



Renewable Energy Potential in Bangladesh and The Role of Government

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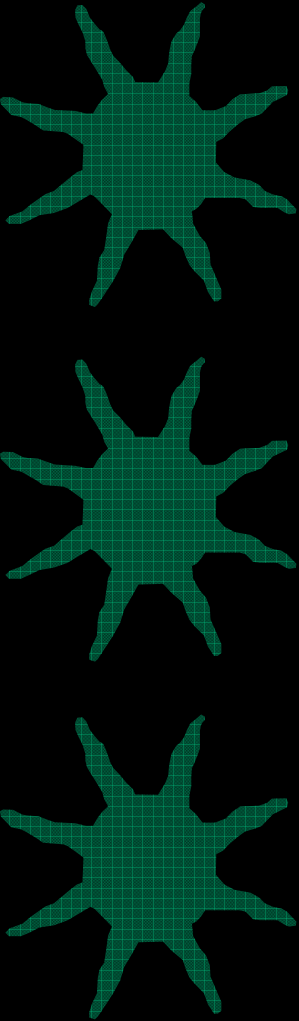
International RENDEV Conference

8 December 2009



CASE FOR RENEWABLE ENERGY

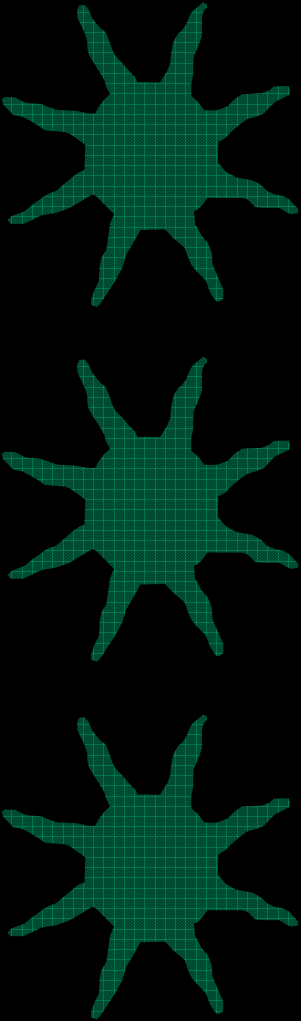
- **To ensure energy security**
 - 70% of Bangladesh's total commercial energy is provided by natural gas and the remainder almost entirely provided by imported oil, hydropower and coal.
- **To reduce negative environmental consequences**
 - Climatic change will eventually raise in sea level- one meter sea level rise will inundate more than 15 percent of Bangladesh, displacing more than 13 million people and cut into the crucial rice crop.
- **To supplement Government's view on:**
 - Electricity for all by 2020.
 - Government has set a target to meet 5% of total power demand by 2015 and 10% of total power demand by 2020 from renewable energy sources.





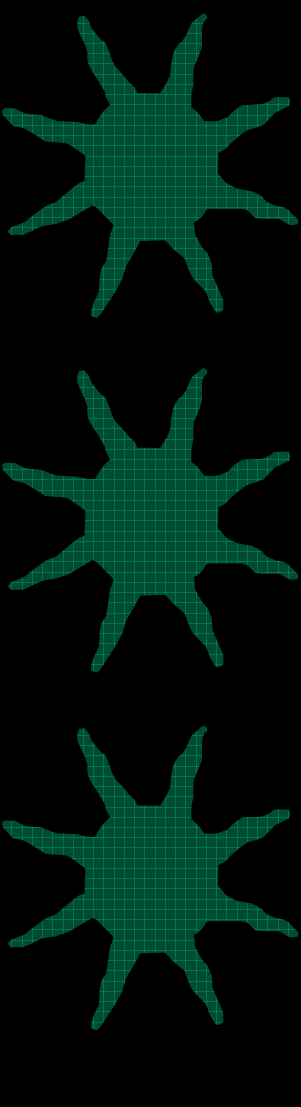
CASE FOR RENEWABLE ENERGY

- **To reach out to off-grid areas where grid electricity is not available:**
 - More than two third of the nearly 15 million households of Bangladesh lack access to electricity
 - Two approaches might be followed to provide electricity to off-grid areas:
 - Individual or household options for dispersed population
 - Community or private sector initiatives involving mini-grids for distributed supply of power





POTENTIAL OF RENEWABLE ENERGY DEVELOPMENT IN BANGLADESH

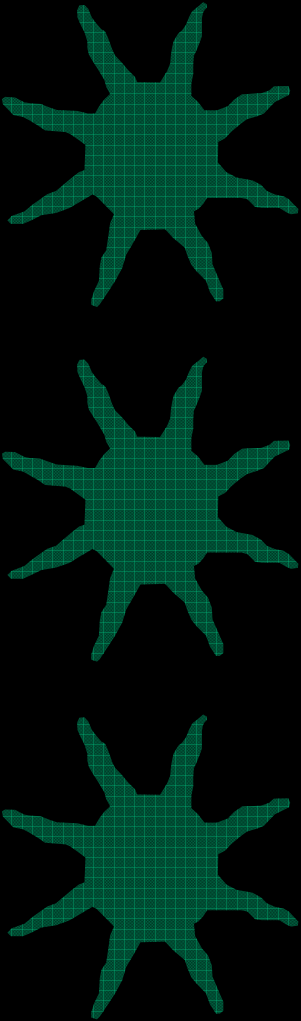


Sources of RE	Technological Potential
Solar photovoltaic	<ul style="list-style-type: none"> Solar energy can be generated in all parts of Bangladesh. Daily average solar radiation varies between 4 to 6.5 kWh per square meter. Solar energy can be effectively utilized in two ways- either by converting it into heat (solar thermal) or electricity (solar photovoltaic). Solar PV has been harnessed more in Bangladesh than Solar Thermal: SHSs (99.9%), others (solar pumping, solar lighting, solar mini-grid and others-0.1%)
Biogas	<ul style="list-style-type: none"> 3 million potential households with adequate cattle/poultry. Biogas is being used for cooking purpose One 50KW biogas based power plant is being financed by IDCOL and about 15 KW installed by others – BRAC, LGED Potential for 800 MW
Biomass	<ul style="list-style-type: none"> There are about 500 auto rice mills in Bangladesh that produce 8 – 9 million metric tons of rice husk annually. Potentials to generate 400 MW electricity
Wind Energy	<ul style="list-style-type: none"> No comprehensive wind mapping as yet. The potential is assumed to be limited to coastal areas, and offshore islands. 2 wind turbines - 1 MW capacity each - at Feni and Kutubdia by BPDB has been installed.
Hydro	<ul style="list-style-type: none"> Microhydro and minihydro have limited potential in Bangladesh, with the exception of Hill trac areas. Hydropower assessments have found few potential sites where small capacity power plants can be built i.e. 10 kW to 5 MW. A LGED study has identified eight prospective micro-hydro sites in the Chittagong Hill Tract regions with a total estimated capacity of 135kW.



PIONEERING ORGANIZATIONS IN RE SECTOR OF BANGLADESH

- IDCOL
- REB
- BPDB
- LGED
- BCSIR
- Grameen Shakti
- BRAC
- Rural Services Foundation
- Others
- GTZ
- KfW



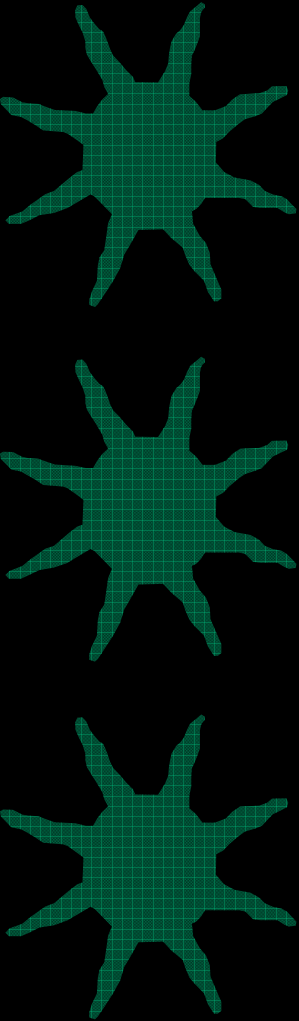


AN OVERVIEW OF IDCOL

- IDCOL is a Government-owned financial institution mandated to promote private sector financing in infrastructure and renewable energy sector.
- It provides long-term financing to private sector infrastructure projects and RE Projects.

Objectives:

- Promoting renewable energy technologies in Bangladesh.
- Fulfilling the basic electricity requirements in the rural areas of Bangladesh and supplementing the Government's vision of electrifying the whole Bangladesh by the year of 2020.
- Promoting renewable energy businesses in Bangladesh on commercial basis.
- Ensuring environmental sustainability.
- Encouraging micro-finance and income generation activities.
- Raising standard of living of rural people through RE.





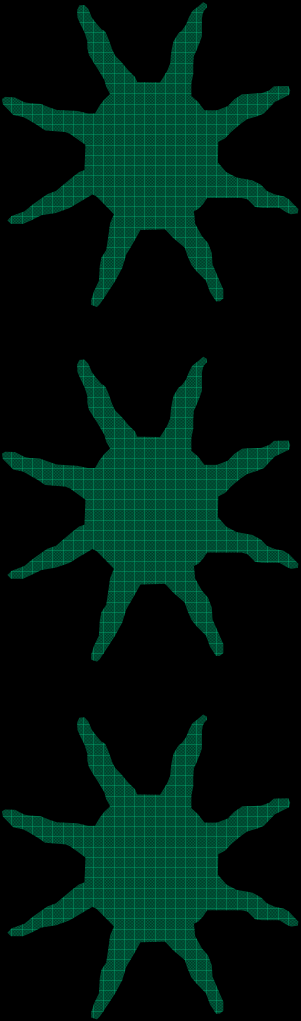
EXISTING RENEWABLE ENERGY PORTFOLIO OF IDCOL

● Programs

- Solar Energy Program
- Biogas Program

● Projects

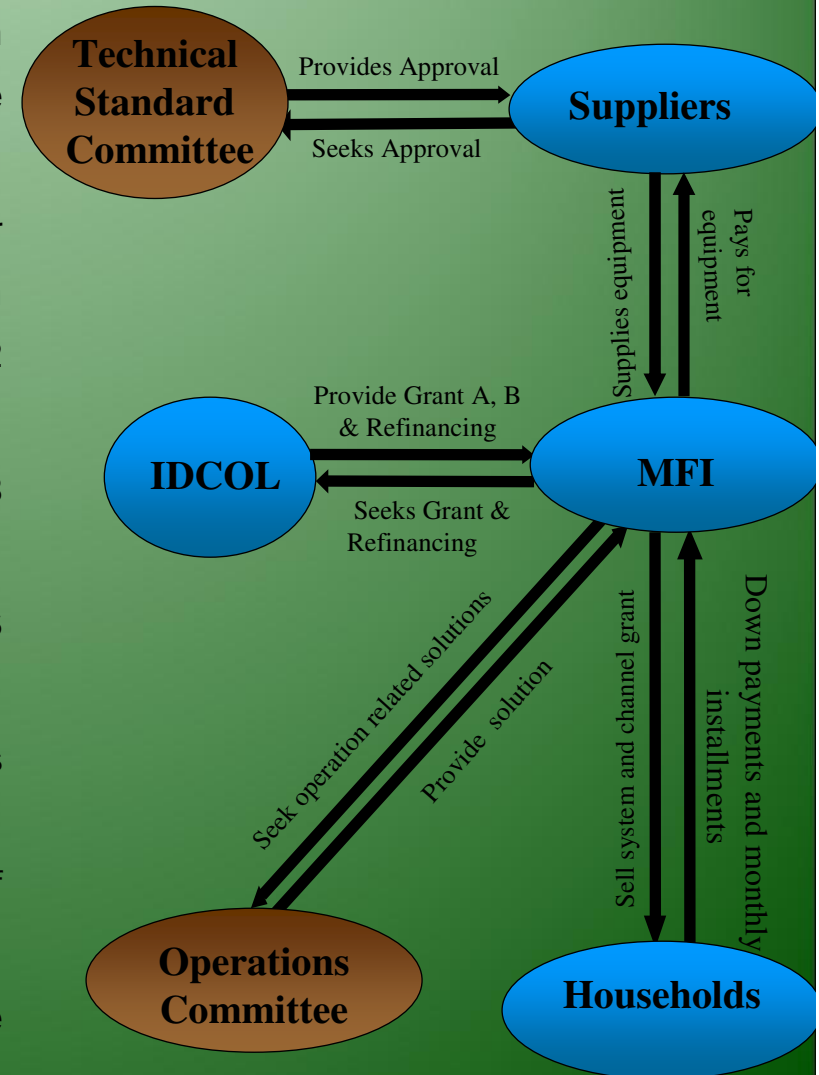
- 250-kW Biomass gasification based power plant
- 50-kW Poultry based power plant





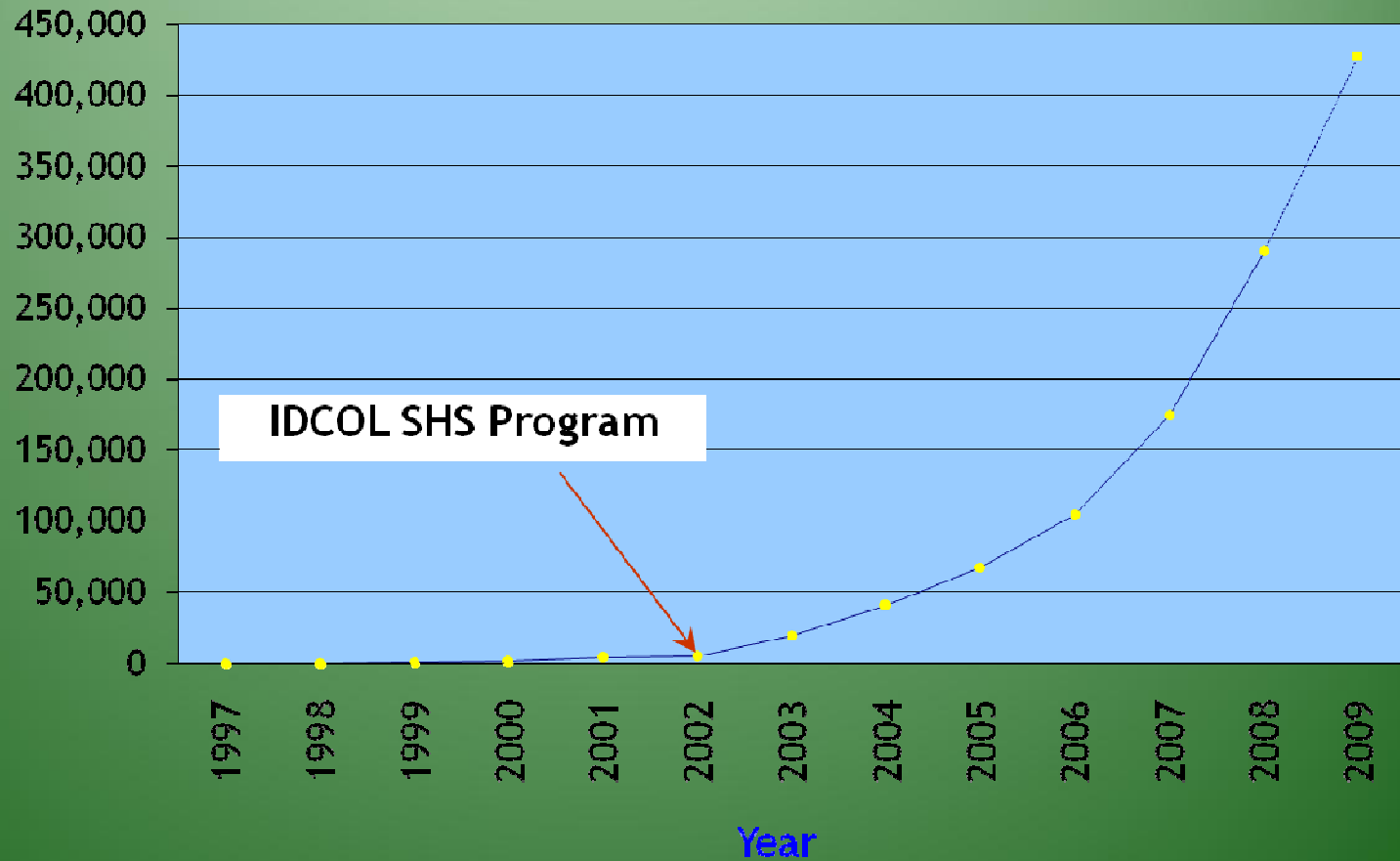
IDCOL SOLAR PROGRAMME – AT A GLANCE

- With the help of IDA, GEF, the Program started as a component of REREDP of the World Bank;
- The initial target of installing 50,000 Solar Home Systems (SHSs) was achieved thorough 3 years ahead of completion date and US\$ 2 million below the estimated cost.
- Following the success, IDA, GTZ, KfW, ADB and IDB have extended support.
- IDCOL has revised its target to 1 million SHS by 2012.
- SHS Installation up to October 2009 is 400,000 (21.56 MW) which has contributed to the 127,500 CO₂ emission reduction of tonne per annum.
- It is one of the fastest growing renewable energy programs in the world.





SHS INSTALLATIONS IN BANGLADESH



Number of SHS

Year

[Back](#)



FINANCING OF A SOLAR HOME SYSTEM

Financing Method (Sample of a 40 Wp System)

Cash Sale

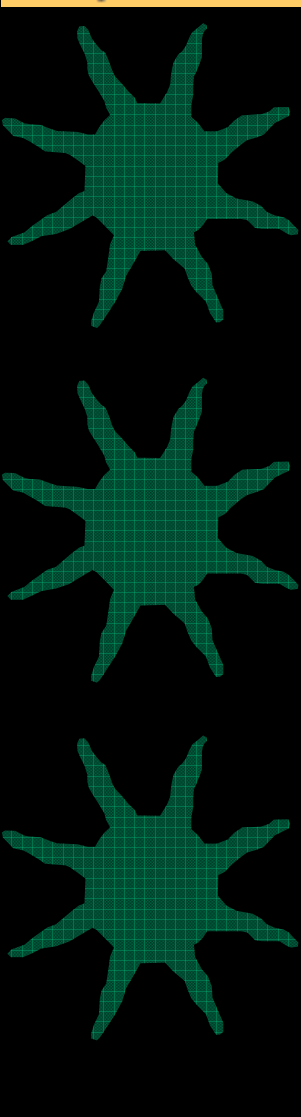
Only Grant A is provided to the PO

Credit Sale

SHS cost (Tk)	USD 323
Household Down payment (15%)	USD 48.43
Loan (Tk)	USD 274.43
IDCOL refinance (80%)	USD 219.54
System buy-down grant :EU 30	USD 38.40
Institutional development grant: EU 8	USD 10.24
PO Contribution 20% of loan amount	USD 55

Financing terms of loans to POs

Loan (Tk)	USD 274.43
Loan duration	3 years
Total Interest charge (6% p.a.)	USD 49.4
Total household payment	USD 324
Monthly household installment	USD 9





IDCOL BIOGAS PROGRAMME – AT A GLANCE

- With support from SNV Netherlands and KfW, IDCOL is implementing this program through 22 partner organizations (PO).
- Around 10,000 households are enjoying the benefit of cooking in clean and healthy environment.
- There are about 12 Biogas villages (each village having more than 20 Plants)
- Interest rate: 6% to LPOs and LCPOs to households
- Loan tenure : 7 years, Grace Period : 1 year, Repayment Profile : Quarterly
- Subsidy: 7,000 Tk/Plant provided by SNV to customer
- Credit facility : IDCOL, KfW up to 80% of the LPOs and LCPOs loan to households.

Cash Sale

- Customer bears all costs.
- IDCOL provides Tk. 9,000 as subsidy to the customer through PO upon completion of the plant.

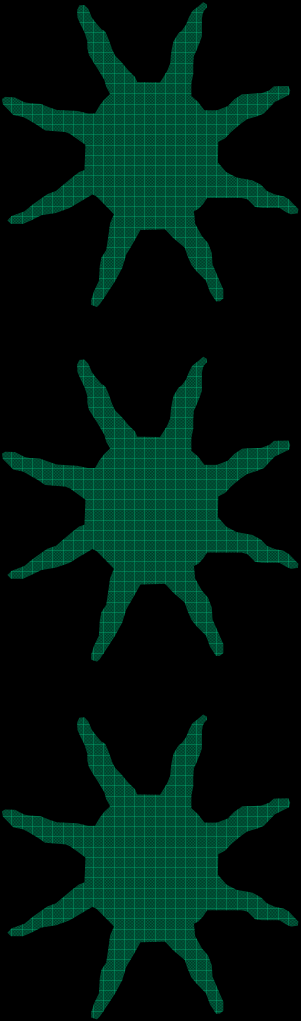
Credit Sale

- **Down payment** : Min 15% of the plant cost
- **Loan** = plant cost- subsidy- down payment
- **Refinance** : 80% of the loan by IDCOL to LPOs/LCPOs (EUR 147)
- **CPO/LCPO contribution** : 20%



OTHER RENEWABLE ENERGY PROJECTS

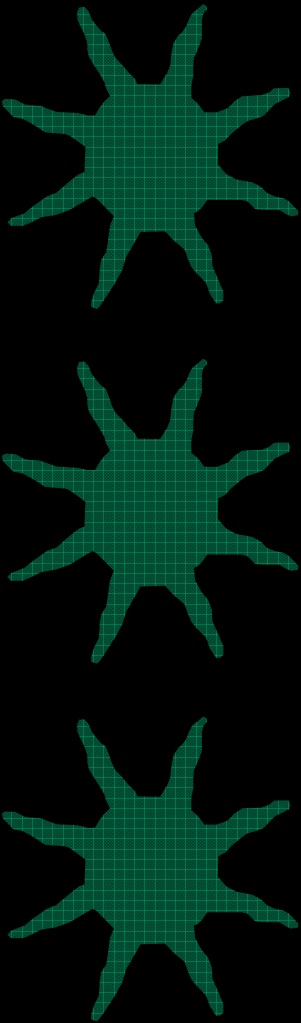
- **250-kW Biomass Gasification based Power Plant**
 - Located in an un-electrified area, the plant is supplying grid quality power to 500 households and commercial entities of the area of Kapasia, Gazipur ;
 - The plant uses locally available agricultural residues i.e. rice husk as fuel for power generation;
 - It has enhanced lives for households and spurred commercial activities i.e. telecom tower, cable tv, saw-mills, irrigation, studios, shops;
 - Total Cost of the Project was BDT 2.5 crore which was financed with a debt to equity ratio of 80% to 20%;
 - BDT 1.5 crore was provided by the World Bank as Grant
- **50-kW poultry based electricity**
 - Generated electricity will be consumed for running a poultry farm of 30,000 birds.
 - Liquid bio-fertilizer produced from the plant will be used in crop production and fish farms.
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OTHER RENEWABLE ENERGY PROJECTS IN PROGRESS

Proposed RE Programme	Technology	Expected Socio-economic impact
400-kW Biomass gasification based power plant	Biomass gasification	<ul style="list-style-type: none">• 15-20 rice mills will be supplied electricity to replace grid electricity currently being used.
Two Solar Water Pump for Irrigation	Solar Photovoltaic	<ul style="list-style-type: none">• A total of 140 solar panels with 130-Wp capacity each will provide the required power to run the pump• Will replace 160,000 liter of diesel and thus, and will save 444,800 tons of CO2 emission reduction during the Project life
5-MW Solar Manufacturing Plant	Solar PV	<ul style="list-style-type: none">• Satisfy local demand• Will alleviate supply crisis• Reduce system price• Generate employment• Will induce faster expansion of SHSs• Generate export earnings

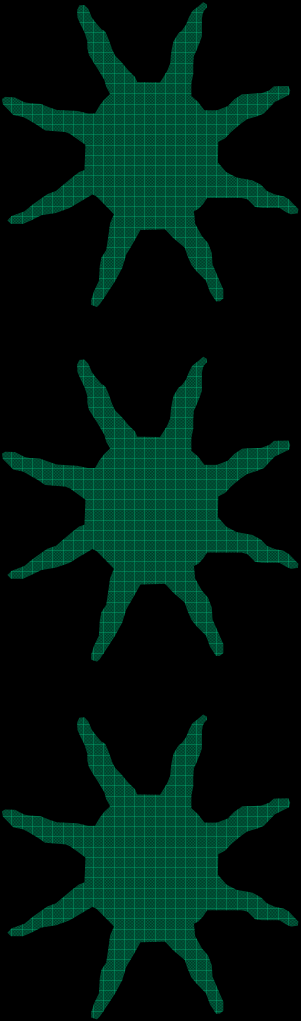




IDCOL'S TARGET UP TO 2012

	Average Capacity	Installation target	Total Capacity
Solar Home System	54 W	1 million	54 MW
Biogas Plant for cooking gas	2.6 m3	60,000	48 MW
Solar Mini Grid	50 KW	20	1 MW
Solar Irrigation Pump (1 Cusec)	5 KW	30,000	150 MW*
Biogas based Power Plant	50 KW	500	25 MW
Biomass Based Power Plant	400 KW	10	4 MW
Total Potential			282 MW

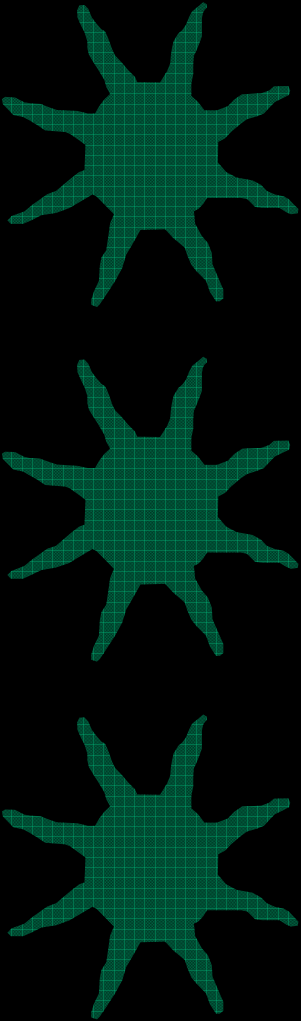
- IDCOL is in the process of creating a model for Solar Irrigation Systems (SISs) similar to the SHS program





ROLE PLAYED BY THE GOVERNMENT

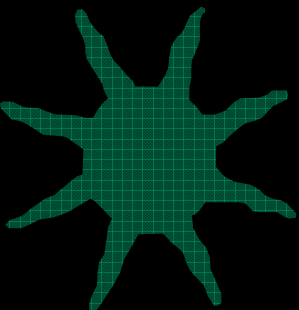
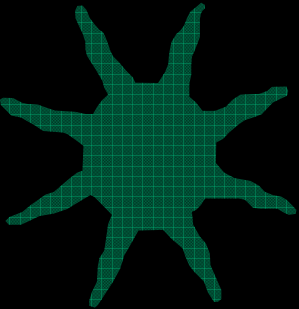
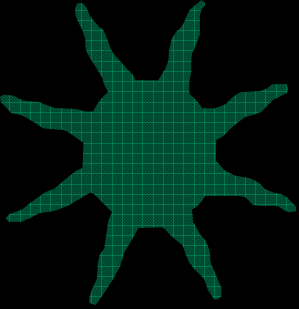
- Renewable Energy Policy has been adopted by the Government of Bangladesh on 18 December 2008.
- The policy has set a target of generating 5% of the total electricity from renewable sources by 2015 and 10% by 2020.
- A focal point called Sustainable Energy Development Agency (SEDA) will coordinate activities related to the development of renewable energy technologies and financing mechanisms.
- For electricity less than 5 MW generated from renewable energy projects may be purchased by power utilities or any consumer.
- All renewable energy equipments and related raw materials will be exempt from 15% VAT and companies will be exempt from corporate income tax for a period of 5 years;





ROLE PLAYED BY THE GOVERNMENT

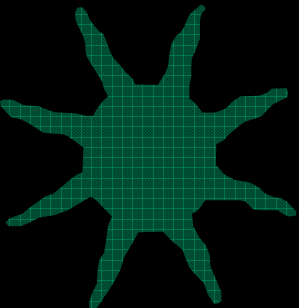
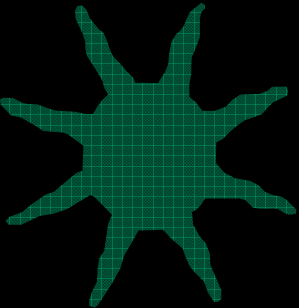
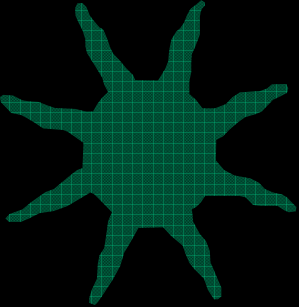
- Private sector participation including joint venture initiatives in renewable energy development will be encouraged and promoted;
- An incentive tariff has been proposed for electricity generated from renewable sources which may be 10% higher than the highest purchase price of electricity.
- Bangladesh Bank, the Central Bank, has launched a revolving fund of BDT 2 billion for refinancing renewable energy projects i.e. solar energy, biogas and effluent treatment plants through commercials at concessionary terms and conditions.

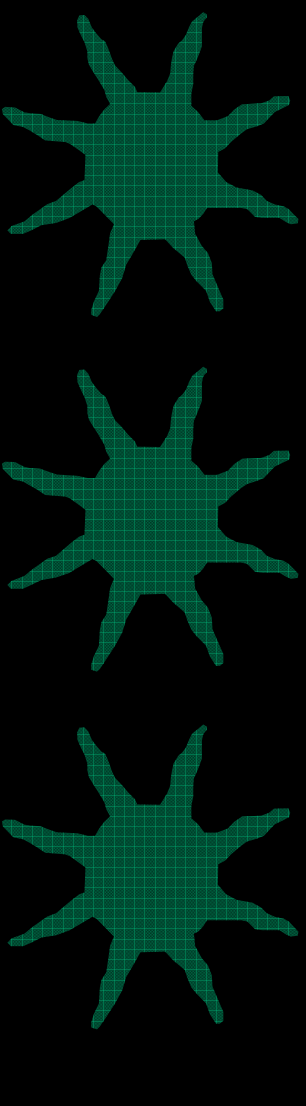




FURTHER EXPECTATIONS

- The policy is needed to be converted into Act;
- The institution of SEDA should be expedited;
- More incentives are required to attract private investments;
- Feed in Tariff/Incentive Tariff needs to be established.





THANK YOU