Bangladesh
Clean Energy Summit
2019
10-11 March 2019, Dhaka

Conference Proceedings
Introduction

IDCOL (Infrastructure Development Company Ltd.) is a market leader in private sector energy and infrastructure financing in Bangladesh. It has been playing a major role in financing Energy Efficiency and Renewable Energy projects through start-up subsidy, concessionary credit and capacity development support. IDCOL compliments the Government’s mission of generating 10% of total energy from renewable sources and reducing 15% energy consumption by financing energy efficient technologies. IDCOL in generating awareness in the Bangladesh market particularly in Residential, Industrial and commercial sector for the use of energy efficient and renewable energy technologies. This would create a market for both the manufacturers/suppliers as well as financial institutions such as IDCOL.

In this regard, Ernst & Young LLP, India (as Knowledge Partner) supported IDCOL in organizing “Bangladesh Clean Energy Summit (BCES)” an International Conference and Expo on 10 to 11 March 2019 at the Bangabandhu International Conference Centre (BICC), Dhaka. The BCES aimed at meeting the following objectives:

- Promotion of affordable and advance renewable energy & conservation technologies;
- Create public awareness on renewable energy, energy efficiency & conservation and available financing options;
- Provide a platform for buyers and sellers to interact with each other. Promote collaborations between local and international manufacturers;
- Contribute to climate sustainability

The two-day conference covered nine sessions which were as follows:

1. Executive Panel Discussion: Global Transitions in Clean Energy - Frontiers of New Energy Paradigm;
2. Spotlight Session: Energy Efficiency Policy, Financing and Market Outlook in Bangladesh;
3. Panel Discussion: Sunnyside up – Scaling up Solar Photovoltaic Solutions;
4. Spotlight Session - Showcasing Global Exhibitors of Expo;
5. Panel Discussion: Reimagining Clean Energy Financing;
7. Panel Discussion: Electric Mobility Potential and Market Outlook in Bangladesh;
8. Spotlight Session - Technological Innovation and Standards for Driving Clean Energy;
9. Panel Discussion - Green Buildings Ecosystem in Bangladesh

The conference was attended by more than 200 delegates and 55 speakers from 12 countries. The regulators, policy makers, financiers, energy experts, PPP experts from donor agencies as well as business houses from various Countries had come together to explore numerous contemporary issues related to clean energy, energy efficiency, green buildings and green finance and enhance collaboration among themselves through different activities during this two-day conference. The
speakers and participants exchange knowledge, ideas and identified challenges with mitigation measures through interactive discussions on various aspects of clean energy which covered technology, market development, financing as well as policy and regulatory matters.

The panel discussions and presentation sessions focused on following key sectors:

1. Energy efficiency
2. Green Buildings
3. Renewable Energy

All the material for the conference that includes conference booklet, participant list, Conference presentations, Photos and media coverage are available for download on the Bangladesh Clean Energy Summit website: http://idcol.org/bces-2019/
Panel Discussions and Spotlight Sessions

This section summarizes the discussions at the conference. The sections were developed using participant input, discussions, recorded notes and the conference presentations.

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<th>Session 1</th>
<th>Executive Panel Discussion: Global Transitions in Clean Energy - Frontiers of New Energy Paradigm</th>
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<td>Participants</td>
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<tr>
<td>Mr. Sudipto Mukherjee</td>
<td>Country Director, UNDP</td>
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<tr>
<td>Mr. Prasoon Agarwal</td>
<td>Regional Program Officer, Asia, IRENA</td>
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<tr>
<td>Mr. Francois LHOMME</td>
<td>Sr. Energy Specialist, AFD</td>
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<tr>
<td>Mr. Somesh Kumar</td>
<td>Partner &amp; Leader (Power and Utilities), EY India</td>
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<tr>
<td>Ms. Farzana Rahman</td>
<td>Senior Vice President, Renewable Energy, IDCOL</td>
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<tr>
<td>Mr. Arbaaz Nayeem</td>
<td>Associate Director, Ricardo</td>
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Summary

This Executive Panel Discussion was held to showcase the experiences from across the globe that have brought about a paradigm shift in clean energy. It also highlighted the emerging technologies and solutions, best practices, policy, implementation models and delivery mechanisms triggering large-scale market transformation around the world.

Key outcomes of the discussion

Mr. Sudipto Mukherjee introduced all panelists and started the panel discussion with following statements:

- Renewable energy (RE) is critical factor for the further development of Bangladesh and for reducing consumption of fossil fuel. Although the country sets development of 2,000MWp by RE by 2021, fossil fuel is still major part of energy sources.
- Following leading countries, such as China, India and US, Bangladesh also sets target of generating 10% of electricity from RE by 2020. Given this, the country has to develop another 1,000MWp by RE.
- This is the challenge for the both public sector and private sectors, and hence he hoped that this session would unveil the mechanism for increasing RE, with focus on emerging technologies, sharing the global experience, best practices, and policy interventions.
- Mr. Mukherjee gave questions to all panelists about key message to promote RE in Bangladesh keeping in mind Bangladesh’s target of development of 15% electricity from RE by 2021, and opened discussion.

Mr. Prasoon Agarwal shared his knowledge and the best practices:

- IRENA has mandate to be a knowledge hub of RE, and analyzed RE policies. Based on IRENA’s 6-7 years trend analysis, net installation of RE is more than conventional capacity increase. One of the key driver for this is cost decrease of Photovoltaics (PV), and on/off shore wind. Another key driver is policy framework involved. Over 170 countries support policies of RE promotion.
The key government policies include such as i) TAX incentive/tax subsidies, ii) use of FIT, and iii) auction.

Regarding the employment, most of all job for RE sector are in China and related to PV. However, he emphasized that 20% of job are for manufacturing, but 80% still requires local employment such as installation, and O&M. Therefore, promoting RE will contribute to create further opportunities for local jobs.

Mr. Francois LHOMME mentioned key changes in the RE sectors:

- Both Public and Private sectors have crucial roles for innovation and managing technologies.
- Modernization of grid is important for the country to provide more flexibility and realize installation of higher volume of PV. Digitalization for the equipment, decentralization and implementation of smart grid are the necessary measures for the modernization of the grid.
- Stringent policies should be placed to ensure smooth transition to flexible grid system and to attract large scale private sector participation.

Mr. Somesh Kumar gave international insights regarding the power and utility sectors:

- He stressed on attracting private sector and public-sector investment in RE development.
- Transparent and investment friendly policy making will create level playing field for private sector.
- Public sectors must act as catalyst. They should aggregate the demand to attract the RE investor/developers and help transfer from feed-in tariff policy to competitive bidding policy.
- In the context of Bangladesh, establishment of the Power Purchase Agreement (PPA) and financial mechanism for off-taker is important for selection of the repayment mechanisms.
- Possible tuning of current market operation, better risk mitigation measures and improving the ease of doing business are necessary to attract new investments.

Mr. Mukherjee gave question to Ms. Farzana Rahman about motivation of IDCOL to organize this summit, and key expectations for other stakeholders as key actors of RE in Bangladesh. Ms. Farzana answered as below:

- Investment for the clean energy offers the potential return, and contributes to reduce Green House Gases (GHG). The inspiration behind this summit is to promote clean energy and energy efficiency (EE) deployment with new policy initiatives and encourage private sector investment.
- The main role for IDCOL is to finance RE & EE projects, along with promoting new technologies in RE and EE sector. Through such events, IDCOL keeps exploring the potential financing opportunities, while contributing to the market development of EE and RE sector.
- She also explained that this event will bring government, non-government and international experts under one roof and provide learning to address some of the challenges the sector is experiencing.

Mr. Arbaaz Nayeem stated the recommendation for the both public and private sectors for further expansion of RE:

- The key concept for expanding the EE technology and RE in Bangladesh depends on the unique situation of the country. One of the remarkable features of the country is growing GDP per capita with no other resources other than gas, and another one is cooperation with the rest of region.
- One of key suggestions is cooperation between the public and private sectors. Private sectors need to roll out for the further installation of RE, such as solar, battery, Electric Vehicles (EVs). For instance, although Bangladesh has already installed EVs and combined capacity of 200 MW batteries, there are still policy challenges for public sectors.
Citing the example of our neighboring country India, he stated that private sector and public sector needs to sit down to ensure cooperation in investment and research and technology sharing. He put emphasis on proper management of RE sector and possible cooperation and trade with neighboring countries.

After the discussion, a question and answer (Q&A) sessions followed:

Q: Considering the target of RE development toward 2021 and annual investment and installation required to achieve this target, the progress seems to be slow. Will the target be really achieved?
A: Mr. Nayeem of Ricardo agreed that it is slow. It is expected that government allocates more budget and come up with sizable investment to promote, or provide incentive mechanism to promote RE, otherwise achieving 2021 target is difficult.
A: Mr. Kumar commented that given the scarcity of land in Bangladesh, potential of floating solar, off-shore wind, roof top solar needs to be investigated.
A: IDCOL also mentioned that government had identified land scarcity issue and started promoting roof top solar with net metering system. Awareness building is required among private sector to promote better idea of clean energy which is still new to private sector.

In the end, the session chair, Mr. Sudipto Mukherjee, concluded the session by thanking everyone for active participation in the discussion.
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<td><strong>Participants</strong></td>
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<td>Name</td>
<td>Designation</td>
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<tr>
<td>Dr. Mohammad Tamim</td>
<td>Pro Vice Chancellor, BRAC University</td>
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<td>Mr. Siddique Zobair,</td>
<td>S Member (EE&amp;C), SREDA &amp; Additional Secretary to GoB</td>
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<tr>
<td>Ms. Sandra Lutz</td>
<td>Project Manager, Energy, South Asia, KfW</td>
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<tr>
<td>Mr. Philippe, Serres</td>
<td>Regional Manager-South Asia, PROPARCO/Mr. Jean-Baptiste Imatte, Investment Officer, PROPARCO</td>
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<tr>
<td>Mr. S. M. Monirul Islam</td>
<td>Deputy CEO and CFO, IDCOL</td>
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**Summary**

The Speakers provided insights on both existing and emerging markets for energy efficiency and related services, trending technologies, solutions and investment opportunities, financing mechanisms and policy roadmap to reimagine the energy efficiency landscape in Bangladesh.

**Key outcomes of the discussion**

The session chair Dr. Mohammad Tamim introduced each speaker, followed by presentation of Mr. Siddique Zobair "Enabling polices, programs and regulations for EE market transformation in Bangladesh" with following key messages:

- **Bangladesh aims to become middle income country by 2021 and the member of developed countries by 2030.** Following the economic development, the demand of energy is expected to increase and reach three times as much as current demand.
- **Climate change is also getting to be national challenging issues and the government set target of GHG emission reduction by 5 % by 2030 by its own, and another 10% reduction with financial and technical support from abroad.**
- **To tackle both the issues (energy scarcity and climate change vulnerability), Government has taken several policy initiatives to facilitate installation of EE equipment and transforming from conventional energy to RE.**
- **Mr. Zobair shared initiatives of Government on EE labeling, Energy audit regulations, EE finance with support from JICA, and Building Energy and Environment Rating.** He expected that market driven EE will be promoted after 2025.
- **Government also aims at achieving 100% clean cooking solution by 2030 and to recover waste heat from power station for productive use.**
- **He stressed on the importance of awareness building for the successful achievement of EE.**

Ms. Sandra Lutz explained the “Catalyzing energy efficiency financing”:

- Ms Lutz shared information on KFW programs in private, industry and municipality level in Germany and successful financing in India in energy efficient projects.
- Ms. Lutz explained KfW’s EE construction in residential sector as the most well-known program in Germany. The program provide loan in same interest rate but different repayment period by the level of EE target. The borrower should meet KfW’s EE standard as pre-condition and required to
achieve the certain level of energy saving.

- Ms. Lutz also introduced the program in India through national housing bank. In this program, technical assistance to adapt EU’s calculation method to India was used to calculate EE level of residential building to satisfy the qualification of financing.
- Ms. Lutz mentioned awareness raising and marketing is important for all level from the experience of KfW’s housing program which is well known by all people in Germany.

**Mr. Philippe Serres** introduced “Fostering the development of markets for EE” sharing the experience and insights from banker perspective.
- PROPARCO is French finance institution focusing on private sector, as a subsidiary of AFD established in 1977. The institution actively supports developing countries, cooperating with the other private French bank as well as international cooperate bank.
- Mr. Serres introduced the project which provided finance to roof top solar in India, as well as the projects financed in Bangladesh and Senegal.
- Mr. Serres also introduced the PROPARCO’s experience in other countries with different type of financial mechanism such as dedicated credit line and corporate guarantee.

**Mr. S. M. Monirul Islam** presented “Exploring the Future of Energy Efficiency Financing in Bangladesh”:
- In the presentation, he explained the value chain for EE, key services and solutions in demand for EE, financiers’ perspective and financing challenges.
- He showed example of different financing mechanism in other countries, such as revolving fund using dedicated credit line, risk sharing program, energy saving performance contract (ESPC).
- He also introduced the model of Energy Savings Company (ESCO) as an emerging trend in Bangladesh.
- Lastly, he introduced the credit lines of IDCOL to support EE including JICA EE finance loan, the fund from other international donor, and IDCOL’S own resource.

After the presentation, followings were discussed during the Q&A session:
- **Mr. Islam** of IDCOL commented that IDCOL is not only the bank which provides finance for EE but encourages other private banks to provide finance to promote EE.
- From the banker’s perspective, getting the guarantee is one of the most difficult part for disbursing their loan, since there are bulk of exposure to risk. For borrowers, getting guarantee plays crucial roles to get loan from bank.
- It is challenging for the bank to finance to the EE project since the return is not visible and also it is perceived as high risk. Therefore, government intervention with innovative and successful models with awareness building is necessary to promote EE which provides long time benefit but not short time benefit.
This session discussed Bangladesh experience and lessons from global experiences in adapting the globally successful financing models to suit local conditions. The focus of panel discussion was on:

1. Innovative and commercial financing instruments using public finance mechanisms to mobilize the private sector capital in up-scaling solar photovoltaic solutions.
2. Policy, regulatory, incentive and electricity distribution network upgrades/mini grid solutions which can be adopted to upscale the Solar PV Solutions in Bangladesh.
Key outcomes of the discussion

The session chair, Dr. Munjurul Hannan Khan introduced all panelists, followed by the discussion by Mr. Nithyanandam Yuvaraj Dinesh Babu from EY India about the case study of roof top solar project in India citing followings:

- He mentioned about USD 1.5 Billion funding has been provided and USD 60 million was spent in technical aspect alone. Regarding to investment return, commercial sectors are regulated by complicated policies, especially selling the power to off-takers faces difficulties in some states. While, the supply side, utilities are forced to carry burden by allowing solar power procurement at higher tariff. For demand side, the consumers are given subsidies for renewable energy projects.
- Utility is a major challenge in the India for developing the measures for mitigation of the investment risk factor.
- Lastly, he stressed on UFO- utility, finance, and outreach for the upscaling of the use of solar energy in Bangladesh.

Ms. Nishat Chowdhury shared her experience on solar roof top program in Bangladesh:

- IFC conducted a study on solar rooftop on factory buildings and identified the potential of 1.5GW roof top solar energy in textile sector in Bangladesh. Although feasibility study was conducted, it was not realized unfortunately because of low tariff for selling the power. In addition, the project cost was too high to invest.
- However, from her experience she suggested some possible solutions, such as incorporating third party implementing project on OPEX model and establishing private to private power sell with PPA.
- She emphasized the necessity of government support, including incentives and also urged the banks to move forward.

Prof. Dr. M. Rezwan Khan explained the challenges and future vision of the solar power:

- Innovation is required to diversity the PV applications, which also lead the decrease of the cost for solar home system.
- He also empathized the issues on promoting solar PVs in grid-connected areas.
- Public-Private Partnership (PPP) is still not well-matured, so there is still some room for investigation.
- He greatly stressed on the innovation required for diversified PV applications and to address the issues on popularizing solar PVs in grid-connected areas.

Md. Enamul Karim Pavel shared the experience of IDCOL in solar PV project:

- IDCOL has promoted implementation of solar home system, solar irrigation pump and also roof top solar.
- To promote roof top solar, he shared the benefits provided by the IDCOL, such as providing loans for 10 years with a 6% interest rate.
- He also suggested two types of business model, service model and ownership model to promote further solar PV project.

Dr. Taibur Rahman focused on the policy and share his experience:

- UNDP is supporting SREDA on policy making. Currently, more than 10 policy documents are
under preparation, as well as the guideline and hand book which are prepared in order to help the related people understand the mechanism related to setting the target and action plan to achieve the target.

- He shared some works done by SRED A with support from UNDP, such as finalizing net metering guideline, carrying out the resource studies of renewable for solar, biomass and wind energy.
- The focusing area from his perspective is the mini-grid and grid-connected solar, and solar irrigation pump.

Mr. Mohammad Alauddin had short presentation for sharing the current situation of the Bangladesh in terms of RE:

- He mentioned about the issues which sponsors of solar PV projects are facing, He talked of net metering issues, the low price of power, as well as the lack of the incentives for installing the solar PV facilities.
- He also discussed the possibility of floating solar power system, and solar power plant for airport as solutions to utilize the idle land.

In the end, the session chair, Dr. Munjurul Hannan Khan, concluded the session by thanking everyone for active participation in the discussion.
Session 4  
Spotlight Session (Presentations): Showcasing the Clean Energy Solutions and Products from Global Exhibitors

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<td>Name</td>
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<tr>
<td>Mr. Daneil Etschman</td>
<td>Senior Technical Director, Energy, KfW</td>
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<td>Ms. Maggie Zhang</td>
<td>Director, ZA Solar</td>
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<td>Mr. AKM Mahbub-Uz-Zaman</td>
<td>Deputy Managing Director, Cement Sector, Bashundhara Group</td>
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<tr>
<td>Mr. Chetan Kanojia</td>
<td>Managing Director, Shakti Pumps, Bangladesh</td>
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<tr>
<td>Mr. Nurul Aktar</td>
<td>CEO &amp; Director, Energypac</td>
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<tr>
<td>Dr. Rahul Kapil</td>
<td>Vice President, Longi Solar</td>
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Summary

This session provided a platform for the leading global technology companies and businesses who have sponsored/set shop in the exhibition to present their products and solutions, distinguishing features and success stories.

Key outcomes of the discussion

Mr. Chetan Kanojia introduced Shakti Pumps’ company profile and its achievement:
- Shakti Pumps has 30 years history of business focusing on solar irrigation pumps, solar home system, and roof-top solar.
- He introduced that Bangladesh spends $900 million per year for 1 million tons of diesel to power its irrigation systems, where he opines that Solar-powered pumps are a reliable irrigation alternative.
- Shakti Pumps is working in Bangladesh with IDCOL supporting the goal of installing 50,000 irrigation solar pumps by 2025. He gave detailed information regarding their works in Bangladesh.

Dr. Rahul Kapil introduced his company, Longi Solar and its technology:
- He talked about the company’s achievement, the global market share, the global presence, financial performance, the customers, company spending on technology, strategic partners, product offering, the roadmap of technology, reliability issues.
- He also introduced the company’s technology, Mono PERC, its performance warranty, bifacial PERC, half cut bifacial PERC and optimizing the system design.

Mr. Nurul Aktar introduced Energypac:
- Energypac was established Jan, 1992 focusing on trading transformer, power generation with EPC capacity 250-300 MWp businesses. Also, Energypac is the first company to sell energy saving lighting technologies, like CFL in 2005.
- Mr. Nurul emphasized the importance of creating awareness and providing viable technology solutions for EE. He mentioned that energy conservation can be implemented with less investment through awareness building by encouraging behavior change such as switching off.
the light which brings 3-5% reduction. Then, providing appliance, like LED lights and super-efficient ceiling fan would be important.

- He emphasized that not only installation of EE appliance, engineering design is also important. For lighting, planning installation depending on the lumen is important for achieving EE.

Mr. AKM Mahbub-Uz-Zaman introduced Bashundhara Group and its EE experience through Vertical Rolling Mill (VRM) installation at their Meghna Cement:

- He showed the data on energy consumption and production cost per ton of cement plants in different parts of the country and compared them with Meghna Cement. He presented the comparison of VRM and conventional mill about specific power consumption, specific price of civil works, and operational cost per unit of production.
- He mentioned that the multiple benefit of VRM on top of the energy saving including lower wear and tear and dam ring adjustment features.

After the presentation, Q&A session was followed. During the Q&A session, the suggestion to tackle the challenges of Bangladesh such as scarcity of the land was asked and following discussion was made:

- Dr. Kapil of Longi mentioned that Mono PERC is 41% more efficient than other technology and generate 5% more electricity annually. It means Longi’s technology can generate more per square feet of land.
- Mr. Kanojia of Shakti commented that Sahkti has been installing solar pumps to individual farmers based on the size of their land instead of focusing on large capacity. Also, he mentioned that the size of panel is becoming smaller with improving efficiency of panel.
- Mr. Zaman of Bashundhara again explained the result of installation of VRM at its cement factory which achieved to save production cost, and cost of energy. It is important to respond to increasing demand.
Session 5  Panel Discussion : Reimagining Clean Energy Finance

Date and Time  March 11, 2019, 10:30 AM – 11:30 AM

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<td></td>
<td>Mr. Mohammad Saif</td>
<td>Director (Power &amp; Utilities), EY, India</td>
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<td></td>
<td>Mr. Nitin Jain</td>
<td>Senior Project Coordinator, GIZ</td>
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<td></td>
<td>Mr. Manash Mitra</td>
<td>Head-Financial Advisory, TATA Cleantech Capital</td>
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<td>Mr. Munawar Misbah Moin</td>
<td>Group Director, Rahimafrooz</td>
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<td></td>
<td>Mr. Dipal C. Barua</td>
<td>Chairman, Bright Green Energy Foundation</td>
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<td></td>
<td>Dr. Ahsan Habib</td>
<td>Director (Training), BIBM</td>
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Summary

The clean energy financing landscape in Bangladesh has witnessed an unprecedented transformation in the last couple of years. This panel discussed Bangladesh experience and lessons from global experiences in adapting the globally successful financing models to suit local conditions. The focus had been on innovative and commercial financing instruments using public finance mechanisms to mobilize the private sector capital.

Key outcomes of the discussion

Mr. Nitin Jain talked about the government schemes that have been successful in India and how SREDA in Bangladesh can learn from these:
- He pointed out that the broad EE framework has 3 elements: i) Regulatory, which handles the regulation policies; ii) Voluntary, which comes from awareness programs, and iii) Financial works which comprises of providing grants, subsidies.
- He also mentioned that scaling up is important challenge for financing EE, aggregation of demand and decreasing the cost for transaction is one method to be considered.

Mr. Munawar Misbah Moin shared his experience in Bangladesh, and discussed how private sector play a role in EE finance based on his experience.
- He praised IDCOL’s solar home system (SHS) program. In his view, pay as you go model has a small number associated with it but has a big impact. He mentioned that leveraging finance is vital
- Bangladesh is moving forward from the stage of promoting access to energy to increasing source from RE, and how RE is connected to productive solution, economically and for income generation.
- Financing last mile is challenging and innovative models are required, for instance taking risk in equity part instead of only focusing on refinance model which was applied for SHS program.
- He was concerned that the technologies are changing at a faster pace but the financing institutions are still not geared up to adopt the change in their financing mechanisms.

Mr. Manash Mitra discussed his experience of working in India that can be replicated in Bangladesh:
- He started his speech with a short introduction of Tata Company. In his view, clean energy is not an option any more but MUST to go; however, steps are needed to have it at an affordable
Recently, the production from RE has surpassed conventional energy in some European countries.

- He shared a brief picture of RE of India. In the last four years, 30 GW has been generated from RE, capital cost has been reduced to one third, the tariff has also been lessened.
- Large scale solar power plant called solar park went successful in India. However, in Bangladesh, Solar park might be difficult due to scarcity of land. Given that, roof-top, irrigation solar and EE would be good opportunity in Bangladesh, in his view.
- There are two models 1) OPEX model, like ESCO, and 2) users pay capital cost and sell electricity. He recommended that both options should be considered since Bangladesh has net metering system now,

**Dr. Ahsan Habib** shared his insights and experience in Green Banking policy:

- He participated in development of Green Banking Policy framework in 2011. According to him it has brought remarkable changes, created awareness among people.
- Green banking provides 70% of its loans to the rural community, while in conventional banking it is only 10%. Therefore, Green financing is helping to achieve SDG targets through financial inclusion.
- In order to encourage other commercial bank to consider green finance, incentive structure to push banks is also important.

**Mr. Dipal C. Barua**, being a pioneer in Bangladesh in the field talked about his insights on future endeavours, shared his experience to scaled up RE technologies:

- He remarked the Solar Home System (SHS) program in Bangladesh to be the largest and shared the history behind its growth till date.
- In his view, people have confidence in solar energy due to the success story of SHS. In the coming days 10% of the country’s electricity is expected to be generated from RE, hence other industries should also come up. He stressed that to become a developed country Bangladesh needs RE for sure.

After the panel discussion, a lively Q/A session followed. In the end, Session Chair, **Mr. Mohammad Saif**, concluded the session by thanking everyone for active participation in the discussion.
**Session 6**  
**Spotlight Session (Presentations) : Leapfrogging in Productivity through Energy Efficiency-Success Stories**

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<td>Name</td>
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<tr>
<td>Ms. Nihad Kabir</td>
<td>Barrister-at-Law, President, MCCI</td>
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<tr>
<td>Mr. Chayan Kumar Barua</td>
<td>Manager (Investment), Industrial and Energy Efficiency Finance, IDCOL</td>
</tr>
<tr>
<td>Mr. Mr. Iftekharul Alam</td>
<td>Senior Manager, Corporate Affairs, Tosrifa Industries Ltd.</td>
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<td>Mr. Md. Kausar Alam</td>
<td>CFO, Shun Sing Group</td>
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<td>Mr. Daniel Liu</td>
<td>Managing Director, JINKO Solar</td>
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<td>Mr. Ramesh Patidar</td>
<td>Director International Business, Shakti Pumps, India</td>
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**Summary**

Energy efficiency interventions are often evaluated only on the basis of the energy savings they deliver whereas, improving energy efficiency can often deliver a range of benefits to the economy and society. This session discussed select case studies from industry leaders in adopting best in class energy efficiency technologies and solutions in the manufacturing and building sectors. The Speakers provided insights on trending technologies and solutions, supplier ecosystem, standardization, success stories and multiple benefits of energy efficiency investments.

**Key outcomes of the discussion**

**Mr. Chayan Kumar Barua** presented on the success stories in productivity gains in textile manufacturing through EE:
- Textile & RMG Sector in Bangladesh has huge potential for EE. He pointed out possible EE investment opportunities in these sectors which include production machinery and electricity and heat supply.
- He emphasized that EE measures increases productivity, profitability and competitiveness through saving of energy consumption, operation and maintenance cost, and capital and compliance cost, etc. by sharing the result of two case studies.

**Mr. Mr. Iftekharul Alam**, introduced Tosrifa’s experience of EE and productivity gains in garment sector:
- Tosrifa introduced their success story about energy saving and productivity gains in garments manufacturing through installation of one-through boiler, sewing machines, LED lights and BEMS using IDCOL EE financing scheme.
- Tosrifa as a company is already holding LEED certification for its factory, the company takes environmental responsibility seriously and works on the principles that business should 1. support a precautionary approach to environmental challenges, 2. undertake initiatives to promote greater environmental responsibility, and 3. encourage the development and diffusion of environmentally friendly technologies.
Mr. Daniel Liu gave a presentation on creating a technology driven transition towards solar energy in Bangladesh:
- He explained JINKO Solar’s success stories around the globe and how they are contributing to Bangladesh’s transition to solar energy. In his view, as the most cost effective, easily scalable technology, increase in solar energy mix will decrease energy dependency on gas, oil and coal.
- He pointed out that ADB Board approved 2.34 million USD for technical advisory to assess floating solar and develop a RE investment plan. Moreover, World Bank approved 185 million USD in financing to support the addition of 310MW RE capacity in Bangladesh. He assured that JINKO Solar will be a valuable partner in this transition to solar energy.

Mr. Md. Kausar Alam gave a presentation about its case of installation of VRM to its cement factory using IDCOL’s EE&C financing scheme.
- He discussed the available technologies for cement production and their possible environmental and economic impact.
- He showed that potential energy cost savings by installation of VRM is 30%, and per bag cost saving is by BDT 30 approximately. He also discussed various challenges in energy saving in cement industry.

Mr. Ramesh Patidar of Shukti Pump introduced its success story of promotion of solar irrigation system in Senegal and India. The product contributes helping income gain by increasing productivity and saving energy cost.

The presentation session is followed by an interactive Q/A session and finally, the session chair Ms. Nihad Kabir concluded the session by thanking everyone for the active participation.
Summary
In this session, industry leaders and practitioners presented their outlook and gathered feedback on some critical themes that include policy mechanisms driving global EV adoption, economics of EVs and implications for conventional fuels in Bangladesh, shifting automaker strategies, the race to build charging infrastructure etc. The Speakers shared insights on trending technologies and solutions, manufacturing ecosystem, standardization, success stories and multiple benefits of electric mobility.

Key outcomes of the discussion

Mr. Ashish Kulkarni focused on the strategies needed for adjusting the infrastructure and ecosystem to accelerate Bangladesh’s entry to electric mobility:
- Mr. Kulkarni pointed out the similarity in infrastructure and stated that Bangladesh can mirror the EV history in India. Then, he mentioned important steps to prepare the stages for electric mobility. The first and foremost need is to set up proper policy and regulatory network. Government needed to issue guidelines for legalizing EVs and provide tax incentives to promote them.
- It is also important to set up safety regulations to ensure environmental safety. It is necessary to promote sustainable charging infrastructure to facilitate transition to EVs.

Mr. Arif M. Faisal discussed about the impact of EVs on our environment and the measures needed to mitigate any adverse environmental effect caused by EVs.
- Currently internal combustion engine vehicles are responsible for nearly 25% of global CO2 emissions. The number is 12% in case of Bangladesh. EVs will substantially reduce this emissions and EVs powered with RE can greatly help Bangladesh to meet GHG emission reduction target.
- The main adversarial effect that EVs may cause to environment is related to storage devices like battery. For this, stringent policies should be placed on battery quality control and battery disposal.

Dr. Farseem M. Mohammedy put emphasis on safety regulation necessary for electric mobility:
- He commented that EVs charging stations and batteries can cause fire hazard if not properly regulated. Building codes are needed to be revised to introduce strict rules and guidelines for
charging stations in residential and other areas and the rules needs to be strictly implemented to prevent another fire hazard in the densely populated cities of Bangladesh. It is also important to create public awareness about this.

**Mr. Shafqat Ahmed** talked about the types of available EVs and their possible adaptation in Bangladesh:

- He showed some examples of successful integration of EVs in different countries and introduced possible models that can be implemented in Bangladesh. For instance, Italy has started converting their public transport system to EVs and it can be a good starting point for Bangladesh as well for the transition to EV.
- He also introduced the idea that the clients are needed to be introduced to hybrid vehicles that can be used as EVs in urban areas with charging infrastructure and as combustion engine vehicles outside the coverage of charging infrastructure.

After the panel discussion, a lively Q/A session followed where participants put forward their queries and the relevant suggestions to the panel speakers. In the end, the session chair, **Mr. Sandeep Gupte**, concluded the session by thanking everyone for active participation in the discussion.
Summary

The session highlighted synergies between growing clean energy markets and the major technological advancements, innovations poised to change the business and consumer segments in Bangladesh. The technology and business leaders shared their ideas and perspectives on how this transformation can be dovetailed to create a win-win situation for all the stakeholders.

Key outcomes of the discussion

Mr. Francois LHOMME presented on smart metering and monitoring of energy efficiency and RE projects:
- He first talked about the smart grid which he feels a major brick for pushing the energetic transition & solving challenges in the sector. He presented his idea about the grid of tomorrow, of which flexibility is a key feature, and introduced smart grid road map from Toronto Hydro-Electric, benchmark smart grid migration between countries, AFD strategy with the electrical grid, and smart meters.
- He also presented some examples of innovations in smart grid with grid automation and a probable guideline towards transition to a smarter grid.

Dr. Ijaz Hossain gave a presentation on industrial technologies and innovations in energy efficiency:
- He started with the basic idea behind EE and then introduced the available industrial options, such as, efficient motor, high-efficiency compression chiller, absorption chiller, cogeneration, electric arc & induction furnaces, steel re-rolling mills, the re-heating furnace of re-rolling mill and the water recycling in the textile industry, etc.

Mr. Naimul Islam presented on modular solar cold storage and the prospects of a modular solar cold storage in Bangladesh:
- He talked on the benefits of choosing modular storage, solar hybrid cold storage and shared the pilot project design specifications details. Then he showed the different views of a pilot project, the associated cooling performance, and the results of freshness quality assessment.
He also introduced the estimated cost for commercial projects, cost-benefit analysis for a commercial project and finally concluded with the social impact of the project.

**Mr. Didar Islam** presented about the potential of floating solar in Bangladesh:
- He introduced the floating solar project in Bangladesh by Solaric, and discussed the associated prospects, the opportunities and challenges ahead. He showed Kaptai hydropower dam installation overview, the satellite image, the floating solar PV sites and finally he concluded with the technical aspects of floating solar.

**Mr. Shahriar Ahmed Chowdhury** discussed the impact and cost of renewable and energy storage:
- He showed the global status of RE, where solar PV constitutes 55%, wind- 29% hydropower- 11% and bio-power- 4.6%. He also presented the statistics of RE in the global power sector. After this, he focused on the sector-wise RE roadmap set by SREDA, electricity demand projections of Bangladesh, solar IPP tariff trend in recent years, challenges of integrating variable RE.
- He talked about energy storage as a solution, considering the cost of energy storage by comparing different technologies.

The presentation session is followed by an interactive Q/A session and finally, the session chair concluded the session by thanking everyone for the active participation.
Summary

This panel discussed global experiences and lessons for Bangladesh stakeholders in adopting the right solutions, create requisite infrastructure and techniques to visualize and perceive multiple benefits adopting of green buildings. The focus had been on how adopting integrated clean energy solutions can maximize benefits, enhance energy access and create jobs locally.

Key outcomes of the discussion

Mr. Al Emran Hossain talked about the green building ecosystem in Bangladesh:

- He clarified that a green building should include energy & water efficiency, and a reverse impact on the environment. He talked about energy star rating system, LEED rating system, the building standards.
- Regarding the cost of green building, he mentioned that it is a bit higher compared to the conventional building structures.
- He also talked about the benefits of green building, including social impact, and stressed that a well-designed green building can contribute to mitigate climate change.

Abhijit Pisal shared his experience of working with green building in India:

- He mentioned that the programs towards the green building in India started in 2001 and currently around seven billion sq.-ft. of the green building were constructed.
- He mentioned that the transformation of the market is necessary in Bangladesh and once the market is developed there is no additional cost. He also emphasized that Bangladesh should look forward to creating awareness, training of professionals and also the government should provide due incentives.

Mr. Raihan Alamgir talked about the scenario of green building architecture in Bangladesh and the challenges that the architects face in the design process:

- He expressed gratification as Bangladesh is growing rapidly in this field. However, the awareness of green building is not sufficient and it severely limits the growth of the sector.
- Green building design is needed for overall planning from the beginning, however this practice has not been established in Bangladesh yet. Furthermore, the clients are not positive on green buildings due to the additional costs.
He expressed concern that without proper incentive and government regulations, the green building design may not achieve its goals in near future.

**Mr. Nafiz Rahman** introduced SREDA’s activities regarding promotion of green building:
- SREDA developed Bangladesh’s own rating system, Building Energy & Environment Rating (BEER) which is designed to incorporate the local criteria with existing international rating systems.
- BEER aims to reduce energy consumption by 30% and water consumption by 20%, and this rating system will save the foreign currency which is currently spent on International rating systems currently used by local industries.

After the panel discussion, an interactive Q/A session was followed where participants put forward their queries and the relevant suggestions to the panel speakers regarding green roof and retrofitting. At the end, the session chair, **Arch. Dewan Shamsul Arif**, concluded the session by thanking everyone for active participation in the discussion.
## Appendix 1: Program Structure

### Day 1
March 10th, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 1: Executive Panel Discussion: Global Transitions in Clean Energy - Frontiers of New Energy Paradigm</th>
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</thead>
<tbody>
<tr>
<td>12:00 PM – 01:00 PM</td>
<td><strong>Session Chair:</strong> Mr. Sudipto Mukherjee, Country Director, UNDP</td>
</tr>
</tbody>
</table>
|                    | **Speakers:** 1. Mr. Prasoon Agarwal, Regional Programme Officer, Asia, IRENA  
|                    | 2. Mr. Francois LHOMME Sr. Energy Specialist, AFD  
|                    | 3. Mr. Somesh Kumar, Partner & Leader (Power and Utilities), EY, India  
|                    | 4. Ms. Farzana Rahman, Senior Vice President, Renewable Energy, IDCOL  
|                    | 5. Mr. Arbaaz Nayeem, Associate Director, Ricardo                                                  |
|                    | **Q&A**                                                                                               |

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<tr>
<th>Time</th>
<th>Session 2: Spotlight Session (Presentations): Energy Efficiency Market Outlook for Bangladesh</th>
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<tbody>
<tr>
<td>02:15 PM – 03:15 PM</td>
<td><strong>Session Chair:</strong> Dr. Mohammad Tamim, Pro Vice Chancellor, BRAC University</td>
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</table>
|                    | **Speakers:**  
|                    | *Enabling polices, programs and regulations for energy efficiency market transformation in Bangladesh* |
|                    | Mr. Siddique Zobair, Member (EE&C), SREDA & Additional Secretary to GoB  
|                    | *Catalyzing energy efficiency financing – success stories* |
|                    | Ms. Sandra Lutz, Project Manager, Energy, South Asia, KfW  
|                    | *Fostering the development of markets for energy efficiency* |
|                    | Mr. Philippe, Serres, Regional Manager-South Asia, PROPARCO/Mr. Jean-Baptiste Imatte, Investment Officer, PROPARCO  
<p>|                    | <em>Exploring the Future of Energy Efficiency Financing in Bangladesh</em> |
|                    | Mr. S. M. Monirul Islam, Deputy CEO and CFO, IDCOL                                                   |
|                    | <strong>Q&amp;A</strong>                                                                                               |</p>
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<tr>
<th>Time</th>
<th>Session 3: Panel Discussion: Sunnyside up – Scaling up Solar Photovoltaics in Bangladesh</th>
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| 03:15 PM – 04:15 PM | **Session Chair:** Dr. Munjurul Hannan Khan, Additional Secretary, Head of SAFE project, Ministry of Environment Forest and Climate Change, GoB  
|               | **Speakers:**  
|               | 1. Mr. Nithyanandam Yuvaraj Dinesh Babu, Team Leader, Sustainable Partnership for Rooftop Acceleration in Bharat (SUPRABHA-The World Bank SBI Initiative), EY, India  
|               | 2. Ms. Nishat Chowdhury, Program Lead for PACT, IFC  
|               | 3. Prof. Dr. M. Rezwan Khan, Director, Institute of Engineering & Scientific Research, United International University, Dhaka  
|               | 4. Mr. Mohammad Alauddin, Joint Secretary, Power Division, M/o PE&M  
|               | 6. Dr. Taibur Rahman, Project Manager, SREPGEN Project, UNDP  
|               | Q&A |

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<tr>
<th>Time</th>
<th>Session 4: Spotlight Session (Presentations): Showcasing the Clean Energy Solutions and Products from Global Exhibitors</th>
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</table>
| 04:30 PM – 05:30 PM | **Session Chair:** Mr. Daneil Etschman, Technical Director, Energy, KfW  
|               | **Speakers:**  
|               | Engr. Mr. AKM Mahbub-Uz-Zaman, Deputy Managing Director, Cement Sector, Bashundhara Group  
|               | Mr. Chetan Kanojia, Managing Director, Shakti Pumps  
|               | Mr. Nurul Akhtar, CEO & Director, Energypac  
|               | Dr. Rahul Kapil, Vice President, Longi Solar  
|               | Q&A |

**Day 2**

**March 11th, 2019**

<table>
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<tr>
<th>Time</th>
<th>Session 5: Reimagining Clean Energy Financing</th>
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</table>
| 10:30 AM – 11:30 AM | **Session Chair:** Mr. Mohammad Saif, Director (Power & Utilities), EY, India  
|               | **Speakers:**  
|
1. Mr. Nitin Jain, Senior Project Coordinator, GiZ
2. Mr. Manash Mitra, Head-Financial Advisory, TATA Cleantech Capital
3. Mr. Munawar Misbah Moin, Group Director, Rahimafrooz
4. Mr. Dipal C. Barua, Chairman, Bright Green Energy Foundation
5. Dr. Ahsan Habib, Director (Training), BIBM

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<tr>
<th>Time</th>
<th>Session 6: Spotlight Session (Presentations): Leapfrogging in Productivity through Energy Efficiency – Success stories</th>
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| 11:30 AM – 12:30 PM | **Session Chair:** Ms. Nihad Kabir, Barrister-at-Law, President, MCCI  
**Speakers:**  
*Productivity gains in textile manufacturing through energy efficiency – Success stories*  
Mr. Chayan Kumar Barua, Manager (Investment), Industrial and Energy Efficiency Finance, IDCOL  
*Productivity gains in garments manufacturing through energy efficiency – Success stories*  
Mr. Hayder Ali, Head of Finance & Account, Northern Toshrifa Group  
*Productivity gains in cement manufacturing through energy efficiency – Success stories*  
Mr. Md. Kausar Alam, CFO, Shun Sing Group  
*Productivity gains in energy efficiency – Success stories*  
Mr. Daniel Liu, Managing Director, JINKO Solar  
*Productivity gains in promotion of solar irrigation system*  
Mr. Ramesh Patidar, Director International Business, Shakti Pumps, India |

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<tr>
<th>Time</th>
<th>Session 7: Electric Mobility Potential and Market Outlook in Bangladesh</th>
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| 01:45 PM – 02:55 PM | **Session Chair:** Mr. Rahul Walawalkar, President & MD, Customized Energy Solutions (India), President, India Energy Storage Alliance and Chair, Global Energy Storage Alliance  
**Speakers:** |
1. Mr. Arif M. Faisal, Programme Specialist, UNDP
2. Mr. Joy Nandi, Independent Consultant at Blue Canopy
3. Mr. Ashish Kulkarni, Associate Partner, EY, India
4. Dr. Farseem M. Mohammedy, Professor, Department of Electrical & Electronics Engineering, BUET
5. Mr. Shafqat Ahmed, Senior Manager, Navana Automobiles Ltd.

Q&A

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<th>Time</th>
<th>Session 8</th>
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<tr>
<td>02:55 PM –</td>
<td><strong>Spotlight Session (Presentations): Technological Innovation and Standards for Driving Clean Energy</strong></td>
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<td>04:00 PM</td>
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<td></td>
<td><strong>Session Chair:</strong> Mr. Manmohan Parkash, Country Director, Asian Development Bank</td>
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<td><strong>Speakers:</strong></td>
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<td><em>Smart Metering and Monitoring of energy efficiency and renewable energy projects</em></td>
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<td></td>
<td>Mr. Francois LHOMME, Sr. Energy Specialist, AFD</td>
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<td></td>
<td><em>Industrial Technologies and Innovations in Energy Efficiency</em></td>
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<td>Dr. Ijaz Hossain, Professor &amp; Head, Chemical Engineering Department, BUET</td>
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<td><em>Modular Solar Cold Storage</em></td>
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<td>Mr. Naimul Islam, MD, Solar E Technology Ltd., Bangladesh</td>
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<td><em>The Prospects of Floating Solar in Bangladesh</em></td>
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<td>Mr. Didar Islam, MD and CEO, Solaric, Bangladesh</td>
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<td><em>Renewable and Energy storage: Impact and Cost</em></td>
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<td></td>
<td>Mr. Shahriar Ahmed Chowdhury, Director, Center for Energy Research &amp; Assistant Professor, Department of EEE, United International University</td>
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<td>Q&amp;A</td>
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Q&A

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<th>Time</th>
<th>Session 9</th>
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<tr>
<td>04:00 PM –</td>
<td><strong>Panel Discussion: Green Buildings Ecosystem in Bangladesh</strong></td>
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<td>05:00 PM</td>
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<td></td>
<td><strong>Session Chair:</strong> Arch. Dewan Shamsul Arif, CEO, Visa Architectural Consultants Ltd.</td>
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<td><strong>Speakers:</strong></td>
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Q&A
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<tr>
<th></th>
<th>Name</th>
<th>Position/Role</th>
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<tr>
<td>1</td>
<td>Mr. Md. Nafizur Rahman</td>
<td>Deputy Director, SREDA</td>
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<tr>
<td>2</td>
<td>Abhijit Pisal</td>
<td>Business Head, Godrej GBCS</td>
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<tr>
<td>3</td>
<td>Mr. Al Emran Hossain</td>
<td>President, Bangladesh Green Building Academy</td>
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<tr>
<td>4</td>
<td>Arc. Raihan Alamgir</td>
<td>MD, Archetype Ltd.</td>
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Q&A