

Technologies for Disaster Management

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The present Tsunami tragedy and its aftermath have shown again that the country is ill prepared in disaster management. Lot of handwringing and knee jerk reaction takes place after every such catastrophe in which thousands of lives are lost. This is followed by a round of blaming various agencies for not coming upto the mark.

The major problems faced in all such calamities are the supply of food and clean drinking water for the survivors. Clean drinking water is extremely essential so that the spread of diseases like cholera does not take place. Other problems are availability of lighting for both shelters and rescue workers; mechanisms to easily and quickly disposing of dead bodies, and cooking fuel for survivors. Most of these problems can be solved by appropriate technologies and their large-scale management.

The foremost technology needed to prevent all these disasters is advance information and warning system. Its development is now being taken up as a priority item by many Government of India organizations. However it will take many years before such a system can be put in place, since earthquake prediction has still not been developed. Till that time, it may be worthwhile to invest in simple technologies on the ground which can be installed to help the disaster-affected persons and areas.

These technologies should address the following problems :

- a) Provision of adequate light in the affected areas.
- b) Clean water supply
- c) Rapid disposal of dead bodies of humans and animals
- d) Fuel for cooking
- e) Communication network.

A. Provision of lighting :

A truck-mounted 200 HP diesel genset may be able to provide enough energy for lights and also produce clean drinking water. The flue gases from the genset can be used to power a small desalination plant or boil the water so that all the germs are killed. Both these units can also be mounted on the same truck. Simple analysis reveals that about 30-40,000 l/day of excellent drinking water could be produced from 200 HP diesel genset as a by-product. Thus the truck-mounted unit will be a dual-purpose plant for producing electricity and water. This will also help increase its efficiency.

In areas where the roads are washed out and the power truck cannot reach, improved kerosene and solar lanterns should be provided for giving light. Nimbkar Agricultural Research Institute (NARI) has produced an extremely efficient multifuel lantern called [Noorie](#), which runs on kerosene and diesel and also doubles up as a small cooking stove. Noorie lanterns can provide good light (equivalent to 100 W bulb light) and are also able to cook small quantity of essential food items.

B. Clean water supply:

As discussed above, the truck-mounted genset can provide good drinking water. In places which are remote and on marooned islands, small solar stills and hand powered reverse osmosis units can be provided for drinking water requirements.

C. Rapid disposal of dead bodies :

One of the major wasted efforts in the present Tsunami tragedy has been the digging up of huge pits for burying dead bodies. A small earthmover needs to be employed which can dig up a trench of 3 m X 1.5 m (wide) and 1 m deep for a single body. These shallow trenches can be dug up quite rapidly and are sufficient for burial of bodies. Besides saving tremendous amount of energy in digging very deep trenches, the work can be done more rapidly so that the disposal is done quickly. Burning of bodies either by scarce wood or kerosene is a tremendous wastage of precious fuel.

D. Fuel for cooking :

It has been seen that in all such disaster events the major efforts both nationally and internationally are mounted on giving food supplies to the disaster affected persons. However in the absence of adequate cooking fuel these supplies do not help the survivors and quite a substantial amount gets spoiled. Thus supply of stoves which can run on both diesel and kerosene or solar cookers may be useful for such areas. With burial of dead bodies, kerosene or diesel can be saved for use as a cooking fuel. Similarly wood can be used for cooking instead of burning bodies.

E. Communications network:

The power truck can also have a small VSAT dish by which it should be possible to communicate from the ground zero to the world. With the advancement of communications technology it should be possible to use these systems powered by the truck mounted genset. The communication also helps in sending the information on requirements of the area so that essential supplies can be brought to that place.

However, for all these technologies to be rapidly deployed it is necessary for the appropriate government agencies to prepare a list of vendors who can supply these goods at a short notice and at a reasonable price. Also there is a need for government and NGOs to work together in such calamities. It has been seen in the past that with poor communication between the two there is duplication of efforts by well meaning NGOs and government agencies.

For vendors to make these systems available to government agencies on short notice, it is necessary that these technologies are used on a substantial scale during other times. Thus the 200 HP power truck can be easily used to provide electric power and much needed clean drinking water to a village. With the present thrust to provide power to all villages by 2012, deployment of such plants should be encouraged. The GOI can give fiscal incentives to utility vendors so that these technologies can become economically viable. With new Electricity Act such micro power utilities will spread in rural areas. This will help in making available such technologies for disaster areas.

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