

Title	ECOLOGICAL SANITATION IN INDIA
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Short CV for Introduction Purposes (100 words max)	<p>PROFESSIONAL EXPERIENCE</p> <p>Present Assignment</p> <p>Hony. Vice President – Sulabh International Social Service Organisation an internationally famed NGO involved in Sanitation, Environment Protection and related areas. Work area includes development of projects, interacting with communities, government bodies and representatives of different International Organisations. Director, Sulabh International Academy of Environmental Sanitation.</p> <p>Major Events</p> <p>Conference and Seminars: Co-organised Fourth Meeting of the “Millennium Development Goal Committee” of UN Task Force on Water and Sanitation from 2-5th March 2004. Participated in deliberations of the Millennium Project Task Force on Water and Sanitation NY, USA in October 2003. Participated in deliberations of Millennium Project Task Force as member on Water and Sanitation, Nairobi, South Africa in May 2003. Participated in UN CSD-12, NY April 14-30, 2004. Participated in UN CSD-13, NY April 11-22, 2005. Was an expert panellist for the session “Unheard Voices for Women; Water, Sanitation and Human Settlements”, chaired by Mrs. Nane Annan.</p> <p>MEMBER</p> <p>UN-Task Force Millennium Development Goal Committee-Representative of Partner Institution. Christian Children’s Fund-India, Member Advisory Council. International Centre for Women & Child-a leading women’s organization.</p> <p>PROFESSIONAL QUALIFICATION: Short course on Enhancing Managerial Capability – Indian Institute of Management, Lucknow.</p> <p>EDUCATIONAL QUALIFICATION: Masters in English from Patna University in 1985.</p>

Photograph attached (jpg)



INTRODUCTION

The Environment has always been revered in India, be it worshipping of trees or attributing Godly characteristics and observing fasting and feasting for the Earth, Sun, Moon, and natural phenomena like rainfall etc. In observance with the Vedic traditions, most Indians in rural and peri-urban areas still follow the age-old tradition of covering the night soil with sand and leaves to aid the process of natural decomposition.

Mahatma Gandhi famously urged his followers to dispose their faeces properly by following the principle of – “TATTI PAR MATTI” literally meaning cover human excreta with soil. The future of sanitation, especially excreta management is going to undergo a paradigm shift from the ‘FLUSH’ systems to systems that ‘RECYCLE’ human waste, in consonance with the WASTE TO WEALTH approach.

Keeping in view the acute crisis regarding shortage of water supply, it is imperative that this shift is accomplished in as short a time period as possible. Amongst the various sanitation technologies, ECOSAN (Ecological Sanitation) is the most significant and visible exponent of utilizing a major portion of the resources present in excreta after suitable sanitization. Essential prerequisites of the technology are separation of urine (which contains most of the nutrients) from faeces (which contain most of the pathogens) thereby minimizing the difficulty in storage, handling, treatment and reuse, and space to collect urine and faeces to be recycled after sanitization.

WATER & SANITATION – The Big Issues:

The 1972, Stockholm Declaration on Human Environment recognizes the link between human rights and environmental protection stating that, “Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being.” Sustainable development has become a key obligation and aspiration in the International community’s agreed upon goal for improving human well-being and environment management. Equitable social development that recognizes empowering the poor to utilize environmental resources sustainably is a necessary foundation for sustainable development.

The benefits of environmental protection, such as clean water and air, suitable sanitation facilities should be available to all, but in reality a disproportionate burden of protecting the environment is borne by the poor people, especially the urban poor.

This is where Sulabh steps in, with a self-imposed goal of: “Providing environmental sanitation to the unserved, underserved, impoverished and destitute populace of urban and rural India to sustain ecosystem and human health and well being.”

The survival and well being of a nation depends upon sustainable development, and for this, water supply and sanitation are essential requirements. For the poor people residing in urban slums and rural areas, bereft of adequate sanitation and water supply, to achieve a better economic growth rate and higher productivity, priority has to be given

to the health of these people, for which provision of utilities like water supply and sanitation is necessary. The benefits of safe water are limited without sanitation. Invariably it is the poor who suffer the most in the absence of safe water and sanitation. The debilitating effects of unsanitary living conditions lower the productive potential of the very people who can least afford it. The enormity of the problem can be gauged from the fact that more than 2.6¹ billion people (about half of the world's population) are without basic sanitation facilities. In India the situation is no different. More than 650 million people either defecate in the open or use unsanitary bucket/ dry privies cleaned manually by the Scavengers (Scavenger is the term used to denote the community which cleans human excreta manually from service/ dry latrines.)

The health implications of this state of affairs are inexcusable and the situation in urban slums is all the more appalling.

In the Johannesburg Earth Summit it has been agreed to halve, by the year 2015 the proportion of people who do not have access to basic sanitation, which would include action at all levels to develop and implement efficient household sanitation systems, improve sanitation in public institutions, especially schools, promote affordable and socially and culturally acceptable technologies and practices, promote safe hygiene practices and integrate sanitation into water resources management strategies.

Sanitation is perhaps the only target of the MDG that directly or indirectly helps achieve other goals viz. Eradicate extreme poverty and hunger, Achieve universal primary education, Improve maternal health, Promote gender equality and empower women, and Combat HIV/AIDS, malaria and other diseases

ECOSANITATION – The Scene in India

The endeavour to view waste (specially human waste) as a resource and recycle it to use in agriculture is not new. In China, using faeces in fields as a fertilizer is an age-old practice. Similarly in India, as probably in other countries, cow dung and dung of other domestic animals has been traditionally used to enrich the soil prior to sowing of seeds.

The Ecological Sanitation approach of 'SANITIZE & RECYCLE' is commendable in its scientific approach and the relative measure of success that it has achieved as an alternative to the costly sewage treatment system for management of human waste. The shift from the 'FLUSH' technologies for management of excreta to those that recycle human excreta like ecosan has been fraught with many downsides.

Although implemented successfully in many countries including India (in Kerala, Bangalore and Ladakh) the technology is still to become the primary choice of users in places where water is used for anal cleansing (Washers).

The double-vault design enables washers to keep urine and anal-cleansing water separate from faeces but the cultural taboo of shifting from the squatting position for anal cleansing and also reluctance to use urine directly in the fields/ kitchen garden are a constraint hindering the wide acceptability of ECOSAN Toilets in India.

In India people use water for ablution. Available design of ecological sanitation toilet is suitable for those where people don't use water for cleaning or it is least used. Urine can be separately collected and used as plant nutrient. Since excreta are stored in a closed chamber, due to higher water content (in case of use of water), it is difficult to dehydrate it. Therefore, it requires more scientific / technical inputs to make the system suitable to such areas where water is used for ablution. Further scientific studies are required to check the loss of nutrients (particularly nitrogen) during storage of nitrogen.

There is still psychological / cultural taboo for the reuse of urine even after knowing the fact that it is a good source of plant nutrients.

Low sanitation coverage in India and other developing countries is primarily due to insufficient motivation/awareness of people and a lack of affordable sanitation technology. Most of these people are from lower socio-economic groups and are not aware of the health and environmental benefits of sanitation. It is still not seen as a high priority, resulting in absence of people's participation. The lack of choice of toilet design, area-specific technologies, inadequate supporting delivery systems and absence of trained masons; skilled workers and technical manpower are the factors for low coverage. Additionally, by tradition, Indian society and culture values personal hygiene, but gives little importance to a clean and healthy community environment. Sanitation is regarded as a matter of individual initiative and not as a collective obligation of the community. In this socio-cultural background, environmental sanitation has not been given required priority.

For decades, the sanitation programmes in developing countries like India, has been conceptualized as supply-driven, government promoted and government controlled programme. It needs to be converted into a demand-driven, people-centered and community-led programme.

Sulabh Sanitation Technologies

Improvement of sanitation through cost effective and socio-culturally acceptable technology is the basic objective of Sulabh. The technology of two-pit pour flush toilet (popularly known as Sulabh Toilet) developed by Sulabh is suitable for household waste management. For the management of wastes from the public toilets, Sulabh has developed a system for the complete recycling and reuse of human excreta that is simple, convenient, affordable and fulfils all the criteria of ecological sanitation. In the following paragraphs both the technologies have been discussed².

Sulabh Toilet (Twin-Pit Pour-flush Water-seal Toilet) - Sulabh Shauchalaya (twin pit pour flush water seal toilet) consists of a squatting pan with a steep slope 25° to 30° and a trap with 20 mm water seal set on the floor and two leaching pits used alternately. The excreta from the pan is flushed by pouring water using a small container of 1.5 to 2 litres capacity. When one pit is full, the flow of excreta is diverted to the second pit. In about 2 years, the contents of the pit already filled get biodegraded and become rich organic humus. The pit can then be conveniently emptied and is ready to be put back into use. The sludge of the pit is a good manure for use in horticulture/agriculture as fertiliser and soil conditioner. The cost of emptying the pit can be met partially from the cost of manure available. Sulabh's two-pit pour-flush compost toilets are also a form of ecological sanitation - as the dried human excreta in the compost pit is utilized in the fields as a fertilizer. Sulabh has so far constructed over 1.2 million such household units in India.

Sulabh Community toilets: Provision of toilet complexes at public places and in slums on 'PAY AND USE' basis is a landmark achievement of Sulabh in the field of community health & hygiene and environmental sanitation. The concept of implementation of public

toilets and its maintenance on 'PAY AND USE' basis, started by Sulabh in 1974, has since become very popular throughout the country. Sulabh complexes are also provided with bath with shower facility, cloak-rooms, telephone and primary healthcare service. These complexes have been widely welcomed both by the people and the authorities due to their cleanliness and good management. Sulabh has constructed/ maintained over 6,000 such toilet complexes in different parts of the country, where maintenance is provided round the clock. These complexes are located at public places like bus stand, hospitals, markets etc. and slums.

Biogas plant and SET System: Sulabh has developed a simple and convenient technology for the complete recycling and reuse of human excreta from public toilets. Biogas is produced from human excreta in an underground digester without manual handling, which is being used for cooking, lighting and even for electricity generation at some places. Biogas digester effluent has a good percentage of plant nutrients but due to its high Biochemical Oxygen Demand (BOD), colour, odour and pathogen contents, an affordable technology was required for its reuse.

To make such effluent recyclable and reusable, Sulabh has developed a simple and convenient method called Sulabh Effluent Treatment (SET) system wherein effluent of human excreta based biogas plant after a short sedimentation time (2-3 hrs.) is passed through activated charcoal followed by U-V (ultra-violet) exposure, that results into colourless, odourless and pathogen free effluent having BOD <10 mg /l - suitable for reuse in agriculture or discharge into any water body. The treated effluent can also be used for cleaning of public toilets in drought prone areas where cleaning of public toilets is a major challenge, due to scarcity of water. It's operational and maintenance costs are low and affordable that can be met easily from the fund received from users of public toilets. It can be operated by semi skilled caretakers of a toilet complex. It is sustainable and will definitely help improve health & hygiene of community and environment in Indian socio-economic conditions. So far, the organisation has implemented 145 biogas plants linked with public toilets in different parts of India.

Use of urine as bio-fertiliser: Scientists at Sulabh are also working to produce a bio-fertilizer from human urine. Extensive Research and Development is being done to reduce the loss of nutrients from urine during storage so as to facilitate its use as a fertilizer in fields. The main aim of the R&D on human urine is to assess the nutrient availability in urine; to stabilize pH and to prevent loss of ammonia; to find out the best option of using urine as fertilizer. Sulabh is also trying to convince policy makers to make all housing societies to have a separate urinal in the bathrooms (to save water as also to collect and use urine as a fertilizer). Thus the faeces would be used after composting as being done now and having a separate urinal would facilitate use of urine directly as fertilizer.

Sulabh's technology has been recognised internationally as one of the best low cost sanitation practices, time and again. The remarkable achievement that has accompanied the design, construction and provision of the two pit toilets has been the liberation of more than 60,000 scavengers who earlier used to perform the demeaning task of carrying human excreta as headload. Sulabh has given them vocational training and provided them with alternative livelihoods. It also started an English Medium School for wards of scavengers so that these people can join the mainstream of the society.

The grossly inadequate progress in the sanitation sector, is primarily due to the following factors:

- i. Lack of political will and administrative support for the sanitation programme.

- ii. Lack of awareness among the people, particularly those in the rural areas, about the need of sanitation and its health consequences.
- iii. Health sector's least involvement and lack of adequate advocacy on its part.
- iv. Failure to develop a demand-driven approach with adequate participation of the people at the grassroots level.
- v. Lack of professional marketing strategy.

For effective awareness generation, and creation of demand for sanitary facilities, government must undertake the following programmes by involving NGOs, CBOs as well as private sector organizations.

1. Sensitization of policy makers and programme managers at all levels of governments - central / state / local bodies.
2. Continuing education programme on Hygiene and Sanitation, to the professionals like medical and public health doctors, public health engineers, social workers, etc.
3. Inclusion of Hygiene Education in the regular curriculum at primary and secondary school levels.
4. A massive campaign should be launched in the mass-media.

The reuse of urine through ecological sanitation toilets may gain acceptance even in societies having religious and cultural taboos associated with it as the values do change with time, with advancement of education and awareness among the people. To have wider acceptability, such reuse must be demonstrated to be low cost, to provide real benefits to population with no risk to public health.

Epilogue

Sulabh subscribes to the ideas of Ecological sanitation – principally the sanitation and recycling of human waste. As discussed earlier, the Sulabh models of sanitation practices, fulfil some of the objectives of Ecosan. But due to cultural and social constraints, some of the design features of the ecological sanitation as practiced in other countries, might be difficult to implement in India. However, there is basic identity of ideals between Sulabh's twin pit pour flush toilets and ecological sanitation and there is scope for further improvement through further research and mutual co-operation. But for the success of either of the approaches, the National Govts. In the developing countries needs to accept that low cost on site sanitation options based on the principal of recycling and safe disposal of excreta requiring minimum of water, should be the appropriate sanitation options for most communities, and not the costly sewerage or septic tank systems. For this, mutual cooperation and enormous effort of all the concerned agencies is required, to be able to carry forward the agenda of providing cost-effective, safe and hygienic sanitation facilities to the underserved all over the world, to not only achieve the MDG targets but to ultimately provide SANITATION TO ALL in an ecologically sustainable and safe manner.

References

Meeting the MDG Drinking Water and Sanitation Target - A Mid-Term Assessment of Progress, WHO/ UNICEF (August 2004).

Pathak; 1981: 29- 38 and Roy; 1984