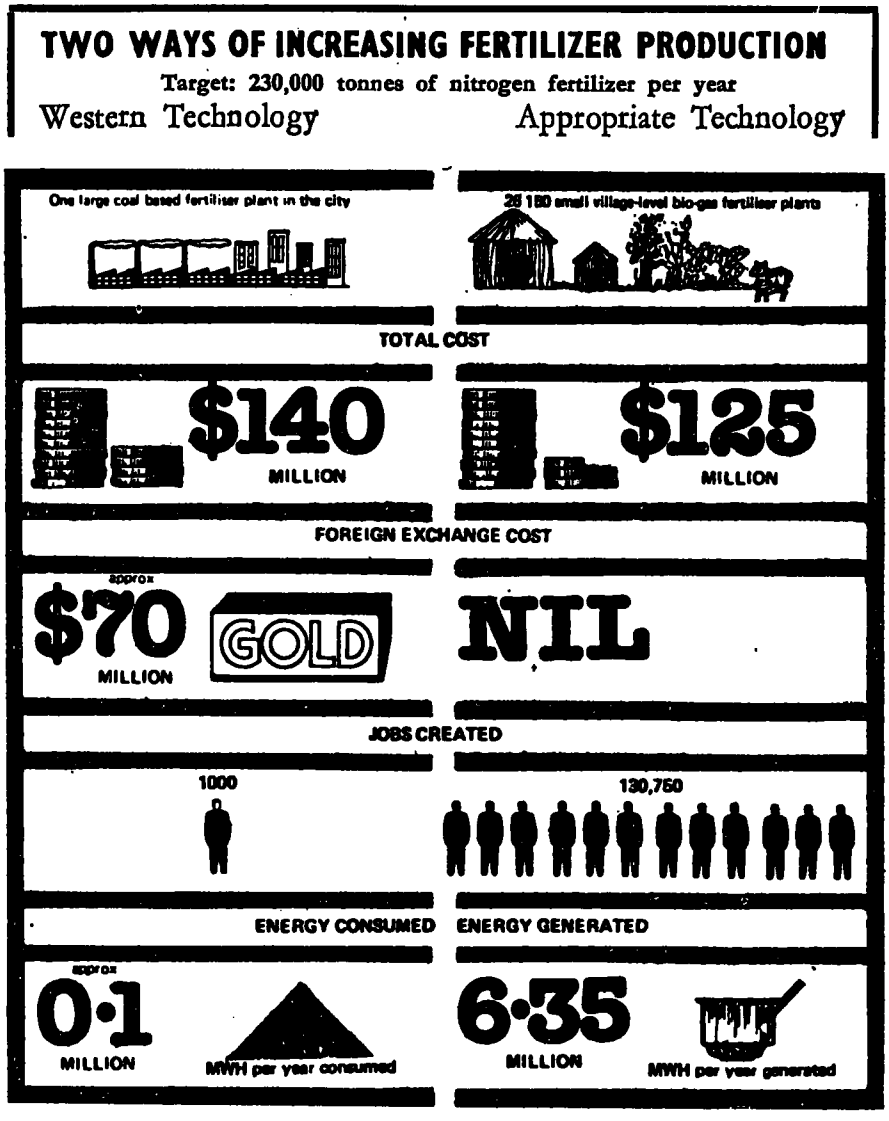
THE TROJAN HORSE Part II

Amulya Kumar N. Reddy

See Box on page 18 for reference to Part 1 of this article.



Magnifying Inequality

The energizing of cities to the detriment of villages and the neglect of the energy needs of the rural poor are striking examples of how western technology magnifies existing inequalities. And yet these energy needs of the poor have an overwhelming bearing on many of the problems of development including population growth. Thus, if a poor family needs about four to six hours per day for each of its activities (collecting firewood to be used as cooking fuel, bringing drinking water from wells, streams, etc., and grazing livestock), its only rational response is to have about three children and to depend on their energy contributions for survival. It is vital therefore to develop energy sources to meet the needs of the poorest families and of villages.

What are the prospects for biogas energy in this context? A crude estimate of the daily energy needs of a 100-house, 500-population village is as follows: about 200 kWh for cooking, about 200 kWh for water pumping and industries, and about 100 kWh for lighting, requiring in all about 180 MWh per year. This requirement can easily be met by a village-scale biogas fertilizer plant, which can generate out of the available cattle and human waste about 5,000 cubic feet of biogas (50-80 per cent methane) per day, with an energy equivalent of about 660 kWh per day or 240 MWh per year. In contrast, one large-scale coal-based fertilizer plant consumes the energy needs of about 550 villages. This means that the choice of western coal-based fertilizer technology also implies the consumption of the energy needs of about 550 villages, whereas the adoption of alternative biogas fertilizer technology helps in meeting the energy needs of 26,150 villages and of the poor in these villages.

There are several other aspects to biogas fertilizer plants. For instance, the biogas produced contains 20-50 per cent carbon dioxide gas, which can be used for enhanced photosynthetic yields (e.g. of vegetables or algae), for production of dry ice as a refrigerant for food preservation, and for certain chemical processes (e.g. clarification of sugarcane juice). The problem of distributing biogas cooking fuel to individual houses can become an advantage by using plastic pipes, which can be time-shared with a drinking water supply system. Such a protected water supply system, working in conjunction with latrines feeding human wastes into the anaerobic digester, may prove an excellent low cost, alternative public health technology to eradicate intestinal parasites, which in India are said to consume as much as 15 per cent of the miserably low daily calorific intake of 1,900 calories per caput.

Further, the fabrication, erection, operation, maintenance and management of the biogas fertilizer plant by village personnel can prove a vital device for stimulating and sustaining social participation and people's control, which are the surest guarantees of endogenous development. Finally, the ecological soundness of these plants is obvious: they use wastes as a renewable resource, they do not use depletable fossil fuels, they render disease-carrying wastes harmless, their small scale makes for low impact on the environment, etc.

Alternative technologies, therefore, are environmentally sound and socio-economically appropriate for the objective of development.