

Energy from waste

“There is no shortage of energy on this planet. There is sadly a great shortage of intelligence”. (Buckminster Fuller- well known American scientist and inventor).

If the above comment is true then we are a nation of fools, for we seem to go from one energy crisis to another – never looking ahead to remedy past mistakes.

Even though it has been found that electricity is unavailable and unaffordable to an unbelievable 70% of the country’s population, what steps are being taken to develop alternative energy sources for which the technology and expertise exist in the country?

At a recent seminar organised by the **Energy forum**, a group of concerned scientists, engineers and environmentalists spoke on the variety of alternative energy options available today which would perfectly suit Sri Lanka’s needs. These options include Solar Power, Dendro Thermal Power, Micro Hydro, Wind Power and Biogas. What caught this writer’s interest was the huge potential and total suitability of Biogas for a country like ours.

“Biogas is internally derived and will last forever”, declares Dr Ajith de Alwis of the University of Moratuwa, whose speciality is bio gas. He states there is a huge potential for this form of energy in Sri Lanka but it has not been looked at seriously as yet. “We really need energy in large quantities and it must be decentralised. From an industrial point of view it is important to decentralise because industry cannot be sustained by having centralised operations.”

In the case of biogas the technology is here and has been there since the early 70’s when we started using the Indian biogas unit, but we have neither utilised, promoted nor understood this energy source properly up to now.

The problem appears to be one of public perception. “Biogas technology is extremely appropriate to the ecological demands of the future. Biogas technology is progressive. However a biogas plant seldom meets the owner’s need for status and recognition. Biogas technology has a poor image. The image of the biogas plant must be improved.” (Sasse, 1988)

The source of the bad reputation of biogas lies in the fact that it is an energy source derived from plant, animal and most offensively, human waste. This matter is found in wood and wood residue, agricultural residue, market waste and animal and human faeces.

All of this waste matter can yield useful fuels either directly or after some form of conversion. The conversion process can be **physical** (drying, size reduction, densification), thermal (as in carbonisation) or **chemical** (as in biogas production). The resulting form of fuel can be solid, liquid or gaseous and this flexibility of the end product is the greatest advantage of biogas over other renewable energy sources.

The process appears to be a logical sequence of events – re-use waste produced by man, animal and environment to man's advantage! If operated properly there is no odour, the human labour input is minimal and it provides an immediate use for garbage and farm animal waste. Most importantly biogas is a continuous gas generation system – as long as humans and animals emit waste, the source of energy will be there.

What we have to overcome is all the misconception surrounding the origin of biogas. People tend to think the gas is toxic because it comes from human waste in particular. But how ridiculous, for gas is gas, no matter what the origin. So education is the need of the day.

A good example of the success of biogas utilization is the farm of the Agricultural Faculty of the University of Moratuwa. Here, a biogas unit provides all the energy requirements for cooking and the hostel area, and as a result, a lot of money is saved and there is no dependence on an outside energy source.

Another misconception which adds to the biogas image problem is that it is only appropriate for the rural areas and poorer folk. Not true. Urban housing units could very successfully adopt this system. With appropriate sorting of bio-degradable garbage within the home, to eliminate plastic and other non-degradable products as far as possible, it could provide an instant source of energy within any urban housing complex.

As the technology improves and the materials needed for the biogas units become more compact and more accessible, this source of energy must be seriously looked at. If it can work in other countries on a large scale, why not here?

Take Denmark, for instance. Copenhagen produces 20,000 metric tons of biogas daily on a commercial basis using garbage as the source matter. This compares with only 1000 metric tons produced in the Colombo metropolitan area currently.

Dr de Alwis is also keen to emphasise the large scale industrial potential of this energy source.

As he stresses, “everything is possible with this technology. You just need more action than talk.”

by Ajita Kadirgamar