

IMPROVED SANITATION AND ITS IMPACT ON CHILDREN: AN EXPLORATION OF SANERGY

By Heather Esper, Ted London, and Yaquta Kanchwala

The introduction of adequate sanitation can provide a range of health advantages and other positive benefits to households and communities. This case examines the impacts a for-profit enterprise, providing sanitation services to the Base of the Pyramid (BoP)¹, has on children and pregnant women and how these impacts can be enhanced. Sanergy, the enterprise in focus, builds 250 USD modular sanitation facilities called Fresh Life Toilets (FLT) in Mukuru, a large slum in Nairobi, Kenya, and sells them to local entrepreneurs for 50,000 Kenyan shillings (KES) or about 588 USD. Franchisees receive business management and operations training from Sanergy and earn revenues by charging customers 3-5 KES (0.04-0.06 USD) per use.

We assessed the company's impacts on its stakeholders' children age eight and under and on pregnant women. We found that Sanergy mainly has positive health impacts on our study's target population. In fact, all children living near FLT – children of franchisees, customers, and non-customers alike – benefit from reduced exposure to poor sanitation-related diseases due to improved cleanliness of the surrounding area. Furthermore, human waste from FLT (separated automatically by the latrine system) is collected daily in a safe manner, treated and disposed correctly, resulting in a slow but steady improvement in land and water quality. Younger children, those age five and under, are likely to benefit the most from the improved environment as they have the most vulnerable immune systems and are more likely to be exposed to contaminants from crawling and playing on the ground. As the appearance of their

¹ The BoP—estimated at approximately 4 billion people—is the socio-economic segment that primarily lives and operates micro-enterprises in the informal economy, and generally has an annual per capita income of less than 3,000 USD in purchasing power parity (PPP).



surroundings improves, children also develop higher expectations of their environment and for their future.

Additionally, we found that children may have access to increased financial resources as a result of the household's reduced medical expenses due to improved health. However, Sanergy customers may need to redirect resources to pay for FLT use, depending on the type of toilet solution they used before access to the FLT. In fact, large numbers of individuals who choose not to use Sanergy facilities likely do so because of the associated cost.

Franchisees' children enjoy many of the positive benefits that customers' children enjoy. In addition, franchisees' children benefit from the income their parents receive from owning the toilets. However, if parents take out loans to purchase the franchise, their ability to provide for their children's needs may be reduced during the loan repayment period.



ABOUT THE AUTHORS

HEATHER ESPER is the Program Manager of Impact Assessment of the William Davidson Institute at the University of Michigan and an editor and writer for NextBillion.net. Her research centers on exploring the poverty reduction contributions of businesses and organizations serving low-income markets. Esper works with these ventures to identify, measure, analyze and leverage their impacts in order to develop strategies to better meet the needs of their stakeholders and further contribute to reducing poverty. She holds a Master's degree in Public Health and a Bachelor of Science degree in Global Health from the University of Michigan.

TED LONDON is a Senior Research Fellow and the Director of the Base of the Pyramid Initiative at the William Davidson Institute and is a faculty member of the University of Michigan's Ross School of Business. His research focuses on designing enterprise strategies and poverty alleviation approaches for low-income markets, assessing poverty reduction outcomes of business ventures, and developing capabilities for cross-sector collaborations. He has published numerous articles, reports, and teaching cases, sits on several advisory boards, and shares his research in venues around the globe.

YAQUTA KANCHWALA is a Research Associate at the William Davidson Institute at the University of Michigan. She has worked in multiple sectors: agricultural value chains, agri-tech, food security, microfinance and access to energy. Her experiences include developing social enterprise growth strategies and conducting rapid impact assessments. She holds a Bachelor of Science in Electrical Engineering from Rutgers University and a Master of International Affairs from Columbia University's School of International and Public Affairs.

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ABOUT THE SERIES

UNICEF states that poverty reduction should start with young children (UNICEF. 2000. Poverty Reduction Begins with Children). The first years of life have a large influence on an individual's long-term well-being. Poverty at an early age can cause lifelong damage to children's future and perpetuate the cycle of poverty across generations. Thus early childhood interventions offer an opportune time to influence the poverty cycle. The effects of poverty can be passed on to children through their parents; improving the well-being of parents therefore can also enhance the well-being of their children.

This series was funded by the Bernard van Leer Foundation, a private philanthropic organization focused on improving the lives of children from birth to age eight. The goal of these cases is to gain a greater understanding of the ways in which businesses in emerging markets impact young children's lives and the potential to optimize impact on children. We also hope that these case studies will influence development and impact investing leaders to include metrics related to young children in their measurement systems.

IN THIS SERIES

IMPROVED HOUSING AND ITS IMPACT ON CHILDREN: AN EXPLORATION OF CEMEX'S PATRIMONIO HOY

Patrimonio Hoy provides construction materials to low-income consumers in Mexico, Nicaragua, Costa Rica, Colombia and the Dominican Republic through a 70-week payment plan that allows its customers to build onto their current homes or build new homes room by room.

IMPROVED SANITATION AND ITS IMPACT ON CHILDREN: AN EXPLORATION OF SANERGY

Sanergy builds 250 USD modular sanitation facilities called Fresh Life Toilets (FLT) in Mukuru, a large slum in Nairobi, Kenya, and sells them to local entrepreneurs for about 588 USD. Franchisees receive business management and operations training and earn revenues by charging customers 0.04-0.06 USD per use.

DIVERSIFIED FARM INCOME, MARKET FACILITATION AND THEIR IMPACT ON CHILDREN: AN EXPLORATION OF HONEY CARE AFRICA

Honey Care Africa (HCA) of Kenya supplies smallholder farmers with beehives and harvest management services. HCA guarantees a market for the beekeeper's honey at fair trade prices, providing a steady source of income.

ACCESS TO CLEAN LIGHTING AND ITS IMPACT ON CHILDREN: AN EXPLORATION OF SOLARAID'S SUNNYMONEY

SunnyMoney sells pico-solar products to BoP communities with limited access to electricity in Tanzania, Malawi, Kenya, and Zambia. It markets the lamps through schools and existing entrepreneur networks.

IMPROVED INCOME STABILITY, TRAINING, MARKET FACILITATION AND THEIR IMPACT ON CHILDREN: AN EXPLORATION OF VILLA ANDINA

Villa Andina of Peru produces high-quality agro-industrial food products through its work with local smallholder farmers. The venture trains farmers in organic cultivation techniques and provides guaranteed payment for the crops produced.

IMPROVED HEALTH CARE AND ITS IMPACT ON CHILDREN: AN EXPLORATION OF PENDA HEALTH

Penda Health provides high-quality, evidence-based, standardized primary care, both curative and preventative, to low- and middle-income families in Kenya while also specializing in women's health care.

BUILDING A SCALABLE BUSINESS WITH SMALL-HOLDER FARMERS IN KENYA: HONEY CARE'S BEEKEEPING MODEL

This teaching case study examines Honey Care Africa's transition from obligating farmers to maintain their own hives to providing hive management services. Readers will explore strategies to reduce side-selling and opportunities to generate greater impacts on farmers' families, in particular young children. The case can be found on GlobalLens.com.

Also included in the series is a summary article, *Focusing on the Next Generation: An Exploration of Enterprise Poverty Impacts on Children*, that aggregates findings across the above six ventures.

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EXECUTIVE SUMMARY

In July 2010, the United Nations General Assembly explicitly recognized the human right to water and sanitation. In fact, access to sanitary living conditions and clean drinking water are essential to the realization of all human rights and to reducing poverty.^{1,2} However, according to the UN, approximately 2.6 billion people—mainly in sub-Saharan Africa and parts of Asia, including South Asia³—lack adequate sanitation. According to researchers at the Water Institute at the University of North Carolina, Chapel Hill, that number is actually 4.1 billion. The difference in numbers is because “the UN measures access to the toilet and how well it protects the user from contact with waste. UNC researchers also considered whether or not the waste was treated, and how that waste affected the community”. Each year, some 1.5 million deaths are caused due to inadequate access to clean water and basic sanitation, 90% of which affect the most vulnerable i.e. children under the age of five. According to the Water Supply and Sanitation Collaborative Council, every 20 seconds, a child dies due to poor sanitation.⁴

The introduction of adequate sanitation to poor communities at the Base of the Pyramid (henceforth called BoP), which lack the same, can provide health and social benefits to all members of the community. The BoP—estimated at approximately four billion people—is the socio-economic segment that primarily lives and operates micro-enterprises in the informal economy, and generally has an annual per capita income of less than 3,000 USD in purchasing power parity. Installing latrines results in less human waste left on streets and/or dumped in water bodies, thus reducing exposure to water-borne diseases. As commercial latrines are installed in communities, the cultural fabric of the social environment is also altered: individuals and families begin to expect a certain degree of cleanliness and that their neighbors will use available toilets. Children also develop a set of related expectations and higher aspirations for their future.

We explore the impacts that Sanergy, a venture providing sanitation facilities and franchising opportunities to the BoP, has on children age eight and under and on pregnant women from the BoP. Sanergy designs and builds 250 USD modular sanitation facilities, called Fresh Life Toilets (FLT), and sells them to local entrepreneurs for 50,000 Kenyan shillings (KES) or about 588 USD in the Mukuru slum of Nairobi, Kenya. Franchisees receive business management and operations training from Sanergy and earn revenues by charging customers 3-5 KES (0.04-0.06 USD) per use.

We gained an initial understanding of the impacts that improved sanitation has on our target population through a literature review and interviews with thought leaders in the space. We then investigated Sanergy’s impacts on our target population across three dimensions of well-being—economic, capability, and relationship—through in-depth qualitative interviews with key Sanergy stakeholders in Mukuru, Kenya. Both direct impacts on children as well as indirect impacts on children through their parents and the environment were assessed across the following stakeholders (see **sidebar**):

We found that Sanergy has the greatest impact on its customers’ children (presented in **Table 1**).

Stakeholders

Customers

Sanergy serves individuals in the slums of Nairobi where there are few commercial and private improved latrines.

Franchisees

Sanergy sells prefabricated toilets to entrepreneurs who charge customers a small fee per use.

Sanergy Staff

Sanergy hires individuals from the BoP community it serves.

Broader Community

Individuals who do not have any relationship with Sanergy.

Table 1: Substantial Impacts on Customers' Children

Economic Well-Being	Changes in Wealth: Changes in parental expenditures impact financial resources available for children's needs. Increased financial resources available for child's well-being as a result of reduced medical expenses due to the reduced occurrence of poor-sanitation-related diseases. Reduced financial resources available for child's well-being due to increased expenditures when families begin to pay to use sanitation facilities.
Capability Well-Being	<p>Improved Physical Health: Improved child health (varying levels) due to using FLT's versus prior sanitation solution. Improved child health from having the opportunity to apply good sanitation practices learned at school such as hand washing at FLT's. Improved child and fetus health as a result of an improvement in the mother's health from using a safe, sanitary toilet. Improved child health from living in cleaner surroundings due to the introduction of FLT's.</p> <p>Increased Aspirations: Children develop higher aspirations for their future and expect more of their local environment, as cleanliness and appearance of their surroundings improve.</p>
Relationship Well-Being	Improved Local Environment: Increased ability for the child to play outside freely with reduced risk of contracting diseases. Improved land and water quality as waste disposal is carried out in the correct manner.

Sanergy also has substantial impacts on children of franchisees and children in the broader community. The majority of impacts that occur on franchisees' children are the same as those that occur on customers' children. In addition, franchisees' children benefit from the income their parents receive from owning the toilets. However, if parents take out loans to purchase the franchise, their ability to provide for their children may be reduced during the loan repayment period. Franchisees' children are likely to have greater health benefits from using the toilets, since they are able to use them for free and as often as required, as these are located right outside their homes. Although franchisees' children will have greater health benefits at an individual level, at an aggregate level, customers' children will have larger health benefits since the number of franchisees' children will always be less than the number of customers' children.

Children living in the community surrounding the FLT's (non-customer children), experience many of the same health benefits as customer's children as a result of improved cleanliness of the nearby environment. As more people use FLT's, a reduced amount of human waste is found on the ground, resulting in better health outcomes for children. People also begin to have an increased sense of respect for their environment. It is important to note that despite these health benefits, children are still at risk of contracting sanitation-related diseases from exposure to polluted water and other contaminated sources.

The impacts we observed on the children of Sanergy's stakeholders varied within and between the age categories of 0-5 and 6-8 years. We expect that children ages 0-5 receive greater health benefits, as they are more likely to be exposed to contaminants from crawling and playing on the ground and have more vulnerable immune-systems. Children do not start using toilets until around age three; prior to this feces from cloth diapers are often disposed by placing it in a paper bag and throwing it into a nearby drainage system or pit latrine. As such, most of the impacts on children younger than three, relate to benefits of a cleaner environment surrounding FLT's. Children ages 6-8 experience similar health benefits as younger children as well as other types of impacts. For example: At age six, children begin to embarrass



Three adjacent FLTs with a hand-washing station.

one another about urinating and defecating in the open. This shaming culture has been created through messages from local NGOs. Given this, children appear to benefit from practicing appropriate sanitation behaviors at FLTs, as it allows for easier assimilation into social and educational environments.

Based on the likely outcomes Sanergy has on children across its value chain, we identify opportunities that Sanergy can explore to enhance, deepen, and expand its impacts on children age eight and under and on pregnant women:

- **Sanergy should explore more opportunities to work with schools, clinics, women's groups and workplaces that employ persons from the BoP to increase awareness of the link between improved sanitation and positive long-term impacts on health and finances.**
- **Sanergy should explore working with NGOs and the government to reduce negative impacts that franchisees face during the loan repayment period, as well as encourage the exchange of financial information and best practices among franchisees in quarterly or semi-annual meetings.**
- **Sanergy can explore piloting pre-paid paper and/or mobile-based payment options for unaccompanied children to use FLTs.**
- **Sanergy should explore different payment options for different types of franchisees to attract users from low-income segments.**

Beyond these key recommendations, we also offer guidance on conducting impact assessments in a systematic and manageable manner.

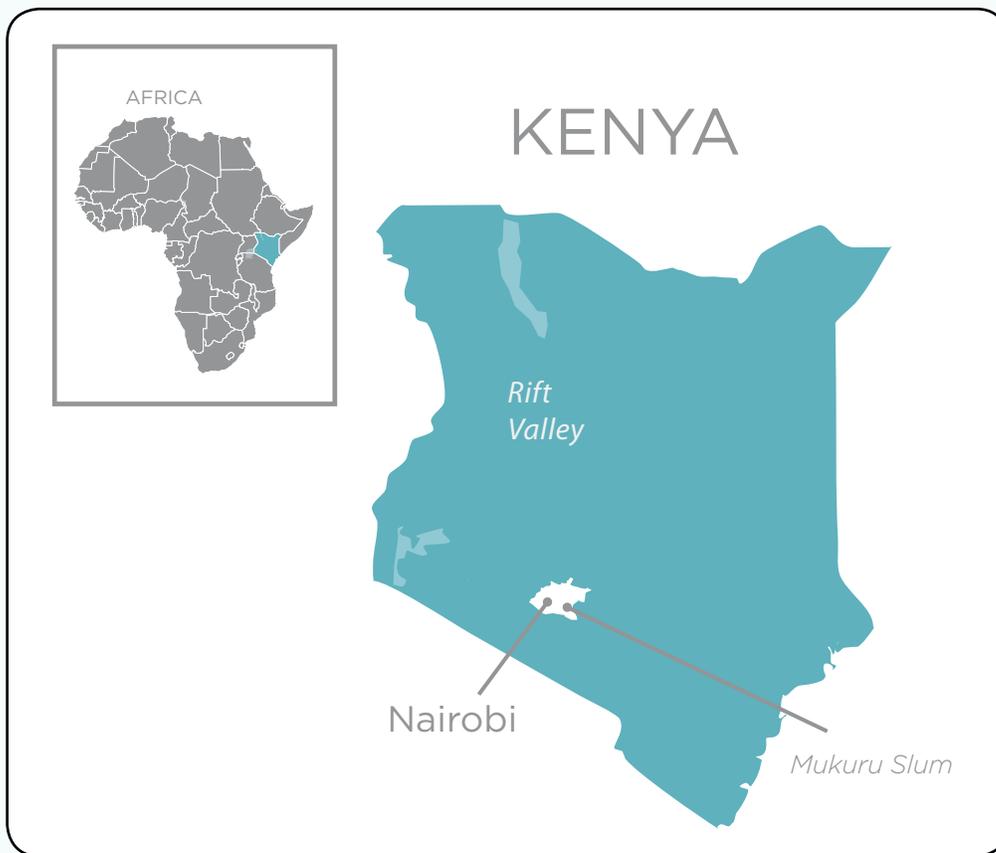
Note: Due to the similarity in impacts across the six cases and in attempt to be concise, we only made secondary research supporting and further exploring impacts in the first case study of the series—Patrimonio Hoy. Please also note that since these cases were developed over the course of 2012-2013, a number of our recommendations to enhance positive and mitigate negative impacts for the venture, have been implemented since we visited the venture. As such, please visit the enterprise's website for more information on their latest practices.

COMPANY BACKGROUND

THE GENESIS OF SANERGY

In 2010 a team of engineers and management students at MIT, including David Auerbach, Nathan Cooke, Lindsay Stradley, Ani Vallabhaneni, and Joel Veenstra founded Sanergy as part of a multidisciplinary team project initiated with the objective of transforming a public health crisis into a business opportunity. Sanergy provides a clean sanitation solution in the form of a modular sanitation facility called a Fresh Life Toilet (henceforth called FLT), via a franchising model, to residents in the Mukuruⁱⁱ slum of Nairobi, Kenya (See **Figure 1**). The team received funding to pilot its business model through a variety of business plan competitions such as the MIT 100K Entrepreneurship Business Plan Contest, fellowships such as Echoing Green, and private capital.⁵

Figure 1: Map of Sanergy's Location



ii Within Mukuru, Sanergy operates in two areas: Viwandani and Kwa Reuben.



Map of Sanergy's operations in Mukuru, as of March 2012.

SANITATION IN LOW-INCOME MARKETS

According to the UN, about 2.6 billion people, or half the developing world, lack “adequate sanitation”ⁱⁱⁱ or access to “an improved latrine.”^{iv} According to researchers at the Water Institute at the University of North Carolina, Chapel Hill, that number is actually 4.1 billion. The difference in numbers is because “the UN measures access to the toilet and how well it protects the user from contact with waste. UNC researchers also considered whether or not the waste was treated, and how that waste affected the community”. Poor sanitation can cause a variety of diseases, some of which, along with their associated morbidity and mortality statistics, are featured below:

- According to the World Health Organization (WHO), between 1.6-1.8 million people die every year from diarrheal diseases (including cholera) due to lack of access to basic sanitation and safe drinking water. About 88% of deaths from diarrheal diseases, 90% of which are in children under the age of five are attributed to unsafe water supply and inadequate sanitation and hygiene.⁶ Even if a child from the BoP is given adequate nutrition, s/he does not benefit if the child suffers from constant diarrhea; the interaction between malnutrition and the disease may then become circular.⁷
- Over 230 million people per year require treatment from schistosomiasis, also known as bilharzia, a chronic disease caused by parasitic worms that are transmitted to humans during contact with infested waters. The parasite's eggs are passed out of the human body through urine and feces, continuing the parasite's life cycle. Hygiene and play habits on the ground make children especially susceptible to the infection.⁸ Similar soil-transmitted intestinal worm parasites (ascariasis, trichuriasis, and hookworm) plague the developing world, with 133 million people suffering from high-intensity intestinal worm infections.^v

iii Adequate sanitation is considered to be facilities not shared between households or that hygienically separate human excreta from human contact.

iv Improved sanitation facilities include flush/pour-flush toilets and latrines that flush to a sewer, septic tank, or pit.

v WHO fact and figures on water, sanitation, and hygiene links to health.

- Globally, an estimated 1.4 million cases of hepatitis A, typically caused by ingestion of contaminated food or water or direct contact with an infected person, are contracted each year. The disease is also associated with a lack of safe water and poor sanitation.⁹
- Trachoma, a bacterial infection of the eye, spreads in areas that lack adequate access to water and sanitation. Globally, eight million people are visually impaired by trachoma and 500 million people are at risk in 57 endemic countries.^{vi}



Sanergy FLT in the Mukuru slum of Nairobi.

- Women and girls face additional health risks: use of poor sanitation methods can affect the health of the fetus during pregnancy. Girls and women of menstruating age face added shame and burden of using open sanitation methods, often using them only in the dark, and further contaminating water sources.

Providing adequate sanitation and hygiene education can decrease sanitation related diseases: the WHO states that improved sanitation reduces diarrhea morbidity by 37.5%. The WHO also states that simple toilets can reduce one-third the number of deaths by diarrhea each year, and proper hand washing can reduce cases by up to 35%-45%.^{vii} Soil-transmitted infections can be decreased by educational campaigns about the proper use of latrines and the safe and sanitary disposal of human feces. Encouraging children to wash their face, providing households with access to clean water, and proper disposal of human and animal waste has been shown to reduce the number of trachoma infections. Improved sanitation has been found to significantly decrease the maternal mortality ratio.¹⁰

SANERGY BUSINESS MODEL

FLTs have a low construction cost (about 21250 KES or 250 USD), and a prefabricated design with a urine diverting plate, sending feces and urine into separate containers. Their compact size allows placement almost anywhere in a dense urban slum. They are sold via a franchising model to residents at 50,000 KES (588 USD), often with direct financing from a local microfinance organization. This price includes waste removal for the first year, after which franchisees pay an annual fee of approximately 9,000 KES (about 106 USD). Franchisees pay about 25,000 KES (about 295 USD) for subsequent units.

Sanergy franchisees charge 3-5 KES (0.04-0.06 USD) per use. Each facility is stocked with toilet paper, soap, and water for hand washing, which Sanergy provides to the franchisees at wholesale prices. The average cost to franchisees for the toilet paper and soap amounts to about 0.5 KES per use. The maximum toilet capacity is approximately 120 uses per day, but most facilities see fewer than 75 uses, and in reality, it is difficult to gauge actual usage patterns. The franchisee usage goal for the first 30 days is 50 customers

vi Center for Disease Control and Prevention facts and figures on hygiene-related diseases.

vii WHO fact and figures on water, sanitation, and hygiene links to health.



Founder Ani Vallabhaneni discussing how FLT's work.



The urine diverting mechanism is under the FLT toilet plate.

a day. Some franchisees hire an employee at a rate of about 0.50-1 USD a day to receive payments from customers. Sanergy estimates that franchisees typically recover their initial investments within approximately seven months. This time frame depends on the number of toilets in use at a site, the population of the area, employee overhead charges, and the per use fee. Franchisee income can be limited by the presence of other FLT operators and commercial competitors in close proximity, forcing some franchisees to lower their costs from 5 KES to 3 KES¹¹ to compete. Income is also limited during and when waiting for Sanergy's daily waste retrieval process and maintenance.¹²

The Ecosan system used in FLT's deposits waste in airtight containers, which are collected and replaced by a waste collector on a daily basis. The full containers are taken to Sanergy's central processing facility. At the facility, human waste is converted into organic fertilizer through a co-composting process and into biogas through an industrial-scale anaerobic digestion process. As Sanergy grows, the biogas will be combusted to generate electricity, which will be sold directly to the national grid through long-term power purchase agreements. The high-quality organic fertilizer, will



Instructions on how to use the toilet are pinned on the inside of all FLT doors.



Toilet paper and sawdust for users at an FLT. Sawdust is applied after each use to reduce the smell from the toilets.

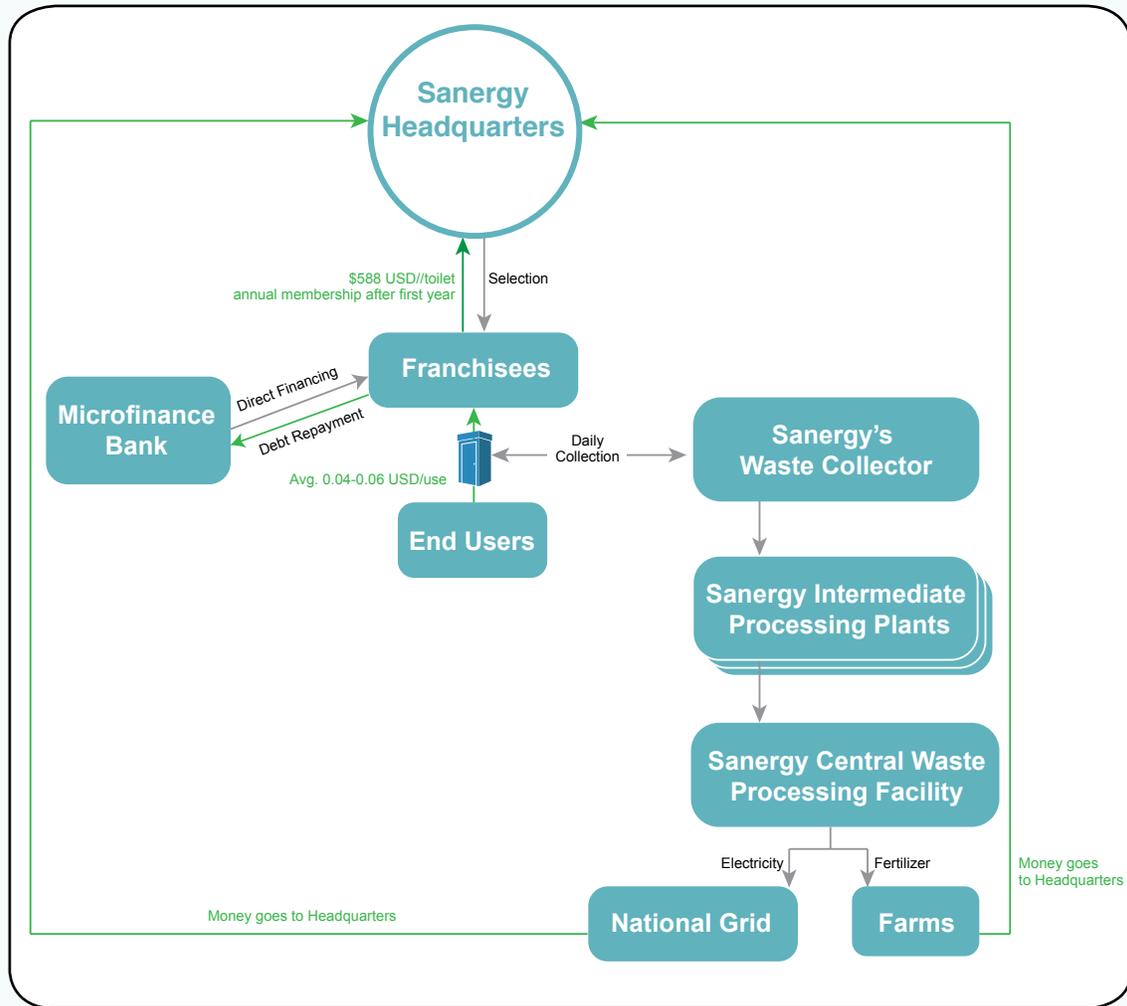


Hand washing station outside the FLT.

be sold to commercial farms and smallholder farmers (see **Figure 2** for more details on Sanergy's business model).

As of May 2013, Sanergy has 179 toilets serving about 8,000 people, and plans to add 250 toilets in a year. With 8 million people lacking access to hygienic sanitation in Kenya's slums, Sanergy projects its market potential as 72 million USD per year.

Figure 2: Sanergy Business Model



Organizational Structure

FRANCHISEES

Sanergy selects its franchisees based on their land ownership, ability to secure financing, and individual commitment to the community. Sanergy recruits three types of franchisees:

- **Small Business Owners:** These franchisees operate their toilets from approximately 5 a.m. to 10 p.m. They are able to operate after dark with the aid of solar-powered light.
- **Landlords:** Sanergy sells its toilets to landlords who provide their tenants with access to the toilets with a key, charging anywhere between 10-200 KES (about 0.15-2.30 USD) a month per rental unit.

Some landlords who live onsite offer the toilets on a pay-per-use basis. Franchisees often do not use a membership model, given that Mukuru operates as a cash-based economy and customers do not yet have long-term confidence that an FLT will always exist/operate in a particular location.

- **Community Institutions:** Sanergy works with a limited number of community institutions who typically do not charge users.

Potential franchisees are required to submit an application and once accepted, training and capacity building activities begin. As part of relationship building, Sanergy has developed a franchisee communications plan that includes contact initiation and sale, training, toilet installation, daily waste collection with toilet paper and soap delivery, daily meetings with a field officer during the start-up phase, and weekly meetings after product launch with an average of three phone calls with a field officer per week. The BoP venture also holds quarterly networking forums for all franchisees.



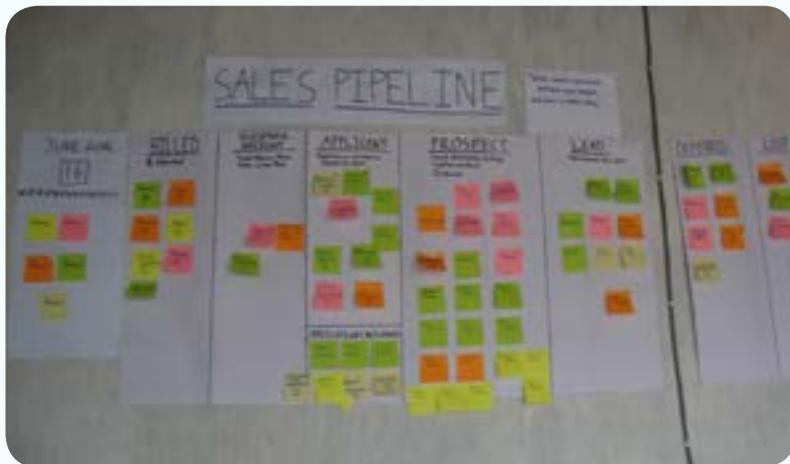
Franchisee training.

SANERGY TEAM

The headquarters for Sanergy is located in Nairobi with a field site in Mukuru, where the majority of staff is based, including managers of human resource, finance, and other administrative functions. The company has approximately 100 employees in technical, operations, and administrative departments, 90% of whom are Kenyan. Most of the talent has been sourced locally with staff members coming from the BoP, working-class, or middle-class (the venture employs 60 people from the local community, and is growing its local staff numbers).

SALES TEAM

The sales staff is comprised of a management team with vast sales experience and 8 sales people from the local BoP population who are tasked with identifying potential franchisees. Through conversations with local community members, existing entrepreneurs, microfinance organizations, lending groups, community organizations, and informal groups, the sales associates



Sales staff receive 1,000 KES (11.80 USD) commission for every toilet they sell and an additional commission when the team reaches its monthly objectives.

gather market intelligence. They also visit areas where there are few toilets or poor quality toilets, and take referrals from existing Sanergy franchisees. On a weekly basis, each sales associate aims to generate approximately 23 new leads, convert about eight of them into qualified leads, and send six qualified leads into the applicant pipeline. They receive 1,000 KES (about 11.80 USD) commission for every toilet they sell and an additional commission when the team reaches its monthly objectives.

MARKETING TEAM

The marketing team is focused on establishing Sanergy's FLT brand. Sanergy leverages sanitation education programs conducted by many other organizations in Nairobi. The marketing team attends community events organized around the issue of sanitation by groups like Community Led Total Sanitation, and spreads the FLT marketing message through promotional materials such as flyers (see **Figure 3**), posters, and T-shirts as well as 'edutainment'—a combination of education and entertainment. As part of its 'edutainment' campaigns, the marketing team organizes acrobat shows, skits around the issue of sanitation, dance competitions, and face painting events for children.

Figure 3: FLT Marketing Flyer



OPERATIONS AND IMPACT MANAGER

Potential franchisees are required to submit an application, and once accepted, are turned over to the operations department. The existing operations and impact manager has a university degree and administers franchisee applications, provides training for facilities operation and business skill development, and ensures that franchisee operations meet Sanergy standards for quality and cleanliness. He also analyzes the competition and continuously examines how the company can adapt and scale its business model to increase market penetration. This includes surveying franchisees and customers to assess Sanergy's influence.

FIELD OFFICERS

The operations department currently has four field officers—all from the local BoP population. The field officers administer the application and business launch process, providing franchisees with a marketing plan that includes leaflets and flyers to advertise the FLT. Field officers are available on-call to the franchisee, continuously for two days during the launch period, and also speak with franchisees weekly to ensure operations are running smoothly. Each field officer spends approximately 30 minutes a week with each of their approximately 40 franchisees. They also sell toilet paper and soap to the owner at wholesale prices, providing the team with additional opportunities to check-in to enforce the organization's cleanliness standards. Sanergy's cleanliness standards require that the squat plate has been mopped, the ground is free of debris and toilet paper, additive sawdust and a waste bin have been provided.



Cement drying in molds for FLTs..

TOILET MANUFACTURING AND INSTALLATION STAFF

Sanergy workers in this division construct the three-by-five-foot toilet from prefabricated local materials and custom molds. The compact size of the FLT allows it to be placed almost anywhere in a dense urban slum. Prefabrication ensures that the unit is assembled rapidly (within a day) onsite, requiring only two-foot-deep foundations. The ferrocement panels are light and highly durable, which allows for easy transportation and a five-year life period. The manufacturing staff install a system that captures urine and feces in separate 30-liter barrels, which reduces odor, prevents contact with human waste, and also prevents leaching into the water table (especially important where there is minimal water infrastructure). The containers can be transported by waste collectors with ease. Installation staff use epoxy paint on floors to prevent staining and build curved corners to reduce build-up of waste and allow for easy cleaning. They also attach hand-washing stations in accordance with Sanergy's cleanliness standards.

WASTE MANAGEMENT

Waste collection and waste processing have two separate teams. Waste collectors average 20 FLTs each and work in pairs. Each team is locally staffed and Sanergy currently has approximately 20 people on staff. The waste collectors wear gloves, masks, safety glasses, boots, and overalls. Waste is collected daily from FLTs by 1 p.m. and transported to the central facility. There, workers process the waste product into energy and fertilizer.^{viii} Onsite showers are provided for staff. Each worker earns about 430 KES (about 5 USD) per day.

TECHNICAL AND MANUFACTURING STAFF

The technical and manufacturing staff includes two product designers, an operations engineer, a chemical engineer, four managers, and two staff members.

^{viii} Energy and fertilizer generation are in the early stages of operation; therefore, impacts on the BoP from the availability and access to these products are unclear.



Loading containers for waste pickup. Waste is collected in 30 liter cartridges.



Urine holding tanks. No waste, solid or liquid ever goes into the natural equipment. There is no chance for waste to leach into the soil and for the high water table to flood the toilets during the rainy season (as stated on Sanergy's website).



Solid human waste is pre-treated before conversion into fertilizer.



Fertilizer product.

COMPETITION

Sanergy's low-cost model circumvents the traditional constraints associated with expensive large block structures containing six to twelve toilets. The block structures are expensive and typically demand donor funding to meet capital requirements, as well as political negotiation to secure land rights. Instead, Sanergy targets existing landowners who are likely to be able to acquire microloans.

The sanitation landscape of the Nairobi slums continues to evolve; other sanitation providers include:

- Umande Trust:** This rights-based organization works closely with community groups, public sector agencies, local government, and peer civil society organizations to secure capital and land access for bio centers. The bio centers are blocks of toilets that provide secure and adequate access to sanitation while transferring waste to septic tanks. As of 2012, the organization has constructed 103 facilities in Nairobi.¹³
- Peepoople AB:** Peepoople is a Sweden-based NGO that provides a safe product replacement for the flying toilet. The product is a personal, single-use, self-sanitizing, fully biodegradable bag that prevents human feces from contaminating the immediate area and the surrounding ecosystem. After use, Peepoo turns into fertilizer.
- Ecotact:** Ecotact builds and operates public toilet and shower facilities, which customers pay 5 KES or 0.06 USD to use. Under its "Build-Operate-Transfer" model, Ecotact signs long-term contracts with municipalities to use public land. The company then absorbs the construction and operational costs of the facilities for five years. After that, Ecotact relinquishes its facility ownership rights to the municipalities, or renegotiates for a contract extension. The company hires staff to operate and clean the units, and provides other revenue-generating products and services such as soft drinks, newspapers, shoeshines, and advertising.¹⁴
- Community Cleaning Services:** CCS is an emerging Kenyan organization that improves urban sanitation while creating franchisee entrepreneurial opportunities for youth from low-income communities. CCS applies a ready-to-use solution to the ongoing management and maintenance of toilets as opposed to infrastructure and construction. CCS focuses on three core activities to support its franchisee sanitation service providers: entrepreneurship training, sanitation marketing, and sanitation services support.¹⁵

Box 1: A Child's Perspective*

Peter is the eight year old son of Josephine, a Sanergy franchisee who recently took out a 588 USD loan through a local microfinance institution. Aminah rents four rooms to tenants as her main source of income, and purchased the FLT to replace her secondary source of income. Peter notices that his mother is earning more money now through the FLT, than she was as a vegetable vendor at a local market center. However, she is using most of the money she generates to repay her loan. He has particularly noticed, because the amount his mom spends on clothing for Peter has been reduced, but he is aware that the amount she spends on nutrition and other necessities has remained the same. He hopes that money does not get tighter as his mother plans on taking out a second loan to purchase another FLT.

** This fictional account is provided to represent a common Sanergy stakeholder situation. The narrative sketch is based on information collected during interviews and focus groups.*

Box 2: Portrait of Sanergy's BoP Market

In 2006, only 42% of Kenyans had access to improved sanitation facilities.¹⁶ In Nairobi, 60% of the population^{ix} lives in slums with high levels of inequality. Mukuru, where Sanergy operates, is one of the poorest urban areas in Africa and has a population of about 500,000. Informal settlements, poor planning, and appalling sanitation conditions characterize this locality. Residents live in makeshift structures built from plastic, tin sheets, etc., without toilet or bathroom facilities. Mukuru does not have a basic drainage system or waste disposal facilities and residents have poor access to clean water. Most human and other waste is dumped into the Ngong River, which passes through the slum.¹⁷ Mukuru residents usually pay the equivalent of about 3-6 US cents to use pit latrines—holes in the ground with plastic sheeting. A popular free option is to defecate in “flying toilets”—plastic bags that the person throws onto rooftops or into the street. Hanging latrines, another common sight, deposit untreated excreta directly into open water bodies. Many residents use these crude methods as they live at far distances from the few existing commercial toilet facilities. Such facilities are often uncared for by the owner or municipality services if government owned, and left in poor conditions. This along with the distance makes it unsafe, especially for women and children, to use the facilities at night. Pregnant women frequently avoid using collective toilets, due to the smell and lack of cleanliness.



A flying toilet in a clear bag on the right side of the picture.

According to Sanergy, the majority of customer families have the following characteristics: some primary schooling, at least one employed person in the family, and a television in the household.

The child's bathroom-use evolves with age in the communities we visited; it begins with diaper use from birth through about age 2.5. Cloth diapers are cleaned, dried, and reused (disposable diapers are usually cost-prohibitive). Waste from diapers is often disposed by placing it in a paper bag and throwing it into a nearby drainage system or pit latrine. From age 2.5 to three, the child is potty trained and waste is disposed in a similar manner. Parents begin to take their children to a toilet facility when they reach age three or four.¹⁸ The younger the child, the more socially acceptable it is for him/her to go to the bathroom in the open. Sanergy is testing a new toilet design for school-age children, with a smaller hole, to be franchised to schools. The smaller hole helps diminish the child's fear of falling into the toilet.

ix Nairobi's population is likely to grow from 3.4 million to 6 million by 2025.

FOCUSING ON IMPACTS ON CHILDREN AGE EIGHT AND UNDER

FRAMEWORK AND METHODOLOGY

The BoP impact assessment framework (BoP IAF) provides a structured approach for gaining a holistic understanding of an enterprise's impacts on key BoP stakeholders. It assesses how BoP stakeholders are impacted across three areas of well-being: economic, capability, and relationship. We customized the BoP IAF to analyze Sanergy's potential impacts on children along its value chain, including children of customers, franchisees, Sanergy staff, and children in the broader community.

We also adapted the framework to explore both direct and indirect impacts on these children (see **Figure 4**). Direct impacts are those that directly result from Sanergy on children, and indirect impacts are those that occur on children as a result of a direct impact from Sanergy on their caregivers, another adult, or the environment.

Figure 4: Direct and Indirect Impacts on Children



The customized set of potential impacts we explored across the BoP IAF's three areas of well-being are:

- **Economic Well-Being:** These are mainly impacts that result from changes in a caregiver's wealth (income and savings) and economic stability (expenditures and employment) that create changes in assets and resources provided to children.
- **Capability Well-Being:** These impacts affect children directly as well as indirectly through direct impacts on their caregivers. Impacts within this area of well-being include changes in the child's physical health, psychological health, leisure time, aspirations, skills, education, and knowledge.
- **Relationship Well-Being:** These impacts affect children both directly and indirectly through direct impacts on their caregivers. The impacts include changes in the types of interactions and support children receive from adults and other children in the community as well as changes to their social network. They also include changes in the home and local environment.

To gain an initial understanding of Sanergy's influence on young children and pregnant women, we conducted a literature review on sanitation and spoke with thought leaders about types of impacts that occur on children from such activities. To gain a holistic sense of Sanergy's impacts, we conducted in-depth qualitative interviews with key Sanergy stakeholders in Nairobi to explore the BoP venture's impacts on children and pregnant women across the three areas of well-being.

Interviews were conducted with people directly impacted by the venture—such as Sanergy's customers, franchisees, and staff - as well as NGOs and sanitation officials from government. We also interviewed people aware of the venture but who had not been impacted by it, such as those who choose not to use Sanergy toilets and external organizations that had experience working with sanitation and/or children in the 0-8 age group. The interviews were semi-structured conversations comprised of a standardized set of open-ended questions that allowed us to ask follow-up questions to elicit more detail. We used



FLT user and her son after the interview.

follow-up questions such as: “Is there anything else related to this topic that you haven’t shared with us yet?” This encouraged interviewees (see **Table 2** for list of respondents) to share additional information. We also incorporated insights from earlier interviews in later interviews in order to develop a more refined understanding of impacts. Each interviewee received a small thank-you gift.^x

Table 2: Description of Primary Interview Respondents

Type of Respondent	Number of Individuals
Customer	5
Franchisee	6
Sanergy Staff	6
Non-customers	5
External organizations (schools, NGOs, governmental organizations)	4

^x Before the visit we asked Sanergy staff about culturally acceptable gifts and they agreed it would be best to give staff a hat with a WDI logo, external stakeholders a metal pen with a WDI logo, and all other stakeholders a plastic pen with a WDI logo.

Methodological Limitations

It is important to note that our evaluation of Sanergy's impacts on children age eight and under is qualitative rather than quantitative. Our findings are interpreted from the qualitative evidence we collected. Therefore our findings consist of likely outcomes of Sanergy on its customers, franchisees, staff, and children in the broader community. The methodology used in this study does not allow us to substantiate the impacts beyond attributing them to the respondents. Some of our findings may also suffer from recall inaccuracy since we did not measure all impacts at the exact time of occurrence.

We informed Sanergy of the different types of stakeholders we would like to interview and relied on Sanergy to select interviewees; as a result, our sampling may be biased to those who had time or felt strongly about sharing information about Sanergy.

This study methodology was adapted from a well-developed approach that has been implemented in Africa, Asia, and Latin America. The adapted methodology was designed to present findings from interviews with the objective of demonstrating the value of collecting such impact data in more rigorous ways over time. The "Capturing Impacts" section that follows demonstrates how to measure the most substantial impacts at a high level over time in a rigorous way in order to quantify them.

Box 3: A Child's Perspective*

Etana is four years old and his mother, Marjani, just began taking him to the FLT that is located approximately two to three minutes from their home. Etana prefers the FLT to the commercial toilet his mother used to take him to, which was located about twice as far from their home. The FLT is closer and he is not afraid to use it because it is clean, has no odor or flies, and he can see the bottom of the toilet. The commercial toilet was dirty and had a disgusting smell. At first, he did not recognize that the FLT was a toilet because it did not smell and it was painted nicely. He likes going to the FLT especially because he likes looking at himself in the mirror on the back of the door. His mother says that he will also have an easier time getting used to going to school and using the facilities there.

** This fictional account is provided to represent a common Sanergy stakeholder situation. The narrative sketch is based on information collected during interviews and focus groups.*

IMPACT FINDINGS

The degree to which Sanergy impacts children differs based on their parents' relationship with Sanergy.

Table 3 summarizes direct and indirect impacts on children of all Sanergy stakeholders that we observed on our field visit. Impacts in bold font are explored in detail in the next section, while details of non-bolded impacts can be found in **Appendices A-C**.

Table 3: Summary of Impacts on Children Eight and Under and Pregnant Women Across Sanergy Stakeholders

	Economic Well-Being	Capability Well-Being	Relationship Well-Being
Customers' Children	<p>Wealth</p> <ul style="list-style-type: none"> Increased financial resources available for child's well-being as a result of reduced medical expenses due to the reduced occurrence of poor sanitation-related diseases (Indirect) Reduced financial resources available for child's well-being due to increased expenditures when families begin to pay to use sanitation facilities (Indirect) Increased financial resources available for child's well-being due to increases in parental income from reduced sick leave at work due to better health outcomes of improved sanitation practices (Indirect) 	<p>Physical Health</p> <ul style="list-style-type: none"> Improved child health from access to improved sanitation solutions (varies by prior sanitation use) (Direct) Improved child health due to applying good sanitation practices learned at school such as hand washing at FLTs (Direct) Improved child and fetus health through parents' improved health from using a safe, sanitary toilet (Indirect) Reduction in child cases of diarrhea, parasites, and other diseases due to cleaner local environment (ground and water) as a result of introduction of FLTs (Indirect) <p>Psychological Health</p> <ul style="list-style-type: none"> Improved child self-confidence and self-esteem from access to improved sanitation (Direct) <p>Education/Knowledge</p> <ul style="list-style-type: none"> Reduced school absenteeism and ability to spend more time on school work as a result of improved physical health (Direct) <p>Aspirations</p> <ul style="list-style-type: none"> Children develop higher aspirations in the long term when a clean, safe toilet is introduced to their community (Direct) 	<p>Interactions</p> <ul style="list-style-type: none"> Improved child-parent interactions as children share information about improved sanitation practices that they learn at school (Direct) <p>Support</p> <ul style="list-style-type: none"> Support from franchisees in using the bathroom and washing hands (Direct) Increased amount of quality time spent with parents due to improved child and parent health (Indirect) Increased social capital resulting from parents and children's ability to invite guests to their home now that an FLT is nearby; additional foot traffic by their home (Indirect) Children receive more support from their parents when their parents experience less tension and stress (Indirect) <p>Adaptability in School</p> <ul style="list-style-type: none"> Easier assimilation into school environments for children who learn to use FLTs (Direct) <p>Local Environment</p> <ul style="list-style-type: none"> Improved cleanliness of local environment from reduced human waste in streets and walkways (Direct) Increased safety and security for women and children due to safe, well-lit, and open FLTs near home (Direct)
Franchisees' Children	<p>Wealth</p> <ul style="list-style-type: none"> Changes in financial resources for child's well-being due to changes in parental income (Indirect) Decreased financial resources available for child's well-being due to household expenditures on the FLT (Indirect) Increased financial resources available for child's well-being due to parents no longer needing to pay for sanitation facilities (Indirect) 	<p>Physical Health</p> <ul style="list-style-type: none"> Same as impacts on Customers' Children <p>Psychological Health</p> <ul style="list-style-type: none"> Same as impacts on Customers' Children <p>Education/Knowledge</p> <ul style="list-style-type: none"> Same as impacts on Customers' Children <p>Aspirations</p> <ul style="list-style-type: none"> Same as impacts on Customers' Children Children develop higher aspirations when observing their parents in their current franchisee role (Indirect) 	<p>Interactions</p> <ul style="list-style-type: none"> Same as impacts on Customers' Children <p>Support</p> <ul style="list-style-type: none"> Changes in support from parents due to changes in time parents have available to spend with children (Indirect) Increased social capital from parents' increased social network results in increased resources for children (Indirect) Same as impacts on Customers' Children <p>Adaptability in School</p> <ul style="list-style-type: none"> Same as impacts on Customers' Children <p>Home Environment</p> <ul style="list-style-type: none"> Children benefit from increased cleanliness and security at home (Direct) <p>Local Environment</p> <ul style="list-style-type: none"> Same as impacts on Customers' Children

Note: Impacts that are likely to have the largest impact on children are bolded. Bolded impacts are explained in more detail in the following sections. Explanations of non-bolded impacts can be found in Appendices A, B, and C.

	Economic Well-Being	Capability Well-Being	Relationship Well-Being
Children from the Community	<p>Wealth</p> <ul style="list-style-type: none"> • Changes in financial resources available for child's well-being due to changes in parental income (Indirect) • Changes in financial resources available for child's well-being due to changes in medical expenses (Indirect) 	<p>Physical Health</p> <ul style="list-style-type: none"> • Reduction in child cases of diarrhea, parasites, and other diseases due to cleaner local environment (ground and water) as a result of introduction of FLTs (Indirect) • Potential negative health impact on children who live near cement factories that Sanergy sources raw materials from (investigation required as cement production usually emits harmful pollutants) (Indirect) <p>Education/Knowledge</p> <ul style="list-style-type: none"> • Increased awareness of health and sanitation issues (Direct) 	<p>Local Environment</p> <ul style="list-style-type: none"> • Improved cleanliness of local environment from reduced human waste in streets and walkways (Direct)
Children of Sanergy's BOP Staff		<p>Education/Knowledge</p> <ul style="list-style-type: none"> • Children learn skills that parents learn at training (Indirect) <p>Aspirations</p> <ul style="list-style-type: none"> • Children develop higher aspirations due to changes in parents' traditional views of employment (Indirect) 	<p>Support</p> <ul style="list-style-type: none"> • Improved daycare facilities for children as Sanergy staff can afford reliable childcare centers (Indirect) • Increased ability to care for children due to improved psychological health of parents (Indirect) • Increased social capital due to parents' increased social network results in increased resources for children (Indirect)

Note: Impacts that are likely to have the largest impact on children are bolded. Bolded impacts are explained in more detail in the following sections. Explanations of non-bolded impacts can be found in Appendices A, B, and C.

Impact on Customers' Children

ECONOMIC WELL-BEING

Indirect Impacts

Wealth: Increased financial resources available for child's well-being as a result of reduced medical expenses due to the reduced occurrence of poor sanitation-related diseases

Parents can expect to see decreased expenditures on health care-related expenses due to living and working in an environment with clean, private sanitation facilities, which can indirectly result in more financial resources available for children's needs.

Wealth: Reduced financial resources available for child's well-being due to increased expenditures when families begin to pay to use sanitation facilities

When parents from the BoP, who typically earn 1-3 USD per day, begin to pay to use toilet facilities, children can be indirectly impacted i.e. paying to use the toilet is a new expenditure that diverts money away from their needs. Nevertheless, many of these parents are already dedicating a similar level of resources to sanitation facilities provided by either non-profit or for-profit organizations (prior to the installation of an FLT in their community) and say that FLTs are an improvement over toilets they were previously using.¹⁹

CAPABILITY WELL-BEING

Direct Impacts

Physical Health: Improved child health from access to improved sanitation solutions (varies by prior sanitation use)

Children going to the bathroom in the open or in unsanitary latrine conditions are exposed to a number of preventable diseases. The introduction of a simple toilet like those offered through Sanergy assist BoP communities in reducing their exposure to pathogens and diseases. "Children are naughty and want to touch everything and put it in their mouth. The FLT toilets are good for children because waste doesn't get on the floor [of the toilet] but rather goes directly into the containers,"²⁰ said a clinic worker. Improvements in health vary depending on the cleanliness of the type of sanitation solution a child used before the FLT. We expect to see large improvements in health when children start using FLTs instead of practicing open defecation, flying toilets, and/or using collective toilets. However, it should be noted that despite the health benefits associated with using FLTs, children are still at risk of contracting many sanitation-related diseases from polluted water.

Toilet use mostly influences older children (2.5 years and older) who are toilet-trained. However, reduction in sanitation-related diseases in such children can influence the health of their younger siblings due to reduced spreading of diseases. Individuals, including a nurse who lives and works near an FLT, said there are fewer cases of diarrhea and the cases appear to be

Box 4: A Pregnant Woman's Perspective*

Nabila is pregnant and prefers to use the FLT located about 50 meters from her home because it is clean, private, and dignified. The FLT has also improved the area around her home which allows her to worry less when her one-year-old son, Kafil, plays and crawls about outside. Before the FLT was introduced to the community, there were no commercial toilets available and local residents defecated in the open, along the road and in plastic bags. They then threw the bags in the street (called flying toilets) and in the area where Kafil plays. Kafil gets sick less often now, Nabila says, and she believes that the FLT is making her neighborhood safe for her child and clean for all members of the community.

* This fictional account is provided to represent a common Sanergy stakeholder situation. The narrative sketch is based on information collected during interviews and focus groups.



A collective toilet in Mukuru.



Waste disposal method from a collective toilet in Mukuru.

less severe overall.²¹ Although boiling water and other behavior changes likely contribute to the reduction in diarrhea, it appears Sanergy's introduction of FLT is influencing the health of the communities it serves. An FLT user said that her six-year-old seems to have diarrhea less often since he started using an FLT (as opposed to commercial toilets). As a result, he spends more time at school and less time at home sick, and is less likely to spread sanitation-related diseases to his younger brother.²²

Physical Health: Improved child health due to applying good sanitation practices learned at school, such as hand washing at FLT

FLTs provide an opportunity for children to apply and practice appropriate hygiene behaviors they learn at school, such as hand washing.

Hands that have been in contact with feces, nasal excretions, and other bodily fluids, and not washed, can be a vector for a number of viruses, bacteria, and parasites. In addition to diarrheal disease, respiratory illness is among the biggest killers of young children in developing nations. Both are, in part, preventable through hand washing.²³ Although not all adults wash their hands, we learned through our interviews that the large majority, if not all, children wash their hands after using the FLTs. This behavior is likely the result of the hygiene education they receive from school and through franchisees, and the availability of hand washing stations at all FLTs.

Aspirations: Children develop higher child aspirations in the long term when a clean, safe toilet is introduced to their community

Children likely develop higher aspirations for their future when an improved latrine is introduced to their environment. In the long term they gain a sense of the potential for change, which pervades other areas of their lives. The resulting emotional and physical health, social skills, and cognitive-linguistic capacities that

emerge from aspirational improvements in early years are all important prerequisites for success in school and later in the workplace and community.²⁴

Indirect Impacts

Physical Health: Improved child and fetus health through parents' improved health from using a safe, sanitary toilet

Improvements in sanitation access and the quality of the local environment lead to a decrease in the transfer of disease related to poor sanitation from parent to child. Healthy parents are also better able to care for their children, attending to their material, emotional, and developmental needs. The physical health of a pregnant woman affects her ability to care for herself, her fetus, and ultimately her newborn child. Improved sanitation has been found to be significantly associated with a decreased maternal mortality ratio.²⁵ Some of the pregnant women we spoke with said that they are prone to vomiting when the odor at commercial toilets becomes too strong.²⁶ Pregnant women who use the FLT, safeguard their health and the health of their unborn child. They are also better able to care for their newborns, as they are less likely to fall sick due to sanitation-related diseases. Sanergy recently opened a toilet in a clinic to provide for a clean, safe, well-maintained facility for local women preparing to give birth. The toilet is located next to the delivery bed, so the clinic's patients do not have to walk far to access it. With the introduction of the FLT, they are able to go to the toilet as often as needed.²⁷ Sanergy's FLT squat model, as opposed to a seated toilet, is preferable for mothers who have recently delivered.

Box 5. Impact of Poor Sanitation on Pregnant Women

A lack of access to clean water and sanitation and the presence of stagnant water have the potential to cause severe adverse pregnancy outcomes. Going to the bathroom in the outdoors or in unsanitary conditions can adversely impact both maternal health and the health of the fetus. Malaria, chronic hookworm infestations, dysentery, and cholera are all related to unsanitary environments lacking improved latrines.²⁸ Pregnant women may experience a variety of adverse consequences from malaria infection, including maternal anemia, placental accumulation of parasites, low birth weight from prematurity and intrauterine growth retardation, fetal parasite exposure and congenital infection, and infant mortality linked to premature low birth weight and intrauterine growth retardation. Pregnant women in the slums of Nairobi frequently avoid using collective toilets available in the community due to their smell and lack of cleanliness. They frequently wait to go to the bathroom, which can lead to urinary tract infections.



The FLT is in the delivery room in a private clinic, where women can access it easily. When they are in labor, they do not want to move around much and appreciate the FLT next to their bed. They also have a place to shower right next to the toilet in the bathroom.



Typical drainage system in Mukuru.

Physical Health: Reduction in child cases of diarrhea, parasites, and other diseases due to cleaner local environment (ground and water) as a result of introduction of FLT

Children's health is further impacted through the improved quality of the local environment. Exposure to poor sanitation-related diseases such as diarrhea and cholera, and presence of flies that spread diseases and parasites are reduced as there is less human waste on the ground. One FLT user noted that her children have the flu less often because not only are there less human feces in the area surrounding her home, but the FLT appears to have an additional effect—neighbors also leave less garbage on the ground near her home.²⁹ Reductions in the incidence of malaria are also observed when less waste is left in open drains, and when stagnant water conditions that are breeding grounds for mosquitoes are eliminated.³⁰ The reduced exposure to diseases from an improved environment especially impacts the youngest and most vulnerable children. Small children, those under age five, crawl and put things in their mouths, including dirty hands, ingesting dirt, parasites, and feces, and thus are more likely to be exposed to pathogens. These children are affected more



Clearer drainage near an FLT in Mukuru.

than adults and older children due to their lower immunity,³¹ with disease effects, especially diarrhea, magnified in instances of malnutrition. Children in the 6-8 age group appear to have the same health benefits as younger children, but they are somewhat less pronounced than in the 0-5 age group.

RELATIONSHIP WELL-BEING

Direct Impacts

Local Environment: Cleanliness of local environment from reduced human waste in streets and walkways

Children are able to play outside more freely with less risk of contracting diseases because of living in cleaner environments, where there are less human feces and flying toilets lying on the ground. Drainage is also improved, with less toilet paper, waste, and stagnant water lying in and around sewers. Because FLT's are dry toilets there is less leakage compared to pit latrines that bring waste to the surface and allow it to escape into the environment when it rains.³² There is also no contamination of waste in FLT's since they are emptied daily and the waste is disposed of properly ensuring slow and steady improvements in land and water quality.



Cleaner environment for children near an FLT.

Sanergy found that over half of its clients used flying toilets at night, but reduced doing so since the installation of an FLT.³³ Additionally, Sanergy collects the waste from FLT's daily, as opposed to collective toilets, where they often dump the waste into surrounding rivers.



Sanergy employee collecting waste in Mukuru.

Impact on Franchisee's Children

Although a broad set of impacts occur on franchisee children, the scale is much smaller than on customers' children due to the greater number of customers' children as compared to those of franchise owners.

ECONOMIC WELL-BEING

Indirect Impacts

Wealth: Changes in financial resources for child's well-being due to changes in parental income

According to Sanergy, franchisees, on average, break-even on their investment within five months or less and thereafter have a steady stream of income from the facilities, with some franchisees owning multiple toilets. We found that this income is frequently redirected to increasing the nutritional value of their children's diets, fees for informal schooling, uniforms and school supplies for public school, and/or re-invested into new business activities. The increased spending has the potential to impact their children's health, cognitive development, social interaction with peers, and future productivity. Franchisee income is often limited by the presence of other FLT operators and commercial competitors in close proximity, forcing franchisees to lower their costs from 5 KES to 3 KES³⁴ to compete. Income is also limited during the timeframe for Sanergy's daily waste retrieval service and maintenance.³⁵

Many of Sanergy's franchisees are existing business owners, who operate kiosks or are landlords. Franchisees often buy FLTs to replace their secondary source of income. One franchisee we spoke with lives with her 18-year-old daughter and two grandsons, ages eight and eight months. Her main source of income is the rent she collects from 10 rooms, earning about 10,000 KES or about 116 USD per month. Her secondary source of income comes from re-selling vegetables that she buys from a smallholder farmer for about 1000 KES or about 12 USD, earning an additional 200-300 KES or 2.30-3.50 USD a day. She said she replaced her vegetable stand with an FLT because the business essentially runs itself.³⁶ The supplementary income that franchisees generate is frequently spent on nutrition, school supplies, clothing, and other necessities for children. The ability of entrepreneurs to provide better nutrition for their children ages 0-8 age is especially significant.^{xi}

Since buying a toilet through Sanergy in February 2012, another franchisee, who in addition to being a landlord was selling clothes and charcoal, has eliminated her secondary businesses. She continues to rent 12 rooms for approximately 1,000 KES or 12 USD a room (per month), and earns about 4,500 KES or 53 USD on the toilet (per month). She said that the income from the FLT is steadier and that the FLT business is easier to run. When she was selling clothes, there would be days when she would make no sales, and the charcoal business earned her only 10-50 KES or about 0.12-0.60 USD per day. With the stable income from the FLT, she said, she can better provide for her granddaughter, stepbrother, and daughter. (She uses her rent earnings to pay her regular bills.) She said she plans to use the money she earns from the FLT to add another toilet and house.³⁷

A bar owner who purchased FLTs has been quickly paying down her debt on the toilets. She said she plans to use the additional income from the toilets to buy land in another part of her community and install more FLTs. She also plans to use the extra money to pay school fees.³⁸ Research shows a lack of investment in early childhood education can impact future employability, productivity, and overall well-being.³⁹

However franchisees' income may decrease when another Sanergy operator or commercial toilet is installed in close proximity. This decrease in income may affect the resources available for child's well-being. For example, one franchisee had about 100 customers a day when he first opened his FLT. The closest competitor was a commercial toilet 100 meters from his location, but now he has about 40-50 customers a day after another Sanergy franchisee opened three toilets 20 meters away from his FLT. The

xi Children who are poorly nourished suffer up to 160 days of illness each year, and nutrition deficiencies play a role in approximately half of the 10.9 million child deaths each year. Under-nutrition magnifies the effect of every disease. The estimated proportions of deaths in which under-nutrition is an underlying cause are roughly similar for diarrhea (61%), malaria (57%), pneumonia (52%), and measles (45%). (Source: World Hunger Education Service)

franchisee said that he would prefer that Sanergy build toilets 100 meters apart, and carefully review the information the company's surveyors collect about where people go to the bathroom, and how far the location is from where they live or work, before selling toilets to franchisees. The loss of income due to the increased competition led him to borrow money from his eldest son to help cover school fees for his younger children.⁴⁰

Wealth: Decreased financial resources available for child's well-being due to household expenditures on FLT's

Franchisees make small regular payments on the toilets, which are typically financed through microloans. One franchisee owner told us that it takes revenues from approximately 35 customers per day to make his monthly payments on his loans.⁴¹

One franchisee who operates two toilets said she is making more money after buying the toilets, but has had to make some short-term financial adjustments to repay her loans. The two FLT's cost her 75,000 KES (about 884 USD). She purchased the first one outright, and after customers began lining up to use the toilet she decided to finance a second facility. The payments on her 30,000 KES (about 354 USD) microloan are 4,000 KES (about 47 USD) a month, and she has almost paid off this loan. But she also has a 50,000 KES (588 USD) loan to reconstruct her house. She earns approximately 300 KES (about 3.55 USD) a day from both toilets, spends 100 KES (about 1.20 USD) on her family's daily food consumption and the rest on loan repayments. Although her income has increased, she has reduced the amount of money she is spending on food to make these payments. Her daughter began her own business, selling sweet potatoes with her grandchildren to help out. As a result, she now spends less time with her grandchildren.⁴²

Another franchisee we spoke with operates the FLT as part of a co-operative of 15 people. The co-op members rotate operation of the toilet on a weekly basis, re-invest 50 KES (0.60 USD) a day into the co-op, and at the end of the month, divide remaining earnings among themselves. Before joining the co-op, the franchisee sold shoes, and said he made more money, but he lost his business after his daughter sustained an upper thigh injury and spent 31 days in the hospital. The hospital bill was over 43,000 KES or about 506 USD—that is in addition to his regular expenses, which includes about 25,600 KES or about 300 USD to send his six-grader and daughter to school and 2,000 KES or about 24 USD in rent. He pays each of the bills in small installments. Although his medical bills have not decreased, the franchisee said his children get sick less often as a result of using the FLT.⁴³

Wealth: Increased financial resources available for child's well-being due to parents no longer needing to pay for sanitation facilities

Financial resources available for children's needs increase, as parents no longer need to pay for their children to use toilet facilities.

CAPABILITY WELL-BEING

Direct Impacts

Physical Health: Improved child health from access to improved sanitation solutions (varies by prior sanitation use)

Please see description of impact in the Impact on Customer's Children section. This specific impact is likely to be larger on franchisees' children, as we assume they use the FLT's more often since the toilets are free, and in most cases, just outside their home.

Physical Health: Improved child health due to applying good sanitation practices learned at school such as hand washing at FLT's

Please see description of impact in the Impact on Customer's Children section.

Aspirations: Children develop higher aspirations in the long term when a clean, safe toilet is introduced to their community

Please see description of impact in the Impact on Customer's Children section.

Indirect Impacts

Physical Health: Improved child and fetus health through parents' improved health from using a safe, sanitary toilet

Please see description of impact in the Impact on Customer's Children section.

Physical Health: Reduction in child cases of diarrhea, parasites, and other diseases due to cleaner local environment (ground and water) as a result of introduction of FLT's

A franchisee children's physical health improves as a result of reduced exposure to sanitation-related diseases in their surrounding environment, which is now cleaner due to the introduction of the FLT. These children are less exposed to flying toilets and human feces when they play outside.⁴⁴

RELATIONSHIP WELL-BEING**Direct Impacts**

Local Environment: Improved cleanliness of local environment from reduced waste in the streets and walkways

Please see description of impact in the Impact on Customer's Children section.

Impact on Children in the Broader Community**CAPABILITY WELL-BEING****Direct Impact**

Education/Knowledge: Increased awareness of health and sanitation issues

Sanergy's impacts on the broader community include increased awareness around issues of health and sanitation. Our interviews with both internal and external stakeholders indicates that the introduction of an FLT to the community creates a shift in values around cleanliness.

Indirect Impacts

Physical Health: Reduction in child cases of diarrhea, parasites, and other diseases due to cleaner local environment (ground and water) as a result of introduction of FLT's

It is likely that non-FLT customers' children benefit from similar health outcomes as FLT customers' children as a result of a cleaner environment. However, it is important to re-emphasize that despite these health benefits, children are still at risk of contracting sanitation-related diseases from exposure to polluted water.

Physical Health: Potential negative health impact on children who live near cement factories that Sanergy sources raw materials from (investigation required as cement production usually emits harmful pollutants)

It is important to also consider potential impacts on children living near factories that Sanergy sources materials from. Cement production usually negatively affects the air quality, by emitting harmful pollutants such as nitrogen oxides and sulfur dioxide. These pollutants attribute to increased levels of asthma as well as other negative health outcomes. Without knowing more about the particular plants that Sanergy sources cement from, we cannot say with certainty what children living near such plants might be experiencing.

RELATIONSHIP WELL-BEING**Direct Impacts**

Local Environment: Improved cleanliness of local environment from reduced human waste in streets and walkways

Surrounding areas around the FLT's not only tend to have fewer flying toilets and less disposal of waste into streets and waterways, but also appear to be cleaner in terms of the way houses in the area dispose garbage; such households also treat the area's appearance with new respect. Neighbors tend to have an increased respect for shared areas (streets and walkways) around their home and maintain the dignity and cleanliness of those surroundings.

Impact on BoP Staff's Children

ECONOMIC WELL-BEING

Indirect Impacts

Wealth: Changes in financial resources available for child's well-being due to changes in parental income

A production engineer for the toilet manufacturing team said that he took a pay cut to work for Sanergy. He uses the income he earns through Sanergy to pay for rent and food for his three children, ages six, three, and one. Based on his response, we assume that he has fewer resources to provide for his children, as a result of working with Sanergy.⁴⁵ A Sanergy waste collector said that before he worked for Sanergy, he had a three day-a-week construction job, earning him 300 KES (3.50 USD) a day. He now makes 400 KES (4.65) USD on a six day-a-week schedule. Even though he has been working for Sanergy for only eight months, he has been able to achieve some life goals such as moving out of a rental and building a house.⁴⁶ Another employee said, "If someone gets money it is good because money is everything—because you can't make change without getting money and life won't change without it."

Wealth: Changes in financial resources available for child's well-being due to changes in medical expenses

Sanergy staff members receive health insurance and can add their family members for a fee. Most organizations in Kenya have a standard practice of providing health care, retirement benefits, and life insurance. One Sanergy employee said that the health insurance he receives is helpful, especially because of the insurance benefits he gains for his children.

RELATIONSHIP WELL-BEING

Indirect Impacts

Support: Improved daycare facilities for children as Sanergy staff can afford reliable childcare centers

A Sanergy field manager said that she now earns enough money to pay for daycare for her one year old child. She used to leave her child with her parents when she was at her previous job, but this was not a reliable option as her parents would have other commitments and she would have to find alternative arrangements.⁴⁷ The ability to pay for daycare with her Sanergy salary allows her to avoid being late to work or missing work entirely. Please note that although this employee pays for someone to watch her child, the grandparents still spend time with her daughter by picking her up from the daycare.

Support: Increased ability to care for children due to improved psychological health of parents

The production engineer who took a pay cut to work for Sanergy decided to make the change because his other job required a lot of traveling and he would often get sick. What he likes most about working for Sanergy is that people share ideas.⁴⁸ Another staff member said that he prefers to work with people from a diverse set of backgrounds and enjoys the fulfillment he experiences from his work at Sanergy.⁴⁹ Working in a collaborative environment can have beneficial effects on employee mental health. Children are indirectly impacted by improvements in their parents' mental health. Better job opportunities appear to mitigate the impacts of parental depression which has been linked to early signs of, or vulnerability to, the following problems in children: increased negativity, less happiness, lower social skills, increased vulnerability to depression, more self-blame, less self-worth, and a less effective response system to stress triggers.⁵⁰

Box 6: Exploration of Individuals Who Choose Not to Use Sanergy's Toilets

We found the following reasons, during our interviews, as to why some persons choose not to use FLT:

- **Price barrier:** The most common reason cited for not using FLT is price.⁵¹ One non-user said that when he does not have enough money to use the commercial toilets he uses the bush.⁵² Another non-user prefers to use commercial toilets even though they are 100 meters away while other facilities are 10- 20 meters away, because urine does not splash back on her when she uses it, and it is less expensive. She indicated that she would use FLT more if the price decreased to 2 KES for adults and half of that for children. She uses the commercial toilet once a day, while her children use the toilet multiple times. Her 4-year-old has stomach problems related to typhoid and uses the bathroom about four times a day. She would prefer to pay monthly for FLT use, and indicated that she would be willing to pay 200 KES (2.30 USD) for the whole family.⁵³ Two mothers who live about 400 meters away from the FLT would use the toilet if there was no charge per use. Their landlord has a nearby pit latrine and includes the charge in their rent. They do not like to use this latrine because it is dirty and the tenants are responsible for cleaning the facility; one of the mothers indicated that she is concerned about this as she thinks her children will get skin rashes.⁵⁴
- **Distance to the FLT:** Some non-users indicated they would use an FLT if one were located closer to their home or their place of business. A non-user said that he uses a commercial toilet even though he does not like the facility because it is located 200 meters from his home, while the FLT is 300 meters away. He said awareness, price, cleanliness, and distance matter when he decides which toilet to use, and cleanliness and money are the most important factors.⁵⁵ One pregnant non-user we spoke with indicated that she does not use the FLT on a regular basis because it is too far to walk, even though she prefers the Sanergy toilets because they are cleaner and stay open longer than most commercial toilets.
- **Financial choice between sanitation or another basic need:** For many of the poor, the choice is between using an FLT or providing food for their children. Malnutrition and sanitation, nevertheless, go hand-in-hand. Because water supply, sanitation, and hygiene have a direct impact on infectious disease, especially diarrhea, they have a significant effect on the prevention of malnutrition. The cost of uniforms, school supplies, and school fees can become too high for parents, forcing children out of school. For BoP families that typically earn 1-3 USD per day, it is always a delicate balance to pay the rent, school fees, nutritional costs, and costs for other necessities. Families frequently make sacrifices in one area to cover expenses in another. Parents who do not use an improved facility or take their children to a toilet, nevertheless, often have higher medical expenses due to illnesses related to poor sanitation.

OPPORTUNITIES FOR GREATER IMPACT

Through the course of our interviews we found that Sanergy has a broad range of impacts on our target population; gaining access to improved toilet facilities substantially improves the lives of children in the 0-8 age category and also has impacts on pregnant women. But we believe Sanergy has opportunities to further amplify its positive impacts, mitigate negative impacts, increase penetration into its existing markets, and expand into new regions. Each of our suggestions can generate more business for Sanergy, but depend on the resources the BoP venture has at its disposal. **Tables 4-7** presents potential ways Sanergy can enhance, deepen, and expand its impacts. Prioritized recommendations are bolded.

ENHANCE POSITIVE IMPACTS

Table 4: Opportunities to Enhance Positive Impacts

Opportunity	Potential Response
Share health and financial impacts of improved sanitation compared to open defecation	Explore more opportunities to work with schools, clinics, women's groups and workplaces that employ persons from the BoP to increase awareness of the link between improved sanitation and positive long-term impacts on health and finances
Exchange knowledge and best practices among franchisees	Encourage exchange of information and best practices among franchisees in quarterly or semi-annual meetings
Hygiene and hand washing	Explore working closely with franchisees to increase their capacity to deliver improved sanitation messaging and establish strong relationships with customers
Environment around sanitation facilities	Encourage franchisees to set an example of keeping clean surroundings in the community
Performance management	Explore developing an incentive system for franchisees to encourage better performance and higher sales while maintaining a healthy competitive environment
Sanitation advocacy	Explore joining existing sanitation advocacy efforts in Nairobi

Prioritized recommendations are bolded.

- **Explore more opportunities to work with schools, clinics, women's groups and workplaces that employ persons from the BoP to increase awareness of the link between improved sanitation and positive long-term impacts on health and finances**

Sanergy can work with the following partners on developing targeted messaging such as improved sanitation to reduce cases of diarrhea and other parasitic infections. The messaging should also emphasize increased household savings from reduced medical expenses and reduced absenteeism from work and school due to improved health. We strongly believe a growth in awareness will increase demand for clean toilets.

Schools: Children receive information on issues of water, health, hygiene, and sanitation from schools and spread the information to their parents and elders in the household. Sanergy should



FLT at a Bridge International school.

leverage this bottom-up spread of information and include general and brand-specific information when presenting in schools. Children tend to come back to use a clean toilet after the first time. They also state the positive experience to their parents and request money for the same. The education environment would be particularly useful for this messaging, especially within the 6-8 age group, as it is at this time that children often begin shaming other children into using an improved facility.

Women's groups: We encourage partnerships with women's groups as research shows that women are often the main decision maker on what their children should do. Sanergy should focus its message on three items in particular: reduced child absenteeism from school due to better health, the child's ability to play freely due to cleaner surroundings, and increased household savings from reduced medical expenses. Marketing messages e.g. posters and flyers promoting FLT use, should be targeted to mothers and placed at FLT sites, in the city center, and local markets, as well as distributed by community groups, government, NGOs, and schools.

Clinics and workplaces that employ persons from the BoP: Sanergy should work with these partners to develop messaging targeted to adults. Topics such as the link between improved health and clean sanitation should be discussed in detail in group settings. Sanergy should emphasize that using clean toilets can reduce the incidence of disease and exposure to pathogens which can result in reduced absenteeism from work. This would then lead to higher incomes and also increased household savings from reduced medical expenses.

- **Encourage exchange of information and best practices among franchisees in quarterly or semi-annual meetings**

Sanergy should encourage franchisees to share information on the issues they face in day-to-day operations during their quarterly or semi-annual meetings. This allows franchisees to share lessons, tough situations, best practices, and transfer knowledge in a safe, collaborative setting.

- **Explore working closely with franchisees to increase their capacity to deliver improved sanitation messaging and establish strong relationships with customers**

Sanergy should explore working closely with franchisees to increase their ability to deliver hygiene education. For example, to encourage hand-washing, franchisees can be guided to set up billboards showing the action or themselves reminding children: "don't forget to wash your hands". Sanergy should also help franchisees develop strong relationships with customers in order to retain their patronage. Franchise owners should always be friendly, greet the customer, and ask if the customer found the space satisfactory. They should take immediate action when a customer has a negative experience. Sanergy can educate and empower franchisees to serve as sanitation educators and relationship builders during their initial training. It can then continue to coach franchisees on these tasks during weekly phone calls and quarterly meetings.

- **Encourage franchisees to set an example of keeping clean surroundings in the community**

Sanergy should encourage its franchisees to frequently sweep and clean the areas surrounding the facility to maintain cleanliness for a positive customer experience. This will also attract more users to the site, and serve as an example to customers to keep their own surrounding areas clean. FLT's can also include the option for customers to clean the toilet and spray sawdust after use to reduce flies

- **Explore developing an incentive system for franchisees to encourage better performance and higher sales while maintaining a healthy competitive environment**

Sanergy should explore setting up an incentive system, such as prizes for highest sales and for the cleanest FLT, to encourage franchisees to improve sales and customer experience, while maintaining a healthy competitive environment. Sanergy should continue to research how to limit intra-FLT competition (spacing of FLT's in the slums). At present, Sanergy believes that for saturation, FLT's need to be closer than every 100m, and therefore works with the franchise owner to purchase second toilets and ensure that each FLT is being run profitably before allowing for other competition.

- **Explore joining existing sanitation advocacy efforts in Nairobi**

Many parents in Nairobi's informal settlements dump such waste into an open sewage system or open area. Working in collaboration with community groups, NGOs, and other BoP ventures, Sanergy should explore petitioning the government to regulate the disposal of solid human waste and enforcement of

associated regulations through imposition of fines. Sanergy could also encourage parents to dump their solid human waste into an FLT for a small fee (garbage and other non-human feces material should not be mixed in the deposit, else it could pose a problem during waste collection and processing).

REDUCE NEGATIVE IMPACTS

Table 5: Opportunities to Decrease Negative Impacts

Opportunity	Potential Response
Financial constraints for franchisees while paying off loan	Explore developing stronger partnerships with the government, microfinance institutions and NGOs to reduce negative impacts franchisees face during the loan repayment period
Track customer negative experience	Consider installing complaint boxes at FLT's to track and rectify negative customer experiences
Impact of Sanergy's inputs on children	Explore partnerships with companies that have similar values and are certified in clean manufacturing practices

Prioritized recommendations are bolded.

- **Explore developing stronger partnerships with the government, microfinance institutions and NGOs to reduce negative impacts franchisees face during the loan repayment period**

Sanergy should explore partnerships with organizations that can offer franchisees additional support to mitigate negative impacts that they may experience while repaying their loan that financed the FLT purchase. The time period for recovering the initial investment on FLT's is, on average, five months. Although many of Sanergy's franchisees are existing business owners, they take on additional financial risks and are economically vulnerable during the repayment period. Support such as child care while they work and resources during the payback period, such as access to food vouchers, could have a large influence on their children's lives. Sanergy could also identify targeted available resources in the community, which could be valuable to Sanergy staff with young children.

- **Consider installing complaint boxes at FLT's to track and rectify negative customer experiences**

Franchisees should track negative customer experiences and inform Sanergy of any issues that they cannot handle or concern FLT-design or materials. Sanergy should help the franchisee take immediate action to rectify issues related to poor cleanliness. One way to track negative experiences is by installing a complaint box. If the customer complains verbally, the FLT owner should record the issue.

- **Explore partnerships with companies that have similar values and are certified in clean manufacturing practices**

Because Sanergy is rapidly scaling its business model, and appears poised to expand into other areas in Africa, we recommend that the company adopt a strict code of ethics that codifies the organization's values. Sanergy may quickly find that it will be outsourcing manufacturing of its prefabricated parts and administration of delivery of the business model. In such events, Sanergy should seek collaborations with organizations that have similar values. Additionally, manufacturing partners with certifications that ensure clean manufacturing practices will reduce any potential negative impacts on children living near factory sites.

INCREASE PENETRATION INTO CURRENT MARKETS

Table 6: Opportunities to Increase Market Penetration

Opportunity	Potential Response
Ability for children to use FLT's when parents are not present	Explore piloting pre-paid paper and/or mobile-based financial solutions to allow unaccompanied children to use FLT's
Awareness and penetration in health care facilities and schools	Explore partnerships with the government on marketing campaigns to heighten public awareness around issues of health and sanitation. Another partnership goal may be to install FLT's at schools and health care facilities
Value proposition for franchisees	Explore piloting kiosks at FLT's to attract and generate more activity at the location e.g. prefabricated showers, small shops selling household items
Targeted signage to direct customers to FLT's	Explore advertisements that explicitly show a picture of a clean FLT (including the inside toilet space), a light source and the branding logo to attract more customers
Increased use in the night	Identify cost-effective lighting solutions that can provide light at the FLT until closing time

Prioritized recommendations are bolded.

- **Explore piloting pre-paid paper and/or mobile-based financial solutions to allow unaccompanied children to use FLT's**

When improved sanitation is introduced to the 0-8 age category, children often do not have money to spend and depend on their parents to either be present at the FLT or give cash to the child. Sanergy may address these issues by providing parents with a prepaid card for children or allowing users to pay using their mobile device.

- **Explore partnerships with the government on marketing campaigns to heighten public awareness around issues of health and sanitation. Another partnership goal may be to install FLT's at schools and health care facilities**

There is a movement brewing in Kenya to make the government more accountable in increasing public awareness on sanitation and providing resources to achieve associated MDGs. There is heightened awareness around the health impacts of both unimproved and improved sanitation in Kenya. Due to the new Kenyan constitution, citizens are beginning to understand that improved sanitation is a basic human right.⁵⁶ Sanergy should leverage this interest in sanitation and continue to expand into more health centers and schools. Many health care facilities within Nairobi's informal settlements provide no toilet at all.⁵⁷ The toilets provided at the clinic Sanergy works with are free for patients. Sanergy should also increase the number of schools it works with, as many schools do not have an improved sanitation facility. In these cases, children go to the bathroom in the open, increasing their risk for contracting illness and disease.

- **Explore piloting kiosks at FLT's to attract and generate more activity at the location e.g. prefabricated showers, small shops selling household items**

To increase the value proposition of becoming a franchise owner and to increase activity around the FLT's, Sanergy can explore piloting prefabricated showers (in design phase) and/or kiosks that provide common everyday items near the toilets. These



Potential for non-Sanergy products at kiosk.

kiosks and/or showers can be owned by the franchise owner or the owner may even rent space to an existing entrepreneur.

- **Explore advertisements that explicitly show a picture of a clean FLT (including the inside toilet space), a light source and the branding logo to attract more customers**

To advertise an FLT location, Sanergy places street billboards to direct customers to the location. Sanergy should explore placing pictures of a clean FLT (including the inside toilet space) on the billboard to visually show customers that this is a sign for a clean toilet. It should also include a picture of a light source in the toilet area to show that it is a safe and clean toilet to use throughout the day and evening. We hypothesize that this will increase customer use and revenues for the franchise owner. Sanergy should also explore including a picture of a clean FLT on its marketing flyers for those community members who cannot read.



FLT advertisement with price for adults and children.

- **Identify cost-effective lighting solutions that can provide light at the FLT until closing time**
Adding more reliable sources of light in FLTs throughout the community would increase use at night. One franchisee we spoke with, who is also a bar owner, indicated that she would prefer that Sanergy begin using more reliable sources of light for the facilities after dark. The solar lamps that Sanergy currently uses, she said, do not last very long. She is able to use them from 6:30-8:30 p.m., but then uses flashlights from 8:30- 10:00 pm (closing time).⁵⁸

EXPAND TO NEW POPULATIONS AND MARKETS

Table 7: Opportunities to Expand to New Populations and Markets

Opportunity	Potential Response
Access lower-income populations	Explore different payment options for different types of franchisees to attract users from low-income segments
Design features of FLTs for children, elderly, pregnant, or disabled people	Explore designing an FLT model that easily converts from adult to child use (i.e. put a Western-style potty on top of squat plate); also consider designs to allow ease of use by pregnant women, persons with disabilities, and the elderly
Scale to other locations and attract new sources of capital	Explore partnerships with NGOs in the water sanitation space to scale to new locations; also explore developing non-financial relationships with large foundations and NGOs to leverage their extensive networks and high-quality expertise
Gather market intelligence	Continue gathering market intelligence by assessing how competitors are attracting new customers, which areas have a higher concentration of very poor people, and where FLTs can be placed on commercial streets to increase revenues

Prioritized recommendations are bolded.

- **Explore different payment options for different types of franchisees to attract users from low-income segments**

To target new low-income customers in existing areas of operations, Sanergy can encourage franchisees to develop and offer different payment plans e.g. an amount for fixed number of uses or an amount for a particular time period, such as a monthly membership. Many franchisees are already creatively increasing toilet use by children. One franchisee we spoke with, who normally charges parents 2 KES for FLT use by a child, has implemented a pay system of 10 KES for 10 uses by a child. Monthly payment plans make the most sense for franchisees who are landlords; the cost of toilet use could be included in the tenant's rent. Recruitment of landlords as franchisees would also improve security at night as a landlord's plots is usually safe for children/women who can access the facility without fear of intruders/sexual assault. Increasing FLT presence on rental properties would allow Sanergy to increase use by impoverished BoP residents of informal settlements. Many such residents are paid monthly and indicate they prefer to pay a monthly fee for FLT use. Respondents also noted that they are not comfortable with the idea of different rates based on an individual's income. Sanergy can explore developing a voucher system with the government for monthly FLT use. The system could start with donor funds and transition to government funding.

- **Explore designing an FLT model that easily converts from adult to child use (i.e. put a Western-style potty on top of squat plate); also consider designs to allow ease of use by pregnant women, persons with disabilities, and the elderly**

Sanergy can explore design modifications such as introducing more seated FLTs or railings inside the toilet to make its design more inclusive for additional populations such as very young children, pregnant women, users with disabilities, and elderly people, all who have trouble squatting.^{xii} Sanergy is testing a new toilet designed for very young children, which has a smaller hole, to be franchised to schools as increasing use for the 0-2 age group is especially important. Additional designs include incorporating a plastic Western-style potty that could be placed over the existing squat plate for infant and toddler



FLT owned by a landlord; the toilet is surrounded by rooms she rents, making it safe for her tenants to use the facility at night.

xii Almost all current Sanergy toilets are squat toilets.

use.⁵⁹ One cause for concern: Sanergy began introducing seated toilets with a pilot model in June 2012 but found that many users worried about “getting diseases from the seat”.⁶⁰

- **Explore partnerships with NGOs in the water sanitation space to scale to new locations; also explore developing non-financial relationships with large foundations and NGOs to leverage their extensive networks and high-quality expertise**

Sanergy should explore partnering with NGOs that focus on water and sanitation to scale to new locations in Nairobi and Kenya and eventually to other countries. Such a partnership could also result in funds to provide FLT to individuals within targeted low-income, impoverished communities. Scaling could also attract further capital and allow Sanergy to magnify its energy and fertilizer generation, increasing profits, and enhancing the sustainability of its business model. Non-financial relationships can also provide many benefits to the venture such as access to networks and technical experts, and the ability to leverage other organizations market-creation efforts.



Sanergy is piloting a seated toilet.

- **Continue gathering market intelligence by assessing how competitors are attracting new customers, which areas have a higher concentration of very poor people, and where FLT can be placed on commercial streets to increase revenues**

Sanergy should continue to assess its competitors’ actions to increase revenues; it should conduct feasibility and willingness-to-pay studies in areas where low-income people reside and work; and study where FLT can best be placed on commercial streets to attract more customers.

CAPTURING IMPACTS

In this section, we outline at a high level how Sanergy can quantify the set of impacts identified in the Impact Findings section and move toward regularly measuring its outcomes on its stakeholders and their children age eight and under. We suggest that Sanergy consider conducting its own study or commission a study from an outside source (preferred method) to learn more about its impacts. By conducting a thorough assessment of impacts, Sanergy can:

- **Assess opportunities to enhance value to its stakeholders**
- **Create additional revenue-generating models to better meet the needs of stakeholders and seek partnerships to facilitate them**
- **Demonstrate the success of its business model to external stakeholders**

MOVING TOWARD A SYSTEMATIC IMPACT ASSESSMENT

We recommend that Sanergy systematically measure its impacts on its stakeholders' children in the 0-8 age category and on pregnant women. Sanergy currently tracks three key indicators: 1) the number of people using the facilities; 2) number of facilities open; and 3) amount of waste safely removed from the community. Sanergy also tracks jobs created and regularly profiles its users and non-users to provide better services. Taking a deeper and quantitative assessment of its impacts would allow Sanergy to gain a more nuanced understanding of the needs of young children as well as how these needs change over time. Rather than focus on measuring the impact it has on all its stakeholders' children, we recommend that Sanergy start by first measuring its impacts on its customers' children and pregnant women. Once Sanergy develops a regular system to capture this, the BoP venture can, in a targeted manner, measure its impacts on children of their franchisees, staff, and those in the broader community.

In order to capture Sanergy's impacts on children in a manageable way, we suggest that the company develop a short, mostly quantitative survey of core impact areas, (such as the impacts bolded in **Table 3**), affecting children age eight and under. The survey should be distributed to new customers at three key intervals: 1) initial FLT use, 2) two weeks into using an FLT at the respondent's home, and 3) four weeks after beginning to use an FLT at the respondent's home. Recording GPS coordinates will help interviewers find respondents' homes at later data collection points. This schedule of surveys will help Sanergy capture both short- and long-term impacts and demonstrate changes in impacts over time. Sanergy should continue to collect impact data from these customers even if they stop using an FLT.

We recommend that the survey be administered by interviewers rather than filled out by the customers. This will help to ensure respondents fully understand the questions and do not leave questions blank. We also recommend that Sanergy hire a third party to conduct the interviews to reduce response bias. A less expensive alternative would be to have Sanergy conduct the surveys. If Sanergy chooses the latter option, we recommend that it still commission an independent assessment of every few years to ensure objectivity of the findings. Regardless of who conducts the surveys, Sanergy should hold a brief workshop to ensure that the interviewers understand the purpose of each question.

Based on the likely direct and indirect impacts we found in the field on the majority of customers' children, we identified core impact areas for Sanergy to consider measuring using subjective questions, many of which can be quantified using Likert scales of 1-5 (see **Appendix D**). Since the impacts are likely to vary by the child's age, we specify which questions should be asked according to age group. The survey should begin with a question about the number of children in the home and their age so the interviewer knows which questions are appropriate. At the end of the survey, the interviewer should ask an open-ended question to capture any other differences parents have noticed in their children or in the mother, if she is pregnant. During the survey, the interviewer should also observe each child's appearance and behavior,

if present. The questions in **Appendix D** are suggestions, and should be pre-tested with customers for adaptation to the local context.

We suggest that Sanergy continue to use the BoP IAF to systematically capture its impacts on customers. The tool will provide a structure through which Sanergy can categorize and track new findings on impacts derived from its surveys. Sanergy may also find the tool helpful if the organization decides to capture impact data on its staff's or franchisees' children and children in the broader community in the 0-8 age group. A benefit of using the BoP IAF is its flexibility—Sanergy can customize the tool to its needs, which will allow the organization to measure its impacts in a manageable way.

CONCLUSION

Improved sanitation provides a range of benefits for children. We find that most of the impacts the sanitation venture has on children age eight and under are positive; a few negative impacts appear to be associated with customer price and financing for franchisees. Overall, all children living near FLT—franchisee, customer and non-customer children—benefit from reduced exposure to sanitation-related diseases as a result of improvements in the cleanliness of the environment surrounding FLT. Children are able to play outside more freely with less risk of disease because they are living in cleaner home environments, where there are fewer feces and flying toilets lying on the ground. Younger children, those age five and under, are likely to benefit the most from the improved environment since they have the most vulnerable immune systems and are more likely to be exposed to such contaminants from crawling and playing on the ground. There is also no contamination of waste in Sanergy FLT, since they are emptied daily and the waste is disposed of properly. Thus the environment, both the land and the water, is slowly getting cleaner. As the appearance of their environment improves, children have more expectations for their environment and their future.

Based on the likely outcomes Sanergy has on children across its value chain, we identify opportunities that Sanergy can explore to enhance, deepen, and expand its impacts on children age eight and under and on pregnant women:

- **Sanergy should explore more opportunities to work with schools, clinics, women's groups and workplaces that employ persons from the BoP to increase awareness of the link between improved sanitation and positive long-term impacts on health and finances.**
- **Sanergy should explore working with NGOs and the government to reduce negative impacts that franchisees face during the loan repayment period, as well as encourage the exchange of financial information and best practices among franchisees in quarterly or semi-annual meetings.**
- **Sanergy can explore piloting pre-paid paper and/or mobile-based payment options for unaccompanied children to use FLT.**
- **Sanergy should explore different payment options for different types of franchisees to attract users from low-income segments.**

We also provide methods and questions that Sanergy can use to measure its impact on children and pregnant women regularly. Together these suggestions can help Sanergy improve its operations to better meet the needs of children.

APPENDICES

APPENDIX A: ADDITIONAL IMPACTS ON CUSTOMERS' CHILDREN

Impacts that occur on customers' children that are not bolded in **Table 3** are explored here:

ECONOMIC WELL-BEING

Indirect Impacts

Wealth: Increased financial resources available for child's well-being due to increases in parental income from reduced sick leave at work due to better health outcomes of improved sanitation practices

With improved health from living in a cleaner environment (due to the introduction of the FLT), parents require less sick leave at work. This allows them to earn more income which can be re-directed to their children's needs.

CAPABILITY WELL-BEING

Direct Impacts

Psychological Health: Improved child self-confidence and self-esteem from access to improved sanitation

Children's confidence and self-esteem improves when they live in communities with access to improved sanitation. The improvements in the appearance of home and local environments impact children's psychological health. They appear to have better attitudes about their environment, and their self-esteem increases as a result of living in a more dignified space. In many of the areas that Sanergy serves, children are not allowed to go places without their mothers. The FLT, however, is often an exception. Because FLTs are located close to homes, mothers frequently give their children money and send them to the toilet. As a result, children have more confidence to do things on their own.⁶¹ Most parents do not send their children along roads until they have reached age five; therefore this impact influences older children more.⁶²

Education/Knowledge: Reduced school absenteeism and ability to spend more time on school work as a result of improved physical health

Reductions in sanitation-related diseases in children likely contribute to a decrease in missed school days and thus improve their education experience. Two pathways reduce children's future productivity: fewer years of schooling and less learning per year in school. The economic impact on adult wages, on average, for each year of schooling is an increase of 9.7%. Disadvantaged children are consequently more likely to be less educated, have lower cognitive function, and be less productive than their peers.⁶³

RELATIONSHIP WELL-BEING

Direct Impacts

Interactions: Improved child-parent interactions as children share information about improved sanitation practices that they learn at school

Sanergy adheres to high standards for cleanliness, the presence of soap and water, and daily maintenance of its facilities. Children's interaction with parents, family, friends, and others changes when they are given the opportunity to share information about sanitation that they learn in school. Children who are exposed to FLTs gain a better understanding of sanitary environments and conditions, and develop a higher set of expectations for their environment, themselves, their neighbors, and their community. Often children who use the facilities demand that others also use a toilet and wash their hands.⁶⁴

The introduction of improved sanitation facilities in the community provides an opportunity for older children, those six and older and in school, to share information they learn about improved sanitation through school hygiene programs with parents, many of whom did not receive sanitation education at school.⁶⁵ This generates parental interest in FLT and sanitation, and parents want to learn more. The dynamics of the parent/child relationship are changing, particularly in Kenya where parents are learning to listen to their children. Children are enlightening their parents on issues of sanitation, health, and technology, among other issues that are critical to the development of individuals, families, and communities.⁶⁶ Data from UNICEF show that when children take these messages home, there is an influence on family attitudes and behaviors.⁶⁷

Support: Support from franchisees in using the bathroom and washing hands

Sanergy's franchisees are chosen, in part, based on their involvement in the community. Children within one of the local BoP communities Sanergy serves call their franchisee "Buddha" as a sign of respect. The franchisees watch over the children and help them with the facilities. Before installing an FLT, one franchisee we spoke with said, he saw 8-year-old children going to the bathroom in the open on a daily basis. These same children, he said, now come to him and tell him when they want to use the bathroom. To promote their health and self-respect, he allows the children to use the facilities for free.⁶⁸ Improving access to sanitation is a critical step toward the cultivation of physical environments that enhance safety and self-esteem.⁶⁹

Adaptability in School: Easier assimilation into school environments for children who learn to use FLTs

Children who learn to use a toilet through Sanergy have an easier time assimilating into school and social environments. As more improved sanitation is installed in BoP communities and members of the community become aware of proper sanitation practices, children's awareness also increases. Given the shaming culture of sanitation in Nairobi, these children appear to benefit from the ease of their assimilation into social and educational environments as a result of practicing appropriate sanitation behaviors. Older children, those age 6-8, who reach school age and do not know how to use improved sanitation facilities are often teased by their peers.

Local Environment: Increased safety and security for women and children due to safe, well-lit, and open FLTs near home

In many cases, children and their parents have to walk long distances to go to the bathroom. Children can be kidnapped, and young girls especially are at risk. Their safety and security improves when there is closer accessibility to an FLT. People who have access to clean, safe, and convenient sanitation services also experience greater security. This is especially important for women and girls, who risk sexual assault when they have to defecate in the open or use public facilities located far from their home.⁷⁰

Indirect Impacts

Support: Increased amount of quality time spent with parents due to improved child and parent health

Closer relationships between parents and children can develop as a result of parents having more time to spend with children as a result of spending less time dealing with diseases related to poor sanitation.

Support: Increased social capital resulting from parents and children's ability to invite guests to their home now that an FLT is nearby; additional foot traffic by their home

Many of the FLT customers we spoke with noted that they thought that once a toilet was installed near their home it would deter guests from coming over, due to flies and overpowering odor. But the FLTs, which are maintained daily, have had the opposite impact, they said, making guests more comfortable because there is clean, safe, and comfortable place to go to the bathroom nearby.⁷¹ Parents seem to increase their social networks as FLTs are installed near their homes, and as they become FLT users. They meet new people and develop more friendships within the community. Children in turn benefit from the parents' increased social networks and the resulting social capital available to them.

Support: Children receive more support from their parents when their parents experience less tension and stress

The installation of FLTs appears to lead to increased support for children as a result of parents decreased stress. Parents say that they feel more at ease when their children have a clean place to go to the bathroom. Parents also experience improved self-esteem from having a private space to go to the bathroom. The support of parents is critical to early childhood development. The first three years of childhood is the most intensive period of brain development during a lifespan, and interaction is central to this development. Adequate stimulation is essential. It is during these years that a child's brain is most sensitive to the influences of the external environment. This rapid brain development affects cognitive, social, and emotional growth.⁷²

APPENDIX B: ADDITIONAL IMPACTS ON FRANCHISEES' CHILDREN

Impacts that occur on franchisees' children that are not bolded in **Table 3** are explored here:

CAPABILITY WELL-BEING

Direct Impacts

Psychological Health: Improved child self-confidence and self-esteem from access to improved sanitation

Please see description of impact in **Appendix A**.

Education/Knowledge: Reduced school absenteeism and ability to spend more time on school work as a result of improved physical health

A franchisee who is part of a co-op that operates an FLT has two children who use the FLT, and has seen improvements in hygiene practices and health. He said his children are remembering to wash their hands more often as a result of using the FLT, are sick less often, and spend more time at school.⁷³

Indirect Impacts

Aspirations: Children develop higher aspirations when observing their parents in their current franchisee role

Children also learn from the new business management and communication skills that their parents apply at home and develop aspirations to be business men and women.

RELATIONSHIP WELL-BEING

Direct Impacts

Interactions: Improved child-parent interactions as children share information about improved sanitation practices that they learn at school

Please see description of impact in **Appendix A**.

Adaptability in School: Easier assimilation into school environments for children who learn to use FLTs

Please see description of impact in **Appendix A**.

Home Environment: Children benefit from increased cleanliness and security at home

Children in the 0-8 age category are directly impacted by improvements to their home environment. The area is cleaner for them to play and there are fewer flies. Some children in areas where franchisees have installed FLTs once used small plastic potties in their home. The parents disposed of their children's waste in drainage areas. One franchisee said that she went to a local chief to stop parents from throwing children's waste in the drainage, and obtained a permit. Many of the same people who used to dispose of their children's waste in drainage areas are now her customers.

Other franchisees are stopping business activities that expose their children to unnecessary physical risks and moving to the Sanergy business model because it provides a safer, steadier source of income. One of the franchisees we spoke with rents rooms for her primary source of income and sells water to supplement what she earns on her rental units. She decided to open an FLT to replace a third source of income- an illicit homebrew business. She had made good money selling homebrews, she said, but after paying fines and bribes to police there was little left. She has continued to sell water and rent rooms, and although she does not earn as much income on the FLT as she did on the homebrews, she said that she feels that her children are safer as a result of replacing the business.⁷⁴

Local Environment: Increased safety and security for women and children due to safe, well-lit, and open FLT's near home

Please see description of impact in **Appendix A**.

Indirect Impacts

Support: Changes in support from parents due to changes in time parents have available to spend with children

Interactions between parents and children improve as franchisees replace other sources of income with the Sanergy business model. Many of these business owners used to leave home early in morning and return late at night, but are now able to spend more time with their children, as the FLT is located close to their home.⁷⁵ The additional time spent with parents is especially significant for children in the 0-8 age group. Parental stimulation in the first three years of life is particularly important. External stimulation helps to ensure that each child reaches his or her potential and becomes a productive member of the household. Children who spend these years in less supportive environments can face cognitive, social, and behavioral delays, as well as experience lower productivity levels as adults.⁷⁶ However, in our study area, in some cases parents spend less time with their children if the Sanergy toilet is not located near their home. A franchisee with children in sixth grade and high school said he spends less time with his children because the toilet his self-help group purchased is not near his home. He has to come to tend the toilet early in the day and stay late. Before the FLT, he used to spend evenings with his children. Although he spends less time with his children now, he said he does not think his relationship with his children has changed.⁷⁷

Support: Increased social capital from parents' increased social network results in increased resources for children

The children of franchisees are impacted indirectly by the increase in their parents' and grandparents' social networks. Franchisees' social networks increase as they begin to meet the people that visit their FLT's and the Sanergy staff that visit regularly. These new friendships can benefit their children by providing them with access to resources and opportunities that might be useful in achieving future goals. One of the franchisees we spoke with said that she now interacts with more people than when she was selling vegetables.⁷⁸ Parents with a social network of emotionally supportive friends, family, and neighbors often find that it is easier to care for their children and themselves when they have access to sympathetic listeners, advice, and support. An increase of resources available within social networks helps parents by easing the burden of parenting (providing parents with support in times of crisis and allowing parents to reach out to help others); and helps children by providing them with additional models of positive social interactions; access to other supportive adults.⁷⁹

Support: Increased amount of quality time spent with parents due to improved child and parent health

Please see description of impact in **Appendix A**.

Support: Children experience more support from their parents when their parents experience less tension and stress

Please see description in **Appendix A**.

APPENDIX C: ADDITIONAL IMPACTS ON BoP STAFFS' CHILDREN

Impacts that occur on BoP employees' children that are not bolded in **Table 3** are explored here:

CAPABILITY WELL-BEING

Indirect Impacts

Education/Knowledge: Children learn skills that parents learn at training

Sanergy's business model allows for co-invention, a critical component for BoP success. The co-creation method allows the venture to combine its knowledge with the wisdom of staff members about the BoP communities they operate in, allowing for co-discovery of new opportunities. Local ownership and involvement are key to the success of BoP enterprise solutions.⁸⁰ This provides Sanergy's employees with a sense of increased self-confidence, and they are able to pass that on to their children. The improved psychological state of parents impacts children in the 0-8 age group, who have a tendency to model their parents' behavior. Children learn from seeing, listening, repeating things they have heard, copying things they have seen, and through their parents' actions and attitudes.⁸¹

Aspirations: Children develop higher aspirations due to changes in parents' traditional views of employment

The direct impacts on workers' aspirations and expectations indirectly impact how their children ages 0-8 view their futures. Parents learn from Sanergy's example, and teach the concepts of the BoP venture to their children. One of the workers we spoke with, who has a 1-year-old daughter, said that when her daughter is old enough, she will teach her that it is always good to give back to society.⁸² When children learn the value of health and sanitation in addition to the benefit of giving back to their communities, the impacts can span generations. Teaching children to give back to their community also has benefits for early childhood development. Grateful children tend to be happier and more satisfied with their lives, have better relationships with friends and family, and maintain higher grades in school. They also experience less envy and depression.⁸³

Note: Given Sanergy's many precautionary standards for its workers, especially waste collectors and processors, staff members are well protected against exposure to sanitation-related diseases while working. They are properly trained for their tasks and use personal protective equipment. Given that there is no standard for the waste collection industry in Kenya, Sanergy should be applauded for the safety standards it has established.

RELATIONSHIP WELL-BEING

Indirect Impacts

Support: Increased social capital due to parents' increased social network results in increased resources for children

Sanergy's employees make more friends within the BoP venture and throughout the community. One worker we spoke with noted that she has expanded her network of friends through Sanergy, and these connections will benefit her daughter as she grows up in the community.⁸⁴ Children with parents who have large social networks have access to the resources offered within those networks. Friends and families also help one another watch over children and guide their development.⁸⁵

APPENDIX D: ADDITIONAL IMPACT ASSESSMENT SUGGESTIONS

These questions provide a starting set that we recommend Sanergy use to begin regularly capturing its impacts on customers' children. The questions illustrate how Sanergy could quantitatively measure some of its key impacts on children. These questions have not been tested and should be reviewed for reliability and for adaptation to local context.

The surveys should be structured to ensure comparability across respondents. Therefore all surveys should include the same questions, so changes in customers' children's lives can be compared and measured over time. However, impacts will likely vary based on the age of the child and whether someone in the household is currently pregnant. Therefore we suggest that the surveys clearly mark questions intended for older children and use skip patterns to only ask questions that apply based on the child's age and whether there is a pregnancy in the household (see **Table 8**). The survey should begin with a question about the number of children in the house and their ages so the interviewer knows which questions are appropriate.

Table 8: Suggested Impacts to Measure and Potential Questions

	Impact	Potential Questions	Question Type
Economic Well-Being	Wealth	What job and other sources of income does the male head of household have?	
		What job and other sources of income does the female head of household have?	
		What is your average weekly income? Please include all sources of income.	
		In an average week, how much money do you spend on your child? How much of that is health-related expenditures? How much do you spend on sanitation for your children on a weekly basis?	Ask caregiver about both younger and older children; ask pregnant women
		Over the past week, to what extent were you able to meet your child's clothing needs?* <i>Scale: 1=Not at all, 2=A little, 3=A moderate amount, 4=Very much and 5=An extreme amount</i> *This question can be repeated to ask about other material needs a child has such as school supplies and fees.	Ask caregiver about both younger and older children
		Please answer the question using the scale based on how true the following statement is: My household income is stable. <i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i>	

	Impact	Potential Questions	Question Type
Capability Well-Being	Psychological Health	<p>Please answer the question using the scale based on how true the following statement is: My child has high self-esteem.*</p> <p><i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i></p> <p>* This question should be repeated to ask about other behaviors including: engages in risky behaviors, is depressed, has aggression, and is hyperactive.</p>	
	Physical Health	How many times has your child gone to the doctor in the last week? The last month?	Ask caregiver about both younger and older children; ask pregnant women
		How many times did your child have diarrhea in the last month?	Ask caregiver about both younger and older children
		How many times did your child have a parasite in the last month?	Ask caregiver about both younger and older children
		How many times has your child missed school due to health reasons in the last month?	Ask caregiver about older children
		What percentage of the time does your child wash his/her hands when presented with the opportunity to do so?	Ask caregiver about both younger and older children
		<p>Please answer the question using the scale based on how true the following statement is: The quantity of food my child is getting is sufficient.</p> <p><i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i></p>	Ask caregiver about both younger and older children; ask pregnant women
		<p>Please answer the question using the scale based on how true the following statement is: The quality of food my child is getting is sufficient.</p> <p><i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i></p>	Ask caregiver about both younger and older children; ask pregnant women
	Education	<p>How much, if at all, has your child's grades improved at school?</p> <p><i>Scale: 1=Not at all, 2=A little, 3=A moderate amount, 4=Very much and 5=An extreme amount</i></p>	Ask caregiver about older children
	Aspirations	<p>How much, if at all, has your child's plans for the future improved?</p> <p><i>Scale: 1=Not at all, 2=A little, 3=A moderate amount, 4=Very much and 5=An extreme amount</i></p>	Ask caregiver about older children

	Impact	Potential Questions	Question Type
Relationship Well-Being	Interactions	<p>Please answer the question using the scale based on how true the following statement is: My child shares information about sanitation that s/he learns at school with me.</p> <p><i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i></p>	Ask caregiver about older children
	Support	<p>Please answer the question using the scale based on how true the following statement is: My child has developed a closer relationship with family members.</p> <p><i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i></p>	Ask caregiver about both younger and older children
		<p>Please answer the question using the scale based on how true the following statement is: I feel like I spend enough time with my children.</p> <p><i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i></p>	Ask caregiver about both younger and older children
		<p>Please answer the question using the scale based on how true the following statement is: My child has developed stronger friendships.</p> <p><i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i></p>	Ask caregiver about both younger and older children
	Local Environment	<p>Please answer the question using the scale based on how true the following statement is: My neighborhood is safe for my children (or child).</p> <p><i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i></p>	Ask caregiver about both younger and older children; ask pregnant women
		<p>Please answer the question using the scale based on how true the following statement is: My neighborhood is clean.</p> <p><i>Scale: 1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree and 5=Strongly disagree</i></p>	Ask caregiver about both younger and older children; ask pregnant women

During the survey, the interviewer should observe each child's appearance and behavior, if present. At the end of the survey, the interviewer should ask an open-ended question to capture any other differences the parents may have noticed in their children or in the mother, if she is pregnant. The above questions are suggested questions and should be pre-tested with customers to adapt them to the local context.

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**William Davidson Institute at the
University of Michigan**

724 E. University Avenue
1st Floor, Wyly Hall
Ann Arbor MI
48109-1234
(734) 763-5020
www.wdi.umich.edu



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