Biogas Plant: Converting Waste into Gas, Electricity and Organic Fertilizer

Poultry dropping for bio gas
Grameen Shakti Biogas Program

Potential:
- At least 4 million biogas plants can be constructed
- Rising cost of fuel and chemical fertiliser
- Linking technology with livestock and agricultural businesses

Target:
- 90,000 plants by 2012

Achievement:
- More than 7,000 biogas plants of which 300 are large size
- 1,000 local masons trained and 1,000 demonstration plots to popularize organic fertilizer
Grameen Shakti Biogas Program

The First Market Based Model in Bangladesh

- Instead of direct subsidies, effective financing is provided to make plants affordable
- Technical and financial packages are tailored to the client’s needs
- For at least two years free monthly after-sales services are guaranteed and provided by local masons
- Users of biogas plants are trained on proper operation and maintenance
- By linking biogas plants to direct income generation and entrepreneurial opportunities local stake-hold is created
Creating a Healthier and Greener Bangladesh

Biogas Plants provide access to modern cooking fuel, green electricity and

- Improve health and sanitation conditions
- Protect women and children from indoor air pollution and related diseases
- Contribute to the expansion of agriculture and livestock business for increased food security
- Encourage the creation of micro-enterprises that can sell electricity, gas and organic fertilizer
- Reduce deforestation and carbon emissions
Biogas Programs can be Successful Without Dependence on Direct Subsidies

Income is higher than installments for domestic biogas plants: Fuel saved around Tk 200 per month, additional income from selling biogas to at least one house, and slurry use is around Tk. 300 per month.

Larger plant owners can sell gas to at least 10 more households to earn around Tk. 5000 per month. Increased income by Tk. 7000 per month through reduced fertilizer cost and increased vegetable production.

Tea stall owners, food shops etc are renting biogas from larger plants thus reducing their energy cost and increasing their business.
Program

- A high quality by-product from the biogas plants
- Grameen Shakti is licensed to market “Grameen Shakti Organic Fertilizer” as a cost-effective and environment-friendly supplement to chemical fertilizer
- Grameen Shakti provides technical assistance to entrepreneurs that promote and distribute “Grameen Shakti Organic Fertilizer”

Benefits

- Application of chemical fertilizer can be reduced by 30 – 40%
- Soil fertility and crop productivity will be improved
- Small Biogas plant owners can earn an additional income of at least Tk 1,400 per month
Grameen Shakti
Improved Cooking Stove Program

Potential:
- 85 million people use biomass for cooking
- Demand is increasing rapidly: 171% growth over the past 6 months

Target:
- 550,000 stoves by 2010

Achievement:
- 40,000 ICS constructed
- More than 40 manufacturing units set-up through seed-capital
- More than 2,000 technicians and entrepreneurs trained
A Sustainable Integrated Entrepreneur Based Business Model

- One, two and three mouthed stoves were designed for household, commercial, institutional applications.
- Locally available, inexpensive material is used for construction.
- With seed-capital from Grameen Shakti, community based manufacturing units are set-up to supply grates and chimneys.
- Technicians and entrepreneurs from rural areas are trained to commercialize ICS and provide efficient after-sales service.
- ICSs are linked to income generating activities: 50% less fuel consumption and time saving through efficient cooking.
ICS are very popular amongst households, businesses and institutions

- Smoke-free, clean and healthy cooking environment
- Time and cost-effective cooking resulting in economic savings
- Short payback period
- More clients attracted because of smoke-free environment
- Creates jobs for local youth
A New Paradigm Was Needed to Reach the Rural People

- High-upfront costs
- No consumer credit for renewable energy technology
- Knowledge and awareness gap: Need to gain the confidence of the rural people
- Very little idea about rural market or rural financing
- Lack of efficient trained human resources at the rural level to install and maintain technology
Key to Sustainability: 
Grameen Shakti’s Business Model

- Innovative financing to make technology cost effective to traditional energy alternatives and create ownership:
  Soft loans are offered but no grants or subsidies.

- A vast rural network of trained social engineers:
  Engineers are recruited and trained locally to create rapport with community and to listen, understand the needs of the clients.

- In-house R&D specialist and consultants:
  To adapt technology to local requirements.
Key to Sustainability: Grameen Shakti’s Business Model

- Development of local technicians and entrepreneurs at the grass-roots level:
  
  To create local stake-hold for promoting, installing and providing efficient after-sales service of the technologies.

- Local capacity development and creation of green jobs:
  
  Local entrepreneurs, especially women are offered financial and technical assistance to set-up a renewable energy technology business that strengthens Grameen Shakti’s service provision.
Key to Sustainability: Grameen Shakti’s Business Model

- **Awareness creation and education:**
  Wide network of trained engineers to disseminate information through workshops with community leaders, door to door visits, demonstration fairs etc.

- **Creating Women Energy Entrepreneurs:**
  GTCs train women to become renewable energy technicians and entrepreneurs.
  End-users, especially women, are trained to operate and maintain their technology properly.
Key to Sustainability: Grameen Shakti’s Business Model

- Linking RET with income generating activities, economic, social and health benefits

  Initiatives like micro-utilities are encouraged where the benefits of RET can be shared and the power producer can have an additional income.

- Strong internal audit to maintain strict quality control

  6 monthly detailed audits and 3 monthly surprise audits to ensure high quality of installations and maintenance.

  Partnering with high quality equipment manufacturers.
Road Map to 2015

Grameen Shakti has achieved the capacity to rapidly scale up the implementation of renewable energy programs in Bangladesh:

- Growing network currently 786 Branch, Regional, Divisional and GTC offices all over Bangladesh
- Presence of 5,000 engineers/technicians at the field level
- Carefully designed standardized technology
- Smooth supply of cost-effective material and accessories through local manufacturing units

Challenge: Access to necessary working capital to support rapid expansion
Road Map to 2015
Reaching 75 million people with Renewable Energy Technologies

Infrastructure & Capacity Development

- 2000 rural offices to cover all Bangladesh
- 10,000 social engineers trained & deployed
- 100,000 Green Jobs especially for young women
- Computerized MIS, region based audit system

Solar Home Systems : 7.5 million

- Create more than 100 GTCs and train 100,000 rural women as front soldiers for scaling-up Grameen Shakti’s program
Creating 100 thousand Green Jobs by 2015

Young Women Technicians Installing Solar Home Systems
Road Map to 2015
Reaching 75 million people with Renewable Energy Technologies

Biogas Plants: 2 million
- Emphasis on linking the technology with micro-enterprise, livestock, agriculture businesses
- Promotion of organic fertilizer
- Emphasis on new initiatives such as portable biogas plants

Improved Cooking Stoves: 20 million
- Development of around 10,000 technicians and entrepreneurs
- Setting up 400 manufacturing units
First-Ever Zayed Future Energy Prize

HH Sheikh Mohammed bin Zayed, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, presents the first Zayed Future Energy Prize to Dipal Chandra Barua, in honour of innovation and commitment in alternative energy, at the Abu Dhabi National Exhibition Centre, January 19, 2009.
Thank You for Your Kind Attention