

ECOSAN MODEL, SEVA MANDIR

- **Background**

The National Sample Survey Office (NSSO) ranked Rajasthan in the bottom five states for drinking water and toilets in rural areas in its 69th annual report. Let alone drinking water, potable water is a problem in many villages of rural Rajasthan due to its arid and dry climate. Hence many villagers. Not just Rajasthan, but in other areas of India too water supply is a problem and constructing water consuming toilets is not favoured by villagers. Hence alternate forms of sanitary hygiene are required for catering to the sanitation required for water scarce regions of rural India.

Ecological Sanitation (EcoSan) is an alternate sanitation model that is being made available to rural villagers by Seva Mandir, a non-profit organisation based in Udaipur and Rajsamand districts of Rajasthan. Interestingly the problem identified by the NGO in these rural areas was not the capacity to build sanitary infrastructure, rather the challenge was in overcoming the cultural norms to prevent open defecation.

EcoSan is a unique system of sustainable sanitation wherein human excreta is converted into nutrients, and the nutrients are then returned to the soil. EcoSan sanitation is a solution pitted as to solve the sanitary hygiene in dry and arid regions and help build sustainable toilets in rural areas. EcoSan works on the principle that urine and dry matter are separated. When the pit of the EcoSan toilet system fills up it is closed and sealed. After about eight to nine months the faeces is completely composted into organic manure and can be used in the farm. On the other hand when the urine is filled, it is immediately exchanged with an empty can. The can is kept sealed for a month so that the smell goes away and urine decomposed to become pesticide.

- **Location, Date**

Udaipur and Rajsamand districts, Rajasthan; 2009

- **Areas**

Rural

- **Stage/Scale**

Started with a pilot project in 2009

- **Objective of the assignment**

To ensure clean drinking water and sanitation in some of the most deprived and remotest villages

- **What was done**

- Right from the beginning, the objective of the Seva Mandir led EcoSan model focussed on changing the outlook of rural villagers towards indoor sanitation and convincing them overcome their taboo, rather than develop infrastructure. The process towards change in the cultural mind-set eventually led to an increase in demand for toilets. Offering it a hygienic solution and affordable solution for villagers; and a private place for women

especially during menstruation cycle the EcoSan model quickly caught up with the citizens, with 75% usage levels.

- It addresses two factors, issue of water scarcity in semi-arid regions and shrinks open defecation effectively and utilise them to create sustainable toilets in rural areas specifically. EcoSan requires the separation of solid and liquid waste at source. The faeces are covered with ash or husk, human urine is collected in a separate can. More importantly, the process requires water only for washing, reducing dependence on the limited source. Each EcoSan toilet has two identical commodes built inside it. Each commode has three pits built into it. The first one is for liquid waste or urine, and is shallower than the middle one which is for solid waste or excreta. The last one, which is as shallow as the one for urine, is used for cleaning. The purpose is to store the excreta in a big pit to convert it into high quality manure, while the urine is stored in a plastic can to make pesticide and fertilizers.
- When the excreta pit for one commode is full, it is kept closed for six months to a year to convert it into manure. In the meantime the other commode is used. On the other hand when the urine can is full; it is immediately exchanged with an empty can. The full can is then kept closed for a month so that the smell goes away, and the urine decomposes to become a pesticide.



• Impact

- Till date Seva Mandir has constructed more than 1000 toilets, 527 of which are EcoSan toilets and they are in use 75 percent of times. The manure generated from the toilets have helped increase the wheat yield of the farmlands, which has increased from 6 quintal per *bigha* to 8 quintal per *bigha* of land.
- Families are also earning additional income from the manure produced. In general the villagers have seen their status in the society rise.
- The young and women of the villages are saved from the embarrassment of open defecation, and also save the old people from open defecation in hilly terrains. The children are also saved from exposure to many disease causing organisms. The women in the households feel much safer and more confident, and children fell ill less often.

• Challenges and Issues

The implementation of EcoSan has not been without its fair share of challenges. It is working hard to change the habitual preference for open defecation in villages. The number of people who defecate in the open is still quite large, and toilets are not maintained well either. Of those who have built EcoSan toilets, the reasons for not using them were found to be the following:

- Residents are not habituated to open defecation
- They do not understand or like the concept of EcoSan
- The residents do not like dry toilets and prefer water supply inside
- Many families do not have reasons for not using the toilets at all
- Many people still prefer to defecate in the open

• Innovation

The solution offered by Seva Mandir is based on the innovation that is EcoSan waterless toilet system which is able to separate solid waste from urine at source. The innovations that are brought about by this system are as follows:

- Affordable waterless toilet system
- Completely closed system with no sewage piping or treatment systems required
- No effluent seepage into underground water system
- Indoor and outdoor installation with odourless design
- Minimum monthly operating costs

• Lessons learnt

- The key challenge is making people understand the importance of a healthy and hygienic sanitary system. Helping people understand the benefits of sanitary hygiene and aiding in the construction seems to be the key in convincing people to adapt and abandon open defecation.
- To help people overcome social stigmas, the key is to continually talk to them and let current users convey the benefits of toilets which offer better living standards and hygiene practices. However the problem being currently faced by the organisation is manpower crunch, which results in difficulty following up with the families.

• Financials

- The average cost of installing a functional unit of EcoSan toilet comes to about INR 6800. Since the inception of the project, an estimated INR 36 lakh has been spent on construction alone. The toilets are not necessarily financed by Seva Mandir. Most toilets are self-financed by households after Seva Mandir and other village panchayats have convinced its patrons to adapt this model.
- To deal with the manpower requirement, Seva Mandir has also collaborated with government run MNREGA mission to aid in construction, and with gram panchayats to aid families financially.

• Economic sustainability/Revenue Model

- The EcoSan toilet is a family run structure in most households, who clean and maintain the facility for household use. The toilet has no existent revenue model, a meagre income can be generated for households who decide to sell their manure in the market rather than use it as a fertilizer in the farm.
- Daily maintenance is cost free, as the design has no plumbing. Only water is required for washing purposes. The storage cans for urine are reused once the urine is converted into pesticide. No revenue or income is generated from this toilet for the household. The sustainability of this toilet come about in the healthy, hygienic and disease free defecation system that it helps provide.

• Implementer Contact Persons

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• Sources and References

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