



SAARC Energy Centre - Grameen Shakti



**Proceedings of
SAARC – Grameen Shakti Joint Workshop
on**

Rural Electrification through Renewable Energy
A Sustainable Model for Replication in South Asia

August 7 – 9, 2010 Dhaka, Bangladesh

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Introduction

The SAARC Energy Centre under its Technology Transfer (POSIT) and Rural Electrification (PREPA) Programs organized a three-day workshop titled '**Rural Electrification through Renewable Energy- A Sustainable Model for Replication in South Asia**' on 7-9 August 2010 at Sheraton Hotel, Dhaka, in cooperation with Grameen Shakti. This SAARC Energy Centre - Grameen Shakti (GS) joint workshop was an approved activity of the SEC for the year 2009. The activity was postponed at the request of the co-organizer, Grameen Shakti. The 4th GB meeting approved the activity for the year 2010 as a follow up or spilled over activity.

Grameen Shakti, a subsidiary of Grameen Bank of Bangladesh which has gained worldwide fame for micro credit financing, is a non-government organization engaged in rural electrification through renewable energy and providing the rural population in remote areas access to modern form of energy for household application, education, health and recreation etc. Its rural electrification program through solar PV technology is getting increasing popularity in Bangladesh and expanding very fast. Solar Home Systems (SHS) are highly decentralized and particularly suitable for remote, inaccessible areas which have no access to conventional electricity with little chance of getting connected to the grid within 5 to 10 years. Currently, GS is one of the largest and fastest growing rural based renewable energy companies in the world.

Solar Home Systems (SHS) installed by GS have made a positive impact on the rural people. As on August 2010 Grameen Shakti installed about 425,000 SHS and has reached monthly installation rate 30,000 SHS. Grameen Shakti's financial system of selling the SHS on credit and realizing the cost at tolerable installments has enabled rural population to afford SHS for households, shops and institutions etc. GS has introduced micro-utility model in order to reach the poorer people who cannot afford a SHS individually. It has also programs of installing biogas plants in the rural areas and promoting the improved cooking stoves in Bangladesh. The Grameen Shakti model which caused rapid expansion of Solar PV technology in Bangladesh is financed by state-owned Infrastructure Company Limited (IDCOL) which in turn supported by the government and donor agencies.

About 35 participants, including resources persons, professionals of SEC and Grameen Shakti, field facilitators, invitees from Bangladesh and 10 nominees of SAARC Member States from Bangladesh, Bhutan, India and Pakistan, attended the workshop.

From SEC, a delegation comprising Dr. Muhammad Pervaz, Program Leader Technology Transfer, Md. Lutfar Rahman, Research Fellow Technology Transfer, Mr. A N M Obaidullah, Research Fellow Energy Trade, attended the workshop as participants and organizers.

Objectives

As already mentioned in the introduction, Grameen Shakti in Bangladesh has developed a successful market base integrated model to make renewable energy technologies to the rural people on a mass scale. The workshop was organized with the following objectives:

- Facilitate technology transfer and sharing best practices of Member States for expansion of renewable energy technologies in rural areas.
- Motivate institutions in Member States for replication of Grameen Shakti Model.

Workshop Sessions and Venue

The workshop comprised of a brief opening/inaugural session, working sessions and field visit. The inaugural session and working sessions were held in the Top of the Park hall of Dhaka Sheraton hotel. The Programme of The workshop is attached as **Annex-I**.

DAY 1 August 7, 2010

Inaugural Session

Welcome Address

Mr. Abser Kamal
Acting Managing Director of Grameen Shakti

Mr. Abser Kamal commenced the inaugural session of the workshop by extending a warm welcome to the chief guests and all the participants. He highlighted that the world's traditional sources of energy are rapidly depleting and contributing to climate change. Reliance on these fuels is becoming increasingly unsustainable, financially and environmentally. In response to these issues, Mr. Abser Kamal suggested that developing countries will need innovative policies and cooperation. Our rural areas are the most vulnerable to these problems and need special attention. Mr. Abser Kamal gratefully acknowledged SAARC Energy Centre for prudently selecting a topic that targets these issues and aims to improve the livelihoods of rural people through the expansion of clean, affordable and sustainable energy.

Mr. Abser Kamal continued the inaugural address with an introduction of Grameen Shakti, which was created in 1996 by Nobel Laureate Professor Muhammad Yunus, Managing Director; Grameen Bank, the founder of micro-credit. Inspired by him, Grameen Shakti has been working with renewable energy to empower the rural people with access to green energy and income opportunities. Mr. Abser Kamal shared with the workshop participants Grameen Shakti's innovative micro-credit financial system for disseminating renewable energy. He discussed the three core programs of Grameen Shakti; Solar Home Systems (SHS), Biogas and Improved Cooking Stoves (ICS), and their respective achievements.

Following the overview of Grameen Shakti, Mr. Abser Kamal briefly outlined the objectives and opportunities of the workshop. He thanked the chief guests for their attendance once more and encouraged all to direct their focus on resolving the energy problems in our rural areas by exploring each nation's potential solutions. Mr. Abser Kamal closed by expressing his gratitude to SAARC for selecting Bangladesh as the venue and Grameen Shakti as the host and facilitators for exploring future prospects for renewable energy solutions.

* Please reference **Appendix-A** for complete welcome address.

Introduction of Participants

Following the welcome address, all the participants introduced themselves. The list of participants, resource persons and members of Organizing Committee are attached as **Appendix B**.

Objectives of the Workshop

Dr. Muhammad Pervaz

Programme Leader, Technology Transfer SAARC Energy Centre

Dr. Muhammad Pervaz as head of SEC delegation and coordinator of the workshop after acknowledging presence of distinguished guests and participants, presented an overview of energy related issues in the region. He mentioned that a secure supply of energy is one of the core problems that developing nations in the region face. Since the mid-90s, economic growth in South Asia has been dominated by industrial sector and meeting this growth in energy demand has outstripped supply. He emphasized that the energy crisis is threatening future economic growth and even stirring social unrest in some regions.

Dr. Muhammad Pervaz highlighted the brief history and programme activities of SEC and stated that its main objective is to have regional institutions of excellence for implementation, coordination and facilitation of SAARC energy programs. The Centre has developed its Strategic and Operational Plan for five years. The Plan identified five thematic areas of programme activities focusing on: (i) Energy Trade, (ii) Technology Transfer, (iii) Energy and Environment, (iv) Energy Efficiency and Fuel Substitution, and (v) Rural Energy Accessibility. This workshop is being organized under Technology Transfer and rural electrification Programmes of the Centre.

He explained that energy consumption in SAARC region is lowest of other regions, where 40 percent of 1.6 billion people do not have access to electricity. He stressed that solar power should not be seen as consolation to poor people in developing countries, as it is also rapidly expanding sector in developed countries as use of fossil fuels become less favorable. Dr. Pervaz cited the solar power initiatives in Europe and that within 5 years, solar power will be competitive with traditional sources of energy under certain scenarios. He explained that the SAARC nations need to also take on initiatives for expanding solar power. The Grameen Shakti experience is worth sharing with SAARC nations for best practices and technology transfer programs. This workshop should facilitate these things for expansion of renewable energy in our member states. He informed the participants that Grameen Shakti model is appreciated by the highest levels of Government of Pakistan. The replication process has been initiated on submission of a research report on Grameen Shakti model by SEC and Hydrocarbon Development Institute of Pakistan (HDIP) and a presentation to the President of Pakistan by Director SEC and DG HDIP. Dr. Pervaz closed by thanking all the participants, with special thanks extended to Bangladesh Power Division Secretary, Mr. Md. Abul Kalam Azad.

* Please reference **Appendix C** for complete copy of Dr. Muhammad Pervaz's speech

Overview of Rural Electrification through Solar Power in Bangladesh

Mr. Islam Sharif

Chief Executive Officer

Development Organization Limited (IDCOL)

Mr. Islam Sharif gave a detailed presentation on the operations of IDCOL. He briefly described IDCOL as a financial institution owned by the government that directly and indirectly implements infrastructure projects. He explained that IDCOL with its partners, especially Grameen Shakti, achieved World Bank targets for solar panel installations 3 years ahead of schedule and US\$ 2 million below estimated costs. Mr. Islam Sharif then shared IDCOL's current operational achievements and objectives.

Mr. Islam Sharif emphasized that IDCOL feels solar power expansion should be a commercial proposition. He explained the lending chain from the government, which is taking the foreign currency risk, to IDCOL to partners, like Grameen Shakti. IDCOL also gets credit and grants so that it can provide capital buy-down grant and credit to partners at an interest rate 6-8 percent. He mentioned that 80 percent of the financing for Grameen Shakti comes from IDCOL, but that they require partners to acquire the remainder from alternative sources. After mentioning that the 50 Watt peak is most popular SHS, Mr. Sharif explained how the cost of the system is reduced by subsidies and grants from IDCOL.

He explained that IDCOL can facilitate the expansion of Solar Home Systems (SHS), but does not have the capacity to install them and that IDCOL needs partners with a market-based approach, a vast distribution network and experience with micro-finance. Grameen Shakti fits the role. Many programs with other partners have not succeeded because they have failed to provide adequate quality after-sales service. Mr. Sharif acknowledged that Grameen Shakti has managed this aspect very well. There are many solar programs in the world, but Mr. Sharif shared that IDCOL's program is growing the fastest in the world. Thanks to partners like Grameen Shakti, IDCOL is installing over 30,000 SHSs per month.

Mr. Sharif claimed that these initiatives should be about changing the lives of people. He shared a story from a personal field visit with Grameen Shakti. He spoke about a village tailor with a shop that use to make only BDT 1000 per month, but after installing a SHS the tailor was able to make BDT 3000 per month. IDCOL has impacted many people, but Mr. Sharif believes that it needs to do more and scale-up operations.

Mr. Sharif closed by sharing three things he sees necessary for scaling up solar power operations in Bangladesh:

1. Solar energy is expensive and needs financial support. Thus, Bangladesh should consider instituting an incentive tariff, such as a feed-in tariff.
2. Private sector involvement will help scale-up sector activities, but will not enter into sector until it is profitable, something government support and feed-in tariffs can facilitate.
3. Bangladesh needs to revise its renewable energy guidelines and fortify it into an Act, where feed-in tariffs and other incentives can be included in the Act.

The complete power point presentation is given at **Appendix D**.

Address by Chief Guest

Mr. Abul Kalam Azad

Secretary, Power Division, Ministry of Power, Energy and Mineral Resources,
Government of Peoples Republic of Bangladesh

Mr. Abul Kalam Azad opened his speech by reflecting on the current global energy crisis and its impact on the region, especially Bangladesh. He reiterated that Bangladesh is an energy starved nation and the Government of Bangladesh has set some ambitious goals, which includes “electricity for all by 2020”. He explained that the idea is to have at least 5 percent of total energy consumption come from renewable energy by 2015 and at least 10 percent by 2020. Right now, Bangladesh only generates about 4000 MW, but has a target of 15,000 MW by 2015, so we need 750 MW from renewable energy. Mr. Azad stated that this may seem almost impossible, but nothing is impossible.

He acknowledged that demand is rapidly increasing and said that the government is considering this dilemma very seriously. He explained that as the number of energy consumers surge, there will be a challenge for IDCOL, Grameen Shakti and others to meet the need of these new consumers with renewable energy solutions. Mr. Azad shared that at present we have some projects for on-grid and off-grid energy solutions. Bangladesh has been developing a sustainable energy department to focus not on just solar power, but wind, biomass all other forms of renewable and sustainable energies as well. He spoke about a current development for a 200 MW off-shore wind turbine, but stressed that cost is most critical factor for implementing this project.

Mr. Azad referenced the Solar Energy workshop in Manila, Philippines and recalled that Asian Development Bank (ADB) declared to have 3000 MW from solar by 2012. Mr. Azad proudly informed the workshop participants that Bangladesh requested the ADB to reserve 500 MW for Bangladesh. He said that workshop will bring some recommendations and ideas forward for advancing renewable energy in Bangladesh and other SAARC nations.

Address by the Chair

Professor Dr. Engr. M. Anwar Hossain

Vice Chancellor, Ahsanullah University of Science and Technology, Dhaka

Professor Hossain began his address by emphasizing that this workshop comes at a critical juncture where fossil fuel depletion demands a transfer from non-renewable to renewable energy for sustainable development and living. He recalled that in the 1960s and 1970s, the government, academics and researchers began to work on these programs, but no real impact was made then. He claimed that now things have changed, the scenario is different and the necessity to mitigate emissions and maintain energy security requires more action on our behalf.

Professor Hossain stressed that we should be very careful and realistic when dealing with renewable energy so that the common people are attracted, not scared away, by renewable energy policies. He reminded the participants that in the early 1980s, a World Bank/UNDP project on solar water pump for irrigation and drinking purposes failed. The technology was tested in the field, but perhaps the technology was introduced to farmers too quickly. Professor Hossain also shared a similar example regarding Improved Cooking Stoves (ICS). He explained that the same ICS model was introduced in different countries. However, as women in different countries have different styles and preferences for cooking, the initiative failed. Thus, Professor Hossain claims that we did a disservice at that point in time.

Referencing the energy objectives of Bangladesh, Professor Hossain suggests that the focus should not be on reaching a certain number or percentage, such as 5 percent of total energy in Bangladesh by 2015 should be from renewable sources. He emphasized that when a target is not reached, it can deter faith, planning efforts and even financial resources.

Professor Hossain continued by stressing that in the rural sector, we have to be very careful of the rural economy and socio-economic condition, and how it will affect their livelihood. He advised that whatever area we touch, we have to be reasonably sure that it will be sustainable or we will lose the faith of the rural people. He agreed that solar energy is a great prospect and viable option for Bangladesh. While praising solar opportunities in Bangladesh, Professor Hossain expressed concern for the poorest of the poor, and argued that we should also consider targeting them with low-cost options, like 5W or single lantern products.

The professor closed by acknowledging the wonderful accomplishments of both IDCOL and Grameen Shakti. He asserted that policy intervention is currently inadequate and more policy support will facilitate further expansion of the great work both institutions are implementing.

Presentation on SEC Study on “Critical Success Factors for Renewable Energy Projects in South Asia”

Presented by Md. Lutfar Rahman
 Research Fellow, Technology Transfer, SAARC Energy Centre

Md. Lutfar Rahman preceded the country presentations with an overview of the most recent SAARC Energy Study. The Study was conducted to identify the successful and unsuccessful renewable energy projects in SAARC member nations spanning over the past 30 years. After evaluating each nation’s renewable energy projects, some critical factors responsible for success and failure were identified. Thus, the study offered some useful findings for the proper planning and implementation of renewable energy projects in the future.

The study identified successful programs and unsuccessful programs for each country. Please see Table 1 for a brief overview.

Table 1: Renewable Energy Projects in SAARC Countries

SAARC Country	Successful	Unsuccessful
Bangladesh	Solar Energy	Wind Energy
Bhutan	Hydroelectric Power	Solar Energy
India	Wind Power	Improved Cooking Stoves
Maldives	Solar Energy	Landfill Gas Project
Nepal	Rural Energy Development Program (REDP)	Wind Energy
Pakistan	Aga Khan Rural Support Program (AKRSP)	Solar PV of 1980s
Sri Lanka	Renewable Energy for Rural Economic Development (RERED)	Renewable Energy Village System

The SAARC Energy Study identified 12 critical factors that have contributed to the success of renewable energy projects in South Asia:

1. The presence of an approved policy for the renewable energy sector as a whole, or sub-sector policies relating to each technology or sub-sector
2. Availability of reliable resource assessment data
3. Well-established, efficient, institutional arrangements for planning and implementation of RE projects/programmes
4. Incentives—financial, fiscal, and supportive feed-in tariff systems
5. Participation of the community in management and operation
6. Project identification and prioritization with reference to the needs of the beneficiaries under the programme /project

7. Project financing tied up fully in advance for smooth flow of funds for implementation
8. Standardization of design, technology and specifications
9. Due diligence of the needs, locally available capability, and resources of the area in advance
10. Identification of training needs and provision of capacity building assistance ahead of launching a program and continuous capacity augmentation support throughout the life of the project
11. Availability of efficient consultancy companies and well-established and reliable contracting firms
12. Availability of knowledge and support from reputed academic or technical institutions

In addition to locating the critical factors for success, this study also identified those factors responsible for failure. Furthermore, the study presents some lessons learnt from the evaluation of each country's experience with renewable energy projects over the past 30 years. These lessons will facilitate better renewable energy policy-making and contribute to more productive discussions regarding renewable energy, including this workshop.

*Please reference **Appendix E** for the complete power point presentation

Country Presentations

This portion of the Workshop was dedicated to sharing the rural energy needs and current renewable energy programs in other SAARC member nations with all the participants. Representatives from each participating nation gave a short presentation on their respective programs at present, their capacity to adopt renewable energy projects and the challenges to implementing programs in their rural areas.

BHUTAN

Mr. Vesraj Bhujel
Division Manager, Bhutan Power Corporation

A brief presentation on Bhutan was given by Mr. Vesraj Bhujel, the division manager of Bhutan Power Corporation. The presentation commenced with a brief overview of Bhutan, which highlighted that 30-35 percent of the population have no access to electricity. After sharing the organizational structure of Bhutan's power sector, the country's infrastructure and generational capacity, Mr. Vesraj Bhujel explained Bhutan's current and future schemes for rural electrification. Bhutan has plans to implement both off-grid and on-grid rural electrification programs in two phases. The current objective for Bhutan's power sector is to have electricity for all by 2013.

*Please reference **Appendix F** for the complete power point presentation

INDIA

Dr. Sunil Kumar Sharma

Principal Scientific Officer, Ministry of New and Renewable Energy in India

The presentation commenced with a brief overview of India's current solar energy resources. Mr. Sunil Kumar Sharma shared that most parts of India receive sufficient solar radiation to efficiently utilize solar energy systems. On average, daily solar radiation in India is between 4 – 7 kWh per square mile, but the capacity to install solar energy systems is insufficient. Mr. Sharma then described the current power scenario in India, including the per capita electricity consumption of 600 kWh per year and emphasized that only 44 percent of rural households are electrified. At present, renewable energy accounts for about 10 percent of total generation in India, of which, 70 percent is wind powered, and less than one percent is comprised of solar energy.

Mr. Sharma summarized India's current energy objectives, strategies and programs. He suggests that obtaining financial and policy support from the government is critical for successful implementation of renewable energy programs. Mr. Sharma informed the workshop that India is the only country to have a government Ministry of Renewable and Sustainable Energy and contends that this institution is responsible for much of India's success with wind energy.

Mr. Sharma explained that India aspires to have a successful solar energy program as well. India initiated its Jawaharlal Nehru National Solar Mission to disseminate solar energy and its relative applications in three phases over the next 12 years. Through micro-financing and its Remote Village Electrification Programme, India has managed to achieve some success with solar energy dissemination. In concluding, Mr. Sharma thanked all the participants for their attention and announced that India is ready to share its experience with all the SAARC nations.

* Please reference **Appendix G** for the complete power point presentation

PAKISTAN

Engr. Muhammad Masaib Qureshi

Deputy Register, Pakistan Engineering Council

Mr. Qureshi shared a pilot project with the workshop that has just been initiated in Pakistan for the expansion of solar energy. He outlined that the core objective of this initiative is to create awareness among the people on the prospects of solar power. USD one million has already been allocated to this project for developing awareness and increasing the Pakistani people's acceptance of solar energy systems. The project will use a variety of solar panel sizes. Mr. Qureshi explained that the project has identified three

types of locations for these systems; educational institutions, mosques and commercial buildings. In total, 560 units are planned to be installed amounting to a generation capacity of 135 KW.

He was of the opinion that in Pakistan common people have little awareness of the benefits from solar energy. They do not know the price of the unit, its affordability and operational costs, and they are also apprehensive about the warranty or guarantee of this technology. Mr. Qureshi expressed his aspiration to learn from this Grameen Shakti workshop and identify applicable approaches and methods to improve the implementation of Pakistan's current initiatives.

The current project started in 2009 and should be completed by the end of this year. Mr. Qureshi shared that most components of the solar system have been imported from China, and that Pakistan only has the capacity to manufacture the converters in Pakistan. Thus, initial costs are very high; between USD 40-50 which is not affordable for the people. So two problems exist; high upfront costs and the people's fear due to lack of awareness. The aforementioned selected locations for the installation of the solar energy systems will be available to the public. Mr. Qureshi explained that this program's objective is to overcome the fear and apprehension to adopt this technology by increasing exposure through public locations. Mr. Qureshi closed by expressing his sincere hope that at the next meeting, he can provide some practical feedback on this initiative and find ways in which Grameen Shakti's model can improve Pakistan's initiatives.

Presentation on Grameen Shakti

Mr. Abser Kamal, Managing Director
Dr. M. Shahidul Islam, Consultant

Mr. Abser Kamal presented to the workshop an overview of Grameen Shakti, followed by a more detailed review of Grameen Shakti's Solar PV Program operations. Mr. Abser Kamal reiterated the energy problems in Bangladesh and the need for sustainable solutions. The key components of this presentation included the following:

1. Grameen Shakti's success of penetrating into rural areas is a result of its market-based approach. This approach combines a focus on community rapport, suitable financing options, reliable after-sales service and social engineering; establishing a dependable and trustworthy reputation in rural communities.
2. Due to Grameen Shakti's innovative approach, it has installed over 425,000 Solar Home Systems to date and is expanding rapidly. Grameen Shakti is installing more than 20,000 Solar Homes Systems each month.
3. Challenges facing Grameen Shakti
4. The benefits and many uses of Solar Home Systems in rural villages
5. Grameen Technology Centers: Achievements and Objectives for women empowerment and ensuring quality after-sales service.
6. Future Goals of Grameen Shakti

Following Mr. Abser Kamal's introduction to Grameen Shakti and its Solar PV Program, Dr. M. Shahidul Islam discussed Grameen Shakti's two other core programs, Biogas and Improved Cooking Stove (ICS).

* Please reference **Appendix H** for the complete power point presentation

Open Discussion

Following the presentations, some time was allotted for an open discussion among the participants. During this time, participants had the opportunity to inquire participating SAARC member nations and other parties about their current and prospective renewable energy programs. In addition, representatives from Bangladesh's Power Development Board and Rural Electrification Board were available for inquiries. The discussion was facilitated by Mr. Abser Kamal.

Questions & Answers

Mr. Sh. Suresh Kumar: *Please explain the funding for Grameen Shakti.*

- **Mr. Abser Kamal:** Grameen Shakti receives 80 percent of its funding from Infrastructure Development Company Limited (IDCOL), borrowed with an interest rate of 8 percent. The remaining 20 percent of funds are covered by grants and subsidies. Grameen Shakti borrows at 8 percent from IDCOL, but GS charges a 6 percent flat rate or an effective rate of 12 percent interest. Thus, GS profit margin from interest is 4 percent.

Mr. A.N.M. Obaidullah: *Where does Grameen Shakti purchase its Solar Panels from?*

- **Mr. Abser Kamal:** The majority of your Solar PV Panels are imported from China and Japan

Mr. Sh. Suresh Kumar: *Are there plans to manufacture Solar PV Panels in Bangladesh?*

- **Mr. Abser Kamal:** Yes, there are plans to eventually manufacture Solar Panels domestically to save money and create jobs. Every other component is produced in Bangladesh, including the batteries.

Mr. Sh. Suresh Kumar: *Please explain the structure of Grameen Shakti?*

- Please refer to Figure 1 below

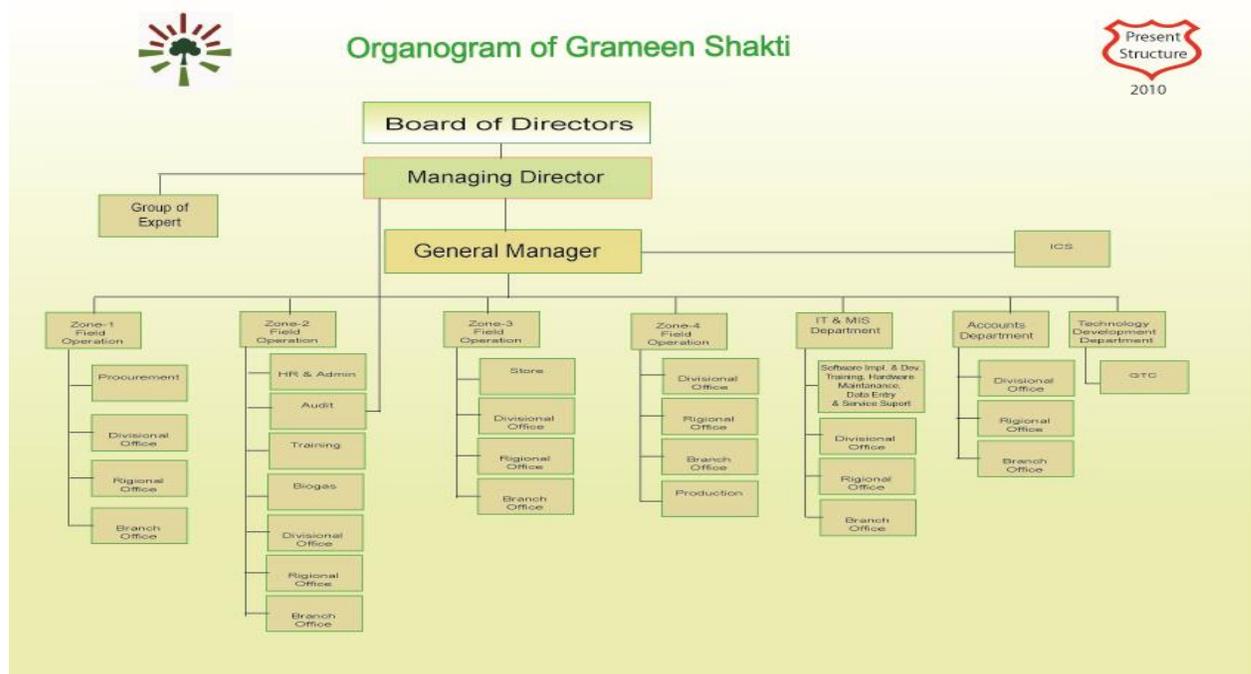


Figure 1: Structure of Grameen Shakti

Prof. Dr. M. Nurul Islam: *What are the prices of the ICS? Biogas?*

- **Mr. Absar Kamal:** The ICS is BDT 890 for the double-mouth model and the Biogas plant is about BDT 20,000 for a 40 cubic liter facility.

Mr. Sh. Suresh Kumar: *Are there plans to manufacture the fiberglass domes in Bangladesh?*

- **Mr. Abser Kamal:** At the moment other countries are producing these, but we can produce them here. This way we can avoid import tax on these plants which is currently about BDT 400,000 for 10 units.

Prof. Dr. M. Nurul Islam: *What is the price of the organic fertilizer?*

- **Mr. Abser Kamal:** The price of the organic fertilizer produced as a byproduct from biogas plants is not controlled by the government. The price is between BDT 8 -10 per kilogram and in the city, the price can be high as BDT 20 per kilogram. Our fertilizer brand is standardized by the government.

Mr. Sh. Suresh Kumar: *How many cows are needed to utilize a Biogas plant? Are there problems with cattle population?*

- **Mr. Abser Kamal:** We can use cow dung, poultry waste and even agricultural waste to operate the Biogas facilities. A household can produce sufficient cooking gas from 2 or 3 cows. The latest cattle census estimated the population to be around 22 million and that this population is increasing.

Ms. Jorifa Khatun: *Is there any Biogas facilities using agricultural waste to generate cooking gas?*

- **Mr. M.A. Gofran:** Yes, with the government's permission, we can use organic kitchen waste. It is very important to focus on other sources of energy production. In Germany, they are using underground city waste to generate 1600 MW.

Ms. Jorifa Khatun: *What is impact of tax being waved on Solar Panels?*

- **Mr. Abser Kamal:** The government decision to introduce tax exemptions for Solar PV panels allowed us to reduce the price in half.

Engr. Muhammad Masaib Qureshi: *How much is Grameen Shakti paying in dollars per Watt peak?*

- **Mr. Abser Kamal:** Grameen Shakti pays about USD 2 per watt peak, but as a package we are paying USD 7 on average.

Prof. Dr. M. Nurul Islam: *Did Grameen Shakti benefit from Bangladesh new "Green Budget"?*

- **Mr. Abser Kamal:** The government's Fund for Renewable Energy did directly benefit Grameen Shakti. The fund was for the banks to utilize. However, the banks have no capacity to implement renewable energy programs, so they came to us looking for customers. There is no clear implantation policy to utilize the fund properly. The government will not give funds to private companies and many of the governmental organization lack the resources to implement effective programs.

Prof. Dr. M. Nurul Islam: *Are the Solar Home Systems available for city dwellers at the same cost and include the same services?*

- **Mr. Abser Kamal:** Yes, but urban installations are not eligible for grants or subsidies.

Mr. Vesraj Bhujel: *What is the average life of the batteries and how do you dispose of old batteries?*

- **Mr. Abser Kamal:** The batteries have an average life of 5 years. The company where Grameen Shakti purchases the batteries extends a 5 year warranty on each battery. Old batteries can be returned to the company for recycling or repair. The customer gives the battery to the branch and the branch coordinates proper disposal. The government of Bangladesh maintains a law regulating the manner in which batteries are disposed of. We abide by these regulations.

Mr. Drukchu Dorji: *What is the average income for a technician?*

- **Mr. Abser Kamal:** Their income is not so great, but they make between BDT 4000 – 6000 plus travel expenses per month.

Mr. Vesraj Bhujel: *Are there plans for the SHSs to be connected to a micro-grid system?*

- **Mr. Abser Kamal:** Grameen Shakti offers a Micro-Utility option for SHS sharing in the market between shop owners. However, we believe that on-grid applications should come from the government level, so we are not thinking too much about this prospect. We prefer the stand-alone individual SHS, because if the micro-grid becomes too large then it becomes unmanageable as well.

Mr. Abul Kalam Azad: *Is the solar powered irrigation pumping system a viable option?*

- **Dr. M. Shahidul Islam:** The current solar powered irrigation pump uses surface water and demands low levels of electricity and it is proving to be viable. We have plans to establish 10 more. The current irrigation pump with 11.2kW capacity has demonstrated that if water is properly managed, this is a viable option.

Dr. M. Shahidul Islam: *Question for INDIA: There are 600 SP Irrigation pumps in India; Can you tell us more about your experience?*

- **Mr. Sh. Suresh Kumar:** These pumps are very small and cannot fulfill the needs of the larger farms which have the financial means to install the system. In areas like the Punjab, some pumps are efficient for drinking water purposes. There is good irrigation in areas like the Punjab, but during times of drought, India desperately needs solar powered pumps. In fact, as climate change has more dramatic impacts, solar powered pumps will be necessary in order to maintain proper water cycles for crops.
- **Mr. Lutfar Rahman:** The current system is pumping surface water, but we will need shallow and deep-well pumps to reach underground water, especially during periods of low rainfall, because rice cultivation requires between 3 and 4 cm of standing water.

Prof. Dr. M. Nurul Islam: *Solar Heaters are already a viable solution. Can we do more to popularize these?*

- **Mr. Abser Kamal:** We need more policy and financial support from the government.

Prof. Dr. M. Nurul Islam: *Question for Power Development Board (PDB); What are your prospects for Renewable Energy in Bangladesh?*

- **Mr. Al Mudabbir Bin Anam:** Of the national energy capacity, less than one percent belongs to renewable energy. We have been focusing on grid connected solar energy and micro-grid applications. The PDB established a solar village in the Chittagong Hill Tracts region. We are concentrating on renewable energies which can be done at economies of scale. One large-scale project that is underway is a 200 MW offshore wind turbine.

Engr. Md. Lutfar Rahman: *Bangladesh has a lack of reliable wind and wind mapping. How will this wind turbine be a viable option?*

- **Mr. Al Mudabbir Bin Anam:** You're right, there is very little wind mapping available in Bangladesh, but we do have some reliable mapping for specific areas. The offshore location for this 200 MW wind turbine project was selected based on wind mapping.

Dr. M. Shahidul Islam: *Question for Rural Electrification Board; What is the REB currently working on?*

- **Mr. Abdur Rahim Mallik:** The REB is currently working in 18 areas. We have also been establishing solar powered irrigation pumps. The most recent plan is to construct an 80 kW solar power plant.

DAY 2 August 8, 2010

Field Visit

The field visit gave each participant the opportunity for first-hand experience and observation of Grameen Shakti's operations. The workshop participants were divided into three groups to facilitate a more involved and educational field visit experience. The field visit was planned on Day 2 so that participants could gain knowledge on Day 1 and be informed observers, and then have an opportunity to reflect on the final day of the workshop. The field visit itinerary is below.

7:30 AM	Breakfast at the Dhaka Sheraton Hotel
8:00 AM	Departure for branches
	Arrival at the branch:
	<ul style="list-style-type: none">• Introduction to branch and GTC staff• Visit SHS Users Training Program• Visit women technicians refresher's training• Visit a solar installation and meet solar beneficiaries
10:00 AM	<ul style="list-style-type: none">• Visit biogas plants and families using improved cooking stoves (if time permits)• Observe documentation of the branch• Discussion with branch staff for understanding GS process for solar marketing, financial & monitoring mechanism, after sales service etc. (This will provide an opportunity to compare the GS program with the participants' own country's context and program experiences in order to ascertain whether replication/adaptation is feasible and how it is to be done and supported by the government).

- A short case study of the branch may be conducted by each group
- Summarize the field visit experiences.

(Lunch will be arranged by the facilitator).

4:30 PM

Leave branch for Dhaka Sheraton Hotel

DAY 3 August 9, 2010

Field Experience Discussion

The third day of the workshop commenced with a discussion session to share individual field experiences. Mr. Abser Kamal welcomed all the participants back from the field visit and requested that each participant reflect on their experiences and observations from the branch offices and Grameen Technology Center visits. Below are some of the most notable observations that each participant made.

Mr. Sh. Suresh Kumar

Visited Singair Branch, Tangail District

“We congratulate Grameen Shakti, for they are doing the government’s job to provide electricity to the rural people of Bangladesh. The government should include a provision for national power code to set up solar power in every district”

Dr. Sunil Kumar Sharma

Visited Maowna Gazipur Branch, Tangail District

“The recovery rate was 94 percent and this is good sign because in the rural areas, there could be many unforeseen causes behind nonpayment”

“At the GTC (Grameen Technical Centre), the women were assembling the charge controllers, electronic ballasts, and mobile chargers and after discussing with them, we found that they are very well-informed on the subject. They work with interest and without lethargy.”

“It is my personal view that the staff was very dedicated and committed. Without dedication and commitment, nobody can succeed in a mission like Grameen Shakti’s mission”

Engr. Muhammad Masaib Qureshi

Visited Maowna Gazipur Branch, Tangail District

“The most important thing that I have observed is that women have been involved in the training, demonstrations and education of the people. This is something Pakistan can learn from.”

“Grameen Shakti has given training to the local people in the local language. This is very important for conveying your message, especially with technology. They are making sure that the customer understands the technology and proper user maintenance.”

“One key to Grameen Shakti’s success is its very dedicated and committed staff”

Md. Shahabuddowla Sarkar

Previously visited Grameen Shakti Branch

“Grameen Shakti is not just illuminating homes, but making rural development possible.”

“On rural electrification in Bangladesh, the REB is taking one side and Grameen Shakti is taking the other”

“Renewable energy is especially important today. With all the critical issues surrounding global warming, renewable energy is the best solution. We hope this seminar will help create new ideas and achieve the knowledge for advancing this technical field in developing nations”

Mr. Vesraj Bhujel

Visited Maowna Gazipur Branch, Tangail District

“Grameen Shakti is making renewable energy more viable, from an economic point-of-view”

“One important aspect is the Grameen Shakti is empowering women and the less fortunate people in the villages, like divorced women, by creating employment opportunities.”

“My group visited a customer that had installed a Solar Home System 4 to 5 years ago and become the owner. This owner has had no big problems with operation of SHS and no problems with service. We can say that the after-sales service and front-line staff is doing very fine.”

Mr. Samdrup Tshering

Visited Kalihati Branch, Tangail District

“Most technicians are women and this makes Grameen Shakti very special compared to other programs and organization.”

“At one center we visited, some women were conducting a training program. The training programs have the power to attract even those women with small children and infants.”

Mr. Drukchu Dorji

Visited Singair Branch, Tangail District

“I have seen the installation of many solar panels and a common mistake is careless wiring, but the wiring of the SHSs we visited with Grameen Shakti had been installed properly.”

“Grameen Shakti is helping rural electrification initiatives, and at the same time, doing a social service in the energy sector as well as providing jobs.”

“In my personal view, most countries have solar power, but often forget the mobile charger. Today, as we all know in the modern world, everyone would like to have communication. If you have solar power, but no way to charge your mobile phone, it becomes useless. So, I think one very innovative initiative taken on by Grameen Shakti is the inclusion of the mobile charger in the SHS package.”

Mr. A.N.M. Obaidullah

Visited Singair Branch, Tangail District

“To successfully operate a social business, an organization requires social management and Grameen Shakti is doing this correctly.”

“Grameen Shakti is doing a great job with supply-chain management and client selection.”

“It is fantastic that Grameen Shakti has rightly chosen women for education on after-sales service, minimal maintenance and emergency support services.”

Engr. Md. Lutfar Rahman

Visited Kalihati Branch, Tangail District

“Mr. Muhammad Yunus is a great dreamer. Grameen Shakti is targeting those people with no time for dreams. They are giving light to people who never thought in their lifetime that they would see electricity in their homes.”

“Fifty years ago the world was different, electricity was not necessary. But today, children live in a society where electricity is a necessity and without it, they are deprived of so many things such as education, communication and entertainment.”

“We visited a Grameen Technology Center and these centers are giving opportunities to educated women and uneducated women for training and employment.”

“We visited customers’ homes to see if the Solar Home System was a viable option for them. Many used to spend around BDT 1200 per month on traditional sources for light, but their current installment for the SHS is only BDT 700 plus surcharges. In these cases, getting light from the solar panel power is less expensive than the alternative.”

Dr. Muhammad Pervaz

Visited Kalihati Branch, Tangail District

“Grameen Shakti is not only a business model but also a commitment and mission dedicated to changing the lives of the people.”

“There is a special attitude at the administrative level that is passed down to the grassroots level and this is the way Grameen Shakti is connecting with the communities and has created the concept of social engineers which has brought added value to their program.”

“I request that the participants take this message [from Grameen Shakti] back to their countries and deprived communities.”

“If you want to replicate the Grameen Shakti approach, you need to have all the elements and institutional components in place like Grameen Shakti. If any of these elements are missing, you cannot replicate Grameen Shakti’s model properly.”

Professor Dr. Nurul Islam

Visited Kalihati Branch, Tangail District

“In our constitution, it is the only constitution in the world to my knowledge, the rural electrification is mandated by our forefathers. I used to read it, teach my students and ask is it possible. The government has announced to have electricity for all by 2020 and I wondered if it is possible. Yesterday when I was visiting Grameen Shakti, I thought it is

possible. It does not say it will be done by the REB, the REB was created under that clause and they are doing a fine job, but the job is so large that alone they cannot do it. Many other organizations are working on these efforts, but Grameen Shakti is leading the way.”

In the 1980s, we tried Biogas plant and the Improved Cooking Stoves, but in most cases the programs failed. These programs failed in Indonesia, China and Sri Lanka. After researching abroad, I returned home and heard that one organization had sold so many thousands of ICSs in Bangladesh, so I had to see for myself. The program had closed, but I went with the program manager to visit a village near Comilla where the organization had many customers. I was doubtful as we approached the village because the area was thick with woods and bush. We met the chairman of the village and he explained that the village did not need ICSs. We asked to see the homes of the listed customers. One woman said that she could not cook enough food on the new stove. This is the constraint of the technology, but the woman was not aware she could purchase a larger sized stove. Another woman had received the stove and refrained from using the stove just to keep it clean. All this was very discouraging. Therefore, I anticipated to have a similar experience on the field visit, but I was incredible surprised by Grameen Shakti’s success.”

“There are three pieces of the Grameen Shakti model. The first is the physical model of the technology. Second, the institutional model of Grameen Shakti is so close to Grameen Bank; you cannot identify who is the big brother, who is the little brother. They are so respectful, so polite. Third, the financial model; we checked all the road books, accounting books, everything was fantastic. To copy, it is more than simply technology transfer, they need to replicate all three components of the model.”

“They have proper division of labor. From my background, I find this very appropriate because the technologies are very different. Biogas, solar and stoves are different and dedicating a person for each technology is the most effective method for expanding each program.”

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- ❖ During the discussion, several participants suggested that one critical factor for Grameen Shakti’s success is the dedicated and disciplined staff. Following the discussion, a question regarding how Grameen Shakti motivates its staff was directed towards Mr. Abser Kamal. He replied that when recruiting new employees, we tell them that their job was created because of the clients and without satisfied customers; their job may disappear as quickly as it came.

Group Discussions

The workshop proceeded with a more organized and focused discussion to facilitate a critical evaluation of the Grameen Shakti model and analyze the feasibility of replication in SAARC countries. The participants were divided into three focus groups and given the following guidelines for group discussion.

Guidelines for group discussion:

1. Is it possible to follow and implement the rural electrification program in the participants own country in light of the Grameen Shakti model? Please give some specific indicators that support your observations.
2. Please identify the core elements for the success of GS (i.e. marketing strategies, financial model technical designs of SHS, after-sales service) and discuss their relative importance with reference to your own country's context.
3. Please list impacts of rural electrification on development parameters such as job creation, SME development, agriculture, livestock production, telecommunication, health facilities, women empowerment, education and any other measurements of economic, social or cultural development.
4. Please list the socio-economic, physical and even political parameters you foresee as barriers to adopting the GS model.
5. Please consider the government's role in rural renewable energy development and indicate what kind of support will be required from the government.

Each group discussion was facilitated by a Deputy or General Manager from Grameen Shakti. The participants were divided into 3 groups. The groups were changed from the previous arrangements for the field visit to stimulate a more fresh, comprehensive and beneficial discussion. Each group prepared a short presentation of their findings according to the guidelines. Following this group discussion, participants of the same country collaborated to develop a Country Action Plan that identifies the prospects for establishing a renewable energy program similar to Grameen Shakti.

Plenary Presentation - Group A

Group A:

1. Engr. Muhammad Masaib Qureshi- Pakistan
2. Mr. Samdrup Tshering- Bhtuan
3. Mr. Sh. Suresh Kumar-India
4. Mr. Abdur Rahim Mallaik, Bangladesh
5. Engr. Md. Lutfar Rahman, SEC

Findings presented by Engr. Muhammad Masaib Qureshi

1. *Is it possible to follow and implement the rural electrification program in the participants own country in light of the Grameen Shakti model? Please give some specific indicators that support your observations.*

Findings: Yes, implementation of the GS model is possible in Pakistan, India and Bhutan. For both Pakistan and India, there is a large shortage of electricity access in rural areas and to a lesser extent in Bhutan. Nevertheless, Bhutan requires some off-grid energy applications for the 30-35 percent of its population without access to electricity. In Pakistan and India, load shedding throughout the country creates a demand for reliable energy like Solar Energy even in urban areas. Pakistan and India are largely flat nations with an abundance of solar radiation, but Bhutan is mountainous and thus, struggles with variables that do not impede solar energy prospects in Pakistan and India. However, the group found that solar energy is a viable option in the lowlands of Bhutan and during the summer season.

2. Please identify the core elements for the success of GS (i.e. marketing strategies, financial model, technical designs of SHS, after-sales service) and discuss their relative importance with reference to your own country's context.

Findings: The group members agreed that the marketing strategies, financial model, technical designs of SHS, after-sales service, social engineering and its financial support from IDCOL are all critical and necessary factors for the success of Grameen Shakti. The group members evaluated the feasibility of replicating this model and discussed the possibility of establishing a joint-venture with Grameen Shakti or other successful programs to facilitate transfer of technology, know-how and philosophy. Pakistan, India and Bhutan found that each nation has similar policies for foreign direct investment. Each county's revenue sharing is 70 percent for foreign investor and 30 percent for their nation. In addition, the group suggested that Grameen Shakti consider opening regional offices in their countries to implement the GS system.

3. Please list impacts of rural electrification on development parameters such as job creation, SME development, agriculture, livestock production, telecommunication, health facilities, women empowerment, education and any other measurements of economic, social or cultural development.

Findings: The group consensus found that all these economic parameters are important and will benefit from rural electrification programs like the Grameen Shakti model.

4. Please list the socio-economic, physical and even political parameters you foresee as barriers to adopting the GS model.

Findings: The governments of Pakistan, India and Bhutan are all encouraging alternative energy development, so the group members found that this policy support helps to avoid other barriers, including financial limitations. However, Pakistan and India identified one barrier; the people are accustomed to using diesel generators and Uninterrupted Power Source (UPS) units as an alternate energy source or to compensate for load shedding.

5. Please consider the government's role in rural renewable energy development and indicate what kind of support will be required from the government.

Findings: The group did not foresee any serious impediments to rural renewable energy development as their respective governments all encourage the installation of alternative energy systems due to the current energy crisis.

Group B

1. Mr. Drukchu Dorji – Bhutan
2. Mr. Md. shahabuddowllah Sarkar- Bangladesh
3. Mr. A.N.M Obaidullah - SEC
4. Mr. Al Mudabbir Bin Anam - Bangladesh
5. Mr. Sunil Kumar Sharma- India

Findings presented by Mr. Sunil Kumar Sharma

1. Is it possible to follow and implement the rural electrification program in the participants own country in light of the Grameen Shakti model? Please give some specific indicators that support your observations.

Findings: The group members found that between 16 – 30 percent of their rural households need to be electrified. The group identified three factors that would improve the possibility of successful implementation of the Grameen Shakti model in their respective nations.

- a. Micro-financing Institutions: MFIs are available in India and Bhutan.
 - b. Strong Civil Societies Network: The network is very strong in India and is available in Bhutan as well.
 - c. Government policies are in place to support renewable energy programs in both India and Bhutan
2. Please identify the core elements for the success of GS (i.e. marketing strategies, financial model technical designs of SHS, after-sales service) and discuss their relative importance with reference to your own country's context.

Finding: The group identified 5 core elements for the success of Grameen Shakti.

- a. Financial/Business model
- b. Role of Facilitators (e.g. IDCOL)
- c. Customers Training
- d. After-Sales Service
- e. Monitoring Arrangements

The group then prioritized the factors for implementing the GS model in their respective countries. The group prioritized 6 factors for any nation that desires to replicate the GS model.

- a. Financial Model
- b. Technical Capacity
- c. After-Sales Service
- d. Strong Customer-Employee Relationship
- e. Strong Monitoring System
- f. Marketing Strategy

3. Please list impacts of rural electrification on development parameters such as job creation, SME development, agriculture, livestock production, telecommunication, health facilities, women empowerment, education and any other measurements of economic, social or cultural development.

Findings: The group identified 8 development parameters that would benefit from rural electrification with respect to their own countries.

- a. Job Creation: There is direct and indirect creating employment
- b. Productivity improvement: Working hours increased in homes and markets
- c. Education/Entertainment
- d. Women Empowerment: When providing electricity and light to a rural household, the person that is impacted the most is the woman
- e. Improved Quality of life
- f. Telecommunication
- g. Agriculture: Irrigation facilities improved
- h. Awareness about Global Affairs

4. Please list the socio-economic, physical and even political parameters you foresee as barriers to adopting the GS model.

Findings: The group members agreed on one major barrier to adopting the GS model: acceptance of renewable energy in rural and remote areas. The group suggested that reluctance to adopt new technology, methods and lifestyle would be the biggest barrier to implementing rural renewable energy programs. Promoting renewable energy can be a challenge.

5. Please consider the government's role in rural renewable energy development and indicate what kind of support will be required from the government

Findings: The group identified three components of an adequate government role in rural renewable energy development.

- a. The government needs proper policy framework
- b. Government must institute financial and physical incentives: The government can reduce or eliminate duties on imported renewable energy technology parts/units. But the subsidy can make it more difficult for expansion of program, because subsidy limits the number of systems you can finance. Micro-financing is better.
- c. Government will power is required for promotion of renewable energy

Follow-up Questions and Comments:

Prof. Dr. M. Nurul Islam: *When we discuss the government involvement; we assume it to be a homogenous entity. However, there can be a disconnect between energy and finance ministries, so how do we circumvent these problems?*

Mr. Sh. Suresh Kumar: We have organizations like Grameen Shakti who has already proven success of RE, so you can take minister or whoever is unwilling to provide subsidy and go to the village and demonstrate the issue of providing electricity which the government is failing to do. A group of experts can also represent the case for the financial resources. Also involve the power sector, because the power sector representatives will tell you that they will not be able to provide electricity to these rural areas in the near future.

Prof. Dr. M. Nurul Islam: *We are now importing from China. When I am importing, I will go for the reliable and cheap one and I have found that all our partners in Bangladesh have these same tendencies and import from China. So is India less competitive than China?*

Mr. Sh. Suresh Kumar: We are very concerned about the Chinese groups. Their systems are cheap, but the life and efficiency of these solar systems are below the standards we have set in India for certification.

Group C:

1. Prof. Dr. Nurul Islam - Bangladesh
2. Dr. Muhammed Pervaz - SEC
3. Mr. Abul kalam Azad - Bangladesh
4. Mrs. Zorifa Khantun - Bangladesh
5. Mr. Vesraj Bhusel – Bhutan

Findings presented by Mr. Vesraj Bhujel

1. Is it possible to follow and implement the rural electrification program in the participants own country in light of the Grameen Shakti model? Please give some specific indicators that support your observations.

Findings: The group members identified 5 factors that would facilitate the implementation of rural electrification programs in their respective countries.

- a. Government targets to extend electricity access to all. For example, Bhutan has set target of “Electricity for All by 2013”
 - b. Desire to improve quality of life. Bhutan has socio-economic indicator called Gross National Happiness (GNH) that would encourage rural electrification.
 - c. Need to address the issues of climate change in SAARC countries
 - d. Government organizations already exist for facilitating rural electrification
 - e. Low access of electricity generates high demand for alternatives
2. Please identify the core elements for the success of GS (i.e. marketing strategies, financial model technical designs of SHS, after-sales service) and discuss their relative importance with reference to your own country’s context.

Findings: The group members identified 4 elements important to the success of GS and that are relative to their own countries efforts.

- a. Marketing strategy of Grameen Shakti is critical to its success, specifically promoting awareness and community participation
 - b. Financial Model allows customers to become the owner. Ownership produces responsibility and this contributes to proper maintenance.
 - c. Technical design of SHS: In rural areas people do not have great knowledge on technology, so the complete package is very essential. The group suggested that shifting to higher capacity might help meet customer needs.
 - d. After-Sales Service is essential for the rural areas. The group proposed collaborating with NGOs for better implementation.
3. Please list impacts of rural electrification on development parameters such as job creation, SME development, agriculture, livestock production,

telecommunication, health facilities, women empowerment, education and any other measurements of economic, social or cultural development.

Findings: The group members identified 6 development parameters that are likely to be impacted the greatest by rural electrification.

- a. Job Creation: Rural Electrification has positive impact on socio-economic development. It is creating jobs in two ways.
 - Technical implementation and installation
 - The application of the technology through cottage industries small business. For example, solar power extends working hours.
 - b. Solar Drying: Solar Thermal heaters can be used to dry fruits, meats and tea.
 - c. Telecommunication: Mobile Phone Chargers enable mobile communication
 - d. Women empowerment
 - e. Education
 - f. Livestock: The group suggested the use of livestock for biogas plant improves the vitality of the market for livestock.
4. Please list the socio-economic, physical and even political parameters you foresee as barriers to adopting the GS model.

Findings: The group identified very few barriers with regards to implementing rural electrification programs. They found no serious barriers within the government and policy framework, but recommended that governments should consider waving the customs, duties and taxes of renewable energy products and components used for producing renewable energy technologies. Additionally, the group found that the capacity for implementation of programs is facilitated by having NGOs and other organizations involved, but currently there is a limited amount of NGOs and other organizations working in the renewable energy sector. In the case of Bhutan, most customers prefer “on-grid” energy solutions due mostly to bad experiences with “off-grid” solutions. This impedes the prospects for implementing solar energy programs, unless it is a mini-grid system.

5. Please consider the government’s role in rural renewable energy development and indicate what kind of support will be required from the government.

Findings: As recommended in the previous findings, the group advises that governments consider waving or reducing the taxes, customs and duties imposed on the manufacturing, production, importation and dissemination of renewable energy technologies. In efforts to improve the capacity for implementation, Group C suggested that governments help make room for NGOs operations in the energy sector. This is required to expedite the implementation process. Lastly, the group recommended that the government facilitate and encourage more expertise sharing.

Follow-up Questions and Comments:

Prof. Dr. M. Nurul Islam: *How do the representatives from Bhutan feel about Group C's findings?*

Mr. Drukchu Dorji: I would like to point out just one thing. Bhutan, being a small country with small population, the government to date has highly subsidized, even up to 100 percent sometimes, renewable energy programs. So we see that it can be adopted in the country, but at the end of the day our main concern is whether the renewable energy technologies will be accepted by the people.

Prof. Dr. M. Nurul Islam: *I have a question for Dr. Sharma. You mentioned that the government of India involved third party monitoring. Can you discuss this?*

Dr. Sunil Kumar Sharma: The NGOs are the direct link with the people, so their role is very important. However, some NGOs can be money-minded that simply desire government resources and facilities and are not performing well. But there are some civil societies that are responsible and are willing to provide these services to the people, so the government helps them. They provide reports and evaluation of programs and recommend changes in policy or programs as needed. The government can respond properly with these reliable civil societies.

Dr. M. Shahidul Islam: On the monitoring from third parties, I think that monitoring and auditing should be part of big system or otherwise it will not be successful. Evaluation of the program should be done by third parties who are unaffiliated with the program. The problem is that civil societies in our country [Bangladesh] have big noses. In fact, in our country, the government does not care about civil society's opinion.

Dr. Sunil Kumar Sharma: In India, there are government monitoring programs, but the main check on standards and quality of programs comes from reliable NGOs.

Prof. Dr. M. Nurul Islam: In Bangladesh's context, IDCOL is doing the financing and has its own mechanism for monitoring their fiscal spending. Now, IDCOL is a government organization, but not strictly to the government of Bangladesh. IDCOL is a Public Sector Organization (PSO).

Engr. Md. Lutfar Rahman: *Will Grameen Shakti allow civil society to investigate all their books and documents? And will IDCOL allow civil society to evaluate and monitor them?*

Mr. Absar Kamal: These are good questions, but no one is thinking about these things right now. These things are not established. The only thing IDCOL is doing is monitoring for their own purposes. If civil societies or NGOs wants to observe the operations of Grameen Shakti, they can come and do that.

Dr. Sunil Kumar Sharma: In India, we have the Right to Information Act. When the government is involved, anyone can request a document and a photocopy of that document must be shared. Any organization refusing to share information will be penalized 250 rupees per day. Essentially, every document is accessible to the public.

Dr. Muhammad Pervaz: The government needs to be convinced that its job is not to make a profit but it has to provide jobs, training, education, etc to its public. If they take the cost of renewable energy, and internalize these costs along with costs to the environment then the viability may seem greater than is initially visible to us. Renewable energy progress is slow. The government has invested so much in one sector, but immediate results are typically unsatisfactory and can become an indirect barrier to future access to funding and resources.

Dr. Muhammad Pervaz: *I would like to know if Grameen Shakti has earned any Clean Development Mechanism (CDM) credits thus far.*

Dr. M. Shahidul Islam: The CDM process is slow and takes time. For our Solar Home Systems, the CDM credits have almost finished processing. It is at the final decision stage agreement with the World Bank. Additionally, we plan to receive CDM credit from the Improve Cooking Stove program with JP Morgan. For now, we are receiving some immediate benefits from JP Morgan who has an environmental program. So with this we have an agreement where they give us the CDM for the completion of the ICS installations. This is the status of CDM with Grameen Shakti.

Prof. Dr. M. Nurul Islam: *Sometimes there are organizations that do not have the money to prepare all the documents necessary to be eligible for CDM benefits. Is this a problem?*

Dr. M. Shahidul Islam: The only thing they charge is a project provision fee and the World Bank also charges a project provision fee. One good thing is that the CDM board has exempted application fee for all developing countries.

Prof. Dr. M. Nurul Islam: *Can we hear from some of the Bangladesh government representatives? What is the Power Development Board doing in the Chittagong Hill tracts?*

Ms. Jorifa Khatun: We have no ongoing project now. We have completed a solar project there. The project consists of a 10 kW solar powered mini-grid system which electrifies 300 households.

Prof. Dr. M. Nurul Islam: *Does the Rural Electrification Board have any comments on their current or future programs?*

Mr. Sarkar: We have several projects. One project is rural electrification through solar energy which will cover 240 villages and will cost around BDT 130 crore. Another project plan of a 28 kW solar power plant is awaiting approval at our headquarters. There is a program to establish small solar power plants with capacity to generate 3 kW. We also have projects for installing irrigation pumps. We are focusing on grid-connected applications, but there is limited revenue generated from grid-connected solar energy. This is one of the major reasons for not furnishing the stand-alone systems. I think IDCOL and other NGOs can pick up this program. Regarding ownership, the other problem is that, as a government organization, we cannot provide complete ownership to the customers. As a result, Solar Home System maintenance and service costs are very high and we cannot attend to these problems quickly. These are some of the projects and problems of the REB.

Engr. Md. Lutfar Rahman: We need some innovation to address these problems. Big organizations have the capacity and time to create separate fields or sectors for developing solutions to these problems. There should be specific positions dedicated to focusing on the issues which constrain expansion and development of renewable energy programs.

Mr. Sarkar: We had idea to set up a separate department like this, but due to some ignorance, our proposal to establish this department was rejected and our activities have slowed down.

Prof. Dr. M. Nurul Islam: *Bangladesh is establishing a new institution called SEDA: Sustainable Energy Development Agency which is under the Power Division of the Bangladesh Government. Will this new institution not be competing with IDCOL?*

Dr. M. Shahidul Islam: Regarding SEDA, the government has announced this institution, but the function of SEDA has not yet been disclosed. I think we will have to wait several years to understand the function of SEDA.

Mr. M.A. Gofran: Actually, this dialogue about SEDA began in 1997. Previously it was going to be an authority, but now it is an agency. Agencies cannot influence government policy, but we need institution that can influence policy. The problem is still not clear about what should be done.

Dr. Muhammad Pervaz: I think in the coming days, there will be a force and pressure for developing renewable energy technologies. We always want to see top-down policy, but in the case of renewable energy it has to be started from the

grass root level; i.e. the consumer level. My understanding is that in the next 5 years, the scenario of renewable energy in Bangladesh will be changed.

Concluding Session

The concluding session was chaired by Prof. Dr. Nurul Islam, Ex-GB Member of SAARC Energy Centre. Mr. Abser Kamal, Prof. Dr. Nurul Islam, Engr. Anwar Hossain Khan, Dr. Muhammad Pervaz, awarded the certificates to all participants. The country representatives expressed their satisfactions over the deliberation of the workshop, selections of topics, field visit and arrangements and support provided by the organizers. Mr. Abser Kamal and Dr. Muhammad Pervaz presented concluding remarks in the session. Dr. Pervaz reiterated some of the major issues that were discussed during the workshop and gave a final thanks to all the participants and members of the organizing Committee.

Vote of Thanks

Presented by Mr. Ahsan Ullah Bhuiyan

Respected Chairman Professor Dr. M Nural Islam, Dr. Muhammad Pervaz, SAARC Energy Centre, Mr. Abser Kamal, Managing Director of Grameen Shakti and guests from SAARC countries including Bangladesh, ladies and gentlemen,

I extend my thanks to all the participants of this workshop for your active participation and valuable contribution.

For the last three days we participated in field trips, group discussions, plenary sessions, and presentations prepared by the participants and resource persons. Through these activities, I believe, we had enough scope to exchange our views and come to consensus. It was a compact schedule, but I hope it was enjoyable too. We are not at the end of our program and I believe that the findings and recommendations of this workshop will benefit all of us.

I extend my thanks to our respected Chairman Professor Dr. M Nural Islam, one of the initiators of this program. His advice at all stages has guided us in the right direction; I extend my thanks to Dr. Muhammad Pervaz, SAARC Energy Centre who played a key role bringing this event to Bangladesh. Mr. Abser Kamal, Managing Director of Grameen Shakti gave his full support from the very beginning to make this workshop successful and I would like to thank him as well.

Finally, I would like to extend my thanks to all the members of the Workshop Organizing Committed for their hard work and effort. During the program, there may have been some lapses or shortfalls. I can say these were not our intentions, but happened in the process. I hope that you will overlook these issues.

Once again, thanks to all of you.

Outcome and Way forward

The workshop had been able to expose the participants the Grameen Shakti experiences for exploring the possibility replication of this model in their respective countries. Participants of the workshop should now be in a better position to help their governments in rural electrification through Solar PV in off-grid areas. SEC in cooperation with Grameen Shakti will prepare the proceedings of the workshop and for wider dissemination it will be uploaded on SEC website. Following key elements can be derived from Workshop on the Grameen Shakti Model for promotion of RE in SAARC Countries:

- Policy Framework and government support,
- Awareness and Community participation,
- Participation of financing institutions like IDCOL in the program,
- Institutional arrangement for all activities of the project cycle,
- Technology and capacity building,
- Maintenance and after sales services, and
- Innovation and technological development and improvements through continuous R&D.