

SOUTH ASIA WOMEN IN ENERGY (SAWIE)
**Second Application Workshop on Efficient
Energy Management And Renewable Energy**

Mainstreaming Gender in promotion of Biogas in Bangladesh

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- Energy is an essential ingredient of development
- ⑩ Conventional sources of energy are exhausting, there prices are increasing
- ⑩ Renewable sources of energy have unlimited reserves
- ⑩ Energy needs are increasing with the growth of population
- ⑩ Conventional sources of energy are centralized and difficult to reach the rural population
- Searching renewable sources of energy is the only option



Why Biogas?

- ⑩ Climate of Asian countries is suitable for biogas
- ⑩ Technology is simple, proven and locally available
- ⑩ Raw materials are easily and cheaply available anywhere
- ⑩ It is cost-effective, payback period is 3-4 years
- ⑩ All hazardous wastes are the raw materials of biogas
- ⑩ It is environmentally friendly
- ⑩ Women benefit more
- It is decentralized and accessible to remote areas



Biogas potential

- Cattle: 22 million
- Poultry farm: 220,000
- Night soil: 150 million
- City waste: 350 Cities
- Agriculture waste: Unlimited
- Straw and Hay: Unlimited
- Water hyacinth: Unlimited



Present practices

- Using biomass and cattle dung for cooking
- Need time for collecting biomass and cooking
- Smoke, make utensil dirty, cause disease
- Soil is deprived of organic fertilizer
- Poultry litter spread bad smell, pollutes environment
- Night soil is the source of many diseases



Conventional Use of Cattle Dung





Conventional Use of Poultry Litter





How women pass time

Period	Without biogas plant	With biogas plant
1 AM	Sleeping	Sleeping
2 AM		
3 AM		
4 AM		
5 AM	Getting up	Getting up
6 AM	Collecting firewood	Looking after vegetable garden and feeding biogas plant
7 AM	Cooking	
8 AM		Cooking



How women pass time

Period	Without biogas plant	With biogas plant
9 AM	Dining	Dining
10 AM	House keeping	House keeping
1 1AM	Collecting firewood	Working for extra income
1 2 AM	Cooking	
1 PM		Cooking
2 PM	Dining	Dining
3 PM	Rest	Rest
4 PM	Work for extra income	Work for extra income



How women pass time

Period	Without biogas plant	With biogas plant
5 PM	Collecting firewood	Work for extra income
6 PM	Cooking	
7 PM		Cooking
8 PM	Visit health care	Looking after children
9 PM	Looking after children	
10 PM		
11 PM	Sleeping	Sleeping
12PM		



Women with biogas plant

- Gets more time to work for extra income
- Earns more and can give more support to her husband
- Spends less in health service
- Can give more time to her children's education
- Living standard improved.



A case study (Golam Maola)

Before construction of the biogas plant

- **Golam Maola is poultry farm owner near Dhaka having 8,000 birds**
- **The litters were spreading bad smell and creating health hazard**
- **His neighbors were angry with him and creating pressure to stop the farm**
- **Golam Maola decided to stop the farm**



A case study(Golam Maola)

After construction of the biogas plant

- **He constructed two 6m³ and one 4.8m³ plants at a cost of US\$ 1200.00**
- **He managed US\$ 400.00 from his own and the rest US\$ 800.00 took loan from Grameen Shakti**
- **He gave connection to 23 houses and earning US\$ 161.00 per month**
- **He repaid the loan in monthly installment of US\$ 37.00 in two years**
- **His neighbors are happy, as they are getting gas service and there is no bad smell**



Pathogen killing rate

Disease	Organism	Temperature (°C)	Retention time (days)	Killing rate (%)
Polio	Polio virus	35⁰	2	98.5
Typhoid	Salmonella SSP	22⁰-37⁰	6-20	82-96
Typhoid	Salmonella typhus	22⁰-37⁰	6	99
Tuberculosis	Mycobacterium	30⁰	-	100
Hookworm	Scurries	29⁰	15	90



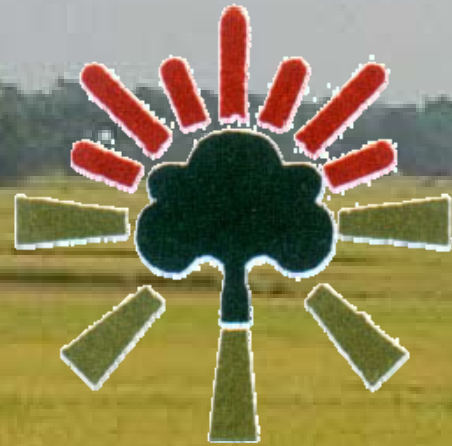
Environmental improvement

Plant #	Place of sample	COD	BOD	p^H
1	Inlet	2120	1400	6.8
	Outlet	168	70	
2	Inlet	1950	1350	6.9
	Outlet	120	80	
3	Inlet	1630	1450	7.0



Compare bio-slurry and chemical fertilizer

Crop	Crop production (ton/hectare)		Increase in production (%)
	Chemical fertilizer	Bio-slurry	
Rice	8.28	9.02	8.93
Maize	7.0	9.5	35.7
Cotton	3.13	3.39	26.8
Vegetable	less	More	-



Thank you