

## Why Sanitation?

Because, around the world

- Four children die every minute from unsafe water and inadequate sanitation
- 3 million people lack safe sanitation
- 2.4 billion people have no access to basic sanitation
- 5.7 % of diseases are due to poor water sanitation and hygiene

These statistics clearly suggest the importance of providing safe water, adequate hygiene and sanitation and more so in post-disaster situations where often water and sanitation may not get adequate attention.

The tsunami of 2004 made an appalling impact to the eastern coast of India especially in the low lying areas off Tamil Nadu coast. Subsequent rains and flooding made things worse. The UN, the government departments, the international NGOs, the local organizations working with the affected population also focused on water supply and sanitation amongst other things.

The result of their efforts major epidemics were prevented, lives were saved, communities continued to be rehabilitated. The attention being given to address water and sanitation issues as part of the tsunami recovery programme is to be applauded. There is perhaps an unprecedented level of support at present with the water and sanitation programme from the multilateral organizations, NGOs and the government. Tsunami affected Communities will benefit from improvements in their sanitation infrastructure and improved water supply arrangements

However, with the unprecedented level of activity, actions by several players, shelters in close proximity, inadequate facilities and water supplies, practice of open defecation, the high water table, lack of understanding of appropriate disposal techniques for disposal of black water, the inappropriate and poor design of disposal systems used pose severe challenges, and question the sustainability of initiatives. If these issues continue to be ignored then the legacy of this unprecedented investment will be malfunctioning or abandoned infrastructure, environmental pollution and public health deterioration.

Independent studies initiated by various organizations such as Oxfam, CRS, CARE, UNICEF, Swayam shikshan prayog pointed to the need for the improvement in the sanitation condition with regard to various aspects. TNTRCs study findings on status of Watsan in Nagapattinam and Kanyakumari districts in temporary shelters provided an eye opener for more focused and sustainable strategies with appropriate design and community participation for the watsan sector.

Several organizations also emphasised on imparting sanitation practices and their importance as they felt and knew this was the only means to propagate usage of toilets. Hence there is major difference in some of the villages where there are testimonies of individuals and communities who have started using toilets and have employed good sanitation practices.

Today the situation is quite different, As there is a transition from temporary shelters to permanent shelters in many districts. In places like Chennai, Nagapattinam, Kanyakumari and Cuddalore communities still live in temporary shelters while permanent shelters are coming up.

In Thazankuda, a village in Cuddalore we met up with Anandraj, a community member. When enquired about the usage of toilets in the habitation he lived, 'Nobody uses toilets in our shelters except for women; open defecation is practiced widely among the men.' A few

meters away, permanent shelters were coming up for this particular community and we asked him what about toilet usage in the permanent houses to which he quickly responded 'We will use the toilets there', which amused us and went on to ask him why. He shot back saying 'There is a graveyard located close to the shelters hence we will be afraid to go out in the open and defecate. A quick tip to make people use toilets!

Organizations work with the communities to understand their needs; requirements making them part of the process. Focus is on with respect to permanent shelters which are coming up rapidly in all the affected districts on the type of toilets and disposal systems.

One of the strategies that have evolved in ensuring better sanitation practices has been community participation which has been tried and tested over the years. In the area of sanitation, it may well be the case that interventions reliant upon behaviour change may fail if the community was not involved in designing these. However, when communities are involved, such messages are much better understood and inculcated. A secondary benefit is that members of the community will subsequently be better placed to act as change agents.

Oxfam has been involved in sanitation programs in the temporary shelters. They involve the community in assessment, planning and implementation of the sanitation aspects, form sanitation committees where individuals volunteer to monitor not alone the implementation process but also the process once the project is implemented. Oxfam's community monitoring system ensures the maintenance of toilets including drain blocks, the cleanliness aspects, and also hand pumps that provide water. A maintenance fund is created where the beneficiaries contribute a small amount which is used for the above mentioned activities. Cultural programs and mass meetings help sensitize and build awareness. Arokiam of Oxfam says 'We also link communities with respective government officers in order to sustain the program. A database of all the officials who need to be contacted has been provided in order to make them self reliant.'

A visit to a temporary shelter in a village in Cuddalore, where BLESS has been working on sanitation aspects and most importantly on community participation clearly shows the transformation and effectiveness of these committees.

The village committee initiated by Bless, Cuddalore showcases successful working of committees. A member had this to say 'Earlier there used to be garbage every where, toilets were dirty forcing people to defecate in the open, by the pumps there used to be water logging, but today the whole place is clean. Each of us monitor the various sanitation aspects like proper garbage disposal; ensure flushing of toilets thus ensuring a clean environment and good hygiene practices. As a result there are fewer cases of diarrhea and people don't fall sick that often.'

### **Children as ?sanitation ambassadors?**

Children have proven to be 'sanitation ambassadors'. A classic example to note, in Karikuppam village, Cuddalore, Bless the implementing agency along with its funding partners on this project the European Commission Humanitarian Aid (ECHO) and ACTED, formed a children sanitation parliament in the village one in a lower primary school and the other in the community. Children have since become torchbearers of village health and sanitation. The parliament consists of 14 members a Chief Minister, a deputy chief minister, six ministers and their deputies who are in charge of Water, Sanitation, Environment, Food, Waste Management and Education. Their duties include:

Weekly meetings with school authorities

Monitoring water availability, toilet cleanliness, mid-day meal preparation and proper waste disposal



Educating about personal hygiene

Maintaining a kitchen garden to prevent water wastage

The children were very proud and enthusiastic about their posts and went all their way out to fulfill their responsibilities. This group meets up every Friday to discuss operational issues and plans. These children also play the role of 'Sanitation Ambassadors' in the homes they come from as well as within the community thus influencing the entire colony.

Involving the community does not end with forming committees or safeguarding, but literally being part of the process. This would include in identifying the right kind of toilet model and disposal systems. In the tsunami context this has been a challenge as the settlements are closer to the coast which has high water table. Initially the focus was on constructing traditional toilets with leach pits or septic tanks as a disposal system, but that proved a failure leading to flooding during the recent rains, blockages and water contamination.

CARE one of the pioneers to try alternative models in sanitation decided to build raised latrines and elongated tub latrines in the 70 habitations of Nagapatinam, Cuddalore and Kanyakumari where it has been working. Paramasivan of CARE says, 'We have set the example in Kallar by using DEWATS to suit the high water table'.

Hence a consensus on the right kind of toilet and disposal system has to be arrived on this requires proper planning and appropriate systems needs to be in place. An inappropriate system will not only pollute the ground water but also create health hazards and epidemics.

The Government of Tamil Nadu has announced a massive housing programme to build 89,206 houses with infrastructure facilities like roads, water supply, sanitation, Rain Water Harvesting structures, etc... in all the nine coastal districts for the affected families.

Of the 35,046 houses taken up for construction. 1472 houses have been handed over. Totally, 6756 houses have been completed. With only a small percentage of houses constructed and still a long way to go, there is still room for thought on alternative successful models.

Some of the successful or appropriate models being practiced in tsunami affected areas.

### **Ecological sanitation - A concept**

Ecosan as a concept has three basic principles. First it promotes health and prevents diseases. It does this by treating excreta as near as possible rather than flushing it downstream. Second, Ecosan approaches protect the environment while conserving resources. One of the main causes of fresh water pollution is sewage. By not using fresh water to transport excreta and

returning it to the land after treating it, water is conserved and protected. Finally this approach recovers nutrients in excreta, return them to productive uses and therefore recycle nutrients.

### **Benefits of Ecosan**

Affordable water free sanitation system

Completely closed system

No sewage pipe network and sewage treatment plants required

No effluent seepage into underground water resources

No obnoxious odours

Indoor or outdoor installation

Minimum monthly operating costs

Plumbing free solution

Protects the environment and conserves water

Recovers and recycles nutrients and organic matter

Prevents disease and promotes health

Reduces housing development costs and costs of homes

Improve public and environmental hygiene

Non- technical to install

No breakdowns for any reason

Ms.Santha Sheela Nair, IAS, Secretary, Rural Development-GoTN had this to say on Ecosan 'Tamil Nadu is a leading state in the country in the field of Ecosan development'.

Under the concept of Ecosan there are a few toilet models that have been identified and found to be ideal for situations where the ground water table is very high.

In this section we have tried to highlight two models that has been widely accepted - the dry compost toilets and DEWATS

### **Dry Compost toilets**

A composting latrine can be constructed either above or below ground and so it is suitable for regions with shallow groundwater or flooding.

Composting latrines normally consist of a single or double vault construction with a system to ensure that urine is kept separate from faeces. The faeces are collected in the box and need to be mixed regularly with earth, wood ash or other organic waste material to deodorize and soak up excess moisture. The compost eventually formed in the vault can be a valuable fertilizer but these latrines needs to be well-managed to provide safe and useable organic material.

There is no doubt that ecosan toilets offer a good solution to sanitation challenges in high water

table areas in coastal settlements as well as in water-scarce or rocky areas. CARE has been one of the first organization to implement ECOSAN in about 41 locations spreading across Nagapatinam and Cuddalore.

Paul Calvert, who developed urine-diverting dry compost toilets with evaporative plantbeds, key components in ecosan, in 1994 in Kerala India says 'people struggle to comprehend how these toilets could be good for everyone especially in cities, but they should come and see them. I always say 'seeing and not smelling is believing!'

In the recent storm surges after the December tsunami several villages in southern Kerala were flooded. Some of the villages were ones where Calvert and his teams have built eco-toilets. Conventional toilets overflowed and the contents of their pits floated around the village disgusting everyone with the sight and smell and posing a serious health hazard. In stark contrast all the eco-toilets were unaffected and consequently there has been a surge in demand for them with people claiming that 'this is the only suitable toilet for our villages'.

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## **DEWATS**

DEWATS stands for 'Decentralized Wastewater Treatment Systems' and is a technical approach rather than merely a technology package. DEWATS is based on the principle of low maintenance since most parts of the system work without technical energy inputs and cannot be switched off intentionally. They provide state of the art technology at affordable prices because all the materials used for construction are locally available.

Auroville has been experimenting and developing DEWATS for the last 20 years. The community operates at present more than 45 decentralizes treatment systems of different capacities and designs.

### **Benefits of DEWATSB**

Establishing of multi-stakeholder networks to combat water pollution

Providing treatment for both, domestic and industrial wastewater at affordable price

Fulfilment of discharge standards and environmental laws

Wastewater pollution reduced by up to 90%

Providing treatment for wastewater flows up to 1000 m<sup>3</sup> / day

Reliable and long lasting applications

Tolerant towards inflow and load fluctuation

Materials/ inputs used for construction are locally available

Minimal maintenance and long de-sludging intervals

Low operation and maintenance costs

Resource efficiency and non dependence on energy

Resource recovery through wastewater re-use and biogas generation

CRS has been actively implementing DEWATS in some of the temporary and permanent shelters. Anna Hybryk of CRS mentioned that they in partnership with Auroville Center for Scientific Research, AquaDyn, Auroville Water Harvest had pioneered a FRP model for DEWATS which in addition to ensuring a safe disposal of waste water, avoiding contamination of the ground water, could be shifted and reused from temporary to permanent shelters, thus optimizing the use of resources.

### **Government a strong advocate for Ecosan**

The other good news has been the DRDA of GoTN in advocating Ecosan and also allocating money for this purpose. This is a step forward and a good initiative which can be replicated by the numerous organizations who are out there trying to bring a difference in the lives of people. Right decisions made and appropriate technologies used can go a long way to achieve sustainable and permanent answers to sanitation.

### **Raised Latrines**

Where there is seasonally high water table a raised latrine may be the one of the most appropriate option for on site sanitation. Classically the solution is to build raised latrines or to build pits sealed at the bottom. To prevent contamination of the ground water the bottom of the pit should be at least 1m above the water level. Trenches can be dug to take off the liquid effluent in pipes as in soak away and dispersion trenches. The pit should be dug at the end of the dry season to maximize the available depth of unsaturated soil that can be excavated. CARE has been instrumental in building a few raised latrines in some of the temporary shelters.

### **Septic tanks and leach pits**

Septic tanks and leach pits which are traditional models have only proved that these models are unsuitable for conditions where the water table is high. Such models pollute the ground water and cause other hazards. Hence these models are not recommended in such conditions.

At the outset constructing traditional sanitation models may not be the solution but a deeper understanding and investing in the right models can provide stability and long term solutions be it for tsunami or flooding.

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### **Solid Waste Management (SWM)**

Another aspect that has been looked into very keenly is the issue of Solid waste management both in the temporary and permanent shelters.

Studies taken up in tsunami recommended measures to tackle solid waste management.

NGOs like Exnora International have played a very vital role in introducing and practicing solid waste management among the tsunami affected population.

Thanks to Exnora, in 19 Temporary shelters, SWM is in place. SWM in other tsunami affected areas will be taken up swiftly as arrangements are done on this aspect. SWM has its impact on vector control and thereby it has reduced potential health hazards. Even in places where composting cannot be done, EXNORA Change Makers are working in tandem with the Municipal Conservancy workers to clear the waste on a daily basis and keeping the



environment clean and green.

To help communities practice SWM Exnora has adopted several strategies Rangoli competition for International Women's Day, has helped greatly to influence the families to keep their surroundings clean.

The second major successful strategy was celebrating 'Sugadhara Pongal' - Healthy Pongal concept thereby integrating the concept of cleanliness with the culture of celebrating the festivals like Pongal.

At ITI Temporary shelter in Nagapattinam, the recyclables are separated and sold; bio-degradable waste is being composted. Similar efforts are on in 19 temporary shelters.

Apart from the successes there are certain issues which also need to be addressed with regard to SWM

Garbage segregation by the families

Making it a priority of the people

Local bodies do not have adequate resources / manpower or the conservancy workers are paid less

Composting is done only in very few places

Government has also issued certain guidelines to the Special Village Panchayat Authority with regard to collection of solid waste, segregation, storage, processing and disposal of wastes.

### **Rain Water Harvesting (RWH)**

RWH in tsunami acquires special significance not only for replenishing the ground water but also tackle ground water contamination.

There are two main techniques of rain water harvestings.

Storage of rainwater on surface for future use.

Recharge to ground water.

Hence the emphasis for the need of conservation of natural resources especially water and RWH is an economical and sustainable method of conserving water. RWH can meet a

substantial portion of the domestic water needs; it can also act as a long term solution to improve ground water levels. This low cost simple technology and can be adopted by anyone.

### **In conclusion????.**

Sanitation being such an important component in recovery and reconstruction, one cannot take it lightly. A lot of planning and implementation is going on with regard to shelters where the communities have been involved in selecting the right kind of models for them to live. There are a lot of discussions and debates going on to decide on the appropriate technologies for sanitation. Organizations themselves are involved in a huge task of behaviour change among communities to use toilets and proper sanitation mechanisms in order to combat unclean surroundings and diseases. Sewerage treatment plants is very expensive and can be used in situations where the shelters are large in number. A good example of this can be seen in Devanampattinam, Cuddalore where more than 600 houses have been constructed. The treatment plant is being constructed by the TWAD board.

The recent flooding just proved that certain models were inappropriate and it did cause a lot of damage and concern in the tsunami affected areas, but it did bring in a lot of good as it revealed the sustainable models. Some lessons to be learnt!

### **Points to ponder**

Rehabilitation is a holistic approach acknowledging hygiene, water and sanitation as a human right and relating it to human development, elimination of poverty, environmental sustainability and the integrated management of water resources. With this mandate in mind it should be possible though challenging to build models and promote technologies which brings about a holistic approach and not a piece meal approach. Lets face the challenge!

Please do feel free to share or write to us about any other information / best practices / models / NGOs involved in Sanitation. We would be very happy to hear from you and also disseminate the information provided.

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