

Biogas: Energy for rural Bangladesh

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Bangladesh produces about 1100 million cubic feet of natural gas daily and imports about three million tons of crude oil and petroleum product per year. These are referred to as commercial energy and provide for 35 per cent of the total energy consumed in the country. These commercial energies are mainly used in urban based industries to generate electricity, to run industrial and commercial units and to supply domestic households in major cities and towns. Ironically, these commercial energies are mostly out of bound of the vast majority of the rural people of the country. So where does the nation's energy balance leave the vast majority of the rural population? It is the biomass energy source that is available to the latter and it consists of fuel wood, leaves, agricultural residues, cow dung and other organic wastes. These are referred to as non commercial energy and actually provide for the remaining 65 per cent of the total energy consumed in the country.

About 80 per cent of the total population of the country or about 100 million people live in rural area. The non-commercial biomass energy sources (fuelwood, cow dung, agricultural waste etc), these people traditionally use are inefficient and poorly managed. For generations, their energy technology base has remained inefficient and primitive. It is estimated that only about 19 per cent of the country's total population have electricity, 4 per cent have natural gas connection in the households. In the rural area only 5 per cent of the population use kerosene as fuel.

Commercially produced natural gas is playing a vital role in the industrialization of the country. With increasing industrialization and urbanization the demand for natural gas will continue to grow. It is said that the country would require about 13.6 Tcf of gas upto 2020, about 26.7 tcf upto 2030, and about 62 tcf upto 2050. With natural gas as the single significant commercial energy resource available in the

country, it appears that the present reserve of 11.6 tcf will not run beyond 2020. For this reason, most of the experts opine against the idea of gas export from the country.

The above gas demand scenario is, however, based on the projected requirement of urban based power plants, fertilizer factories, industrial and commercial units to be built in future. This projection does not envisage providing natural gas directly to the vast majority of the rural people. This is not practical for two reasons, i) it is not possible to build gas pipe line infrastructure to connect thousands of villages

throughout the country, ii) even if that were possible, the rural population would not have the purchasing power to use pipe line gas in their households.

The above situation leave the rural population to rely on the traditional biomass sources for household supply of energy. This is however not only a case with Bangladesh, but many other developing nations like India, Pakistan, Nepal, Sri Lanka, Thailand, China etc. Over the last few decades there have been renewed interests and initiatives by many developing countries to innovate new and improved biomass energy technologies whereby the biomass energy sources can be used more efficiently and managed more scientifically. The most popular and widely used of these technologies has been the biogas technology in which biomass (cow dung, poultry dropping, agricultural residue etc) is converted into biogas. The biogas is supplied to households for use in cooking in a similar way natural gas is used. In addition, biogas may be used to light houses as does the petromax.

burner cooker where the gas burns with clean blue flame free of smoke or ash, much the same way a Dhaka city household burns Titag gas. Mr Rashid informed that he installed the biogas plant three years ago. The plant runs on cow dung collected from five cows, which (the dung) is fed into an underground chamber through a hole on the ground surface. That is all he has to do in the morning and the gas automatically flows through a half inch pipe to the kitchen.

In the nearby village of Naljuri, a primary school teacher Nazrul Islam installed his biogas plant five months ago. His family of six is very satisfied with the biogas plant which not only supplies gas to the kitchen, but because the plant is fed with cow dung and other agri waste, the environment of the house it kept clean. Like Abdur Rashid his 100 cubic ft biogas plant cost Tk.14000, of which he received a subsidy of Tk.7500 from the government. An one burner cooker will use 10 cubic feet of gas per hour, so a 100 cubic feet biogas plant, producing 100 cubic feet of gas a day can run a

single burner for 10 hours each day, enough for all the cooking his family needs.

Both the above families are fortunate to be included in biogas project of Science Laboratory, Dhaka (Bangladesh Council of Industrial and Scientific Research). The project was originally initiated in 1995 for 5 years to install 5000 biogas plants throughout the country, informed Mr. Rashed Ismail, Deputy Assistant Biogas Engineer, responsible for supervising biogas installation programme in Jaintia area. A second phase of the project started in 2001 for four more years during

which time 20,000 more biogas plants are supposed to be installed throughout the country. There are 128 biogas engineers working at the field level throughout Bangladesh to familiarise the technology and supervise the installation of biogas plant. Considering the level of interest among the rural people and the benefit this brings to individual household, there should be more help from government and non government organization toward these projects.

Kazi Akhtaruzzaman, Director of the Biogas project of the Science Laboratory at Dhaka, emphatically pointed out the potential this project has to upgrade the social and economic status and standard of living of the rural population. It is, however, unfortunate that we cannot give enough manpower assistance nor the required financial support to meet the countrywide demand existing at the moment. There is lack of understanding as well as commitment on part of the high ups in the administration about this kind of micro level project. Bangladesh remains far behind the neighbouring

countries in developing biogas as apparent from the fact that the number of biogas plant installed is about 30 lac in India, 70 lac in China, 70 thousand in Nepal and only about 8000 in Bangladesh.

Ideal technology for rural Bangladesh: Biogas plant is built with simple technology and uses raw material easily available with the rural households – mostly cow dung. Biogas is a kind of gas generated when biomass i.e cow dung or other animal dung or biodegradable organic masses are stored in underground chamber in an anaerobic condition (absence of oxygen). It

quality fertilizer ready to use in the field.

In Bangladesh 40 million tons of fuelwood is used in rural areas as cooking fuel each year. This destroys our forest and has negative impact on weather, land and environment. Also, as other biomasses like leaves, cow dung and agricultural residues are burnt as cooking fuel, these can no more help as a natural fertilizer as part of the cycle that keeps the balance in the ecosystem. In all the above counts, use of biogas technology will bring about benefits to the environment and the people. It certainly upgrades an age-old inefficient and poor energy use practice into a more efficient and scientific one.

Only a small volume of gas is produced by biogas plant. A 100 cft plant produces 100 cft gas per day. The presently installed 8000 biogas plants in the country cumulatively produces 0.8 million cubic feet of gas per day. Supposing, the present target of installing 20,000 biogas plant be achieved by the year 2004, the volume of biogas that will then be produced will be two million cubic feet per day. This is peanut compared to 1100 million cubic feet of natural gas that the country commercially produces from gas fields at present. The fact remains that in spite of being insignificant in volume, the availability of biogas to very large number of rural people and to very remote areas make the technology very suitable and effective. True, commercially produced pipeline natural gas plays and will continue to play vital role in the industrialization and urbanization of the country, but this gas will not reach the remote village households any time soon, if at all! In that respect there is no alternative to biogas for the millions of villagers like Abdur Rashid and Nazrul Islam.

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All health information to keep you up to date

Around the World

Vitamin C has little or no effect on the common cold

There is much speculation about Vitamin C's (Ascorbic acid or cevitamic acid) role in infections and other conditions. So far large doses (1g or more per day) have been advocated for prevention and cure of common colds, and this theory has gained some popular experimental support. But an Australian National University (ANU) study has concluded that large doses of vitamin C have little or no effect on the common cold. They (the study reported in the Medical Journal of Australia) found that mega doses of vitamin C (over one gram) did not alter either the duration or severity of colds in normally nourished adults. Leader of the group from the National Centre for Epidemiology and Population Health (NCEPH), Professor Bob Douglas said: "The results trail were convincing in their failure to show benefit. In fact, the group who had the shortest and least severe colds were those who used tiny doses of Vitamin C". In the study 184 volunteers were given identically appearing and tasting tablets for the first three days after they developed a cold. One quarter of the volunteers were given a daily dose of 30 mg -- less than minimum required daily dose of Vitamin C -- while the other three groups of the study were given a daily dose of 1g, 2g or 3g of Vitamin C supplemented by flavonoids. Pro. Douglas said the high doses of Vitamin C did not result either in shorter or less severe colds than those in the "Placebo" low dose group. "Placebo" means a medication without direct action on disease, such as water with a harmless colouring agent added or a pill composed entirely of flour; it may be used simply to give the patient the feeling that some treatment is being employed.

The authors, who have systematically reviewed the literature on Vitamin C and the common cold, believe that the eminent 1954 Nobel Laureate, Linus Pauling, greatly overestimated the benefits of large doses of Vitamin C. Prof. Douglas said that evidence in support of Pauling's thesis has always been medically controversial and since Pauling's time about 35 good randomised trails had been carried out. The ANU researchers embarked on their study because of a number of uncertainties and inconsistencies that had emerged from their review of all or the published evidence. "After this study, however, there is no longer any basis for believing that long term maintenance dosage of Vitamin C prevents the incidence of colds in normally nourished adults."

Next: Do you know?

Project to promote primary education

MUSTAK HOSSAIN

The Intensive District Approach to Education for All (IDEAL), a new approach towards teaching, has enhanced the number of students enrolment significantly and seemingly also contributed to improve quality of primary education in the country. Gross enrolment in primary schools rose to 85 per cent recently while the rate of dropout reduced to 30 per cent. Education sector observers tend to see this as a milestone achievement.

The IDEAL project initiated by donors, even in remote places created enthusiasm among the students and parents. Students feel more encouraged to attend school. "I like to come to school as attending class is more interesting now-a-days since teachers use different types of teaching aid to take classes," said Juki Mong, first girl of class five of Mangalshuk Government Primary School at remote

Kalapara upazila. "Juki, came from a local Rakhain family and she is very much interested in attending school," said her class teacher Suraya Nasrin.

The IDEAL project was launched in two upazilas of Jhenidah district in 1996. By the end of 1998, the project was expanded to all upazilas of Jhenidah, Mymensingh, Patuakhali, Noakhali and Dinajpur districts and two upazilas of another 12 districts. There is a target to introduce the project in all 64 districts by the year 2002.

"The IDEAL has taught us to take class in a planned and systematic way. We prepare ourselves through making lesson plan, which help us a lot to organise a class confidently," said Sheuly Begum, another teacher of the school.

"Before implementation of the project, we did not have any planning and monitoring in teaching activities," she said.

"The students of the school were so far awarded 87 primary scholar-

ships since 1987, due to our effort and special care for students," said Mohammad Ismail, head teacher of Mongalskukh Government Primary School.

"After adopting the IDEAL, the school was declared as a model school in the region considering the method we practice to teach students," Ismail maintained with a grain of pride.

He said that many had come forward to provide assistance to primary schools of the locality. With local contribution they were able to replete classrooms and provide uniform to poor students. Students now feel encouraged to attend class as the teachers use different teaching aids to present lecture, which attract most of the students, one guardian maintained.

"IDEAL project has helped us to make a yearly plan taking input from teachers, staff, students, guardians and managing committee," said Selina Akhter, Head Mistress of Sister's Day Government Primary

School at Barisal district headquarters. She said after introduction of IDEAL, government schools were allowed to receive grants and donations from local people to equip classrooms.

"The project has created enormous enthusiasm among the local people and guardians feel encouraged to be associated with the new method of teaching under IDEAL," said M. Nizamul Islam, President of the school's Managing Committee.

is mandatory to make map of catchment area and visit students' houses to know about their problems. The objective of the IDEAL project was to help increase the enrolment rate of 6-10 year children to 95 per cent and the completion rate of 5-year education of enrolled children to 80 per cent.

During a visit to Patuakhali and Barisal, it was revealed that the primary students have achieved 95 per cent enrolment but they are yet to achieve the completion rate of 5-year education of 80 per cent. "Enrolment in all upazilas of Barisal district has achieved 95 per cent target excepting only a few," said Amal Krishna Majumder, District Primary Education Officer of Barisal. He said only Hijla upazila was lacking behind with 70 per cent enrolment.

"We are investigating into the

matter and trying to pin point the cause behind," Majumder added.

Many primary teachers at different schools under the projects said they have to work extra time for copybook implementation of the project. "We give extra effort even at the end of our scheduled school hour but there is no extra incentives for us," one teacher maintained. "If there is not extra incentives, then why should we feel encouraged to provide extra efforts?" she asked.

Observers said although the IDEAL is a tremendously successful in increasing the enrolment rate but it is yet to come up with quality education. Teachers said quality of education could be increased if the teacher-student ratio is brought to a reasonable state.

Many of the primary schools of Barisal and Patuakhali districts have been suffering from logistic support. "We could not take class properly due to lack of sitting arrangement in the school," said a teacher of Sister's Day School. "We have written to the facilities department of the Directorate of Primary Education for supply of bench for the students a few months ago but we are yet to get response from the authorities concerned," another teacher of Sister's Day School alleged. She said we could deliver better teaching if the IDEAL project

could look into some issues like logistic support.

Schools under the project teach through a new approach 'Multiple Ways of Teaching and Learning (MWTL)'. It has been designed and developed through experimentation based on the famous Multiple Intelligence Theory of Professor Howard Gardner of Harvard University.

The government took extensive programmes to bring all eligible children to school, get them to complete the primary education cycle, and give them a quality education. The project started in 1996, is being implemented by the Directorate of Primary Education under Primary and Mass Education Division, with assistance from National Curriculum and Textbook Board (NCTB) and National Academy for Primary Education (NAPE). UNICEF provides financial and technical support for implementation of the project.

The project has generated a high level interest among donors since its inception. At present financial support is being provided by AusAid, World University Services of Canada, Asian Development Bank (ADB), SIDA and World Bank. Other donors have also indicated their intention to support the project.