

BIO-TOILETS, BHARAT HEAVY ELECTRICALS LIMITED (BHEL)

- **Background**

The Ganga River originates in the Himalayan region through melting glaciers and traverses more than 2500 km through central Indian states such as Uttar Pradesh, Bihar and West Bengal before entering Bangladesh. On its journey it is joined by Ramganga, Yamuna, Sai, Gomti, Ghaghara, Sone, Gandak, Kosi and Damodar along the way, along with many other smaller rivers.



In the plains this river is polluted by effluents from the numerous factories that line its banks, open defecation, human dead bodies released into the water for religious reasons, and sewer waste released directly into the river. The polluted water not just poses grave danger to human health but to the environment at large as well. So cleaning up the river was a major poll promise for the current central government. In addition, The Ganga holds a revered place in the Hindu mythology and hence cleaning it has been on agenda of many governments in the past as well.

To control the release of harmful human sewerage into river water through faeces and urine, BHEL planned to set up **bio-digester toilets** along the river in 25 different clusters. BHEL is collaborating with DRDO for bio-digester technology and with FICCI for execution of this project. These clusters would be set up between the cities of Haridwar and Rishikesh on the banks of the River. The Bio-digester toilet is a pollution free way of cleaning sewerage as human faeces gets decomposed by the use of the bacteria. The only by-products of are water and methane gas can be used for irrigation and bio-fuel respectively.

- **Location, Date**

Haridwar and Rishikesh, 2015

- **Areas**

Rural

- **Stage/Scale**

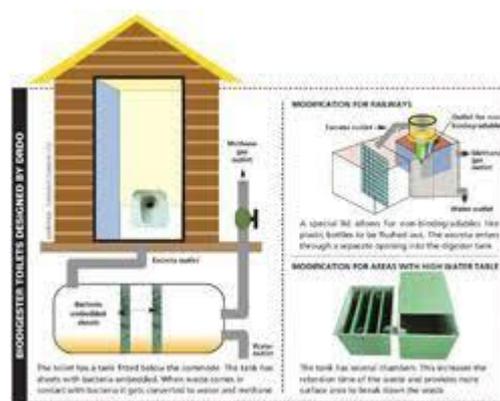
The bio-digester toilets are to be set up in 25 clusters along the banks of the riven between Haridwar and Rishikesh cities.

- **Objective of the assignment**

Installing bio-digester technology toilets will help recycling waste, including solid waste which is a major area of focus for our country. By recycling and treating the human waste, these bio toilet clusters will help reduce the river pollution to a large extent.

• What was done

- Taken as an initiative by the BHEL under its CSR initiatives, this project was planned in partnership with the DRDO and the FICCI. DRDO is providing the technology for bio-digester toilets and FICCI is executing this project for BHEL. To check the viability of the idea, it was started as a pilot plant at two bio-digester toilets, and depending on the success it was planned it would be taken to other cities as well. The toilets would also have clean drinking facility for the villagers.



- For starting the construction of the project, a MoU was signed by BHEL-Haridwar unit and FICCI in a function held at BHEL-Haridwar on 02.02.2017. Following this MoU agreements, two pilot toilet clusters were to be constructed along the banks.
- Each cluster will have 3 toilets and 3 urinals for men, and 5 toilets for women. The bio-digester toilet technology is designed and developed by the DRDO. These toilets come with special bacteria in their tanks that digest the faecal matter, leaving no odour or visible faecal matter. This project is to be implemented over a period of two years with a cost of approximately 4.65 crore on the 25 bio-digester toilets clusters.

• Impact

- The project is still in the plot phase and the real impact that it has upon the amount of human wastage that is treated and is prohibited from being released into the water system can only be estimated once the twenty five toilet clusters are completely built along the banks of the river.
- It has been able to help provide clean health and sanitation for a few of the users, however the plan to build along only the banks will not solve problem of river pollution through sewer flow from other places and toilets within the city away from banks into the rivers. This remains the major source of pollution.

• Challenges and Issues

- The key challenge in execution of this project is land access for constructing the toilet clusters. Hence BHEL has teamed up with FICCI to execute the construction plan.
- Other issue that is a major drawback of this initiative is the limited scope of the project to only construct of these toilets clusters along the banks of the river. To solve the

• Innovation

The innovation in this project is the bio-digester toilets that were developed by DRDO for railways and remote defence outpost with little water and sanitation facilities. These bio-toilets come with specially designed bacteria which digest the human faeces and sewerage waste. The salient advantages of such a system are as follows:

- No bad smell in toilets from tanks
- Fecal matter in the tank not visible
- No infestation of cockroaches and flies
- No clogging of digester
- Effluent is free from off odour and solid waste

- Reduction in pathogens by 99%
- Reduction in organic matter by 99%
- No maintenance required

- **Lessons learnt**

The project is limited in the scope of its execution to a few location on the banks of the river. Hence it is too soon to assess the impact of the project on solving the Ganga pollution. Having said that, the biotoilet system is not a replacement for systematic civic planning and public health and sanitation system. The large amount of sewage that is released into the river is still not treated. For a clean river, these systematic problems need to be solved.

- **Financials**

The project is being financed through the Corporate Social Responsibility expenditure of Bharat Heavy Electronics Limited (BHEL), and mainly implemented by the Haridwar unit of BHEL. To be implemented over a period of two years, and with a planned expenditure of 4.65cr in the initial two years.

- **Economic sustainability/Revenue Model**

- The model is entirely based on the BHEL buying the bio toilets from DRDO and installing them along the banks of the river Ganga. Long term viability of the toilet cluster is still suspect as Indians are still not adapted to using a toilet system that does not flush clean.
- This will not generate any revenue for BHEL and is entirely being done on a pro bono basis.

- **Implementer Contact Persons**

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- **Sources and References**

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