

# Green Housing & Energy Limited

Dedicated to Sustainable Social Business



**GHIEL** Green Housing and Energy Ltd. (GHIEL) is a social impact business dedicated to combating poverty through empowering low income people and making a better living environment available to them. GHIEL is supporting underprivileged people to improve their living conditions through raising their levels of health, education, employment and income. By offering a wide range of customized products and services to an affordable price GHIEL is targeting the socio-economic problems of green energy supply (solar/biogas), housing, water supply, enterprise development and capacity building. GHIEL has established a platform where investors can participate in social impact business projects through equity investments and technology transfer for achieving real impact in community development.

**THE CHALLENGE** At present, most households rely on biomass as an energy source for cooking. Burning biomass is harmful both to the health and to the environment. Indoor air pollution caused by smoke produced from this kind of fuel affects more than 130 million people and causes over 49,500 deaths per year in Bangladesh. Additionally, dependencies on these fuels increases air pollution, global warming and deforestation. In Bangladesh forests have decreased by 50 % since 1970 and this can in part be ascribable to the dependency on wood for cooking. Instead, organic waste (e.g. dead plant and animal material, cow dung, kitchen waste) can be used to produce biogas.

## GHIEL Biogas Plant

**THE SOLUTION** In response to these issues, GHIEL has launched a Biogas Plant Program in Bangladesh to address the pressing need to adopt wide-scale use of clean alternative sources of fuel for cooking. The ultimate goal of GHIEL's Biogas Plant Program is to offer low cost green and alternative source of energy for everyday household needs.

“Biogas is a bio fuel that originates from the biological breakdown of organic matter in the absence of oxygen.”

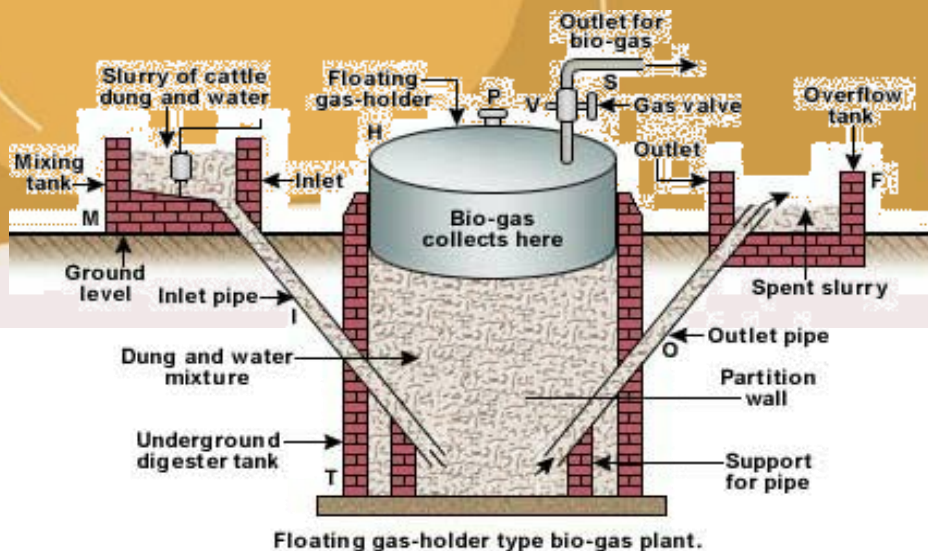
**IMPACT** The main benefits of biogas production are:

- Biogas is a **eco-friendly** source of energy,
- Beneficiaries experience long term **health benefits**
- More **affordable source of energy** (compared to e.g. kerosene and wood) in the medium to long term

In addition, the capacity of bigger GHIEL Biogas Plants can produce both gas for cooking and electricity to power a generator. The Biogas Plants also support income generation since the excess production of gas can be distributed to other households. The byproduct—bio-fertilizer—can be collected and provide the household with a valuable additional income.

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### THE TARGET POPULATION

GH&E targets all those rural households currently using traditional health and environmentally hazardous fuels for cooking purposes. Women and children are disproportionately affected by diseases related to indoor air pollution due to their household responsibilities. Additionally GH&E is working to serve the low-income population and to increase the affordability of green energy technology to these people.

### GH&E'S FINANCIAL SOLUTION

GH&E provides its clients with a customized financial solution with a 10 %-20% down payment and additional monthly installments for a period of 2-3 years.

### THE GH&E BIOGAS PLANT

GH&E offers two types of Biogas Plants according to the client's need:

#### 1) The GH&E Biogas Plant for household cooking purposes:

Size of the plant	Kg of cow dung needed	Biogas production (h)	Price (BDT)
1.6 m <sup>3</sup>	40-50 (4 cows)	3-4	27,000
2.0 m <sup>3</sup>	50-55 (6 cows)	4-5	30,000
2.4 m <sup>3</sup>	60-65 (7 cows)	5-6	33,000
3.2 m <sup>3</sup>	80-85 (10 cows)	6-8	39,000
4.8 m <sup>3</sup>	120-130 (14 cows)	10-12	45,000

#### 2) The GH&E Biogas Plant for industrial purposes:

GH&E can design and provide Biogas Plants of any size depending on the clients needs and capacity.

### WARRANTY AND SERVICING

GH&E offers its clients a 25 years warranty on all Biogas Plants. For optimized usage and better maintenance of the biogas plant specialized GH&E engineers provide clients with training and assistance. GH&E technical experts are always available to support the clients thanks to the local presence GH&E has through its network of 80 branch offices.

Given GH&E's emphasis on quality control GH&E employs great efforts and resources in training its engineers and local staff. Through GH&E's partnership with IDCOL high-caliber training is guaranteed and GH&E imposes a strict quality measurement process of expert cross-examination to ensure exemplary quality of the construction and installation.