

ABSTRACT

Commercial energy sources account for over 60% of India's total energy consumption. The commercial energy consuming sectors have been plagued with shortages and the likelihood of these shortages being removed in the near future is remote.

The commercial sources - oil, coal, uranium - being exhaustible by nature - their availability is limited. Renewable energy sources are available and must be utilized wherever feasible. This has been the view endorsed by several committees set up by the Government.

Solid waste is one such renewable source. The problem of solid waste disposal has been neglected for long. Presently, solid waste is dumped in low lying areas in the most unhygienic manner. This has implications on the health of people around. Also, land being limited in availability, landfilling cannot be allowed to claim valuable land.

Some portion of the solid waste is being processed to manufacture compost. Even though the compost is sold at substantially low prices (Rs.50 - Rs.80 per ton), it has not found total acceptance amongst the user community.

The main reasons for this is the fact that large volumes have to be transported over long distances. Also, the compost has small glass and metal pieces make it inconvenient for the farmer to use the compost. To date, mechanized compost plants with an investment ranging from Rs.60-100 lakhs have been set up at Bombay, Bangalore, Baroda, Ahmedabad, Calcutta, Kanpur and Madras. All the plants are operating under a loss and some of them have been shut down.

The other options available are anaerobic digestion and incineration. Anaerobic digestion yields a mixture of methane and carbon dioxide and also manure as by-product. Incineration gives a volume reduction of 90% and leaves only about 10% to be sent to landfills. Got gases generated can be used to produce steam and further generate electricity.

The limitation of anaerobic digestion is that one has to have a ready user for the gas generated. This is overcome by using the gas for power generation and then feeding it into the grid-with a certain loss in the conversion process. This still leaves the problem of finding a user for the manure. Incineration, on the other hand, has no such limitations and hence should be strongly considered as an option.

Estimates indicate a generation of 20-30 million tons of refuse in cities with population greater than 10 lakhs. Even at a low calorific value of 1000 KCal/kg, this works out an equivalent of 2-3 million tons of oil directly. Calculations show that 2600 million units of electricity can be generated from 20 million tons of refuse (equivalent to 520 MW operating for 5000 hrs) and the investment required would be around Rs.140 crores. As against this, a conventional thermal station would cost Rs.260 crores - a saving of Rs.120 crores to be invested in other sectors of the economy.

Adoption of energy recovery systems would apart from providing the much needed energy to the economy - would solve the problem of waste disposal too. It is time that pilot plants of 10-20 tons per day were set up to give future direction to energy from municipal solid waste.