

Prospects of Energy Production from Biogas in Bangladesh

by Dr A M Shamsul Hoque

Considering the deteriorating physical, economical and environmental condition and gradual human density increase in Bangladesh, the production and utilisation of biogas should have been started here long ago. However, better late than never, Bangladesh hence should start wide-spread feasibility study and research on biogas energy production and utilisation without any further delay.

BIOGAS is a gas produced from the bacterial decomposition of organic materials, organic wastes, such as cow-dung, etc. The production and utilisation of biogas in large scale was started in the rural and some urban areas of neighbouring countries like India, China, Thailand and Nepal during the last decade. Except a negligible few, the projects taken were found to be mostly successful and these have solved the acute shortage of fuelwood, lighting and in some cases these provided the energy needs of small industries. In Bangladesh, some research type projects on Biogas Production were undertaken about a decade and half ago by the Department of Public Health Engineering (DPHE) through its then Branch of Environment Pollution Control (EPC) now converted to a separate department called Department of Environment and transferred to a new ministry, called the Ministry of Environment. The operation and maintenance of those plants was not done properly and adequately due to lack of knowledge and technical know-how among the users and supervisors. The follow-up action also was not taken due to lack of initiative and drive. Local Government Engineering Department is one among the concerned agencies which is learnt to have taken initiative in recent time in this field. This is a timely step towards contribution to rural and urban energy development in the country from non-conventional sources.

In Bangladesh about eighty per cent of 120 million population live in about 15 million rural homes where there is acute shortage of energy for cooking, lighting and many other purposes. About 40 million metric tonnes of fuelwood are unavoidably burnt per year for evoking. This creates an unbearable pressure on the country's forest, which at present is only about 8 per cent of the total area of Bangladesh, although environmental protection need demands 30 per cent forest coverage. So for the survival of our country, we have to protect our environment, and for the protection of the environment, we should protect our forest resources, and hence should find out alternative energy sources to meet up our essential energy need. There are many possibilities of alternative sources of energy in the country, such as solar energy, wind energy and biogas energy. But all these are not yet developed adequately to be used in Bangladesh within the affordability of the rural people. Understandably, we have to proceed with the cheapest source like biogas which have successfully been developed and are being used in many



A biogas plant.

are essential needs for Bangladesh. In Bangladesh, cows are reared in almost every house in rural areas and also there are huge stock of paddy straw available for production of biogas in the villages where biogas is needed the most. Hence, it should be the government policy to introduce biogas production and utilisation in rural Bangladesh, and some urban slums and fringes.

The very cheap raw materials along with low-cost technology, are also available to produce biogas in plenty. Human excreta also can be used for biogas production if same is mixed with other raw materials by disposing in a single compartment and only if that is aesthetically acceptable to users. Particularly, paddy plants are available so plenty in Bangladesh that we can mostly depend on paddy straw as raw materials for many years before we can search for other less cheaper materials, such as vegetables wasters, water-hy-

acinth etc. Under the leadership of Dr Kolasinghe, a civil engineer at National Engineering Research and Development in Sri Lanka, a study found that dry batch type of biogas generator could be developed eliminating the problems of occasional scum formation and poisoning of conventional types of biogas plants due to long retention time and non-availability of raw materials such as cow-dung.

Biogas utilisation and production in India, China and Thailand started long ago in large scale and story of success is being heard for many years. Thousands of plants have minimised the large scale destruction of forests and thus protected the environment of those countries.

In Nepal, biogas production and utilisation has been started in the recent days in some rural parts of the country where fuelwood is in short supply due to deforestation.

Considering the deteriorating physical, economical and environmental condition and gradual human density increase in Bangladesh, the production and utilisation of biogas should have been started here long ago. However, better late than never, Bangladesh hence should start wide-spread feasibility study and research on biogas energy production and utilisation without any further delay. The Department of Public Health Engineering which have manpower in this field should take the lead in the matter and other interested government and private agencies also should come forward to participate in this activity as a national protection step towards the country's environment and at the same time providing rural people with their essential energy need.

The government should take up a country-wide project of constructions biogas plants in the entire rural area and also in the towns where fuelwood is still used for cooking, lighting and other needs. There are cow-dung, vegetables, wastes, paddy straws, which can be used as raw materials for production of biogas. If biogas is used, speedy deforestation of the country will be stopped, land erosion will be controlled and protection of environment will be ensured. The waste products of the biogas plant can also be used as manure without impairment of the quality of cow-dung and other wastes. Moreover, when biogas will be burnt, we will be contributing partially to the reduction of methane gas accumulation in the atmosphere which is responsible for greenhouse effect reportedly increasing the temperature of the earth and thus threatening the existence of Maldives and southern part of Bangladesh.

Giving Hope to Dhaka City's Slums

by Aasha Mehreen Amin

AN annual migration rate of 7 to 8 per cent has ensured more congestion and misery for the urban-poor. In Dhaka there are over 700,000 people living in 1556 slums and squatters. About half of this number are women who are illiterate, malnourished, deprived, and dependent on their male relatives. Many of them whose husbands are either dead or absconding, are left with small children to feed, pay rent for their slum but hut and live in the squalor of city slums. Most NGOs of this country being concerned exclusively with rural women, this growing number of disadvantaged women in the urban areas have been completely overlooked. This is where Shakti Foundation has made a difference initiating its urban credit programme (UCP) in April 1992 for women in slums and squatters of Dhaka city. Through this programme Shakti has given these women the opportunity to use their potentials to be financially self-reliant and to gain access to a male dominated labour market.

Shakti's credit programme based on the Grameen Bank model acts as a minibank with the objective of empowering slum women economically and socially. With this goal the UCP offers a complete package providing credit for income generating activities; encouraging savings; providing training in skilled development and basic literacy and numeracy; and developing women's management, organisational and leadership skills so that they can control their own investment.

With an initial support from Ford Foundation and Grameen Bank and recently from Ashoka Foundation, Shakti has reached a large number of women in the city. Investments have been made in 80 sectors under the three broad categories of processing, manufacturing and trading. As far as success of the programme goes, the rate of recovery of the loans is 100 per cent.

Shirin, a young woman living in a slum in Dhaka with her husband, a rickshaw puller, says that her loan from the UCP has enabled her to get training in clothes making. "We are now much better off with the added income I get from making clothes, plus we no longer have to borrow from the money-lender."

The additional income has also given these women a higher status in their family. "Previously," says Noorjahan, another slum dweller, "my husband did not discuss any-

thing with me, but now because I am earning, he listens to me.

Following the Grameen Bank system, the project operates through Groups and Kendras. A Group consists of five like-minded women who elect a chairperson and Secretary. Kendra consists of four to six groups with its own Kendra Pradhan and Assistant Kendra Pradhan. Every week there is a Kendra meeting

saving schemes says Islam, provide a back up support for a woman in addition to personal savings. "These savings help her in case she is unable to buy raw materials or purchase something for her investments."

The foundation does not itself give training in skilled development but gets the help of institutions like BISIC, a government agency for small and cottage industry. One of the



Entrepreneurs at work



Women creating their own fate



when financial transactions are made and group members, interact and discuss matters. The meetings which start off with an oath taken by the women to support each other and abide by the programme rules, is a way to develop solidarity among them.

Humaira Islam, Shakti's Executive Director as well as its creator says that the enthusiasm and sincerity of these women have made the programme a success. "Some women have paid off their second loans and are now taking the third; we are now trying to channel them to micro enterprises." The UCP's compulsory

training programmes with the technical support from a man who lived in one of the slums includes teaching women to make entire shoes as opposed to just making a single part. This allows the women to go directly to the market and sell their product without going through a middleman.

Along with training, Shakti also promotes awareness in health and other issues. On the Foundation's request, ICDDR has given these women basic training on how to prevent certain life threatening diseases. Mini workshops are also conducted through Shakti Foundation using women con-

sultants from within the groups who are paid a consultant's fee. "This makes the others more receptive plus it means that we can use the money that would have paid for outside consultants, to invest in our own people," adds Islam.

With an existing project of 23 slums in Dhaka city, a number that is always increasing, Shakti has plenty of problems. The most pressing one is that of eviction. A credit programme maybe progressing successfully in a particular slum when all of a sudden the slum dwellers will be evicted with no alternative area to go to. This says Islam completely disrupts the programme although Shakti makes all efforts to keep close contact with the evicted. Other drawbacks include problems of marketing the products made by the women and getting enough trained management staff to cope with the increasing numbers of Shakti's beneficiaries.

These problems, however, have not undermined UCP's success, evident in the change in the lives of its recipients. Piara a young woman from a slum in Mirpur now owns a mudir doka (small shop) in the slum area, selling various items such as wheat, pulses, spices, cigarettes etc. She has already paid off her first loan of 3,500 taka and received a second one. With the Taka 1,000 in sales revenue plus profit, Piara supports her family of one son and four daughters and also buys more goods for her shop. Musammam Parveen, a mother of two girls and the wife of a rickshaw puller, uses her loan to buy cloth and thread to make embroidered table clothes, bed covers and garments. The added income has enabled Parveen to look forward to the future: "I want my children to be educated and to have a good life; if I can I will get out of the slum and live in a decent place."

The women under the UCP programme, still have a long way to go before they can have in basic terms, a decent life. Life in a slum is always ridden with uncertainty, disease and despair over where the next meal will come from. In this dismal scenario, Shakti which means strength or power, has given these women the chance to make a better tomorrow. The Executive Director of this organisation, whose dedication has made this possible, believes that one day these women will become entrepreneurs and industrialists and live a life of dignity and hope.

Promoting Production of Brass Products

by Dr MA Yahia

NO effective steps have yet been taken by any agency or any organisation to trace the ancient original folk industries of Bangladesh and to treat them as cultural heritage of the country. It has been observed in many cases that ancient technology is still being practiced in the villages by the villagers in the country. Such metal products are also called as the folk crafts of Bangladesh. In order to ascertain the solution of the problems, goal-oriented scientific and technical survey should be undertaken throughout the country before a particular cottage industry is fully extinguished.

Present Conditions of the Brass Factories

Most of the factories of brass products are located at Dhamrai, Shimulia, Jinjira, Bikrampur in greater Dhaka district. Water pot with nozzle and Tumbler of brass are being manufactured using the casting process in three factories at Dhamrai. Large spoon, plate, pitcher, bowl, betel-plate, betel-box of brass are being produced at Shimulia. Large cooking pot (cauldron), betel-box, flower-tub are being made at Jinjira in Dhaka. Various brass items are being prepared by sheet drawn process in more than 25 factories at Laujhong and Nagerhat of Bikrampur. Almost 200 artisans are working in these factories. The items manufactured in these cottage industries are tub, pitcher, cooking pot, plate, betel-plate, betel-box, jug etc.

Actually casting device is more difficult and laborious than the sheet drawn process. Thus the durability by casting process is greater than the durability of the product produced through the technique of sheet drawn process. While asked, how he learned the process, an artisan replied that he learned the technique from his boyhood and now became an expert. It was also learnt that this technology was not imported into Bangladesh rather they have learnt it from their fore father.

It was gathered that the artisans of Shimulia factory were not able to work in the factory of Dhamrai. Because same items are not produced in both the area. It was also learnt from a survey report that most

of the factories at Shimulia were closed down due to various problems including high rate of raw materials and firewood. The owners and the president of the association of all the factories at Shimulia have complained that the extinction of brass factories were mainly due to rising market of steel products, aluminium products, melamine products, PVC products, ceramic prod-

ucts are essential for this factory but heavy machineries are not required at all.

Establishment Cost

The establishment cost of one brass factory is estimated to about Taka twenty lakhs.

The factory may be equipped in such a way that the following category of products can be manufactured: (i) utensils (ii) tools

products replaced the brass products due to high price of brass products. Raw materials needed for brass factory are not easily available. Because brass materials (used and fresh) are being smuggled out of the country. These problems were discussed with the president of the association. He suggested some measures and solutions. According to his formula, the import duty of raw brass should be rationalised so that people can buy the brass utensils instead of steel products, aluminium products, melamine products etc. Smuggling out of brass from the country should be seriously considered by the government. Fuel and electricity should also be made available to these factories at a reasonable cost. The production of brass products does not need heavy machineries whereas the production of steel products, aluminium products, melamine products, ceramic products need heavy machineries. Thus the village people can manufacture the brass products very easily of the owners of brass factories are given the reasonable opportunity for getting bank loans to establish the factory in their own village or town.

Sale Promotion

The sale of the products may be arranged through the handicraft shops located at different places of the country. Arrangement should be made through foreign ministry for sale in the foreign markets.

Conclusion

Village peoples may be trained for the manufacture of brass products so that they can establish such factory in their village and town for their economic benefit and livelihood. The Youth Ministry may undertake such projects for the greater interests of the youths of the country. Moreover, the revival of ancient technology for the folk crafts could be made effective. The Government of Bangladesh may also frame policy for the revival of such original cottage industries as cultural heritage of the country.

The writer is an archaeological chemist.



An artisan preparing brass products.

— Star photo

Alarm over Rice Price Rise

Agronomists warn of a looming shortage in Asia's staple grain. Kunda Dixit of Inter Press Service reports.



Research Institute (IRRI) in Los Banos, near Manila.

IRRI is working on a breed of 'super-rice' to boost yields by up to 30 per cent and on a variety of tropical hybrid rice. But the new seeds are not expected to be available for another six years.

In the past 25 years, global rice production has doubled thanks largely to the high-yield Green Revolution seeds that IRRI developed. Countries like India, Bangladesh, Indonesia and the Philippines became self-sufficient in rice production.

"This dramatic progress has allowed a mood of complacency to set in regarding Asia's ability to handle the food population equation," Hossain, who is a Bangladeshi, told IPS in an interview.

The Green Revolution breakthroughs are beginning to plateau off. Japan and Korea have the highest rice productivity, growing 6.5 tonnes of rice per

hectare. China, which was growing only four tonnes per hectare in the 1970s, now produces up to six tonnes per hectare. Indonesia is reaching the 5.5 tonne per hectare range.

India's average is still only 2.7 tonnes per hectare, but areas like Punjab and Tamil Nadu produce up to 5.2 tonnes. Bangladesh's delta paddies grow an average of three tonnes per hectare.

"There is room for improvement, but at six tonnes per hectare we are reaching the upper threshold of what can be achieved with present technology," Hossain says.

While the likelihood of a dramatic breakthrough in new rice in the next decade is slim, paddy fields across Asia are being eaten up by urban sprawl, there is less money for infrastructure and improper irrigation has salinated large tracts of farmlands in South Asia.

There is one positive sign. As countries get richer, it has

been observed that their rice consumption falls. Per capita rice consumption has fallen in Japan, Thailand, South Korea and Malaysia over the past 20 years.

In poorer countries like China, India, Indonesia, rice is still a luxury and growing incomes will lead to a rise in rice consumption.

While richer Asian countries where rice consumption is falling eat only 10 per cent of the region's production, China, India, Indonesia and Bangladesh — which have yet to reach the income threshold where rice consumption drops — consume more than 70 per cent of the total rice in the world.

Asia's three billion population is expected to increase by 55 per cent in the next 35 years. In that time, IRRI estimates demand for rice will grow by 70 per cent.

Warns Hossain: "Without a continuing growth in rice productivity, it will be difficult to maintain the food-population balance in Asia."

Rice production is also threatened by other uncertainties such as climate change caused by the greenhouse effect and ozone depletion, which could cut harvests drastically in the poorest regions of Asia.

IRRI recently organised an international symposium on Climate Change and Rice in Los Banos, where scientists exchanged their latest findings on whether rice plants can adapt to warmer conditions.

The climate change specialist from the United Nations Environment Programme (UNEP), Peter Usher, told participants Asia was already on a food security tightrope: "The spectre of famine has not touched the Asian continent in the way it has blighted Africa. Yet the current situation has whispered a warning which we ignore at our peril."