



International Off-Grid Renewable Energy Conference

Organized by: IRENA

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First Zayed Future Energy Prize Winner

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Creating A Solar World for 1.6 Billion energy starved people around the world



Renewable Energy Technologies can give us
unlimited energy without damaging the environment.
Let us talk about its POTENTIAL

My Vision: Bangladesh

One of the First Solar Nations in the world

"I dream of Empowering 75 million people-half the population of Bangladesh with renewable energy technologies"



A Green Future For Our People

I have set ambitious targets for myself for 2020:

- 7.5 Million Solar Home Systems in Rural Areas;
- Expanding into Urban Areas transforming every building into a power house;
- Replacing 500,000 irrigation pumps with Solar Pumps
- Powering Education, Health, and Telecommunications
- Implementing Low Cost Solar Solutions such as Street Lighting, Billboards, Solar Lanterns, etc.
- Solar Lantern charging station and creating women entrepreneur in rural Bangladesh.

A Green Future For Our People (continued)

- Running Small Machines such as Power Looms, Rice Haulers, etc.
- Coping with natural disasters through Solar Water Desalination, Emergency Lighting & Early Warning Systems
- 20 million Improved Cooking Stoves
- 100,000 Green Jobs especially for young women

Creating Eco-villages as a Response for Climate Mitigation and Adaptation

- **Sustainable Eco Villages**

- Carbon Neutral
- Water Conservation, Rain Water Harvesting and Purification
- Production of Organic Agriculture and Fertilizer
- Planting Sustainable:
 - I. Fruit Trees
 - II. Medicinal Plants
 - III. Timber Wood
- Local and High Efficiency Building Materials
- Biogas and Improved Cooking Stoves



First Taste of Electricity from Solar

Creating Eco-villages as a Response for Climate Mitigation and Adaptation

- Sustainable Eco Villages(Cont.)

- Powered by Renewables
- Natural and Low Power Lighting
- Renewable Energy Entrepreneurial Neighborhood
- Eco Lifestyle Education
- Low Power Ubiquitous Wireless Connectivity
- Intelligent Power Management
 - Maximizing Battery Life
 - Micro Utility
- Climate Monitoring Systems
- Advanced Warning System for Bad Weather
 - Using a microphone to alert people for evacuation
 - Improved Communitywide Safety



Green Technician Training Session

Solar Irrigation

Year Round Water Source

For Cultivation and to increase agriculture production



Solar Energy is used for irrigation in the fertile areas of Bangladesh.

Guaranteed water supply in off-grid areas.

Farmers are vastly benefitted because of this in rural and remote areas.

Multiple crops are being cultivated year round because of Solar irrigation pump.

Solar Power in Bangladesh



- Over 1.5 million Solar Home Systems been installed benefiting 15 million people
- Our model is internationally recognized for taking solar to the masses
- More cost effective than grid infrastructure, is low maintenance and flexible – Solar is very suitable for a developing country like Bangladesh

IDCOL is playing a major role in expansion of Renewable Energy Technology in Bangladesh

AN OVERVIEW OF IDCOL:

IDCOL: 1997 Started as a fund manager

- created jointly by the Government of Bangladesh and the World Bank.
- to meet financing gap for large scale private sector infrastructure projects
- undertook Renewable Energy program in 2003 with a view to financing green technology

IDCOL: Today A full-fledged financial intermediary

- largest local financier in infrastructure and renewable energy projects
- funded by the Government and multiple agencies i.e. World Bank, ADB, KfW, GIZ, IDB, GPOBA, SNV Netherlands etc.

A Growing Market of over 75 million people

Our Achievements :

- An innovative financial mechanism replacing monthly kerosene costs
- Strong after-sales maintenance and support.
- Rural level assembly, repair & maintenance of solar accessories
- All components produced locally except the solar panel
- VAT/ Tax removed from solar panel import
- Prices of solar panels going down internationally



School children can study better by Solar powered Light than Kerosene lantern.

**A rural family can enjoy bright lighting
as well as
television ,mobile phones & Laptop at the same cost as
kerosene.**



A man is running television from the Solar Home Systems in off-grid areas.



Children can study in the bright light powered by Solar Home Systems in off-grid areas.

Our Programs Change Lives

- **Environment : Replacing kerosene :** 500 kg/ year CO₂ replaced per 50W system , reducing fire hazards, in-door air pollution and improving health
- **Women :** Reduced household burden for women
- **Communication :** Access to TV, mobile phones and internet
- **Education :** Many rural schools installing solar power, Solar powered computers
- **Healthcare Facilities :** Solar lights, Solar powered refrigerators in Clinics,
- **Disaster management :** During cyclone Sidr in 2007, PV was a lifeline. The only homes with light were those with PV.



We serve the most disadvantaged,
isolated people in coastal belts and
islands



We Create and Facilitate Rural Businesses

- **Facilitating home based business ventures**
- **Increasing income** through extended business hours, reduced energy cost
- **Micro-utility Model-** Sharing a Energy to reduce cost and increase income

Mobile Phones: Solar powered mobile phones, TVs and internet increase business

- **Small Solar Home Systems :** Popular among low income household helping to replace kerosene and generate income
- **Solar runs computers in off-grid areas**



Renting Solar lanterns and running televisions attracts customers while charging mobile phones – this has become a good business



Solar Charging Station are serving the rural off-grid people of Bangladesh.

1. Creating Women Entrepreneurs.
2. Providing Lights to people who live at the bottom of the pyramid.



Solar Power facilitates business in rural markets



We have successfully created Green Jobs for Women

Women as Solar Ambassadors to their Communities

- Pioneered & established rural based GTCs across Bangladesh
- Trained 5000 rural women as Solar technicians and entrepreneurs
- Created decent jobs for women in their home villages
- 80% of the assembly of solar accessories takes place at GTCs



Zayed Future Energy Scholarship Winners



Dr Sultan Al Jaber, CEO, Masdar with our Zayed Future Energy Scholarship winners in Bangladesh



Mobilizing Social Forces



- School children from rural areas learn about Renewable Energy Technologies
- Rural women have learned to take care of the systems installed in their homes

Venturing into New Frontiers – Ushering in the Solar Century

- **Each Urban Building becomes a Power House.**
- **Solar Panels for Irrigation:** Reallocating Grid electricity through converting irrigation pumps to Solar Energy.
- **Powering Mobile Telecommunications Base stations :** 22,000 base stations can be powered by Solar (No Diesel)
- **Small Solar Solutions in urban areas:** Solar power street lights and bill boards . Small solar lanterns for Rickshaws, small shops, and slum areas



Urban Solar Energy



Solar Energy Systems are being installed in Urban areas of Bangladesh.

Government of Bangladesh Renewable energy Policy has set a minimum energy of 3% should be produced from Solar Power in order to get the Grid Power Connection.

Venturing into New Frontiers - Ushering in the Solar Century (Cont.)

- **Greening our Vehicles** : Solar and battery powered hybrids
- **Expanding Education** : Solar powered computers, audio-visual tools in rural schools, adding internet
- **Health Care**: Solar powered refrigerators and other equipment in rural clinics, telemedicine, low power health monitoring devices.



Venturing into New Frontiers - Ushering in the Solar Century (Cont.)

- Mini-grid : For rural areas with the potential to connect to the main grid
- Solar Thermal : cities , hospitals, hotels, hostels etc
- Solar –Wind Hybrid Systems
- Powering small manufacturing units i.e. power looms



Bringing development in
the rural areas

Goal: Creating 100,000 Green Jobs by 2020



Young Women Technicians Installing Solar Home Systems

Bright Green Energy Foundation (BGEF) at a Glance:

- Over 155 branches in total in 8 different zones.
- More than 750 highly qualified staff members to take the service at the consumer's door step.
- Close to 30,000 SHS installed till date, over 2,500 SHS being installed per month.
- Over 300,000 beneficiaries of Solar Energy.
- Six (6) Green Technology Centers (GTC) are in operation till date and successfully training 60 to 100 women green technicians each month.
- Over 3,000 Improved Cooking Stoves installed till date.
- Bio-gas program is expanding at a commendable rate.

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.

Renewable Energy Technologies Can Bring a True Green Economy in Developing Countries Ending Energy Poverty & Environmental Degradation





**Thank you
for your Kind Attention**