

Environment security and MDGs

Main challenges and solutions for environment sanitation in rural and semi-rural areas

Environment sustainability is directly linked to sanitation. Sanitation is closely impacts on infant mortality, maternal mortality, gender equity, and the quality of life. Open defecation, non-availability of toilets and poor sanitation facility leads to contamination of air, water, soil, and land. Very low priority is accorded to sanitation by individuals, community, government and NGOs.

People demand land, houses, water supply, job opportunity, ration cards, and even television sets, but not toilets. The reason is that defecation is a normal and every day process. The day man was born, he started eating and consequently he had to defecate whether there was a toilet or no toilet.

The river Cauvery in Trichy is a holy river and last year the devotees during Pushkar festival, worshipped the Cauvery. But on the banks of the river Cauvery, open defecation is widely prevalent and seen.

No substitute for water

Water is the most important input for our life. Water is the only commodity which has no substitute. The consequences of open defecation is the contamination of ground water, surface water, air, soil and environment. One gram of faeces contains 10 million virus, 1 million bacteria and thousands of parasites. Infant mortality due to water contamination is very high. Water-borne diseases, diarrhoea, malaria, filaria, polio are widely prevalent.

Sanitation is the key determinant of health of society and its ability to sustain itself. Approaches to sanitation should be, resource and management-oriented and not disposal oriented. Sanitation is vital for equity in society. There cannot be equity in a world where 70 per cent of the population is denied even the basic sanitation facilities. There cannot be gender equality if women are forced to resort to open defecation.

“2.4 billion of world’s population should be provided with a health and hygienic toilet before 2015”, it has been said. I don’t think that will be possible if we proceed as we are doing today. Considering the dwindling quantity of water available in our planet and increasing pollution levels of potable water, Ecosan compost toilet model could be a suitable model for achieving this goal in developing countries where water is scarce.

On site and off site Sanitation:

There are two types of sanitation on-site sanitation and off-site. On-site is a system in which disposal of excreta takes place on or near the house. Pit-latrines and septic tanks, fall under this category. There are limitations in pit latrines because they are highly water centred, attract flies and mosquitoes and chances of water and soil pollution is high. They need vast areas since the pit will get filled up in 2-3 years and a new pit has to be dug. Flushing is very important after every use. But people do not flush properly and also, use a lot of water.

Another widely popular on site model is the septic tank. This makes for wholesale contamination. It is an improvement over pit latrines but the majority of masons are ignorant of scientific construction methods for septic tanks. The black water has to be removed periodically and that is expensive. Scientific or environment friendly treatment facility of blacked water or sludge is available in most of the cities. Black water from tankers and tri-cycle are let into the isolated river banks, river beds, dry tanks, road, etc. polluting ground water, surface water, soil and environment.

Then there is another disposal model of human waste is off site sanitation.

The centralised sewage system is an off-site model. But only in big towns. The disposal of 153 gm of human excreta per defecation from house to that sewage line needs 12 litres of water. Then we need booster and power, and scores of miles of undergrounds mains which should be maintained very systematically all 24-hours. Operation and maintenance will be complex and costly.

Ecological Sanitation

Ecological sanitation is an integrated approach to the sustainable management of human waste. Urine and feces, which carry nutrients, are polluting the air, water, and soil in the off-site and on-side models. But in the Ecosan model, the nutrients in feces and urine are collected, and used for promoting agriculture. The urine and feces thus get back into the nutrient cycle, and the loop is closed.

The ecosan toilet squatting slab is so designed that the urine from the front bowl, and wash water from the rear bowl, are collected separately. From the bottom portion of the squatting slab the wash water is let into a filter bed and urine into a mud-pot. Wash water and the urine pass through the soil, and are absorbed by the

plants in the kitchen garden raised near the toilet.

SCOPE designed and constructed its first Ecosan toilet in 2002 in its training centre in Thannerpandal, near Tiruchi, and over 4,000 people used it. This was a two-in-one model where feces was collected in a drop hole and wash water and urine together in a mud pot. It was thrown open by John Oloff Drangert, of Linkpong University, Sweden, in the presence of officials from UNICEF and SEI, on November 18, 2004 on the eve of the world Toilet Day.

Kaliyapalyam, the pioneer village

Happy about the performance of this model toilet, 18 families of Kalyapalayam village, on the banks of the river Cauvery, a high water table area came forward to construct the model in their houses. The first ecosan toilet of Mangalathammal was inaugurated by Shantha Sheela Nair, secretary, rural department in 2004, and two years later she came again to open the first closed compost chamber of the toilet in the same village. This was opened in the presence of over 25 scientists and specialists in the field of Ecosan from all over the world, who had come for a two-day conference held in Tiruchi organised by UNICEF.

Following this, over 125 people in nearby Sevanthilingapuram also constructed the Ecosan toilets. And during that one year, SCOPE based on the feed back from people using the toilets, and experts who visited the toilets, and also due to exposure by attending ecosan conference in India and abroad evolved the second design, the three-in-one model, This model is now being promoted by SCOPE.

ECCT at Musiri

SCOPE has constructed the first Ecosan community toilet in the country in Musiri, at a cost of Rs. 8.5 lakh, with assistance from WASTE, an NGO of Netherlands. About 200 persons are use it daily. The urine collected from the toilet is used for watering the bananas in the campus. SCOPE has also entered into an MOU with the Tamil Nadu Agriculture University for the study of urine as a liquid fertilizer for paddy and other crops. The Rs. 4 lakh MOU is the first MOU signed by TNAU with an NGO.

Following the tsunami which hit the Tamil Nadu coast on December 26, 2004, there was a need for constructing toilets in the temporary and permanent shelters in coastal areas. Pit latrines or septic tanks were not suitable for high water table coastal areas. Those pit latrines constructed under tsunami rehabilitation programmes were not functioning well and in fact were found to be a health hazard.

And it was in this context that the friends-in-need, FIN approached SCOPE for construction of Ecosan toilets in tsunami-hit Kameshwaram village. With the help of funds from FIN, as many as 100 toilets were constructed in Kameshwaram village. This was a boon to the residents and an excellent demonstration to all that Ecosan was an ideal toilet model for high water table coastal areas.

Shanthi, who was the pioneer in constructing the first Ecosan toilet in her house, was soon elected to the panchayat council, and was also the vice chairperson of the Kameswaram panchayat council. It was indeed empowerment of women through promotion of suitable toilet model, the first pilot model in the tsunami hit coastal of India.

School Eco-toilet: With the support of FIN, and SOS of France, SCOPE has constructed a Ecosan toilet in the school in Kameshwaram at a cost of Rs. 2.5 lakh. About 400 students will use the toilet, and the urine collected separately is used for irrigating the cashew trees in the adjacent compound. A sanitary napkins incinerator is also installed in the toilet campus.

Beauty Contest for Toilets: Soon there was a demand for more toilets in the village. Some rich people who had built palatial houses had no toilets in their homes, and they constructed the Ecosan toilets. With further help from UNICEF and the state administration and most importantly, Rs. 2,100 from each house owner, another 150 houses were constructed in Kameshwaram village. And this was followed by a beauty contest for toilets, the first time in the country for toilets! The idea promoted by Shyama Ramani and SCOPE raised many eye-brows, all over the country.

Ecosan and M.D.G.

Ecosan toilets are highly environmentally friendly save water, protect soil, water and air from getting polluted by open defecation helps in the reuse of the nutrients in human waste for farm production and ensuring food security. Ecosan has thus a key role in achieving the MDG goal of environmental sustainability, ensuring human dignity, gender equity, reducing child infant mortality rates caused by water borne diseases, and enriching the very quality of life of the people, both poor and the rich too.

Some questions:

Can Ecosan could be constructed for apartments?

Yes Ecosan toilets can be constructed in multi story buildings. In China, Germany, Netherlands, Sweden, etc. many an apartment part has been provided with Ecosan toilets, which are more sophisticated, and use saw dust. In Musiri, an Ecosan toilet has been built in the first floor of the house of a student of a college in Tiruchi city, who used to have a toilet in her hostel, but not in her house when she came home for holidays or week-ends. Finding open defecation impossible, she persuaded her parents to build an Ecosan toilet in the first floor. The washwater and urine pipes are connected to the ground below.

Will not the toilet produce a bad smell?

No, the fecal matter when covered with ash and not mixed with water will not have any smell. Similarly the compost will also not have a bad smell. We have opened many compost chambers, with scores of people standing around, including IAS officers Shantha Sheela Nair, P. Amuda, District Collectors, and Ecosan specialists from various parts of the world. They have taken the compost by hand, and smelt it and said that it was odorless. This has to be seen to be believed. That is why in our awareness programme we insist on exposure visit to Ecosan toilet villages before constructing one.

We have also sent all the compost taken out for testing, as also the banana and ground nut crops produced using the wash water and urine. They have all been certified as free from any dangerous pathogens.

Is not applying ash, closing the drop hole with a lid, washing the body after moving back a few inches etc. difficult practices? Will people accept these irksome practices?

For those who have no toilets at all and are forced to defecate in the open, these practices are no issues at all. But for people like us, government officials, including IAS officers, who are used to the flush-and-forget septic tank or the central disposal systems, these may appear as problems. But mind you, 70 per cent of the Indian people are still without toilets and they want toilet system which will work and is sustainable.

Will getting ash be a problem?

Not in India where 70 per cent of the people live in rural areas. And when there is demand for ash, there will be enough people to supply them. Now we get toothbrush to mosquito coil from shops to meet our first need in the morning to the last in the night.

Is Ecosan gaining popularity in other countries?

Yes, it is gaining rapid support in all countries, where the importance of water as a most scarce commodity has been realized. It is also becoming more important as a good model for billions of people, who do not at the moment have a toilet in the houses, and cannot install a water centered toilet model. In fact in India, SCSOPE has been appointed by UNICEF as consultant for dissemination of Ecosan concept and training for masons for construction of Ecosan toilets in all states in the country. And so far we have completed training in five states. SCOPE was also awarded Nirmal Gram Puraskar in 2006 for its pioneering work in rural sanitation.

How much place is required for constructing this toilet in each house? How can it be kept dry? And third, are there any schemes of the government? What is the cost of each toilet?

In Trichy, we have used (?) holoplast. It is cheaper than bricks. The material cost

is cheaper, the labour is cheaper and the unit cost is Rs.5000 in Trichy and the surrounding areas. In tsunami hit area where we are using bricks, more cement is needed, labour is also high and the unit cost is Rs.7,500. The government is giving Rs.1200 in the total sanitation campaign fund, TSC fund provides Rs.1200. We are asking for more funds for this ecological sanitation. We have stressed that the subsidy component should be raised to at least Rs.2,500 from the present Rs.1,200.

Under the biogas development programme, the government has also proposed that the toilets be linked to biogas plants.. If you promote this type of the construction cost can also be reduced because there will be a separate pipe for urine and wash water, etc. and gas can be generated.

I fully accept this as a good idea with the gas also being put to good use. Also the slurry is very good for agriculture but you need water.

So this is useful only for water shortage areas?

-Water shortage areas and high water table areas, both.

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