

Meeting Energy Needs with Commercial Biogas

Background

Almost 90 per cent of all Bangladeshi households cook with traditional biomass energy, such as rice husk, jute sticks, cow dung or wood. In fact, 50 per cent of this country's total energy supply comes from biomass sources which are becoming increasingly scarce and costly, putting additional pressure on poor households.

Addressing Bangladesh's energy needs in a sustainable way is one of the priority areas of German Development Cooperation in Bangladesh. The Renewable Energy and Energy Efficiency Programme (REEEP), is deeply involved in Bangladesh's efforts to provide reliable energy supply to its people through the dissemination of renewable energy technologies and through efficient usage of energies. This programme is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and supported by the Bangladesh Ministry of Power, Energy, and Mineral Resources (MPEMR) and the German Federal Ministry for Economic Cooperation and Development (BMZ). Sustainable and Renewable Energy Development Authority (SREDA) is REEEP's Government Counterpart.

Producing biogas from organic waste can not only address the energy crisis, it can also help in managing the ever increasing volume of waste generated in the country. Biogas digesters fuelled with cow dung, poultry litter, night soil, crop waste, water hyacinth leaves etc. represent a simple, inexpensive, yet highly effective way to use and conserve biomass. These digesters produce biogas, a mixture of methane and carbon dioxide, which can be used as a clean fuel for cooking and to generate power. Biogas digesters also produce high-quality pathogen-free organic fertiliser in the form of bio-slurry as a by-product.

Around 100,000 biogas plants are already in operation in Bangladesh; most of which are small domestic systems based on cow dung and poultry litter and are used for cooking. GIZ has promoted the use of larger (gas production of more than 4.8 cubic meters per day) biogas plants through dairy and poultry farms. GIZ has supported approximately 1,500 biogas plants in Bangladesh to use cow dung or poultry litter to produce biogas on a commercial scale during the period of 2006 to 2013.

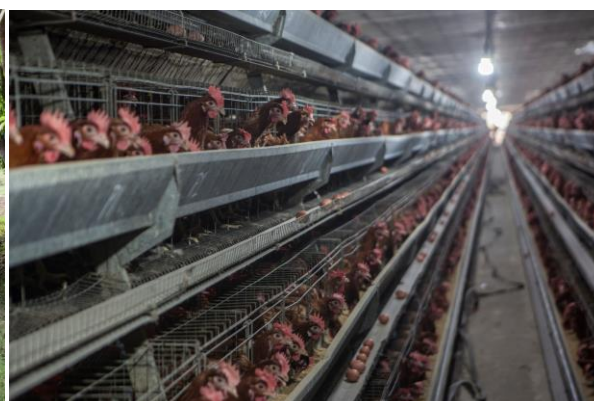
The gas produced in a biogas digester fuelled by poultry litter contains small amounts of hydrogen sulphide and moisture, which are corrosive and cause engine problems. In 2008, GIZ installed a pilot biogas-based power generation system at Raj Poultry in Faridpur. It successfully removed the moisture and hydrogen sulphide using "plug and play" filters and were also able to modify local gasoline and diesel engines to produce electricity (entirely in biogas and in dual fuel modes).

Our Approach

Bangladesh has potential for intensive livestock farm -agro-industrial biogas production, estimated at about 130,000 biogas plant systems of bigger sizes:

- The Bangladesh Bureau of Statistics reports show that about 60,000 commercial cattle farms,
- 70,000 commercial poultry farms. 72.9% of the total commercial chicken production in Bangladesh is in the divisions of the country's two largest cities Chittagong and Dhaka (FAO, 2008).

GIZ developed 23 technical service providers for commercial scale biogas plants during the period from 2006 to 2013. Only a



Left: Buffer storage (balloons) to enhance biogas storage capacity in a large commercial poultry farm

Right: Biogas technology provides an easy solution for poultry waste management and an alternative source of energy

few of them are active in this sector. The most pressing challenge for commercial biogas plants is lack of qualified technical service providers for commercial biogas installations. There is also a shortage of biogas technology experts and very limited information is available about existing commercial biogas plants, including - level of operation, technical aspects, and financial returns and the challenges/ opportunities that it offers for the plant owners. For the market development, it is also imperative to have a comprehensive understanding of the commercial biogas subsector.

To address the above issues, during 2015-16 GIZ conducted a comprehensive multidisciplinary study covering an in-depth review of the existing state of agro-commercial biogas subsector and developing a way forward with necessary insights to conduct a sectoral review for the overall Commercial Biogas Subsector development in Bangladesh.

The objectives of this study were to:

1. Assess whether there is a feasible market for commercial biogas subsector in Bangladesh, considering both the demand and supply end.
2. Assess the readiness of service providers, service facilities, the service recipients and the policy environment to respond for commercial biogas sector development.
3. Assess the status of policy, strategy and regulations in Bangladesh to promote commercial biogas technology; as well as the client-friendliness of laws and policies.
4. Provide recommendations and insights as a way forward to conduct a wider scale sectoral review.

Professor Heinz-Peter Mang of University of Science and Technology Beijing conducted the study as the Lead Expert to conduct the study. The study was supported by Sustainable and Renewable Energy Development Authority (SREDA), German Society for Sustainable Biogas and Bioenergy Utilization (GERBIO) and Bangladesh Biogas Development Foundation (BBDF).

GIZ presented the key findings and recommendations from the study report and the roadmap for commercial biogas sector development to stakeholders in June 2017.

Planned Activities

GIZ plans to implement a showcase project for commercial biogas incorporating all recommendations from the study report endorsed by stakeholders. It is also planned to develop a business model for commercial biogas incorporating all findings and analysis from the showcase project.

GIZ intends to collaborate with SREDA, other government agencies, Bangladesh Biogas Development Foundation (BBDF), non-government organisations, development partners, private enterprises, dairy and poultry farm owners as well as the banking sector to promote and accelerate the dissemination of commercial biogas in Bangladesh. This collaborative approach is expected to help promote commercial biogas sector from technology, policy, business model and service provider perspectives.

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