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SANITATION

# This unmanned self-cleaning e-toilet is here to take on India's greatest worry – open defecation

BINJAL SHAH, 18 APRIL 2016

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Five years ago, a strictly mundane incident in a school in Thiruvananthapuram, south India, blew the lid off a disturbing trend that had the potential to go down in the country's societal history. A Class-VIII student, Geetha, was hospitalised with a severe urinary infection. The doctors examined Geetha and found that she had been avoiding drinking water for long hours while at school, so that she didn't have to use the toilet there. Geetha shared that she used to hold the urge to relieve herself throughout the day because of the cringe-worthy state of the bathrooms; and she had been doing so for years.



## 626 million Geethas

There are millions of Geethas who are bearing with this painful situation. It is more common than one would think for women to go without using the toilet for more than eight hours a day, thus resulting in frequent urinary tract infections (UTIs). Doctors have raised concerns of kidney diseases and UTIs getting more common among people who avoid drinking water in fear of using the toilets.

One need not conjure up the scene of a rural hinterland to picture this crisis in action – there are instances of abhorrent sanitation facilities much closer to home. How many of you are hot on the idea of using a public toilet, a Sulabh Shouchalay, while you are outdoors? For starters, of the existing 10 lakh public toilet installations in India, only 10,000 are functional. And we all know the state of a typical functional public toilet in the country.

Most corporate conglomerates think that contributing to public sanitation is not their cup of tea. Especially in India, where the mere mention of sanitation is taboo, it is difficult to find any major developments or innovation in this sector, let alone a company that deals exclusively in the making and marketing of toilets. Health Ministry statistics indicate that over 626 million people still defecate in the open. Juvenile death rate owing to lack of sanitation is still high in India.

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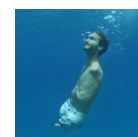
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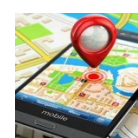
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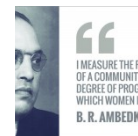
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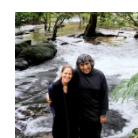
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Flush the taboo

Thiruvananthapuram-based **Eram Scientific** decided to challenge the current issues surrounding sanitation. “Our research during the past eight years in the sanitation sector showed us how it is the most neglected sector, without any technological innovation.” A group of individuals with ICT and e-governance experience, led by Siddeek Ahmed, set out to revamp this sector, by creating an e-toilet, to dignify the sector and grant it a new image.

“Sanitation is a deeply complex challenge where cultural values, social mores, political priorities, and development objectives are tangled together. Innovative technology by itself is unlikely to be enough to instil lasting change. To be a true success, innovative toilets will have to effectively engage with the complex dynamics of the society. We look forward to that day,” says Anvar Sadath, CEO of Eram Scientific.

E-toilet was conceived with an aim to address the issues associated with traditional public toilets– namely, non availability of water, power, manpower, lack of maintenance and sustainability. The serious dearth of personnel was another important pain-point, often hindering sustained service to the users. Moreover, public toilets that are constructed with government funds are closed within a short time, due to lack of a sustainable income model.

Unmanned sanitation satellite

Eram Scientific launched e-Lite 14, the world’s cheapest solar-powered unmanned e-toilet for schools, in October, 2014. It incorporates a full-cycle approach in sustainable sanitation, by integrating electronics, mechanical, web-mobile technologies, thereby controlling entry, usage, cleaning, exit, and remote monitoring capabilities with multiple revenue options. The insertion of a coin opens the door of the e-toilet for the user, switches on a light—thus saving energy—and even directs the person with audio commands. The toilets are programmed to flush 1.5 litres of water after three minutes of usage, or 4.5 litres if usage is longer. It can also be programmed to clean the platform with a complete wash-down after every five or 10 persons use the toilet. Eram Scientific launched the first-ever e-toilet mobile app. Gunning for a completely Make-In-India product, it has chosen only indigenously developed components.

The company worked closely with Marico Innovation Foundation (MIF) through its Social Innovation Acceleration Programme. MIF mobilised students of XLRI Jamshedpur to survey users, potential customers and prepare documentation for the sanitation project and brainstorm on how it could be improved. “MIF’s intervention helped us to find innovative ways to market the technology and understand the feel of the market,” says Anvar.

Eram in numbers

As a strong team of over 150, Eram has a service network across 19 States in India and fabrication facilities in three States. The basic model of the toilet costs Rs 2 lakh, while the advanced stainless steel version costs Rs4-5 lakh. After installation, the operation costs are covered through the small usage charge and the income derived from the advertisement area on its interior and exterior walls.

The Eram team has, so far, managed to construct 1600 such toilets in 19 States of India, and 400 sewage treatment plants, and has been recognised with over 40 awards globally.

But the foremost challenge was making people understand the e-toilet. “Since the toilet was completely automated, technology phobia was evident in the early stages of the initiative. But gradually, as e-toilet received much media hype and government support, the initial reluctance has turned to curiosity and acceptance,” he says.

Collaborating with Tata Consulatncy Services, Eram provided over 600 e-Lite 14 models in government schools in Andhra Pradesh and Tamil Nadu, as part of the Swachh Bharat Abhiyan initiative, and even received the Safaigiri Toilet Titan Award 2015 from Prime Minister Narendra Modi last October.

Pats on the back

Eram is now developing e-toilets that are self-sustainable, nutrient, energy, and water-recovering and which meet international standards.It is collaborating with grantees of the



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Bill and Melinda Gates Foundation (BMGF) for recovering water, energy, fertilizers through suitable sewage management solutions. It is expected that these projects would ultimately make e-toilets self-sufficient in water and energy requirements.

Eram Scientific is also collaborating with California Institute of Technology (CALTECH) in Ahmedabad, Gujarat; Duke University and University of South Florida (USF) at IIT Madras

promoted by BIRAC, Government of India, which is nearing approval and initiation.

The BMGF also endorses Eram’s collaboration with IDEO.org for improvisation on design and user experience. “We plan to conduct further research into e-toilet to make it 100 percent touch-less for use. Our ultimate vision is to develop e-toilets that are self-sustainable, creating their own energy and water for their functioning and also powering the external environment,” reveals Anvar.

In addition to these, Eram has also been successful in integrating environment-friendly sewage treatment units, in association with established national and international players as well as DRDO and ISEA, Italy. Its long-term vision is to build a sustainable and well-maintained toilet and public infrastructure network across the country that is affordable and accessible to the common man.

Eram has attracted investments of Rs 20 crore from stakeholders, and is supported by Siddeek and the Eram Group.

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