

E-TOILET, ERAM SCIENTIFIC SOLUTIONS (ESS) PVT. LTD.

- **Background**

Public sanitation for all has remained the most difficult, elusive challenge that we have not been able to solve yet. The inherent huge costs, absence of dependable labour, unattractive job profile, unpleasantness of wastes and the ever increasing population has had its share in making sanitation a highly neglected and challenging aspect. Eram Scientific has introduced the revolutionary concept of re-engineered toilets by incorporating state-of-the-art technologies to address the challenges associated with sanitation in the society. They are a technology R&D company, positioned in a niche market for developing utility electronics, alternative energy, embedded systems, etc. Eram Scientific Solutions (ESS) has come up with the county's first electronic public toilet named eToilets (Patent Pending) to catalyse better hygiene and sanitation practices.

- **Location, Date**

19 states in India, 2010

- **Areas**

Urban

- **Stage/Scale**

- The pilot was initiated in a government girls' school in Ernakulum, Kerala
- Prototyping and scaling of operations is ongoing

- **Objective of the assignment**

The team targets open defecation and tries to give sustainable solution to the problem. While doing so, they keep in mind the current situation in countries like India and their objective is to come up with the best possible solution at the least cost to the users, while creating a sustainable business model.

- **What was done**

eToilet is a revenue generating sanitation model designed and engineered to suit the Indian cities and urban locations. This innovation involves unmanned operations and thus ensures easy and continual operation while minimizing maintenance costs. The toilets are built of stainless steel or mild steel enclosures and have electronic systems for enhancing user experience. The important features include automated access control systems, sensor enabled water minimization and self-washing & floor wash mechanisms. The interiors provide a high



ambience in terms of look, feel and functionality. The LED lights glow only when a person enters. The toilets have ample natural ventilation and offers privacy and safety.

These sleek and modular, unmanned self-cleaning eToilets have simple user interfaces. The integrated a comprehensive maintenance plan ensures that the eToilets are clean and hygienic for every user. The eToilet has a facility of pre-flushing before entering, automatic flushing once usage is done, in-built water tanks, sensors for water and electricity conservation and automatic platform cleaning and power back-up with coin operated entry. Keeping in mind individual needs, the toilets are programmed to flush 1.5 litres of water after three minutes of usage or 4.5 litres if usage is longer. The performance status of the units can also be monitored via web using GPRS connectivity of the units.

● **Impact**

The world's most economically priced solar powered, self-cleaning eToilet with inbuilt solar panel and metallic platform is set to bridge India's ever growing sanitation gap.

- Eram Scientific has installed over 650 e-toilets in more than 15 states covering whole of Kerala, Tamil Nadu, Karnataka, New Delhi, Andhra Pradesh, Himachal Pradesh, Maharashtra, and Haryana. There are collaborations with different Foundations for further Research & Development on e- toilets.
- Recently, the e-toilet project has been selected by the Marico Innovation Foundation for its acceleration programme, as one among the ventures that could make significant impact on the development processes. ESS envisions a future to water and sanitation where waste water treatment industry and public sanitation facilities would stand for the principles of recycle, recover and reuse.

Other Impacts:

- Till date, 368 eToilet units have been set up across India
- Another 80 units of eToilet are in the pipeline in Kerala
- 25 eToilet units are to be set up in Vishakhapatnam
- 131 units have been set up in 37 government schools across Ernakulum, Kerala

● **Challenges and Issues**

Eram Scientific is focused on addressing the critical challenge of maintaining clean and hygienic toilets using appropriate technology while conserving natural resources, which is a difficult task in itself as both the activities are kind of opposites to each other. While doing so, Eram had to be self-sufficient in terms of finances in the initial stages of implementation. With a sound business plan and the urge to serve the society, they grabbed a grant of significant amount from Bill & Melinda Gates foundation. It is the only company from not only from India but also Asia and one among the four institutions worldwide to win the grant this year.

● **Innovation**

The units incorporate a full-cycle approach in sustainable sanitation by integrating electrical, mechanical and web-mobile technologies. They offer custom-sized Stainless Steel enclosures that are extremely durable, corrosion-resistant and are unswerving in the long run. The various product variants include eToilet General Public Model, Civic/School Model, E-Lite 14 for schools and She Toilet. The model called e-Lite14 eToilet for schools has automated self-

cleaning and washing mechanisms and automatic floor wash system, automatic ceiling light, in-built sensors to conserve electricity and water and an overhead water tank.

Eram Scientific also launched a new eToilet Mobile App for electronic Toilets in India, as part of establishing a new connected eToilet Infrastructure (CeTI). The eToilet App is freely downloadable for Android users from the Google Play Store by typing the keyword “etoilets”. Its unique features include locating the nearest eToilets via Map & Address Listings, understanding the mode of operations, mode of access and information on facilities such as napkin vending machine, incinerator etc., and sharing feedback on the user experience of eToilet along with image uploading. Through this App, the public can also suggest new places for eToilets, if it's not available there.

• **Lessons learnt**

- Eram believes that there is always a scope of improvement. Despite the huge success they have got in creating the modern toilets, Eram is also working with three international institutions: California Institute of Technology, Duke University, University of South Florida, to develop better and sustainable waste water treatment/ usage facility, energy generation from faecal waste and solar panels attached to the units in order to run the automated systems.
- Lack of a plan for meeting maintenance funds for eToilets being installed with CSR, others which focus only on capex. This affects the sustainability of the model. Eram is to an extent trying to meet this with advertisement revenue in which the side panels and front panels can be used for advertisement display.

• **Financials**

The Bill & Melinda Gates Foundation has awarded an INR 3 crores 'Reinvent the Toilet Challenge' grant to Eram Scientific Solutions based here.

• **Economic sustainability/Revenue Model**

eToilets have multiple revenue options which ensures sustainability of operations. Eram Scientific carries out projects involving large-scale deployment of eToilets on a turn-key basis. Eram Scientific undertakes supply, installations, commissioning and maintenance of eToilets. It has a robust customer service mechanism to ensure that the eToilets are maintained clean and hygienic for constant public use, beyond the installation stage. It also envisages innovative revenue streams by way of advertisement income and user charges, so as to make eToilets self-sustaining in the long run.

eToilet works on sustainable revenue model of user-fee collection and revenue generated through advertisements. This amount collected can be used for maintenance and cleaning of the units. Also the units have the capability of adopting high-tech advertisement displays such as revolving ads which adds to its aesthetics and sustainability. The entrepreneurial model can generate employment opportunities. By taking bank loans and installing and managing the unit in their region, unemployed youth or small entrepreneurs can take benefit of this opportunity. The loan repayment can be ensured through the advertisement and collection revenue.

- **Implementer Contact Persons**

- **Bincy Baby**
Head, Convergence Business Group, Eram

- **Sources and References**

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