

APPENDIX 2: URBAN CASE STUDIES

3S - A DIVISION OF
SARAPLAST PVT. LTD.



Project	3S - A Saraplast enterprise
Organization	3S - A Saraplast enterprise
Geography	India (6 cities)
Areas	Urban
Solution	Collective
Date started	1999
Stage	Scale up
Scale	3.5k rented toilets rotating between various projects; 1k toilets sold; 150k daily users



3S Truck. Source: Hystra

Project description

History of organization

Shramik Sanitation Systems (3S) is a social enterprise launched in 1999. In 2006, Saraplast was founded separately as a manufacturing entity, and in 2008, 3S and Saraplast merged into Saraplast Private limited (but kept the 3S name for service operations as the name was already popular). The company started with the clear social purpose of providing clean toilets to people who did not have access to them yet. It provides portable toilet cabins, hand washing stations, urinals, shower cabins, and associated services (septic tank cleaning and waste disposal). They first focused on project developers who offer shelter and food to their migrant workers while they work on site – and rarely have sanitation solutions built in; as well as event organizers. Today 3S has 3,450 available units for rent with at least 80% utilization rate at any point in time. 3S has offices in Pune (where headquarters are located), Mumbai, Delhi, Hyderabad, Bangalore and Chennai. It managed to raise its second round of investment from ResponsAbility in April 2013, allowing for rapid expansion. It has also set up a Trust which received funding from Michael & Susan Dell Foundation (MSDF) that sponsors – on a purely philanthropic basis – innovative approaches to bring sanitation to the poorest, such as support to existing public and community toilet entrepreneurs to turn them into successful businesses (as of 2013 pilots were conducted in Delhi, Pune and Mumbai).

Value proposition and profile of customers

3S installs and services toilet cabins with built-in tanks in poor settlements with migrant workers (paid for by the project developer, at \$75-100 a month for a squat toilet). The use of toilet is free for the workers, and sometimes the site allows the neighboring slum to use the toilets after the site is shut and workers have gone home, or simply if there is capacity for more people to use them. One toilet should serve around 50 workers a day, and 3S services each toilet once a day or at least once every second day. This represents 81% of 3S revenues.

3S also installs toilets for specific events where a model of sitting toilet is also proposed for \$25-33 per day, including a toilet attendant and all the consumables for the toilet (soap, etc.). This represents 11% of revenues.

Only the toilet interior changes between sitting and squat toilet cabins, so toilets are modular between these two formats.

Alternatively, organizations can purchase the cabins for \$750 (squat toilet) to \$1,083 (sitting toilet) – but then service is not included. This represents 5% of 3S revenues, but growing rapidly.

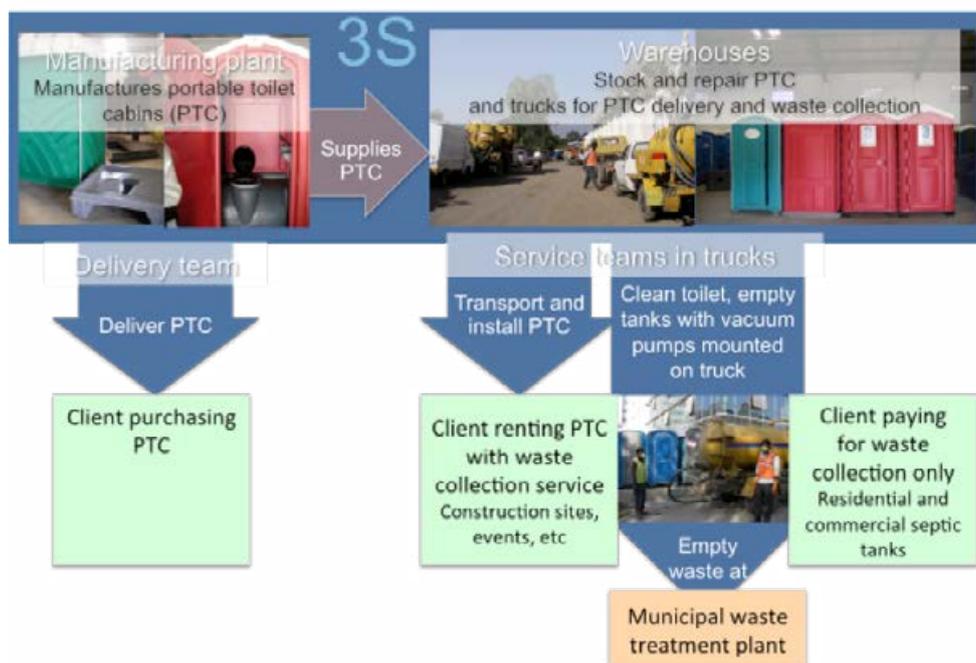
3S also provides commercial and residential septic tank emptying and disposal (only 3% of 3S revenues).

Finally, 3S is also experimenting with supporting collective toilet entrepreneurs in poor urban areas to improve their service to clients, e.g., with water points in the toilet, wall

painting, basic marketing support, sales of additional related product (e.g. sanitary napkins). Entrepreneurs charge users ~\$0.80 per month per family to use community toilets (i.e. in poor residential areas, open 24 hours a day), similar or more than what they charged before 3S intervention (as they provide better service), or \$0.03 per use in public toilets

(i.e. in areas with a lot of transit, open 11am-9:30pm), which is the maximum price allowed by law for one toilet use. 3S considers these as pilots to explore opportunities of working directly in the slums, and is not charging end-consumers (costs of these pilots are covered by grants, representing less than 1% of 3S total revenues).

Value chain



Manufacturing

Toilet interiors (in plastic) are manufactured in a plant 40km outside of Pune, then assembled with the rest which is imported (side panel and roof come from the US, head pumps and foot pumps from Ireland, the rest from various cities in India). The plant can manufacture and assemble 800 toilets per month (but is currently working at only 25-30% of its full capacity, producing 200-250/month on average). Manufacturing the entire product in-house would take off 26-30% of toilet costs (some from customs and freight) and the investment in the manufacturing facility would make sense economically for 5,000 toilets per year.

Installation

Toilets go through a full check before they are dispatched to new sites. They are installed (and then maintained) by a team of 2 technicians, 1 driver and 1 supervisor, who transport the toilets in a truck and install them on site. Installing a cabin takes 5 minutes. No link with water tank or sewage is required as toilets have their own tanks, one for water that can be replenished with clean water by 3S, and one for waste that can get emptied by 3S as well, if water and sewage connections are not available on site. In case of link to a sewage system, plumbing done at the site can be done onsite.

Marketing & sales strategy and organization

The sales organization is deployed through city branches (6 cities in total), with at least four sales person in each. On average, one sale person sells rental contracts for over 100 toilets throughout a year. Sales persons are overseen by the Centre heads (in charge of operations and sales activities), located in each of the 6 main cities of operations. There has not been any issue of sales saturation so far as the market is huge and 3S is the first entrant, with their number of toilets installed doubling every year.

Cash/payment collection

Construction site clients are billed once a month.

Community toilets are either pay per use or subscription system, but payment was not always enforced. In community toilets (in residential areas) supported by 3S, families are now requested to pay the monthly family amount at the beginning of each month, directly to the toilet entrepreneur (all revenues go to the toilet entrepreneurs). Before the intervention of 3S, about half of the users were not paying anything. In public toilet (in areas with a lot of traffic), the system is pay-per-use, and clients must pay INR 2 to the operator before use.

Usage and hygiene

Indian squat toilets are all provided with hand wash facilities outside the toilets, while Western toilets have hand wash inside the toilet. 3S also offers showers in a separate cabin (not very popular yet though).

Maintenance and cleaning

The toilets are sturdy and need repairs only 2-3 times in total over their 10 years lifetime. Maintenance is done in the warehouse by the installation/collection team where each toilet is dismantled, cleaned piece by piece and verified. If a problem happens on site, site supervisors can conduct basic maintenance themselves. These small repairs cost on average \$8 per year a toilet. Toilet cleaning is done by the collection team after the pit is emptied (see below in “waste storage and collection”). Technicians then add a deodorant and disinfectant solution dissolved in 5L of water, and clean the inside and outside of the structure as well. The deodorizers can be bio deodorizers or bio tab or dissolvable biosachets, all ecofriendly and made in the USA (EPA approved).

Waste storage and collection

The collection team is the same as the installation team. Hiring requirements are minimal – anyone who applies can get the job, and keep it if they respect basic discipline (e.g. being on time and present every day, respecting the safety conditions). Turnover has been lowered over the years thanks to a comprehensive HR policy (e.g. in addition to competitive salary, breakfast offered at the warehouses every day, group activities etc) and is now between 10 and 30% depending on the cities. The collection team collects the waste from each toilet daily (up to 190L waste per toilet), or every 2 days for the most remote sites, following a set route in a truck with a 1000-3000L storage tank on top. They cover 50-85 toilets per day.

Waste treatment, disposal and recovery

The collection tanks on trucks are brought and emptied at municipal treatment facilities (multiple trips a day, given the volume of waste). As of 2013, the total cost of using these waste facilities is around \$1,000/month for 3S. In Pune (city with the largest operations for 3S), the municipal waste treatment plant is currently close to full capacity and is likely to ask players like 3S to find other ways to dispose of their waste. 3S has started thinking about setting up its own treatment facility there.

Technology

Description of toilet-related technology

Key features:

- Cost: \$550 on average; Price: \$700.
- Design: Pour-flush, collective portable toilet: cabin with base, side panels, one piece door and roof, held with slide on corner moldings and a rivet system. Some models come with hover handle, coat hook, mirror and shelves. Dimensions are: 2.3m x 1.1m x 1.2m, for 68 to 80 kg. The interiors are made of LLDPE (Linear Low Density Polyethylene) and the exteriors are made of HDPE (High Density Polyethylene).
- Durability: The toilet structure (interior and exterior) can last 10 years, with some small parts needing repairs (lock, rivets for the door, etc.).
- Water and energy efficiency: The flush uses 0.3L of water per stroke, contained in a 150L water tank in the cabin replenished from a local water source (paid for by the construction site or event organizers) or by 3S clean water tank each day, as part of the service contract. Today 3S pays the various municipalities less than \$2000/year in total for water. The toilets do not require any energy (the flush works via foot pump or gravity).
- Malodors and safety: The malodor is limited thanks to the chemical disinfectant solution which is added every day. This solution helps control malodor for several days. The toilet is completely safe to use and faeces are stored in the tank below the toilet.
- Waste storage: On-site tank below the toilet (up to 200L capacity) – or when available, connection to public sewage system (which can be done even for temporary toilets).
- Waste collection: Daily collection by 3S trucks with vacuum pumps – high pressure jetting mechanism to evacuate quickly the waste and avoid that anyone touches it – or when available connection to public sewage system. Pumps are powered either via a small motor or by the truck engine.

- Potential and limitations:
 - » The industrialized collection process set up by 3S is economically viable with one truck for at least 50 toilets visited daily, which is feasible in dense areas but can become more challenging in more dispersed environments.
 - » The routes could be further optimized with IT; trucks with larger capacity would limit the number of trips to the waste treatment facility. 3S is working on both.

Social impact

- Scale: Over 3,000 toilets rented at any point in time, 3,450 in total available for rental, 300 sold in 2013, 700-900 sold since inception. Assuming 50 users per toilet in average, this means that over 150k users use 3S toilets every day.
- Penetration: It is assumed that most workers use the toilet, as this is the only free sanitation facility available. In some instances, if allowed by the site manager, other people from the neighborhood might be using them as well. There is no clear monitoring of usage.
- Acceptance and usage: N/A.
- Customer satisfaction: 90% of construction companies sign up for a new contract after their first one. S3 has just set up a 3-person hotline to answer any client concern or user question. At end user level, anecdotal evidence of S3 construction workers being first time users of toilets and deciding to build a toilet at home.
- Evidence of impact on health: NA.
- Promotion of related behaviors: In addition, on construction sites where 3S installs toilets for the long term, 3S staff conducts at least one awareness campaign on sites – about open defecation, good hygiene practices such as how to wash hands, how to use a toilet, the benefit of bathing and keeping the residence area clean, etc., using a UNICEF movie, pictures and other media. According to Saraplast, around 40% of users attend the training, and that most of them claim that they were applying what was taught. As of 2012, over 6000 participated. In addition, 3S has installed free toilets in various schools (grant-based project), and uses the schools as a platform to raise awareness on the importance of clean sanitation. Finally, the company launched a “City 100% Sanitation Campaign” to generate awareness on these topics among Pune’s citizens and stakeholders.
- Waste collection and disposal strategy: The toilets are rented for a fee, which includes daily collection done entirely by 3S. There is no ensured compliance for the toilets that are sold, or for the public toilets that 3S helps run.

Economic sustainability

End consumers

- Affordability for end users: Free for end-user in the case of rented contracts, pay per use at \$0.03 or pay per month at \$0.83 per household in case of collective toilets (0.3% of household income with 3 persons working).
- End consumer financing: N/A

Upstream organization

- 3S: 3S charges its institutional clients \$75-100 for the set up and servicing of a toilet per month (for long-term contracts) or \$25-33 per day (for short term events – this higher cost includes an attendant). One route needs 50 toilets per truck to breakeven in 15-18 months (on the costs of the toilets, plus the truck, plus the local team operating the truck, plus cost of waste disposal – which is as of now minimal in municipal waste treatment plant). 3S also generates revenues from advertising on toilets. 3S is currently profitable.
- Public toilet operators: Revenues from user fees. Initial pilots show that if well run, public toilets can be a small business for local entrepreneurs (earning over \$60/month, in areas where average salary is around \$80/person).

Downstream organization

So far, 3S has to pay for disposal of waste at the municipal treatment plant (\$1,000/mth for all 6 locations, covered by the margins of the upstream organization). However as the Pune plant is reaching full capacity, the municipality will likely ask 3S to treat their waste themselves. It is also likely that the price of water will increase as water is becoming scarcer. Hence S3 is thinking of building its own waste treatment plant that should allow to convert 80% of the waste into a water clean enough to clean toilets (for S3 own use), or to be mixed to make cement (if sold to construction sites). The pay-back of such a plant (based on savings on municipal waste treatment plant fees and reselling the clean water) would be around 2 years.

Innovations

- 3S has found a truly profitable business model by targeting clients who are not the users themselves, but people who are ready and able to pay for toilets: construction site managers willing to provide a better work environment for their workers. The fact that workers can avail this facility free of cost allows spreading the experience of regular and clean toilet use.
- 3S markets its cabins with free trials: when construction site managers hesitate to take on the service, 3S provides its toilets and service for free for a month. 50% of managers then decide to take on the paying service.

Remaining hurdles and bottlenecks

- Finding a sustainable model to educate and serve end-users directly in the slums: 3S is only catering to a limited market segment. It still needs to find a way to better cater directly to end-users in slums:
 - » Upgrading community toilets can be challenging as these are often government buildings and local governments are reluctant to let a company interfere with their work
 - » Organizing waste collection for small home toilets (i.e. waste in a bag) is forbidden in India (a law forbids to carry waste by hand, to make sure the scavenger's job disappears)
 - » Households still prefer septic tanks, when they can afford; which 3S could service and is in the process of acquiring equipment and new technology to cater this vast market.

Contact information

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Appendix

Sources: Field visit of Pune operations, December 10-11, 2013. Interview with Ulka Sadalkar, Director, Ranjit Kher, Director, Colonel A.A. Gune, Lead for operations in Pune and for India, Tapan Apte, Chief Financial Controller, Amey Mahure, Business Development CLTS (Community Led Total Sanitation) ; www.3sindia.com; www.businessinnovationfacility.org/page/saraplast-3s-shramik-portable-sanitation-and-waste-management-in-; www.planetedentrepreneurs.com/wp-content/uploads/entrepreneurs/Inde/Shramik/Pdf_Shramik.pdf

Exchange rate: 1 USD = 60 INR
