

APPENDIX 1:

RURAL CASE STUDIES

GRAMALAYA



Project	Gramalaya
Organization	Gramalaya
Geography	Tamil Nadu, India
Areas	Rural areas
Solution	Individual
Date started	1987
Stage	Scape-up
Scale	100,000 toilets (500,000 users)



Gramayala toilet user. Source : www.gramalaya.in

Project description

History of organization

Gramalaya is an Indian organization created in 1987 and dedicated to rural development in Tamil Nadu. It is working on health and hygiene education, latrine construction and safe water supply, in partnership with community-based organizations (CBOs). Since 2005, Gramalaya has adopted a new approach to sanitation: they stopped providing direct subsidies to households, focusing instead on the promotion of sustainable supply chains. Gramalaya itself is mostly grant-funded by local and national governments (e.g. the Ministry of Drinking Water and Sanitation, Government of India) and international NGOs/donors (e.g. Arghyam, Bangalore, WaterAid, Water.org).

Since 2005, Gramalaya had also been looking for financing solutions for households willing to purchase a toilet. They started to offer micro-loans through their network of SHGs. As of December 2007, Gramalaya had loaned nearly \$200k, with an average loan of \$91 per borrower. The performance of the program gradually improved – from 2004 to 2007, Gramalaya had an average repayment rate of 82%, reaching almost 100% in 2007 thanks to extensive investments into capacity-building and processes/software. Building on this success, Gramalaya decided to create its own financing entity in 2007 named Guardian, a non-banking financial corporation which, thanks to its status, is not required to ensure a minimum of 70% income-generating loans. Guardian gets money from local and governmental banks at 9-14% and lends at 21%.

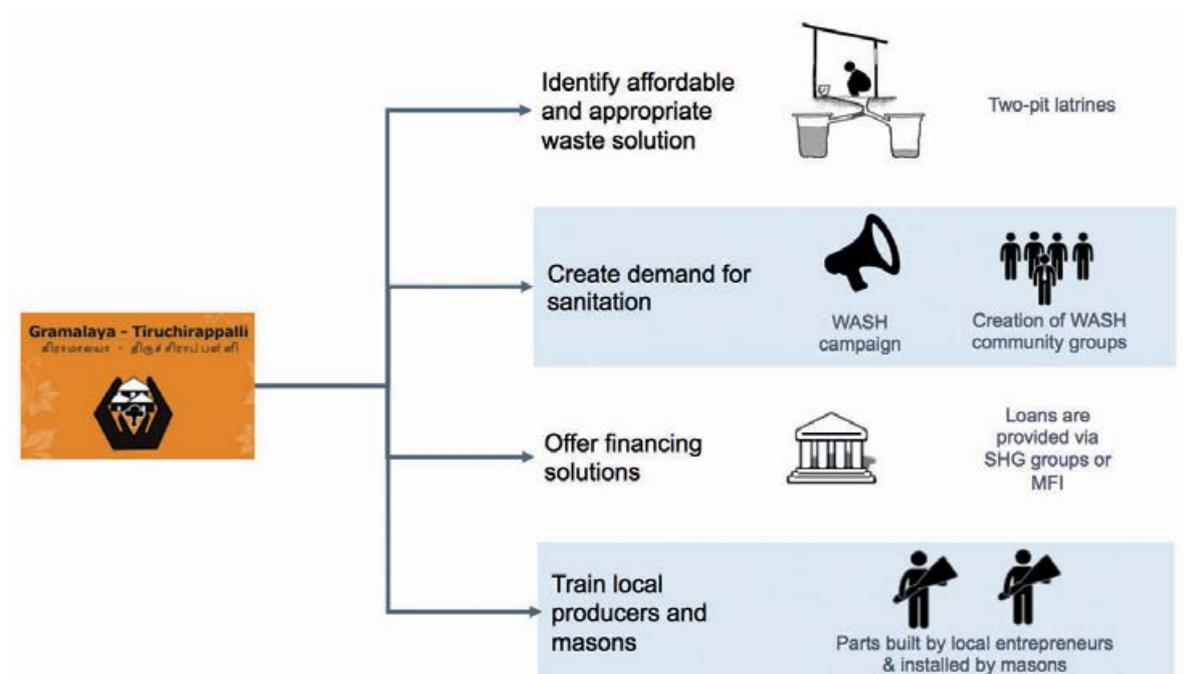
Value proposition and profile of customers

Gramalaya promotes a range of toilet models to households, supports local producers in manufacturing better quality latrines at lower cost, trains masons in installing them, and offers end-user financing. From 2005 to 2010, Gramalaya mainly promoted single-pit latrine packages (\$150 including shelter), twin-pit latrine packages (\$200 including shelter), and Ecosan composting latrine packages (\$250 including shelter), as well as septic tank packages (\$500 including shelter). Today they mostly promote the twin-pit model. Households can pay upfront, take out a loan through Guardian, or borrow from SHGs (Self-Help Groups¹²). Guardian restricts its loans to married women who own their house. It verifies that each borrower spends the loan on sanitation within the first month after disbursement.

Before purchasing latrines, most customers practiced open defecation. In a typical village, less than 5% of people already have a toilet, 5-10% are able to purchase a toilet upfront, 50-70% will borrow money to purchase one, and 20-40% ultra-poor will not have enough space or be able to borrow for a toilet.

¹² SHGs are savings groups of up to 20 women. SHGs can become eligible to receive external funding from commercial banks. Historically, Gramalaya has been promoting SHGs (over 4k since inception).

Value chain



Marketing & sales strategy and organization

Gramalaya is active in every village for a period of 1-2 years. They start with awareness-raising activities through Community Health Workers (CHWs) organizing village events and going door-to-door. In the first two months in a village, the CHWs promote the creation of AWASH¹³ (Associations for Water, Sanitation and Hygiene) among villagers. These committees take over the promotion and monitoring of toilet usage within their community. The CHWs survey the sanitary conditions of households and measure the demand for toilets. Then, after drafting a list of households that would require a loan to build toilets, they involve Guardian's credit officers.

Financing

- Upfront payment (5-10% of village population): Typically some of the wealthier households.
- Loans from Guardian (30-40% of village population): Gramalaya shares the demand assessment with Guardian who then provide loans to eligible households. Only 10 loans are provided in each village during the first three months of activity, to test the repayment capacity of the villagers. Guardian restricts its loans to women under 55 who own their house and belong to a Joint Liability

¹³ AWASH committees promoted by Gramalaya are non-profit organizations of voluntary members, focused on sanitation and hygiene. They promote and monitor usage of sanitation in their community, and Gramalaya trains them to continue doing so even after it leaves the village. Over 500 such committees have been formed since 2005.

Group¹⁴. Guardian also assesses the cost of construction and provides a list of materials.

- Loans from SHGs (20-30% of village population): Households that are not eligible for loans from Guardian can rely on women SHGs to obtain loans for toilet construction. These loans are issued from SHG members' savings.

Manufacturing

After Gramalaya promotion, households interested in toilets ask a local entrepreneur to build the necessary parts for the construction of toilets (slabs and cement rings). An entrepreneur typically covers 10 villages and is referred either by Gramalaya or the local village masons (who have been trained by Gramalaya in most cases). Most entrepreneurs are pre-established small producers who already make slabs for doors and windows. Gramalaya trains them to construct quality slabs, adapted to local demand (e.g. twin pit latrines), and encourages them to make the necessary investments.

Installation

Households purchase construction materials themselves from the local entrepreneur and retail stores. A mason trained by Gramalaya staff handles the building of the latrine, assisted by an unskilled worker or a member of the household. There can be up to 5 such masons in every village of some 200 households.

¹⁴ JLGs are informal groups of 4 to 5 individuals who agree to share liability on loans taken out by members, thus offering collateral to credit institutions such as Guardian, which only loans to members of JLGs.

Payment collection by Guardian

The leader of the JLG does the monthly collection of payments and then hands it over to the Credit Officer from Guardian. Late repayments are first handled by CHWs, then Credit Officers Guardian writes off 3 to 4% of loans on average.

Usage and hygiene

Gramalaya’s strategy is to spur the emergence and monitor the progress of AWASH committees dedicated to the promotion and sustainable usage of sanitation and toilets. AWASH committees promote both the toilets and good hygiene practices.

Maintenance and cleaning

Households clean the toilets themselves. There is very little maintenance needed. There is no guarantee offered on the toilets.

Waste storage and collection:

- Single-pit toilets fill up typically after 7 to 10 years. They must be emptied manually or by waste-collecting trucks before they can be refilled again, which few households did. As some users were going back to open defecation, Gramalaya has gradually stopped promoting single-pit toilets.
- Twin-pit toilets allow switching pits when one is full. After 2 years, the full pit can be manually emptied and the pathogen-free and nutrient-rich humus used for soil amendment and fertilizing.
- Ecosan toilets feces are composted in vaults and then used as a fertilizer. Urine can be infiltrated in the ground or collected for fertilizing.

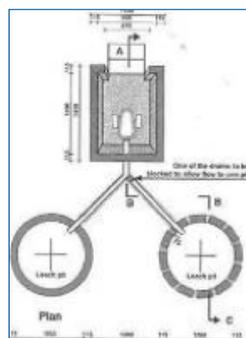
Waste treatment, disposal and recovery: Twin-pit and Ecosan toilets allow composting of waste and use as fertilizer.

Technology

Description of toilet-related technology

The two main technologies currently promoted by Gramalaya are:

1. Twin-pit toilets

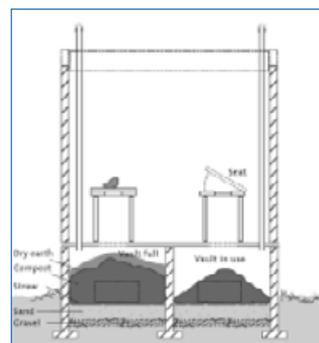


Source: www.goodcleantech.pcmag.com

Key features:

- Cost: ~\$200 for a brick model including toilet shelter.
- Design: A concrete or brick cabin is equipped with a cement slab, which includes a squatting pad and water trap. PVC pipes link the slab to two identical pits, 1 meter in diameter and 1.5 meter in depth. These can be made of stonework, honeycomb brickwork or perforated concrete rings to allow infiltration of liquids into the ground. The United Nations Development Program (UNDP) designed the model promoted by Gramalaya.
- Durability: Circular pits are unlikely to collapse when well built. One household can use a two-pit latrine for decades by rotating from pit to pit.
- Water and energy efficiency: One bucket of water (1.5 to 2L) is required per flush. No energy required.
- Malodors and safety: The water trap prevents odors from escaping the pit and flies and mosquitoes from entering it. There is no direct contact with excrements and very little risk of contamination. To avoid any groundwater pollution, pits should be dug a safe distance from water sources, and only in regions where water tables are low enough and where floods are uncommon.
- Waste storage: Once the first pit is filled, it is sealed and left to compost, while the flow of excrements is redirected to the second pit by a connecting chamber.
- Waste collection: After composting, the pit must be opened and manually emptied. The composted humus can be used as organic fertilizer.
- Potential and limitations: Twin-pit latrines are a relatively cheap and reliable way to treat excrement. However they do require some investment and materials along with some space. They can be ill adapted to certain soil structures. End-consumers also need to be convinced of the necessity to build an extra pit, which won't be used before 7 to 10 years.

2. Ecosan toilets



Source: www.unesco.org/education/fresh

Key features:

- **Cost:** ~\$180 including toilet shelter
- **Design:** Ecosan toilets are waterless composting toilets, made of a toilet shelter built above two slabs covering twin vaults. Each vault is used alternately: when one is filled, the slab hole is plugged and the excrement is left to compost. Urine is diverted to a reservoir where it is infiltrated into the ground or used as fertilizer. Anal cleansing water is collected and infiltrated into the ground through a separate circuit.
- **Durability:** When well built and maintained, these structures can potentially last decades and resist floods.
- **Water and energy efficiency:** Ecosan toilets require no flushing and no energy.
- **Malodors and safety:** In order to prevent malodor, vaults must be equipped with a ventilation pipe reaching out over the top of the structure. The end of the pipe is covered in mesh wire to prevent insects from entering the vault. Additives such as ash or sawdust must be added after each use. Fully composted excrements can be considered pathogen-free.
- **Waste storage:** Urine is stored or drained using a mud pot. The feces is collected in the vaults and undergoes aerobic treatment to become fertilizer. Once it is filled after 3 to 4 years, the vault is left to compost.
- **Waste collection:** After composting, a door on the side of the vault is opened and the vault is emptied.
- **Potential and limitations:** This aboveground technology is ideal for areas with high water tables, frequent droughts or rocky terrain. Its waterless functioning also makes it well adapted to places where water is scarce. However, the absence of flushing and water seal may also be perceived as less convenient and be a barrier to adoption by customers.

Social impact

- **Penetration:** Since 1987, Gramalaya has built over 100,000 toilets in over 1,000 villages. In a typical 150-household village, only 2 to 10 households are initially equipped with latrines. The first 10 latrines are quite difficult to sell (typically requires a 2-3 months period). AWASH committee members are often the early adopters, and within 4 to 5 months demand starts picking up. After 12 months, over 50% of the households are equipped. Maximum penetration (up to 90%) can sometimes be reached in less than 2 years.
- **Acceptance and usage:** Out of the 100k latrines by Gramalaya, 30% are out of use, most of which are single-pit toilets, which were built thanks to subsidies. Now that households are paying for the installation, they maintain the toilets much better than when subsidized.

- **Customer satisfaction:** Gramalaya runs a baseline user survey in every prospective area. The same survey is run 3 years later to assess the impact of toilets on health and behaviors, both quantitatively and qualitatively. Satisfaction among toilet-owners reaches over 90%.
- **Evidence of impact on health:** A report by WaterAid and Gramalaya¹⁵ found that significant impacts have been observed on the incidence of diarrhea (up to 63% less in some communities), along with subsequent reduction in medical expenses.
- **Promotion of related behaviors:** AWASH Committees ensure the promotion of general hygiene in villages.
- **Waste collection and disposal strategy:** Both Ecosan and twin-pit models offer effective and clean disposal of waste. Gramalaya is now promoting these specific technologies.

Economic sustainability

End consumers

- **Affordability for end users:** The Ecosan or twin-pit toilets costs around 5-10% of the annual household income, which explains why only 5-10% of village households are able to purchase a toilet upfront. The vast majority requires financing solutions.
- **End consumer financing:** for the construction of a new toilet, Guardian loans a fixed amount of \$160 at a 21% diminishing interest rate, over 18 monthly payments. It also charges a 1% loan processing fee and a \$1.6 charge for insurance and administrative cost. The Indian government has been providing subsidies for individual toilet construction, which can influence households' ability to borrow or repay¹⁶.

Organization

- **Gramalaya:** is mostly supported by local and national governments (e.g. the Ministry of Drinking Water and Sanitation, Government of India) and international NGOs/donors (e.g. Arghyam, Bangalore, WaterAid, Water.org). The program costs are approximately \$10 per latrine.
- **Guardian:** has made more than 30,000 loans for toilets to date, with a 96% repayment rate. It has reached

¹⁵ Tiruchirappalli Shows the Way, Community-Municipal Corporation-NGO Partnership for City-wide Pro-poor Slums' Infrastructure Improvement, WaterAid India, September 2008

¹⁶ The Indian government provides subsidies for the construction of individual toilets through the "Nirmal Bharat Abhiyan" (Total Sanitation Campaign). The NBA subsidy amounts to \$75, with an added \$15 for the poorest citizens. The National Rural Employment Guarantee Scheme (NREGS) also provides a subsidy of \$72 for labor costs. It should be noted that authorities are increasingly providing direct transfer of subsidies to households after completion of installation, allowing more flexibility in design and costs and the emergence of competitive value chains.

breakeven, although its financial sustainability relies on demand creation and customer identification operated and funded by Gramalaya.

- **Staff:** Gramalaya employs 12 people for management and administration at its headquarters, and 50 Community Health Workers (CHWs) in the field, mainly in charge of training and monitoring AWASH committees, local producers and masons. Each CHW can start up, train and open bank accounts for 20 AWASH committees per year. As it takes committees 1-2 years to become autonomous, one CHW can follow up to 40 different committees simultaneously.
- **Local producers:** are independent entrepreneurs who receive training from Gramalaya. To manufacture toilet parts, established local producers only need to purchase iron or wood molds for about \$300. They make a 10-15 % margin on components, roughly \$15 per toilet. The construction itself lasts 3 to 4 days, with the mason making about \$8 a day, and the unskilled worker \$3 a day. There are over 100 such entrepreneurs active today.
- **Local masons:** Masons are also trained by Gramalaya to install latrine components, and paid around \$8 per day. Over 1,000 masons have been trained to date.
- **AWASH committees and other CBOs:** Their 20 members are equally divided between men and women, and usually include social health workers, school teachers, as well as a minimum of two masons. They are all volunteers.

Innovations

- **Promoting a dedicated microfinance institution:** Gramalaya promoted Guardian, the first MFI to focus exclusively on water and sanitation. This enabled transitioning to a more sustainable model without direct household subsidies. Guardian is currently on the right path to sustainability, even though it relies on demand creation efforts by Gramalaya which are fully grant-based.
- **“Aspirational” marketing:** Gramalaya’s approach has evolved from using a ‘peer pressure’ based approach to a more aspirational model. By promoting quality models which can be customized in terms of design and decoration, Gramalaya allows toilets to become a more desirable investment. According to Gramalaya, customers prove more satisfied than under the previous subsidy-based model where they often ended-up with poor quality toilets not meeting expectations.

Remaining hurdles and bottlenecks

- **Ensuring long-term usage:** out of 100,000 toilets built by Gramalaya, only 70% are still in use. A primary challenge to long-term usage is durability. Most derelict toilets are old, overflowing single-pit models. Gramalaya expects to improve usage rates by promoting twin-pit and eco-san models instead. Another challenge has to do with

Gramalaya’s exit strategy: after 1-2 years of monitoring and intervention, Gramalaya leaves the market and AWASH committees take over the monitoring of sanitation activities in the village; it will be a key challenge to ensure that these community-based structures remain active after a few years without support or monitoring.

- **Coordinating with government subsidy schemes:** distribution of new subsidies for toilet construction may be implemented in the coming years by the state administration of Tamil Nadu. This could help Gramalaya reach a higher proportion of households in each village. Since subsidies would only be granted a minimum of 3 months after construction, loans from Guardian would still be required but for a shorter period of time, which could undermine the profitability of its lending activities.
- **Finding sustainable growth channels for Gramalaya as an NGO:** Contrary to Guardian, Gramalaya still relies mainly on grant funding, which limits its ability to grow. Guardian’s profits could not be used to finance Gramalaya under the current regulatory framework.
- **Guardian’s challenges:** Guardian is facing its own challenges, especially to reduce its operating costs and attract commercial funding. And as Guardian’s growth increases much faster than Gramalaya’s, it will need to extend its activities beyond the areas where the latter is operating. The MFI will need to prove its ability to be sustainable without strong grant-funded support in the demand creation phase, or find new partners to scale up.

Contact information

Mr S. Damodaran, Founder and Director, Gramalaya:
sdamodaran63@gmail.com

Appendix

Sources: Interviews with Mr Damodaran, Founder and Director, Gramalaya (December 2013), Mr Elangovan, Executive Director, Gramalaya (December 2013); Mrs Geetha, Advisor, Gramalaya (December 2013); and Mr Sathianathan, Chief Executive Officer, Guardian (December 2013);

www.gramalaya.in; www.guardianmfi.org;
www.acumen.org/investment/guardian

Andrew Barenberg, Microfinance for water and sanitation:
A case study from Tiruchirappalli, India, 2009

Sophie Trémolet, Evaluating the potential of microfinance
for sanitation in India, 2013

Market Led Approach to Rural Sanitation, Monitor Inclusive
Markets, 2013

Exchange rate: 1 USD = 60 INR