

**ANNUAL REPORT OF
THE FOUNDATION FOR GREENTECH ENVIRONMENTAL SYSTEMS
(YEAR 2005 – 2006)**

The Foundation for Greentech Environmental Systems is going to complete three years in October 2006. During the first two years there was limited activity and therefore it experienced a rather soft launch. However, during last one year there has been a significant activity which builds up the momentum to work on the mission. This first annual report in essence presents the work of last three years.

AN UNUSUAL FIRST RESEARCH STUDY

In the first year itself the Foundation was awarded a research study by the Japan Bank for International Conference (JBIC) on a rather unusual subject of 'Promotion on environment friendly crematoria'. This assignment was anchored in the context of the then on-going Yamuna Action Plan of the Ministry of Environment and Forest (MoEF). During YAP-I a large number of the so called 'environment friendly' crematoria were set up in major towns along the river to control the practice of disposal of dead bodies in to the river and also to conserve wood resources, however they have not been accepted by the society at large due to a number of socio-religious factors. The study cut across religion, technology, social aspects (customs and traditions) and environment protection and found that the project implementation was devoid of subtleness required to take care of the sensibilities of the target communities. It was found to be a purely mechanical intervention and did not establish relationships with local stakeholders, business community etc. which are exhorted in the scriptures to discharge their social obligation towards the poor section of the society. Moreover, the structures were neither technically robust nor have aesthetic appearance. While a set of recommendations were provided to improve the system but on the whole the Foundation came to the conclusion that state sponsored initiatives in such a sensitive social matter are not advised, instead they should be carried out by facilitating and strengthening the civil society organisations.

PARTICIPATION IN A JBIC REVIEW MISSION

Subsequent to above described research assignment, we were recommended by the JBIC, Japan to team up with a review mission of the Hosei University of Japan for the assessment of the low cost sanitation component of the YAP-I. The Foundation was engaged to carry out survey of around 200 beneficiary families in Delhi and Agra, analyse the responses and provided background information to the mission. This assignment was completed successfully and to the satisfaction of the Mission Leader.

THE GREEN EARTH MACHINE

During last three years we have been working on improving the prototype 'Home Composter' which we call as the 'Green Earth Machine'. We have been able to prepare plastic prototypes which are robust, attractive and low cost. This was possible with the cooperation and help we received from one of the leading plastic moulding industries M/s Sheetal Plastics, Delhi. We have been trying to get the support of the Delhi Government for wide scale promotion of this device for home composting. We have submitted proposals to the Municipal Corporation of Delhi, New Delhi Municipal Council and to the Ministry of Urban Development, however as yet we have not been successful in getting a favorable response.



In this regard, we are now working on developing publicity material and bring out a guide booklet. A help line and a website would go along with it. We hope to get some corporate sponsorship for this initiative and are in the process of contacting relevant agencies.

THE DEVELOPMENT MARKETPLACE 2006

During the course of a case study that I recently completed for the Water and Sanitation Program-South Asia (of the World Bank) on solid waste treatment technology options, I came across a set of interesting set ups in Mumbai. These small plants are based on BARC's Nisargruna technology which convert organic solid waste into biogas and manure. Based on this technology and an innovative institutional model for creating livelihood opportunity for micro-enterprises, we submitted a proposal to the World Bank under its global competition called 'The Development Marketplace 2006'. Our proposal entitled 'Decentralised bio-energy via organic waste treatment' was short listed for the final round from among 2500 entries. The Foundation was invited for participation in the final round which was held in Washington DC during May 8-9, 2006. Mr. Asit Nema, the General Secretary participated in the event on behalf of the Foundation. Unfortunately the proposal did not appear in the list of final winners. Nonetheless, this visit gave us an opportunity to network with the development community from across the world working in the areas of water and sanitation. This overall experience also boosted our confidence to take the process forward and continue to work on the mission of the Foundation, which is to bring green technologies for poverty alleviation. We would explore other avenues for funding for this project as well as for other similar ideas.



LICENSE FROM BARC FOR NISARGRUNA TECHNOLOGY

The Foundation has obtained a license for promotion of 'Nisargruna' technology for treating organic solid waste and converting it into biogas and manure. This enables us to now market a physical system to various agencies who are confronted with the problem of safe treatment and disposal of solid waste. The Foundation will work on the model which was proposed for the Development Marketplace wherein micro-enterprises will be empowered to own, operate and maintain such plants and thereby generate sustainable livelihood for their families. This is one fine example of application of green technology for poverty alleviation which we hope to build up on.



FAIRFAX COUNTY SOLID WASTE LANDFILL SITE

The opportunity of being in Washington DC was utilized to visit an interesting project location in the nearby county of Fairfax. This is a solid waste landfill site which has been in operation for last 20 years and is now being capped. The County plans to convert the landscaped location into a park/protected forest. The landfill gas is being harnessed through a network of 300 gas wells and about 6 MW of green bio-energy is being produced. This energy is being fed to the local grid. The project also showcases an interesting institutional model for public private partnership wherein the operator has made capital investment in power plant and is able to sell the electricity to the utility while the County has offered all

the back up support and an enabling environment without asking for any royalty or biogas charges.

NORTH LONDON ARTIFICIAL RECHARGE SYSTEM (NLARS)

Thames Water Authority (TWA) has implemented an interesting ground water recharge system wherein about 80 million litres of potable water is injected daily into the deep aquifer in the surplus season. This is done to build up the reserves and meet drinking water demand in scarcity / emergency conditions. A similar solution was recommended by me to the World Bank during one of the recent assignments for Delhi. In this context, the stop over at London was utilised to visit TWA and the project site to familiarize and explore possibility to have a pilot in Delhi. This is a robust and appropriately engineered solution vis-à-vis the rhetoric of rainwater harvesting at household level pitched by a large number NGOs in India. It is being increasingly realized that these small scale solutions have high unit cost, tend to get neglected and soon become dysfunctional as has been experienced across the country.

We hope to build up on this and explore possibilities of introducing this type of solution in different parts of the country. To start with we will attempt to disseminate the technology to a wider audience through suitable publication.

SEWAGE TREATMENT IN RURAL DELHI

Delhi Jal Board is working on a plan for wastewater management from over 200 semi-urban villages/settlements in the National Capital Territory of Delhi. In this regard, the Lead consulting agency M/s Consulting Engineering Services has awarded a small consulting assignment to the Foundation for developing strategic options for wastewater treatment which involve low life cycle costs and are sustainable. Based on a field survey and background information available in house, a draft report was prepared in a very short time. The report has recommended a combination of solutions involving integration with the citywide / zonal network and treatment plants as well as decentralized wastewater treatment based on innovative approaches.

REPRESENTATION TO JBIC AND NRCD

Japan Bank for International Cooperation has been providing loan to the Government of India for the implementation of the Yamuna Action Plan-II. The Plan is being implemented by the National River Conservation Directorate of the Ministry of Environment and Forest. In this context, the Foundation for Greentech Environmental Systems under the guidance of one of our esteemed members Dr. Vinod Tare of IIT Kanpur had carried out a case study of sewage treatment plants (STP) which were constructed during last two decades. During the course of this study we learned about severe limitations of a particular technology viz. UASB (Upflow Anaerobic Sludge Blanket) which has been used extensively for sewage treatment. Apparently this has not delivered the desired results because of several fundamental technical flaws in the process. The Foundation documented these limitations and presented in national and international conferences. On this issue we made representations to both the agencies in the context of the proposed STP projects in Varanasi and Kanpur against further adoption of the UASB technology. We have been given to understand that NRCD has taken note of our findings and is considering reassessment of the proposals. This has been possible as a result of the meticulous insight provided by our Prof. Dr. Tare who has been monitoring these plants in Kanpur since 1990.

COMPOSTING AT VRINDAVAN

ISKCON Vrindavan maintains a large dairy and agriculture farm near its temple. It has been facing the problem of disposal of waste from the dairy as well as from the temple and its own various kitchens. The Foundation extended technical support in initiating a composting programme at the agriculture farm which could treat waste from all the sources.

PARTICIPATION IN CONFERENCES AND WORKSHOPS

The General Secretary of the Foundation Green-Ensys was invited in the following national/international conferences for making presentation of our scientific papers/publications.

- **Sustainable options for on-site sanitation in Rural Maharashtra**, Proceedings of, 9th International conference on Ecosan India, Mumbai, November, 2005. pp 299-303. We were also invited by the Indian Water Works Association's Ahmedabad Chapter to present the same paper in their Annual Convention in March 2006.
- **Sustainability of achieving high quality norms for treated wastewater**, Municipalika 2005, New Delhi, April 2005.
- **Sewage treatment through UASB technology – expectations and reality**, 22nd National convention on Environmental Engineering, Institution of Public Health Engineering and IT-BHU, Varanasi, April 2006. This paper was also included in the proceedings of the International Conference on biogas technologies, Beijing, China, October, 2005. We were also invited to present this paper by WHO South East Asia Regional Office, New Delhi and by the Indian Water Works Association, Ahmedabad Chapter
- **Past experience with municipal solid waste treatment and disposal projects and lessons learnt**, National Workshop on Integrated Solid Waste Management : Scope and Dynamics of Regional Approaches, Organised by Water and Sanitation Program-South Asia and ASCI, Hyderabad, February 2006.
- During the last year we also participation in an **Alumni refresher course on Ecological Sanitation** which was organized by the UNESCO-IHE, Delft, The Netherlands at the Hohai University, Nanjing, China, September, 2006.

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