PEEPOOPLE

Project	Initial Launch Project
Organization	Peepoople Kenya (NGO)
Geography	Kenya, Nairobi (Kibera slum)
Areas	Urban
Solution	Individual
Date started	2010
Stage	Pilot
Scale	995k bags distributed (out of which 512k sold and 483k distributed in schools)

Peepoo bag. Source: www.greenupgrader.com

Project description

History of organization

Started in 2005, Peepoople AB is a Swedish for-profit social business which aims to provide "universal access to hygienic and dignified sanitation". Peepoople produces Peepoo, a single-use, biodegradable, self-sanitizing bag for urine and feces, easy to use when fixed to a suitable small bucket or container. Peepoople created an NGO, Peepoople Kenya, to sell this sanitation solution in the Kenyan slum of Kibera. The objective is to build a sustainable sanitation operation that could be replicated in other urban slums. The product was field tested in 2009 and 2010, and was rolled out late 2010. The following two years were spent on exploring different sales and distribution schemes, until mid-2013, when the current approach was stabilized. The project run by Peepoople Kenya is currently funded by Simavi (Dutch NGO) and the Swedish government agency Vinnova. Since 2013, Peepoople also provide Peepoos to aid organizations (e.g. ACF, Swedish Red Cross) for emergency situations. In late 2012, Peepoople Kenya also started working with approximately 60 informal schools (10,000 children) on a philanthropic level, whereby it provides cabins, an attendant and free bags for use by the children.

Value proposition and profile of customers

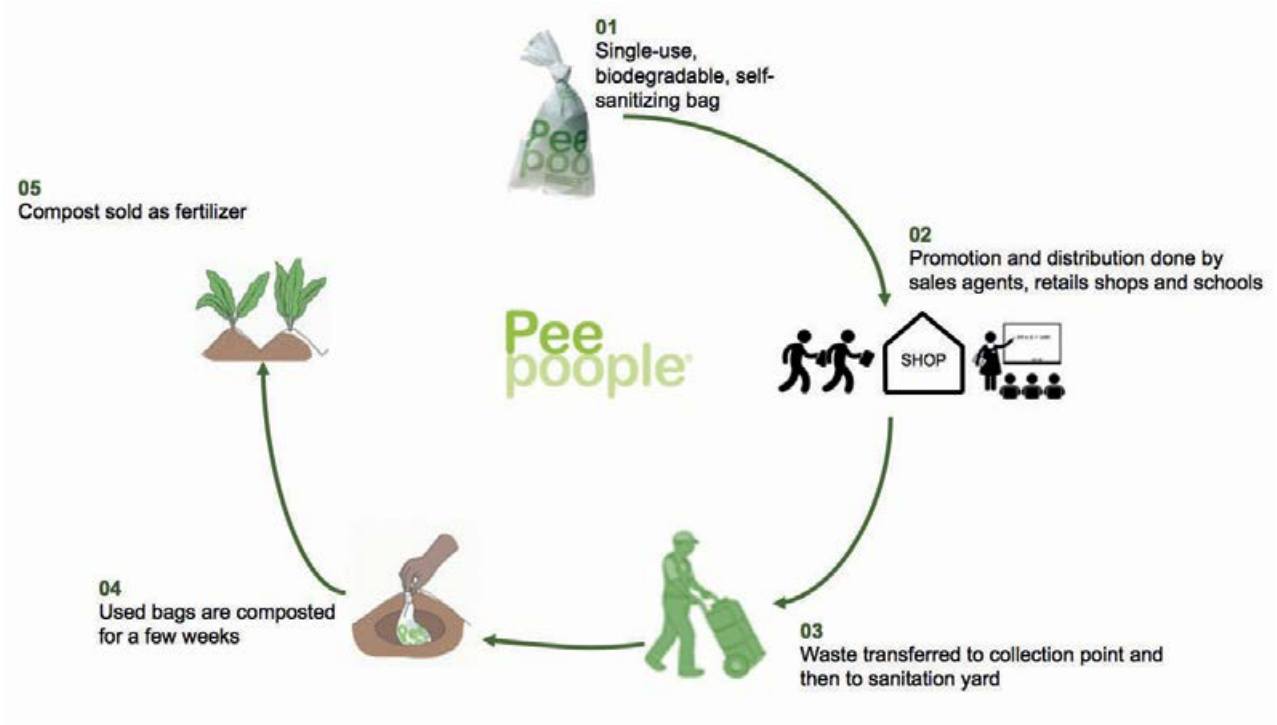
Peepoo is an improved sanitation solution for slum dwellers, who have to choose between open defecation, unhygienic public toilets or "flying toilets', as they have no space in their homes for a toilet. It consists of a self-decomposing and self-sanitizing bag, which is fitted on the Peepoo Kiti (customized seat) or any suitable small bucket or container, which are brought back to Peepoople drop points in exchange for a refund. The bag can be easily sealed for hygiene and safety, it does not smell for 12 to 24 hours, and is single use. It costs SHK 3, out of which SHK 1 is refunded. Users can also buy packs of 28 bags for SHK 50 (SHK 1.8/bag), or if users buy 2 packs they will be given a Peepoo seat (Peepoo Kiti) for free (2013 introduction campaign). As the bags are hygienic to handle, single-use and odorless, they are a clean and hygienic improvement on open defecation and flying toilets practices. Households use them in particular at night (when it is unsafe to get out), with kids (to replace night pots) and when they are located far from public toilets. Many regular public toilet users also prefer Peepoo, as it is a more economic option than paying a public toilet fee (which costs SHK 5 for adults and SHK 3 for children). Finally, unlike flying toilets, which polluted streets and gutters, Peepoos also get collected.

Peepoople sales operations are active in 4 of the 13 'villages' of Kibera, covering a population of approximately 9000 households (45,000 people). The population living there are 90% renters (SHK 500 to 3000 rent/month) and it is estimated that open defecation is practiced by 50% to 70% of the slum population. Slum dwellers are hawkers, construction or factory workers, they also undertake cleaning jobs or run small informal businesses.

Within and beyond these areas, Peepoople also run the Peepoo School Program where Peepoo toilets (cabins and regular supply of bags) are distributed for free to approximately 60 informal schools on a philanthropic basis.

For emergency operations, Peepoople also sells its products in bulk (packs, Kiti seats and tents).

Value chain



Manufacturing

Peepoople buys the biodegradable plastic resin from BASF and has it transformed into plastic films. Peepoo production was manual and low-scale until 2013, when it purchased a specialized fully automated machine (3.5m Euros) which can produce 500,000 bags a day. Peepoos are manufactured now in Europe. Once the manufacturing operations have been fine-tuned the maximum production capacity is about 500,000 bags per 24 hours.

Marketing & sales strategy and organization

The project carried out a number of radio campaigns to drive awareness of the product. However, promotion is mostly done by sales agents, during small information sessions at community events. At these events the agents explain the basics of hygiene, hand-washing and safe sanitation, as well as promoting Peepoo bags as a safe and hygienic sanitation solution. Peepoople now employs 21 sales agents each covering 400 to 450 households on average, and selling 1 to 10 packs/day (one pack containing 28 bags), with about 25% of sales agents selling 10 or more packs a day. The sales agents organize on average between 3 and 6 community meetings every month (where 5 to 10 participants end up buying the product and are given free soap as a bonus). These meetings are particularly effective in 'breaking the taboo', as all matters related to sanitation are 'shameful' in Kenya and most do not want to admit practices of flying toilet or open defecation. The neighbors can discuss the product and possibly agree on how to organize themselves within their neighborhood. This makes it easier for any individual family to adopt the practice. Otherwise, sales agents work door-to-door to restock existing customers and possibly find new customers (typically 1 to 2 new customer/day). Word-of-mouth is already one of the main sources of business, as existing users share and recommend the product.

The agents purchase the rolls at SHK30 (making a margin of SHK20 on the sale) and are given an incentive payment of SHK 300 each time they successfully run an event (i.e. with a minimum of 10 packs sold). The sales agents are either ladies that are well connected and respected in the community, or community health workers (that are volunteers, who relay the government policies at the grassroots to help roll out health programs). They are trained for 1 to 3 weeks on the job, depending on their background. While the sales ladies turnover was relatively high at the beginning of the project (as sales struggled to pick up), it is minimal today. After working a couple of hours a day a sales lady can currently earn between SHK 3600 to SHK 6600 per month, which compares rather favorably with the average household income in slums, which hovers around SHK 7,000.

Other sales channels include 23 retail kiosks, who sell 6 to 7 packs/week (they also reported the sale of 10 single

units/day). Most customers are not regular and come to the shop for convenience and privacy reasons. Finally, school attendants are also encouraged to sell the products, even though this has proved to be more challenging as they work from 9am to 4pm, and most of the schools are actually located outside of the current operational areas of Peepoople.

Sales agents, Peepoo collectors and small retail shops are supervised by 6 'zone markers' (Peepoople staff) who also manage stocks and payments.

The team uses a system of zone mapping and marking to count households and assess penetration, as well as make sure each area is linked with a single sales person and collector. Individual homes are also marked with an "S" (if sold to them) and/or a "C" (if they wish home collection).

In schools, the project distributes in average 2000 to 3000 bags a day for 10k school children, and pays the 40 school attendants in the bigger schools a lumpsum of 5000 SHK/ month. Collection is organized differently depending on the location of the school, but there is no refund system. Each school undergoes a 2 to 3 months trial period, at the end of which the project tries to enroll parents by telling them about the program and the need for improved sanitation. There is currently little evidence that this program drives sales in these areas (partly due to the fact that a number of schools are located outside of the operational areas of the project). However, there is anecdotal evidence that the school program helped drive acceptance of the Peepoo solution in the community, and parents are even starting to see participation in the Peepoo School Program as a selection criteria for schools.

Installation: N/A

Usage and hygiene

Sales agents educate local communities on hygiene and hand washing during promotion events, where they also explain how to use Peepoo.

Maintenance and cleaning: N/A

Waste storage and collection

Bags are single use, and need to be sealed after use to ensure hygienic handling. They remain odorless for 12 to 24 hours afterwards. The Peepoople team first assumed that most users would bring them back for the refund, but this did not take place. Instead, 9 collectors (mostly women) saw this as an opportunity to earn some additional income and started spontaneously covering their neighborhood to collect the waste. In other areas, the sales ladies and community health workers helped identify potential candidates for this role. 1 collector is now attached to approximately every 2 sales ladies to ensure clear zone demarcation between them. Collectors make an income by cashing in the refund, and typically work early morning (8am to 10am). A good collector gathers approximately 200 to 300 units a day (earning as much in SHK). In new or slow areas, the collectors are given a flat fee until the number of users picks up. Users either leave used bags in the street, in bins, or ask for them to be collected at home (about 20% to 30% of them). In addition, some slum dwellers also offer to do the collection for their lane or compound, the proceeds are either kept or redistributed back to their neighbors.

Four drop points are situated in strategic areas of the project. They are run by full-time Peepoople staff, drop point attendants who count and pay for the units returned. The drop points are open from 6.30 am until 4 pm. The name, date and number of bags are recorded there.

Cash/payment collection

The drop points attendants hand out the refunds on a weekly basis (all of this is done through m-pesa).

Waste treatment, disposal and recovery

Used bags are collected daily from the drop points in large numerated containers and brought to an intermediate collection point, the 'aggregation center'. On a weekly basis, they are then brought to a sanitation yard, where they stand for 3 to 4 weeks, so that all pathogens are killed. The by-product is compost, which is then distributed to farmers and various other projects. The project, after experimenting with the compost, is now planning to sell the decomposed bags to farms. Three farmers are already growing coffee, maize and napier grass using Peepoo as fertilizer. Peepoople Kenya is also exploring the opportunity to collaborate with agroforestry representatives to help acceleration reaforestation efforts in the country.

Technology

Description of toilet-related technology

Key features:

- Cost: 5.1 SHK/bag (raw material costs only). This cost may come down along with the price of biodegradable materials. As utilization of the high-capacity production line increases, the fully loaded cost (including full production cost, overhead and depreciation) will stand between 10 to 15 SHK/bag (according to the production volume projections of period 2015-2016). By 2020, the project hopes to bring down the fully loaded cost of the bag to approximately 5 SHK.

- Design: Peepoo is made of degradable bio-plastic "Ecovio", whose ammonia-based composition allows for almost complete malodor control and self-sanitization. The bag is opaque and equipped with a foldout funnel that facilitates usage and the outer bag is long and slim for safe and easy sealing with a knot. In addition, the bag contains 6 gram of urea, a sanitation agent that drives the effective self-sanitization process.
- Personal, single-use, easy to store and transport, safe-to-use product, that does not require fixed infrastructure or investment from the households
- Water and energy efficiency: N/A
- Malodors and safety: Once sealed, the bag does not carry any odor for 12-24 hours
- Waste storage: Once sealed, waste is safely stored in the bag.
- Waste collection: Bags are brought to larger collection containers at drop points in buckets or plastic bags
- Potentialities and limitations: The biodegradable plastic currently used is an emerging, hence still expensive technology. The polymer is a mixture of aliphatic/aromatic co-polyesters and poly-lactic acid, with small additives of wax and lime. The biomaterial is developed in cooperation with the German company BASF.

Description of by-products-related technology

Key features:

There is no specific technology involved in the composting process. Thanks to the urea stocked in the bags, the waste is made completely safe after 3 to 4 weeks (urea turns into ammonia that inactivates pathogens). The process is well controlled thanks to the storage in larger sealed containers.

Economics:

Currently, Peepoople Kenya collects 10 tons of waste per week. Peepoople has been testing the properties of its compost and its applications. Early results are very encouraging, composted bags can be directly laid under new tree seedlings after the 3 to 4 weeks storage period in the sanitation yard, resulting in accelerated growth of the plant (2 to 3 fold increases). It has now managed to sell its first 3800 single unit bags (250g to 300g each) to coffee farms for 4SHK/ composted bag (about 25 units are needed per plant).

If let decompose underground for another 2 months, the compost turns more concentrated while keeping high levels of hydrogen and can replace very advantageously synthetic fertilizer. 5 tons of 'further processed' compost per ha spread at planting resulted in 50% to 60% more yields than yields obtained with the recommended levels of synthetic fertilizers. In addition, this organic fertilizer contains carbon which contributes to structuring and nurturing the soil (while synthetic fertilizers typically dry and deplete it). In terms of price however, Peepoo still remains much more expensive ($4700 per ha for 5 tons of Peepoo, vs. $230 for 250k of chemical fertilizers containing the same recommended level of nitrogen and phosphorous). To obtain 5 tons of 'further processed' compost, Peepoo needs to collect 15 tons of fresh human waste (100k bags, or 60% of the current monthly collection volume). Hence, while the results of this improved compost are impressive, Peepoo would need to dramatically expand its operations to become the supplier of choice of a number of mid-sized farms.

Social impact

- Penetration: During the latest months, Peepoople Kenya sells on average approximately 2000 to 3000 bags a day (80k a month) and distributes approximately 60 to 80k bags a month in schools (when open). In Kenya slums, estimated penetration is 35% to 55% (after about 7 months of stable operation) if counting all 1 time only buyers. Sales agents estimate however that 1200 to 1500 households (17% of all households in the area) use Peepoo once or twice a week (for night or emergency use, or at weekends when they do not go to their workplace toilet), and 300 to 500 households (or 5% to 6% of households living in the area) use it regularly. The project would need to sell up to 1.5 million units/month (or 60k units/day, which would be roughly 3% regular users among the estimated population of 2 million slum dwellers in Kibera) to reach breakeven (assuming significant cost reductions on the production side and systematic sales of fertilizer). Peepoople AB also sold about 2m bags this year (2013) to emergency clients in Pakistan, Philippines, Syria and China.
- Acceptance and usage: Consumers are likely to purchase the product given the convenience, comfort, safety and hygiene it offers (including in the surroundings where flying toilets diminish), but still few consumers use it as their sanitation solution of choice. In fact, the product is somehow linked to the 'taboo' practice of flying toilets, which customers are often ashamed to admit. And so, many times they would not articulate the need to replace or improve this practice, but for their children.
- Customer satisfaction: Surveys (including customer satisfaction assesment) have been conducted in 2012 and 2013.
- Evidence of impact on health: Too early to tell for slum users. In schools, it is reported that the introduction of Peepoo toilets has dramatically improved enrollment (as parents see this infrastructure as a plus) and reduced absenteeism by 40%. In addition, children are sensitized

to the importance of hand-washing and safe sanitation.

- Promotion of related behaviors: Sales agents do basic WASH education during the community promotion sessions, where they broadly cover the topics of germ transmission, the need for handwashing five times a day, and the need for safe sanitation.
- Waste collection and disposal strategy: The Peepoo team had initially envisaged that the refund fee of 1SHK per unit would be enough to drive individuals to drop theirs at the drop points. However, given irregular usage, the fact that 1 SHK is very little and the fact that 'handling shit' is a taboo, no individual ever does. However, local slum dwellers saw this as an opportunity, and they cover whole neighborhoods. While the project tries to allocate those to zones, there are still issues of competition and 'border-crossing' between them.

Economic sustainability

End consumers

- Affordability for consumers: Peepoo bags can be purchased by the unit (3 SHK) or in 28 units packs (1.8 SHK/unit) out of which users can get a refund for 1 SHK, bringing the price down to 0.8 SHK/unit if the users actually bring it back themselves to the drop point. This compares to SHK 5 for public toilets use (3 SHK for children). Very few families manage to negotiate a family package deal of SHK 150/family/month at the public toilet, making Peepoo a more private, pleasant and safe alternative, as well as cheaper alternative to daily public toilet use. Peepoo costs SHK 270 assuming 1 daily use per family member and no refund vs 570 SHK assuming 1 public toilet use for each family member, or SHK 300 if only the adults use it. If used bags are returned, regular use costs as little as SHK 120/family/month. For comparison, these families spend on average 300 SHK/month on electricity and at least 1200 SHK/month on cooking fuel. The average household income is SHK 10 to 15k SHK/month, out of which approximately 25% typically goes for rent. One hypothesis is that the most avid Peepoo users were previously using public toilets regularly.

  For schools, the Peepoo solution is a clear plus, as many were equipped with pit latrines that required frequent emptying (every 2 to 3 months, for a price of SHK 15k to 20k)

Upstream and downstream organization

- Main organization: Peepoople Kenya estimated that it would need actual sales of 22m bags a year (60k a day) to reach break-even, assuming they could bring down their 'imported price' to 5 SHK/ new bag and sell for 5 SHK/ composted bag. At this scale, Peepoople Kenya would cover both its operating and overhead costs.

Innovations

- Limited infrastructure and no maintenance cost. At scale, distribution and collection operations could be streamlined to a minimum.
- Self-sanitizing technology (ammonia-based sanitation technology, combined with being personal and single-use solution, enclosing the feces directly at the source caters for good hygiene and disease control.
- Very small and lightweight, portable and mobile, enabling in-home usage, while being a clear improvement on 'flying toilets'.

Remaining hurdles and bottlenecks

- Sales of fertilizer have only just started. While the product seems to be good, there is still much demonstration and market building needed to have most of the waste actually sold to small-size farmers and agroforestry
- So far, the project does not manage to charge enough for its products itself to allow for faster and better cost recovery

Contact information

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Appendix

Sources: London School of Hygiene and Tropical Medicine in collaboration with Domestos, Mapping Sanitation Solutions; www.peepoople.com; www.germany.ashoka.org/sites/germany.ashoka.org/files/CIDG%20Fellow%20-%20Anders%20Wilhelmson.pdf

Exchange rate: 1 USD = 85.5 SHK

SUSTAINABLE ORGANIC INTEGRATED LIVELIHOODS (SOIL)

Project	Scaling-up sanitation solutions
Organization	SOIL
Geography	Haiti (Cap Haitien)
Areas	Urban/ peri-urban
Solution	Individual (household pilot)
Date started	2006 (2012 for the household pilot)
Stage	Pilot
Scale	251 household (home toilets), around 110 households (31 shared toilets)

SOIL urine-diversion toilet. Source: Hystra

Project description

History of organization

Sustainable Organic Integrated Livelihoods (SOIL) is a US non-profit organization. Its work focuses on two urban areas in Haiti, Port-au-Prince and Cap-Haitien. SOIL's mission is to protect soil resources, empower communities and to transform waste into valuable resources. SOIL mostly receives grants from foundations and individual contributors.

The work of SOIL in Haiti spans 3 main phases, firstly in 2006-2009 it focused on constructing 54 public urine-diversion toilets. Secondly in 2010-2012, following the earthquake, SOIL focused on constructing 200 emergency ecological toilets in 32 camps around the city and a composting waste treatment facility in Port-au-Prince to treat the waste collected from these toilets. Thirdly since 2012, SOIL has focused on a household-level toilet pilot. For this pilot SOIL was supported by re.source Sanitation (experts from Stanford University), who helped with the ecosan toilet design and household surveys. Today, 251 households (approximately 1'980 people in total) are using SOIL home toilets and another 110 families share the same toilets between 3 to 4 families (orabout 870 people in total).

Value proposition and profile of customers

SOIL provides portable, waterless, urine-diversion toilets (branded as Twalet EkoSOIL) to be used in homes or outside (in shared compounds) by families not connected to the sewage. The toilets remain the property of SOIL, which promotes and services the toilets twice a week (against a monthly fee of $5/toilet) by a team of waste collectors who pick up the waste, which is contained in a drum under the toilet seat. All the waste is brought to, treated and processed at the SOIL compost plant, before being sold to the Ministry of Agriculture and various businesses.

Users are families living in a slum of Cap Haitien (Shada neighborhood). This neighborhood was chosen, because SOIL was known there for its previous work. Nearly all slum residents are renters, who live in rooms of under 10 square metres in size (very basic type of habitations, ranging from metal to solid walls constructions) and earn $50 per household monthly. A family accounts for about 7.9 people and a family shares two of these small rooms. Most early adopters are families in the phase of upgrading their living facilities, who are often familiar with SOIL's public toilets installed after the earthquake.

Once they agree to a contract with SOIL for a toilet, the users sign a service agreement, which lays out the terms of the collection service.

SOIL also promotes the same solution for groups of households, who share the use and the costs (the price of the service is also $5). These are typically families who have less income earners.

Value chain

Manufacturing

SOIL toilets consist of a plastic toilet seat, urine diversion inlet and cover, along with a wooden shelter (if shared and/or outside toilet), as well as 20 or 60 liters drums (depending on the number of families using the toilet). It sources the plastic part from local shops, and subcontracts the manufacturing of the wooden elements to local carpenters. When SOIL was manufacturing the toilets itself, manufacturing costs were about $75 (without shelter). Currently, the production cost is $50 without shelter (home solution) and $175 to $400 with a shelter (shared toilet) depending on the materials used, notably for the superstructure. Today, SOIL can get 140 toilets a month from its suppliers.

Marketing & sales strategy and organization

SOIL's marketing strategy focuses on community events. The events are held by a team of four, non-dedicated SOIL staff, who organizes 5 to 6 events a month in different communities. They receive no commission for this work, but are paid a salary by SOIL. Currently however, as word-of-mouth picks up, demand outstrips supply in those communities where SOIL is working.

Installation

A team of four SOIL staff undertakes the transport, assembly and installation on-site. These are regular SOIL employees. It takes only few minutes to set-up a new toilet. This team also explains the functioning of the toilet and terms of the servicing agreement. Making the service agreement takes the most effort, it involves identifying the contract partner and the person paying for the service fee and documenting the agreements.

Cash/payment collection

Cash payment is done on a monthly basis and collected by the waste collection team. There is limited information available on payment delays. So far, a few toilets have been taken back due to default of payment.

Usage and hygiene

The installation team gives initial advice to customers on how to use the toilet (e.g. do not throw sanitary napkins into it). Households are given a hand-washing bucket with the toilet at installation. The households are also provided with sugarcane bagasse or peanut shells, this material is to be thrown into the toilet after use, to reduce flies and it assists in the composting of the excreta.

Maintenance and cleaning

Families clean the facilities themselves. In the case where multiple families share the toilet, they typically select one caretaker. Maintenance is usually not required.

Waste storage and collection

Feces are contained in a bucket under the toilet which is collected twice a week from households by the SOIL collection team (the buckets are closed, replaced by a new, clean one, and brought to a collection point, where they are transported by truck to the composting plant on a weekly basis). At the plant, the content of the buckets is dumped into the compost bins and covered with sugarcane bagasse. The buckets are then cleaned and returned to the collection point. The collection and transportation of drums is undertaken by a team of 5 SOIL employees (2 collectors,

1 truck driver and 2 assistants). On average, each collection team member services 100 households during an 8 hour day. Urine is diverted by a pipe, either into a separate bucket that is emptied by the user in the vicinity of the household (canal, sea, ground, etc), or directly to a soak pit if possible.

Waste treatment, disposal and recovery

SOIL uses a large composting site for the waste collected from toilets in Cap-Haitien. After processing, each batch of compost is tested for germs before being packed into 20 litre bags for sale. There is only one dedicated person working at the compost site, they are assisted by the collection teams in the waste processing work.

Compost marketing

SOIL markets its compost under the brand name "Konpòs Lakay" to businesses such as Heineken (as part of a CSR initiative) and the Ministry of Agriculture, which purchase it in bulk for subsidized distribution to small farmers. To market the product, SOIL runs demo agricultural trials and directly markets the product to potential customers through a team of four people. From the beginning, SOIL has had to devote more time and energy into marketing compost than the toilet services. This is primarily due to the fact that there is no existing market for compost in Haiti. Today, SOIL manages to sell 50% of its compost on average.

Technology

Description of toilet-related technology

Key features:

- Design: Compact, portable toilet unit designed for home use. The toilet has 5 main components.
- Durability: Estimated lifetime of 5 years.
- Water and energy efficiency: No electricity or water is needed.
- Malodors and safety: Sugarcane bagasse or peanut shells are thrown in to eliminate smell, reduce flies and to assist in the composting of the excreta.
- Waste storage: The opening in the back section of the seat allows the feces to drop into the drums that are located below the toilet structure. The front section of the seat diverts the urine.
- Waste collection: Is done manually until collection points.

Description of by-products-related technology

Requirements and functioning:

The solid human waste is transformed into agricultural-grade compost at the composting site in Cap Haitian. SOIL applies a thermophilic composting process to treat the human waste, i.e. the waste is stored in wooden boxes, it is watered regularly and covered with carbon matter (this ensures that flies cannot access the fresh feces, reduces smells and insulates the pile to maintain the internal high temperatures). Once the bin is filled, the compost stays in the bin for at least one month and is closely monitored. Every 2 to 3 days, SOIL measures the temperature of the compost to monitor temperatures throughout the pile. When the temperatures start to go down (usually after 3 months) the compost is moved into windrows to finish decomposing (which takes another 0.5 months). SOIL's composting process is effective at eliminating all human pathogens within the first 3.5 months of treatment at the compost facility. SOIL tests all finished compost for E. coli, a key indicator pathogen, before sale or use. The compost that can be sold for various purposes (soccer fields, tree planting, nurseries, fish food, household gardens in urban areas, community gardens, and tree planting).

Economics:

SOIL's waste treatment sites treats and transforms over 76,000 litres of human waste per month. These 76,000 litres yield to about 36k litres of compost per month. This corresponds to 12.1 litres of compost per person per month, at an average price of $0.15 per litre (or $1.8 per person/ per month). The processing costs less than $3 per person per month. Processing costs includes the labor, equipment, as well as the infrastructure costs. Since 2011 SOIL has sold 235'000 litres of compost to individuals, companies, and organizations around Haiti.

Social impact

- Penetration: Since 2010, SOIL has installed and is servicing 251 home toilets and 31 shared toilets, used by 375 families (or 2'960 people). This corresponds to about 6% of families in the Shada neighborhood.
- Acceptance and usage: No customer has returned the toilet to date, and most households use the toilet regularly (night and day).
- Customer satisfaction: Customer satisfaction is not surveyed systematically. Main topic of complaint is related to the service fee.
- Evidence of impact on health: No survey conducted yet.
- Promotion of related behaviors: No promotion of such behaviors. However, toilets come with a hand-washing bucket.
- Waste collection and disposal strategy: The toilets remain the property of SOIL.

Economic sustainability

End consumers

- Affordability for end users: The monthly servicing fee is $5 for single families (or an estimated 5% of total household income) vs $1.5 to $2 if the adults regularly use the public toilet. The price was set based on initial surveys on willingness to pay. As a point of comparison, re.source found that people usually pay $2.3 to $4.6 /month) for their cell phone bills.
- End consumer financing: N/A

Upstream organization

SOIL operates a number of projects thanks to grants. With regards to the home toilets project, current servicing revenues cover for the salaries of the waste collectors, and the fuel of the collection truck. It does not cover for overhead costs and toilet manufacturing costs. Scaling up the project to 500 toilets should help cover additional costs, such as manufacturing costs.

Field team members earn ion average $100/month. Due to very limited job opportunities, there is a very little turnover among the team.

Downstream organization

SOIL currently manages to sell 50% of the compost it produces. It is estimated that compost sale revenue and waste treatment fees can recover about 70% of overall costs for waste treatment in the long term.

Its main client so far washas been BRANA (Brasserie Nationale d'Haiti S.A), a member of HEINEKEN, which agreed to purchase 190'000 litresers of compost to test the compost's ability to increase local sorghum yields. Overall, SOIL has about 75 customers purchasing one to two bags of compost (about 200 KG) per month. The Clinton Foundation has also made a grant to SOIL of $25,000 for additional agricultural research on compost.

Innovations

- SOIL has been effective over the years in establishing itself as a reputable provider of sanitation solutions in the communities they work in. Hence, customers now havenow a high awareness and acceptance of SOIL's sanitation solutions.

Remaining hurdles and bottlenecks

- To set-up business processes that would better support the scale-up of its operations, SOIL is considering setting-up a separate private company for the household toilet and compost business.

Contact information

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Appendix

Sources: Berendes, D. et al. (2013). Evaluation Of SOIL Latrine Waste Composting In Port-Au-Prince, Haiti. Atlanta: Georgia: U.S. Centers for Disease Control and Prevention. Retrieved from www.oursoil.org/cdc-releases-report-on-soil-composting-process. Interviews and discussions between Sasha Kramer, Leah Page, Gregorie Virard and Heiko Gebauer (eawag).

Exchange rate: 1 USD = 43.5 Haitian Gourdes