Is bio-gas realistic in Bangladesh context ?

NURUL HUDA

Cattle holding in general is on decline in Bangladesh, which is seen as a major challenge as regards the implementation of the project. IDCOL officials, however, believe that the country has the potentiality of over one million households having the capacity to install biogas plants. The ever increasing cost of construction materials is seen as another challenge.

THE government has been implementing the National Domestic Biogas and Manure Programme (NDBMP) from 2006 with the objective of developing and disseminating biogas technology in the rural areas with the ultimate objective of establishment of a sustainable and commercial biogas sector in the country. The Infrastructure Development Company Limited (IDCOL) with the financial assistance from SNV Netherlands and KFW Germany has set a target of installing 60,000 biogas plants at an estimated cost of US $ 37 million by the year 2010.

Of the total amount US $ 8 million is credit from KFW Germany while the rest is grant. So far IDCOL has given pre-construction approval for 6140 plants out of which 4934 have already been completed.

According to IDCOL by May this year from January a total of 2000 biogas plants have been completed during the current year (2008) by Partner Organizations (PO) who have been working under NDBMP.

The question which is being raised by the knowledgeable circles in the field is whether the multi-million dollar project is realistic in our context. Those who are skeptical of the success of the project do so not without basis as there were efforts to promote biogas use also in early 1980s when HM Ershad was in power. The Ershad government had a plan to install one biogas plant at each of the country's 450 police stations, as a means of popularizing the technology.

Environment Pollution Department had installed 152 plants at government's expenditure . Most of those plants which involved a cost of US $ 160 each, went to relatively wealthy families. There is logic in this as to supply enough fuel for the cooking and lighting needs of a family of five, each plant needs about 10 kg of dung dailythe output of at least four cows.

In Bangladesh a four-cow owning family is a wealthy family, one which can afford to buy its own fuel wood or cylinder gas. Such families usually do not bother to feed dung regularly into digesters. Thus the experience of biogas project of Ershad period was not all encouraging.

The case of China is different where seven million biogas plants were used as energy source as early as 1983 as the country had well established system of rural communes. It needs to be recalled here that in India 75,000 biogas plants did not function smoothly due to shortage of feeding materials in early 1980s.

It needs to be stated here that only 26 percent of the households in our country produced the required quantity of feeding materials; 44 percent households produced less than half of the required quantity; 50 percent of the plant received less than 50 percent of the required quantity of feeding materials and 83 percent plants were underfed, revealed a recent study submitted to NDBMP.

It said out of 66 plants under analysis, 31 plants were functioning satisfactorily, 21 were functioning partly and the rest were not functioning at all during the investigation conducted on plants installed by BCSIR and LGED from 1997 to 2005.

IDCOL provides Tk. 7,000 as investment subsidy to each household for installation of biogas plant as per its set specifications and standards. Increasing of the subsidy amount is reportedly under consideration due to increase in prices of construction materials.

According to IDCOL the participating organizations are assigned the task of selecting the project areas and potential customers, construct biogas plants as per approved design and standard and extend after sale services. IDCOL provides subsidy, sets technical standards/specification for biogas plant, develops publicity materials, imparts training and activities related to capacity building of POs and monitor their performances.

Cattle holding in general is on decline in Bangladesh, which is seen as a major challenge as regards the implementation of the project. IDCOL officials, however, believe that the country has the potentiality of over one million households having the capacity to install biogas plants.The ever increasing cost of construction materials is seen as another challenge. Partner Organizations (PO) of IDCOL have been experiencing shortage of skilled manpower in construction of biogas plants, which is also having negative impact of implementation the project target.

Awareness of the benefits of biogas use for fuel and organic fertilizer is another challenge. The initial failure of the project in early 1980s still haunts the rural people who do not readily believe good words of IDCOL officials regarding biogas plants.

IDCOL General Manager SM Monirul Islam said, " We are well aware of the constraints and past failures of the biogas project and trying our best to address those accordingly." IDCOL, he said extends concessionary refinancing to the users through POs to help improve their economic condition." According to him 6 per cent of the plants remain out of use mainly due to indifference of service providers.

Biogas may, if the technology proves itself over the long run, eventually save energy money of the rural people. It, however, remains to be seen how IDCOL moves ahead with the multi-million dollar ambitious project through its partner participating organizations to the satisfaction of all of us.

Nurul Huda is a senior journalist.

Addressing the market place to ensure sanitation for all

MD. FIROJ ALAM

Sanitation, in terms of latrines, water supply and solid waste management have the capacity to make hats and bazaar safer and cleaner places to work, shop and eat in. Separate sanitation facilities for women can play a good role in creating a congenial environment in the market place for women to trade and have full benefit from IGA programmes.

DEVELOPMENT in Bangladesh is usually segregated into two broad contextsurban and rural. However, between these two defined areas lie many market places and growth centres which do not fall within either category and are therefore escaping the eyes of the development planners.

In Bangladesh, the exact number of hats or bazaars is not known to me at this moment but it is clear to us that there is at least one hat or bazaar within walking distance of everyone in Bangladesh.

What happens there? A group of peopleshopkeepers and other tradersare living almost permanently in the market place while other groups come daily or weekly to buy and sell products and commodities. In fact the market place and growth centres are a hub for the people living within its catchment area. The population of the hat or bazaar can vary daily from a few hundred to a few thousand people as they gather frequently depending on the market.

Though men are the main visitors of the market place, we cannot ignore the presence of women, children, adolescent boys and girls, though their number varies dramatically throughout the country, for instance, in the Chittagong Hill Tracts the presence of women in the weekly market is high.

Despite the large transient populations water and sanitation facilities in hats and bazaars are negligible. People are forced to openly defecate and urinate close to food stores, with little opportunities to wash hands. Where latrine opportunities are available there is seldom any specific facilities for women.

Solid waste management is generally absent, indiscriminate dumping of market wastes create an ideal breeding ground for vectors such as rats, flies and mosquitoes. Piles of peels and leaves, fish and animal entrails mixed with inorganic plastics are left to decompose. In most of the cases there are no regular cleaners to clean the market places.

The critical aspect of this unhygienic market place is: even the people who are maintaining good hygiene in their home are unable to avoid the potential risk of coming in contact of pathogens from this unhygienic environment where they come to buy their food.

In addition, poor hygiene practices have been observed in tea stalls, road-side hotels and sweetmeat shops. Together, it is evident that a huge gap remains between assurance and action in the prevention of water and excreta borne diseases.

The country strategy which aims for "total sanitation" [covering all parts of the country with sanitation facilities) and "sanitation for all" [no one will be left out from sanitation service and facilities] by the year 2010 will be ignoring a large component if hats and bazaars are not properly included. Despite investing a lot of money and a huge effort given by government and non-government agencies large populations will be facing high risks of contracting the water and excreta borne diseases.

From another perspective, the provision of water and sanitation in the market place has the capability of encouraging women under government and NGO led women's Income Generating Activities [IGA] to sell their products directly to the consumer. It has been identified that these women often loose considerable income when selling through middle man principally due to discouragement in going to the market place. One of the major reasons for not allowing them or their unwillingness to enter the market place is its dirty and unhygienic environment.

Sanitation, in terms of latrines, water supply and solid waste management have the capacity to make hats and bazaar safer and cleaner places to work, shop and eat in.

Separate sanitation facilities for women can play a good role in creating a congenial environment in the market place for women to trade and have full benefit from IGA programmes. In fine to make the "total sanitation" campaign meaningful, Sanitation in the market place is a must.

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Women in a CHT market place.

LANDSCAPE ECOLOGY

A sustainable urban planning approach

FAYSAL KABIR SHUVRO

ACROSS the modern world, landscape ecology is beginning to provide a scientific basis for landscape and natural resource planning and management. Landscape ecology is the study of the interactions between the temporal and spatial aspects of various components of landscape; these components include Abiotic (water, nutrients, energy flow etc), Biotic (flora and fauna) as well as manmade Cultural (urban infrastructures, recreational facilities etc) components therefore landscape ecology addresses the ecological processes affected by the spatial structure of a large area intervened by human activities or natural system. Since there is a wide scope of anthropogenic intervention, the landscape ecology is subjected to planning i.e. sustainable planning.

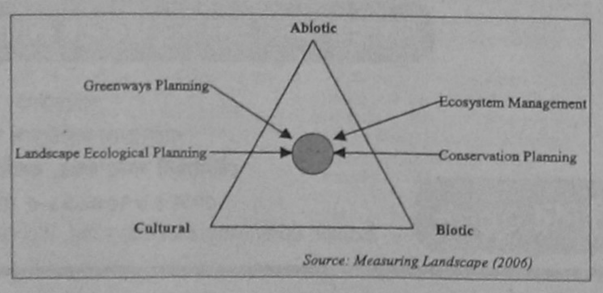
The difference between the traditional ecological studies and landscape ecology, from this viewpoint, is the consideration of human activities, which are kept isolated from natural system in the typical ecological studies. The main focus of landscape ecology is on the structure, function and change of landscape. Structure relates to the composition (number, type and extent of landscape elements. The major landscape elements are Patch e.g. homogenous nonlinear area like forest area or urban built-up area, Corridor e.g. linear element like river or expressway and Matrix e.g. the over all landscape combined with patch and corridor) and Configuration (position, orientation and arrangements of landscape elements).

The functions of landscape usually refer to the of flora, fauna, energy, mineral nutrients and water between landscape elements (Forman and Gordon 1986; Forman 1995). Thus, the functions are mainly 'services' in the form of production (e.g. food, wood, recreation etc), protection (e.g. rainfall infiltration, oxygen production, CO2 absorption etc) and regulation (maintaining the stability of over all landscape) that provided by landscapes. Any natural or manmade change in the structures of landscape i.e. subdivision and fragmentation of natural habitat, construction of dams and embankments on the water way, filling up low land, construction of road dividing agricultural or forest land and so on would change the functions of it. Both nature and cultural systems mutually interact to generate landscape pattern to influence the

functions within it and affect the change.

Landscape planning attempts to influence specific changes in the pattern of landscapes with particular consequences for ecosystem structure and function. In a book named 'Measuring Landscapes' Leitao, A.B. et. al. (2006) there is used a landscape metrics capable of determining the composition and configuration of landscape. The ten set of landscape metrics described in this book are able to measure the geometric properties of landscape elements, and their relative positions and distributions (composition and configuration) are useful for landscape planning because landscape structure influences ecological functions and processes. The ten metrics are: i. Patch Richness (PR), ii. Class Area Proportion (CAP), iii. Patch Number (PN)/ Patch Density (PD), iv. Patch Size (AREA_MN and AREA_AM), v. Patch Shape (SHAPE), vi. Edge Contrast (ECON), vii. Patch Compaction (GYRATE), viii. Euclidean Nearest Neighbour Distance (ENN), ix. Proximity Index (PROX), x. Contagion (CONTAG).

All these metrics can be calculated from vector based data or cell based image using GIS tools or a recommended software named FRAGSTAT. Landscape metrics can be used to characterize a wide variety of spatial patterns as they measure composition and spatial configuration of landscape elements as well as the metrics can be used to characterize the individual landscape elements, collection of landscape elements of same types and entire collections of diverse landscape elements. The spatial patterns can affect the wide variety of ecological processes, which in turn can affect spatial pattern, and this interplay is the prime focus of Landscape Ecology. Because of the relationship between spatial pattern and processes, landscape metrics can inform planners about landscape functions.



Source: Measuring Landscape (2006)

Planning or spatial planning goal is to organize function and space in a way that can achieve best mutual relationship and this can be best realized by ABC triangle and the current planning activities are converging towards the core of the triangle, i.e. the integrated approach of spatial planning. For example: park connecting planning in Singapore has taken into consideration the activities like green enhancement, recreation and urban development, in many countries water resource planning is evolving towards integrated watershed approach considering ABC resources altogether.

Although often originating with a recreational focus, greenway planning also combines natural and cultural goals because it recognizes the connectivity as key to providing multi-functional corridors for hydrological management, species movement, recreation and cultural landscape preservation. The importance of maintaining connectivity is a subject of major research area and for its ubiquity is not discussed here. But to offset the loss of green due to urban development the environmental planners are cautiously suggesting promoting green culture in buildings especially in densely developed cities like Singapore, New York. Greening in the form of vertical gardening, roof or terrace gardening is able to perform the following functions: Reduce urban heat; Attract bio-diversity; Increase aesthetic quality; Conserve energy.

In face of rapid urbanization and consequent deterioration of environment and biodiversity, Sustainable urban planning is a must for numerous reasons and landscape ecological planning therefore would be the best approach to accomplish the task.

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Let's be wise in solid waste management

MAHFUZUR RAHMAN

It will not be wise to burn the waste that can be composted to produce environment friendly biofertilizer and biogas through anaerobic decomposition in a digester. Again you should not burry the substance you can burn to extract energy and utilize the ash as raw material for certain industry.

SOLID waste generation in huge amount is key feature of modern industrial and urban economic system where increasing the production is a prime goal. Waste management is the mechanism of collection, transport, processing, recycling or disposal of waste materials and is generally undertaken to reduce their effect on health, aesthetics or amenity. Waste management practices differ for developed and developing nations, for urban and rural areas, and for residential and industrial generators. Management for non-hazardous residential and institutional waste in metropolitan areas is usually the responsibility of local government authorities, while management for non-hazardous commercial and industrial waste is usually the responsibility of the generator.

Collection and transportation: Waste collection methods vary widely between different countries and regions. Some areas, especially in less developed countries, do not have a formal waste-collection system. In Australia most urban domestic households have a 240-litre (63.4 U.S. gallons) bin that is emptied weekly from the curb using side- or rear-loading compactor trucks. In Europe and a few other places around the world, a few communities use a proprietary collection system known as Envac, which conveys refuse via underground conduits using a vacuum system. In Canadian urban centres curbside collection is the most common method of disposal, whereby the city collects waste and/or recyclables and/or organics on a scheduled basis. In rural areas people often dispose of their waste by hauling it to a transfer station. Waste collected is then transported to a regional landfill.

Disposal methods

Waste management methods vary widely between areas for many reasons, including type of waste material, nearby land uses, and the area available. An analysis of existing methods of disposal processing waste materials is attempted here.

Landfill: Disposing of waste in a landfill involves burying the waste and this remains a common practice in most countries. Historically, landfills were often established in disused quarries, mining voids or burrow pits. A properly-designed and well-managed landfill can be a hygienic and relatively inexpensive method of disposing of waste materials. Older, poorly-designed or poorly-managed landfills can create a number of adverse environmental impacts such as wind-blown litter, attraction of vermin, and generation of liquid leachate. Another common byproduct of landfills is gas (mostly methane and carbon dioxide), which is produced as organic waste breaks down anaerobically. This gas can create odor problems, kill surface vegetation, and is a greenhouse one.

Design characteristics of a modern landfill include methods to contain leachate such as clay or plastic lining material. Deposited waste is normally compacted to increase its density and stability, and covered to prevent vermin (such as mice or rats). Many landfills also have landfill gas extraction systems installed. Gas is pumped out of the landfill using perforated pipes and flared off or burnt in a gas engine to generate electricity.

Many local authorities, especially in rural areas, have found it difficult to establish new landfills due to opposition from owners of adjacent land. As a result, solid waste in these areas must be transported further for disposal or managed by other methods. This fact, as well as growing concern about the environmental impacts of excessive waste generation, has given rise to efforts to minimize the amount of waste sent to landfill in many areas. These efforts include taxing or levying the waste sent to landfill, recycling waste products, converting waste to energy, and designing products that use less material and thus generate less waste.

Incineration: Incineration is a disposal method that involves combustion of waste material. Incineration and other high temperature waste treatment systems are sometimes described as "thermal treatment". Incinerators convert waste materials into heat, gas, steam, and ash. Incineration is carried out both on a small scale by individuals and on a large scale by industry. It is used to dispose of solid, liquid and gaseous waste. It is recognised as a practical method of disposing of certain hazardous waste materials (such as biological medical waste). Although it remains a controversial method of waste disposal in many places due to issues such as emission of gaseous pollutants, modern combustion technologies such as the RCBC (rotary cascading bed combustor) allows efficient energy production with emissions well within regulatory standards. Incineration is common in countries such as Japan where land is scarcer, as these facilities generally do not require as much area as landfills.

Recycling: The popular meaning of 'recycling' in most developed countries refers to the widespread collection and reuse of everyday waste materials such as empty beverage containers. These are collected and sorted into common types so that the raw materials from which the items are made can be reprocessed into new products. Material for recycling may be collected separately from general waste using dedicated bins and collection vehicles, or sorted directly from mixed waste streams. The most common consumer products recycled include aluminium beverage cans, steel food and aerosol cans, HDPE and PET bottles, glass bottles and jars, paperboard cartons, newspapers, magazines, and cardboard, types of plastic (PVC, LDPE, PP, and PS etc. However, recycling of complex products (such as computers and electronic equipment) is difficult, due to the additional dismantling and separation required.

Biological processing: Waste materials that are organic in nature, such as plant material, food scraps, and paper products, can be recycled using biological composting and digestion processes to decompose the organic matter. The resulting organic material is then recycled as mulch or compost for agricultural or landscaping purposes. In addition, gas from the process (such as methane) can be captured and used for generating electricity. The intention of biological processing in waste management is to control and accelerate the natural process of decomposition of organic matter. There is a large variety of composting and digestion methods and technologies varying in complexity from simple home compost heaps, to industrial-scale enclosed-vessel digestion of mixed domestic waste. Methods of biological decomposition are also differentiated as being aerobic or anaerobic.

Conclusion: Waste management system includes waste collection, processing and disposal mechanism. Various mechanisms are applied for collection, segregation, processing and disposal. For environment friendly disposal various components of waste should be carefully segregated. Different parts of solid waste have their own physical, chemical and biological properties. They separately demand distinctive disposal . It will not be wise to burn the waste that can be composted to produce environment friendly biofertilizer and biogas through anaerobic decomposition in a digester. Again you should not burry the substance you can burn to extract energy and utilize the ash as raw material for certain industry.

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