



**Understanding**

**THE  
RENEWABLE  
ENERGY  
LANDSCAPE**

**in Bangladesh**

September 2022- August 2023

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**SANEM**  
RESEARCH | KNOWLEDGE | DEVELOPMENT

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# Background



The energy landscape of Bangladesh is primarily characterised and sustained by fossil fuel-based energy sources, namely, natural gas, with more than half of the electricity being generated by domestic natural gas and imported Liquefied Natural Gas (LNG). The rest of the power generation is sourced from coal, diesel, furnace oil, and a tiny portion by hydro and solar (BPDB, 2022). The country's power and energy sector confront substantial hurdles that highlight its inherent structural and institutional weaknesses despite its noteworthy accomplishments. The unpredictability in the global energy market, notably stemming from the Russia-Ukraine conflict, is placing a strain on the government's finances, as evident from the financial stress experienced by the BPDB. With declining domestic gas reserves and plans for expanded LNG imports and infrastructure development, the nation's vulnerability to shifts in global energy prices is amplified.

Additionally, Bangladesh has made precise climate commitments within its Nationally Determined Contributions (NDC) under the Paris Agreement. In November 2022, the country introduced the "Mujib Climate Prosperity Plan," which initially set ambitious renewable energy (RE) targets at 30% by 2030 and 40% in power generation by 2041. Subsequently, these targets were revised to achieve 40% power generation from clean energy sources, including hydrogen, nuclear, ammonia, and renewables. Under this scenario, the available alternatives must be duly explored and evaluated for understanding and choosing the best energy mix available for the country. We must seek a sustainable approach to adopting green and clean energy solutions in Bangladesh to secure our energy needs amidst global uncertainty while meeting climate commitments. To investigate how fuel imports, especially LNG, affect the overall health of Bangladesh's Power and Energy Sector, whether any cost-effective alternatives are available now, and assess the current state of renewable energy development in Bangladesh, SANEM has crafted two research papers.

# **SANEM POWER AND ENERGY STUDY TEAM**

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# SANEM's Seminar

SANEM's Seminar on  
**Youth's Perception on Renewable Energy**  
Monday, 24 July 2023 | 10:00AM - 12:00PM  
Muzaffar Ahmed Chowdhury Auditorium, University of Dhaka

WELCOME REMARKS BY

MODERATOR

PRESENTATION BY

DISTINGUISHED PANELISTS

  
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Executive Director, SANEM

  
Ms. Farha Tasneem Juma  
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SANEM  
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## “Youth's Perception on Renewable Energy”

On 24 July 2023, Monday Economics Study Center- ESC and the South Asian Network on Economic Modeling- SANEM collaborated to arrange a seminar titled “Youth’s Perception on Renewable Energy.” The event aimed to address the growing energy crisis in the country, find the reasons and explore sustainable solutions offered by renewable energy sources.



The seminar opened with welcome remarks from Dr Selim Raihan, Professor at the Department of Economics, University of Dhaka, Executive Director of SANEM, and Ms Farha Tasneem, President of the Economics Study Center. In his welcome remarks, Dr Selim Raihan introduced the panellists, welcomed the guests, and introduced the inspiration behind organising the seminar. He attracted everyone’s attention to the economic effect of fossil and renewable fuels and their environmental impact.

Ms Farha Tasneem, ESC President, outlined the circumstances responsible for the recent increase in fuel prices in her welcome remarks, emphasising the importance of turning toward renewable energy.

Chaired by Dr Sayema Haque Bidisha, Professor at the Department of Economics, University of Dhaka, and Research Director of SANEM, the event also featured Ms Israt Hossain, Senior Research Associate at SANEM, who delivered a keynote presentation on the importance of renewable energy in Bangladesh's future. Ms Israt presented an overview of Bangladesh's current energy situation. Overreliance on a fuel that has a very volatile price record like LNG, overcapacity of the country's power generation capacity due to mainly shortage of fuel and inefficiency of powerplants, increased cost of buying electricity from Independent and rental Power Producer (IPP), increasing transmission loss, BPDB's continuous loss, etc. were mentioned as main reasons behind the crisis. The presentation emphasised the budget allocation for the energy sector, pointing out that most of the budget was allocated to the power division, and the amount assigned to the Energy and Mineral Resources division was insufficient to explore the development of the renewable energy sector. Despite having the potential to produce 40,000 MW of energy from the solar energy sector, the country produces only 924.5 MW- the presentation noted while mentioning other potential renewable energy sectors as well.

The panel discussion included esteemed experts in the field, including:

1. Dr Sakib Bin Amin, Associate Professor at the Department of Economics, North South University;
2. Mr Md. Abul Kalam Azad, Manager-FGGIII, ActionAid, Bangladesh;
3. Ms Aziza Sultana Mukti, Head of Operations, SOLshare;
4. Mr Md. Hasin Israaq, Student, Department of Economics, University of Dhaka

The panellists demonstrated excellent insights and comprehensive coverage of various aspects related to renewable energy. They offered valuable perspectives on the challenges and opportunities for harnessing renewable resources in Bangladesh and addressed questions from the attending youth.



Dr Sakib started the discussion by stressing the importance of energy in every aspect of economic and industrial activity over the course of time. He acknowledged the development of the energy sector in the previous decade through government policies and the private sector's contribution. Dr Sakib provided a '4-A' framework to evaluate various energy sources, which includes availability, affordability, applicability, and acceptability.

His discussion shed light on the development and structure of the energy sector over the years after independence. Bangladesh has witnessed three Power Supply Master Plans in this century. The first proposed a natural gas-powered energy system, while the third shifted to more affordable gases.



The country has been seeing declining natural gas stock, forcing it to invest in cost-ineffective LNG. In addition, the country lacks skilled labour in the energy industry, resulting in inefficiencies. In the end, the speaker suggested promoting rooftop solar systems to increase the contribution of renewable energy in the long run while urging policymakers to allocate more resources to renewable energy.

Ms Sultana spoke on the problems and prospects of renewable energy in Bangladesh. Climate change has long been an important issue, particularly for the inhabitants of this region. However, the rural people have been facing severe electricity shortages compared to the country's urban people, and solving it has become one of the most critical issues.

Ms Sultana raised the issue of auto-rickshaw batteries, which threaten the environment for various reasons, and suggested switching to a virtual power plants (VPPs) system. She also advised transferring the charging burden of these batteries to off-peak hours to achieve low system costs, a stable grid, high quality of power, and a high share of renewable energies.



Mr Israq began by explaining the present state of the government's numerous initiatives and emphasising the need for policy consistency and implementation. According to Vision 2041, the government intends to grow its power production capacity to 40,000 MW by 2030 and 60,000 MW by 2041, with renewable energy accounting for 30% in 2030 and 40% in 2041, as stated in the Mujib Climate Prosperity Plan 2016.

To meet the target, the country needs nearly tenfold its present renewable energy production capacity by 2030 and 20fold by 2041. However, the prior track record is not encouraging, as the government aimed to boost RE's contribution to 5% by 2015 in the REP 2008, which has yet to be reached even after eight years. The seminar's youngest panellist also pointed out how the government could have invested in RE projects like its neighbour India instead of extensively investing in LNG infrastructure, meeting the 30% RE contribution objective by 2030. The panellist proposed an energy demand and supply system to meet the government's goal of zero carbon emissions by 2050. The panellist encouraged the government to establish a maintenance system by including related training in government-provided vocational training courses and employing specialised mechanics at the power division's root level to safeguard the supply system's longevity and sustainability.

Concerning the demand sector, the panellist advocated for more significant funding for the net metering system and incentives for institutions and people that use renewable energy sources. The speaker projected that earlier RE initiatives undertaken by different government agencies, such as solar street lighting, would be more sustainable if a robust maintenance system were established, as indicated.



Mr Azad stated the importance of our coexistence with nature in his discussion. With its concept of neoliberalism, the world has always been focused on getting the most out of available resources. As a result, it has always disregarded nature and wasted resources to maximise profit. We have now damaged the earth's natural balance mechanism due to years of devastation, resulting in global warming and other natural disasters.

It is long overdue for humanity to restore balance, and renewable energy is one of the most essential methods. According to the speaker, Bangladesh is no exception in this aspect. However, with the rising cost and dwindling supply of fossil fuels, the GoB is under further pressure to seek cost-effective alternatives, such as renewable energy. In this regard, he showed concern about the necessity of an essential guiding philosophy or principles in Bangladesh's power and energy sector, which seems nonexistent. Mr Azad emphasised sustainable development, where workers' rights and environmental protection are ensured.

Following the panellists' discussion, a large number of students in the audience expressed their opinions on an array of issues, including whether the government should prioritise industrial needs over household needs, how to reduce capacity charges, how to make the policy-making process more gender inclusive, and how to guarantee the availability of safe water in coastal areas even during system loss periods.



In her concluding speech, Dr Sayema Haque Bidisha, the seminar chairperson, expressed her gratitude to all the panellists and attendees for their valuable insights and active participation. She highlighted the significance of the seminar's theme, "Youth's Perception on Renewable Energy," in addressing the pressing energy crisis in the country. Dr Bidisha stressed the importance of research and data-driven policymaking in finding sustainable solutions to the energy crisis.

She encouraged further research collaborations between academia, government, and industry to explore the potential of renewable energy sources fully.



She also emphasised the need for a long-term roadmap to achieve the government's renewable energy targets, urging policymakers to set clear and achievable milestones. Dr Bidisha advocated for inclusive policies considering gender and social equity in energy planning, ensuring everyone benefits from renewable energy initiatives. In conclusion, she highlighted the importance of sustainability in all aspects of the energy sector, from resource allocation to implementation and maintenance. Dr Bidisha concluded the seminar hoping that the youth, as future leaders, would actively advocate for renewable energy and contribute to a greener and more sustainable Bangladesh.

## Photo Gallery







# SANEM's Webinar

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**সানেমের ওয়েবিনার**

**নবায়নযোগ্য জ্বালানি নিয়ে যত ভুল ধারণা**

**স্বাগত বক্তব্য**  
**ড. সায়মা হক বিদিশা**  
অধ্যাপক  
অর্থনীতি বিভাগ  
ঢাকা বিশ্ববিদ্যালয়  
রিসার্চ ডিরেক্টর, সানেম

**মডারেটর**  
**ইশরাত হোসাইন**  
সিনিয়র রিসার্চ এসোসিয়েট  
সানেম

**আলোচকবৃন্দ**

**ড. এম তামিম**  
অধ্যাপক  
পেট্রোলিয়াম প্রকৌশল বিভাগ  
বাংলাদেশ প্রকৌশল  
বিশ্ববিদ্যালয়

**শফিকুল আলম**  
এনার্জি ফাইন্যান্স এনালিস্ট  
আই ই ই এক এ

**মোশাহিদা সুলতানা**  
সহযোগী অধ্যাপক  
একান্তিৎ অ্যান্ড  
ইনফরমেশন সিস্টেম বিভাগ  
ঢাকা বিশ্ববিদ্যালয়

**বুধবার | ৯ আগস্ট, ২০২৩ | বিকাল ৩ টা**

## Misconceptions about Renewable Energy in Bangladesh

South Asian Network on Economic Modeling (SANEM) has recently arranged a webinar titled “Misconceptions about Renewable Energy in Bangladesh” (নবায়নযোগ্য জ্বালানি নিয়ে যত ভুল ধারণা) on 9 August 2023 at online platform Zoom. The objective of the webinar was to address and debunk the dominant misconceptions revolving around Renewable Energy existing in people’s minds in Bangladesh.



The webinar opened with welcome remarks from Dr Sayema Haque Bidisha, Professor at the Department of Economics, University of Dhaka, and Research Director of SANEM. In her welcome remarks, Dr Bidisha introduced the panellists, welcomed the guests, and highlighted the inspiration behind organising the webinar. She briefly introduced the background, saying that Renewable Energy has become crucial since global warming and the change in climate pattern induced by

consequent temperature rise has been a persisting phenomenon on the earth. Without proper management of fossil fuel-based production systems and transitioning toward a Renewable Energy-based carbon-free green society, the downgrading of our already endangered environment. The webinar was moderated by Ms Israt Hossain, Senior Research Associate, SANEM.

The panel discussion included esteemed experts in the field, including:

1. Dr Mohammad Tamim, Dean of the Faculty of Chemical and Materials Engineering, Bangladesh University of Engineering and Technology (BUET);
2. Shafiqul Alam, Energy Finance Analyst for Bangladesh, Institute for Energy Economics and Financial Analysis;
3. Moshahida Sultana, Associate Professor, Department of Accounting and Information System (AIS), University of Dhaka.

Not only did the panellists lend thought-provoking insights and address the technical aspects of the issues related to renewable energy, but they also offered feasible solutions and alternative scenarios regarding the challenges of harnessing renewable resources in Bangladesh.



Mr Shafiqul Alam started by saying that reaching 24000 MW on the basis of installed capacity by 2041 is obviously challenging, however, we can proceed by following a year-wise (annual) action plan rather than following such a big long-term target. On the issue of land scarcity, he highlighted that although it is a challenge since we must abide by the policy obligation, we can go for a combination of options such as utilization of utility-scale land-based solar projects, rooftop solar PV, and offshore (and onshore) wind-based projects.

We have to explore rigorously the true potential of rooftop solar finding the scope of current and future industrial rooftop and educational institutions rooftops, and by utilising those options, we can get several thousands of MW of power. Similarly, we can do the same for utility-scale land-based solar projects and wind-based projects. Also, the long-standing import duty on four solar accessories needs to be exempted immediately because the aggregate return it will generate will indeed surpass the revenue the government is collecting from current import duties. The government can make an effective integrated resource mapping to manage land scarcity better. BPDB itself can initiate some projects in place of old fuel-based plants, also called repurposing of old inefficient power plants, which can reduce the per-unit generation cost of electricity, for cost-cutting is another primary objective of RE. The price of storage is currently very high, it's true. We can do some pilot projects, but large-scale storage-based projects are not feasible yet; even in India, the price is not agreeable. What we can do is design the system in such a way that our daytime peak demand can be met by solar power and night-time peak demand by wind power. In that way, we can bypass the storage issue now. A moderate portion of the total revenue shortfall of the power sector can be set aside for RE development so that its progress doesn't get hampered.



Ms Moshahida Sultana highlighted, with reference to her research, some points on the issues and prevailing misconceptions that make us lag behind in this sector. While considering RE, it is essential to understand which groups the misconceptions are prevalent among and why what is the context behind these misconceptions; otherwise, it may lead to further misconceptions. During the early 2010s, when the production cost of solar and wind power started falling, many countries enthusiastically declared that they would fully shift to them.

However, especially from the Justice point of view, some issues, such as rehabilitating and compensating the coal workers, etc, arose, and the international coal lobby was also in action, so the countries couldn't realize what they thought they could. At that time, among policymakers, experts, and common people, there were some negative attitudes induced by confusion and lack of reliability regarding whether Solar could manage the base load demand, how to serve night-time peak demand, the cost of storage, grid capacity, etc. Hence, attention was primarily on coal and LNG. As the RE technology continues developing, some attitudes have been positively changed. However, the scale we can expand and achieve from RE is still debated. In that case, we can talk about some relevant scenarios, especially that of Vietnam. Vietnam has successfully enhanced a great deal of power, nearly 16000 MW, from RE within just a couple of years. What they remarkably did was utilise their rooftops. Therefore, the experience of Vietnam challenges the notion that solar development is impossible without a big mass of land. In the case of land-based utility-scale solar, the complaints were mostly from commercial investors and solar developers due to legal and practical difficulties in land acquisition and the availability estimates of land in riverine Char areas; Khaas lands were also highly contested with the practical experience. However, better policy indication and efficient management at the implementation level could have solved this issue with comfort. Besides, with rapidly changing technology, it is now possible to generate more power with less land and cheaper costs; Kaptai is an example. The same goes with RE waste management, with convenient technology coming in the future, thanks to global investments and innovation in this sector, we can dispose of or recycle them efficiently. Another big misconception stemmed from the solar home system. In terms of quality and performance, these were really out of place, creating a lot of confusion and negative impressions at the consumer level. Due to this bitter experience at the local consumer level, people lost interest in solar-related discussions. Moreover, the efforts to reverse this process and restore faith in solar were minimal from all sides—the government, the NGOs, and the importers. Finally, by carefully assessing the capability and preparedness to adopt the technology's proper policy guidelines, providing adequate economic incentives, and building institutional capacity, we can overcome all difficulties and achieve a great deal in RE in the coming ages.





Dr Tamim emphasised the urgency of policy revision since, according to him, our entire RE-related policy over the years has largely failed. He raised the question of and insights on why Bangladesh hasn't reached at least 1000 MW of capacity from RE in the last 15 years. According to him, the allocated lands for land-based utility-scale projects were, in most cases, remote. In those cases, the transmission cost was more significant than the overall project cost.

There was also a lack of incentives; for instance, if the feed-in tariff system could be accommodated, an integrated resource planning could be adopted, and the solar capacity could have been enhanced more. Most importantly, the need for significant public investment and enterprise lies at the heart of this failure. Building any utility-scale RE project at the current stage needs the government's direct involvement in public investment, implementation and monitoring, and finally, attracting private investments. According to a recent study conducted by the World Bank, five abandoned coal sites are recommended to be reallocated to install solar, entailing an aggregate potential capacity of around 6,000 MW. Since these projects are understandably large-scale, the government can proceed gradually—not all overnight-- through Public Private Partnerships, and as Mr Shafique aptly remarked earlier, the government shouldn't be bothered about gigantic long-term targets; the whole power sector should be reorganised with a solid plan, and a clear understanding of demand and supply for five years at a time the estimates of which can appropriately be done by a 'bottom-up' approach. The central planning that we currently have is not working; we need a distributive system. The new wind project in Cox'bazar is performing well above its break-even point, but we have to wait year-round to deliver judgment on the wind potential of Bangladesh. Nevertheless, this particular pilot project gives us glimmering hope. If a subsidy is needed in this sector, it has to be delivered but, importantly, not in an unsolicited manner. Considering the limitations of RE-based power generation, such as variable load and the ensuing grid management under the current legacy system, Dr Tamim also emphasised the system to be designed in such a way that our daytime peak demand can be met by solar power and night-time peak demand by wind power as long as the storage facility doesn't become commercially viable. Above all, at the government level, the attitude toward RE must be changed; the government needs to be more affirmative in that case. The government's political will, proper policy formulation and planning, and the direct involvement of PGCB will play a crucial role in transitioning to a sustainable future. The independent system of the operator (ISO, the national load dispatches sector) must be automated to stabilise the load streams in the national grid because the source of power has now become more diversified with the addition of Solar, Wind, and especially Nuclear power plants.

Now, RE should no doubt contribute the maximum in power generation in principle; at the same time, in practice, we should also keep in mind our economic growth. As the RE roll-out is still slow, we cannot forgo the power demand and economic growth waiting for RE to catch up. If needed, we must use fossil fuels to keep the economy running. The development and shift toward RE should follow a simultaneous and gradual replacement.

Following the panellists' discussion, many of the audience expressed their opinions on an array of issues relevant to the topic. They presented their questions, and the panellists addressed them duly.



In her concluding speech, Dr Bidisha expressed her gratitude to all the panellists and attendees for their valuable insights and engaging participation. She highlighted and summarized the webinar in four significant points: financing, cost-effectiveness, commercial viability, and sustainability. An urgency for cost-efficient management while managing RE-induced wastes, land acquisition, target setting, attracting FDI, and, most importantly, monitoring budget incentives also resonated in her speech.

Dr Bidisha concluded the webinar by saying that careful inclusion of all cost components—economic and environmental—by internalising the externalities and understanding the political economy of RE underlying the whole Power and energy sector is crucial to facilitate the transitional pathway toward a clean and sustainable future.



# National-Level Dialogue



## Exploring Sustainable Energy Pathways Focusing on Cost-effectiveness and Green Budget

South Asian Network on Economic Modeling (SANEM) recently hosted a pivotal National-Level Dialogue on September 18, 2023, at 2 PM. The event, "Exploring Sustainable Energy Pathways: Focusing on Cost-effectiveness and Green Budget", brought together experts and stakeholders to delve into crucial discussions surrounding sustainable energy, emphasising cost-effectiveness and environmentally conscious budgeting.

After giving the opening remarks, the event was skillfully moderated by Dr. Selim Raihan, the Executive Director of SANEM and a Professor in the Department of Economics at the University of Dhaka. Ms Israt Hossain, Senior Research Associate at SANEM, started the program by presenting comprehensive insights into Bangladesh's energy sector's current state, plans, and prospects, specifically focusing on renewable energy. The dialogue featured esteemed guests, including Dr. Shamsul Alam, the state minister for Planning of the People's Republic of Bangladesh, who graced the occasion as the chief guest.

The panel of speakers included Mohammad Hossain, Director General of Power Cell; A K M Fazlul Haque, Director (Deputy Secretary) of Sustainable and Renewable Energy Development Authority (SREDA); and representatives from the Ministry of Power, Energy and Mineral Resources. Noteworthy figures such as Dr. Md. Rafiqul Islam, Joint Secretary (Planning) of the Energy and Mineral Resources Division of the MoPEMR; Barrister Md. Khalilur Rahman Khan, Secretary (Deputy Secretary) of Bangladesh Energy Regulatory Commission; Engineer Md. Shah Alam, General Manager (LNG) of Rupantarita Prakritik Gas Company Limited (RPGCL) and Dr. Ijaz Hossain, a professor and Dean of Engineering at the Bangladesh University of Engineering (BUET); Dr. M Shamsul Alam, Energy Advisor and Senior Vice President, CAB and Dean of Faculty of Engineering at Daffodil International University, added valuable perspectives. The distinguished lineup also featured academics such as Dr. Sayema Haque Bidisha, Research Director at SANEM; Shafiqul Alam, Energy Finance Analyst at the Institute for Energy Economics and Financial Analysis; Professor Dr. Helal Ahmed of North South University; Md. Shahriar Ahmed Chowdhury, Director of the Center for Energy Research; and Associate Professor Moshahida Sultana Ritu from the Department of Accounting and Information Systems at Dhaka University.

In her insightful presentation, Ms Israt Hossain, Senior Research Associate at SANEM, shed light on the intricate dynamics of the power and energy sector. Grounded in data from the Power Sector Master Plan 2016 and other governmental sources, Bangladesh aspires to achieve a formidable 30,000 MW peak demand power generation capacity by 2030 and an even more ambitious 60,000 MW by 2041.

As of 2022, a striking 98% of the total energy production in Bangladesh is derived from conventional sources such as natural gas, oil, diesel, and coal, while renewables contribute a mere 2%. This places Bangladesh at the bottom rung within the South Asian region, possessing the smallest share of renewable energy (excluding hydro) in its total installed capacity for electricity generation, standing at just 1.01%.

Despite achieving a commendable 100% electrification rate in the past year, the recent energy crisis has brought inherent structural vulnerabilities within the power and energy sector to the forefront. The operational losses of the Bangladesh Power Development Board (BPDB) are not solely attributed to the global energy crisis but also signify persistent weaknesses, reaching their zenith in the preceding year. This predicament has further intensified electricity import costs, escalating from 55% of total operating expenses in FY20-21 to 68.5% in FY22-23. These figures underscore the urgent need for strategic interventions and comprehensive reforms within the energy landscape.

In response to the recent decline in domestic gas reserves, Bangladesh strategically diversified its energy landscape by emphasising Liquefied Natural Gas (LNG) as an alternative. The government's proactive stance is evident through plans to construct three new LNG terminals and initiate the development of sixteen additional power plants.

The intricacies of this comprehensive approach, including the opportunity cost, accounting cost, and environmental cost associated with the envisioned complete replacement of domestic gas by 2030, are meticulously presented.

In tandem with the challenges posed by dwindling gas reserves, Bangladesh is actively exploring renewable energy as a viable alternative, recognising its substantial potential despite certain constraints. The scarcity of available land emerges as a significant hurdle for private investment in solar energy; however, innovative solutions propose dedicating 250 acres per 1000 acres for solar projects, concurrently addressing energy needs and preserving food security. Bangladesh, with an average of 4.5 hours of daylight per day, holds the potential to generate 2500 MW of electricity using solar power, offering a valuable resource to bridge daytime power shortages. Moreover, studies indicate the country could harness up to 17,000 MW of wind power by 2050, although the Bangladesh Power Development Board (BPDB) maintains a more conservative forecast of 500-600 MW.

In alignment with the comprehensive energy strategy, this year's budget speech underscored the government's commitment to elevating the contribution of renewable energy to 10 per cent of the total electricity supply by 2030. The budget presentation also highlighted notable advancements within the renewable energy sector, showcasing the installation of 6 million solar systems to provide electricity to households. Additionally, establishing eight solar parks nationwide and the ongoing initiative to replace diesel-powered pumps with solar-powered counterparts were acknowledged as steps toward reducing carbon emissions.

Addressing the prevailing energy crisis, Mohammad Hossain, the Director General of Power Cell, candidly acknowledged the dearth of information and identified the primary fuel crisis as the root cause. He emphasised the pivotal role of solar energy, attributing the renewable energy challenge to the singular feasibility of solar solutions. Noteworthy data he shared indicated that, alongside the existing production of 1200 MW of renewable energy, an additional 2000 MW is currently under construction, with ambitious plans to elevate this capacity to 10,000 MW. Director General Hossain expressed optimism about the potential of diverse solar projects, encompassing floating solar initiatives, rooftop solar installations, land farming, and various other solar ventures.

Professor M. Shamsul Alam voiced concerns about the government's approach to the power and energy sector, suggesting a sense of confusion. He traced the historical shift in Bangladesh's focus from actively seeking gas fields for foreign currency earnings to a lack of enthusiasm in the wake of diminishing possibilities in this realm. Professor Alam underscored the dwindling role of the Planning Commission, once a key player in post-independence planning, emphasising the need for its resurgence to address inconsistencies in recent plans. Drawing parallels with Amartya Sen's perspective on food security, he argued that energy availability is insufficient without ensuring affordability, noting that despite the government's capacity, challenges in procuring fuel hinder achieving proper energy security.



Professor Alam also stressed the importance of cultivating a market for renewable energy among the public, advocating for a comprehensive and inclusive strategy to shape the nation's future.

Energy finance analyst Shafiqul Alam offered a critical perspective, asserting that the nation's focus has predominantly been on electricity security rather than comprehensive energy security. He attributed this approach to the assumption that the growth trajectory would effortlessly cover the costs of energy imports, a belief that has yet to materialise. Alam lamented a missed opportunity in the solar sector and stressed the urgency of initiating pilot projects promptly, emphasising the adage that "nothing is more expensive than lost opportunities." He recommended reclassifying solar panels from luxury to essential products to address solar crises tied to bank Letters of Credit (LCs).

Meanwhile, Md. Rafiqul Islam, Joint Secretary (Planning) of the Energy and Mineral Resources Department, countered the notion that the government aims to reduce dependence on domestic gas. He clarified that efforts have been geared towards aligning gas imports with the government's demand for growth, highlighting plans to drill an additional 46 wells in the upcoming financial year 2024-25. Islam also indicated positive progress in offshore exploration, ensuring tangible outcomes are on the horizon. He justified the decision to import Liquefied Natural Gas (LNG) by noting that the country would have faced heightened load shedding without it.

Professor Dr Helal Ahmed underscored the imperative of prioritising energy availability and affordability to ensure energy security. Emphasising the need for foresight in policy implementation, he advocates for prioritising low-cost sustainable energy sources to alleviate pressure on the government and empower the ordinary people. Aligning with this vision, Mr Abul Kalam Azad highlights the importance of tailoring the energy sector's planning to Bangladesh's unique environmental and climatic conditions. He advocates for a village-centric approach in planning to optimise the success of renewable energy initiatives.

AKM Fazlul Haque, the Director (Deputy Secretary) at SREDA, highlights recent developments in the solar energy sector, citing a new circular issued to ease the net metering process. Acknowledging challenges related to manpower shortages, he commends such initiatives and welcomes the perspectives put forth by analysts –meanwhile, Barrister Md. Khalilur Rahman Khan, Secretary (Deputy Secretary) of the Bangladesh Energy Regulatory Commission, informs about ongoing efforts to formulate a grid code. He expresses optimism about addressing the ongoing energy crisis by exploring new gas fields, avoiding over-reliance on LNG imports and preserving foreign exchange reserves.

Professor Dr Ijaz Hossain addresses the current dynamics of energy costs, noting the relatively low price of LNG compared to potentially higher costs associated with solar projects, mainly due to batteries. He critiques the power sector's planning, highlighting a decrease in demand post-2017 compared to policymakers' projections. Dr Hossain strongly opposes electricity generation from oil, urging a more optimal solar energy utilisation to meet daytime demands. Proposing the exploration of green hydrogen and ammonia as fuel options, he suggests strategic diversification. Shahriar Ahmed Chowdhury, Founding Director of the Center for Energy Research, questions the reliance on ammonia rather than hydrogen as the primary fuel and advocates for domestic production. He emphasises achieving the target of generating 30,000 MW of solar power by 2041 through sustainable battery costs resulting from technological advancements. He underscores the importance of collaborative master planning with the country's citizens.

Engineer Md. Shah Alam, General Manager (LNG) at Rupantarito Prakritik Gas Company Limited, highlighted the underutilisation of the optimal capacity in our terminals. Despite having the necessary infrastructure, the full potential remains unrealised. In conclusion, Professor Ijaz drew attention to the Energy Commission's role, suggesting that a more commercially focused approach could be prioritised if given the responsibility of formulation. Dr. Sayema Haque Bidisha, in her brief address, underscored the critical need to ensure the availability of fuel at affordable prices, deeming it the most significant success factor. Dr Selim Raihan, in his remarks, drew a parallel between the energy crisis and financial challenges, emphasising the necessity of robust leadership and collective efforts from all organisations to navigate the current situation.

State Minister for Planning, Professor Dr. Shamsul Alam, commenced his speech by highlighting recent national achievements, asserting that the country is not in crisis but undergoing a transformative stage. He says a true emergency would manifest if economic growth were negative. Drawing inspiration from rain-prone Germany, he expressed optimism about the potential role of solar energy in Bangladesh with goodwill. He cited ongoing investments in wind energy through wind mapping to ensure sustainability. Dr Alam emphasised the crucial implementation of net metering policies to encourage nationwide household-level solar panel investments. Referring to the rehabilitation of jute mills, he conveyed the government's unwavering stance against malpractices, expressing confidence in overcoming technical limitations to make the energy sector more consumer-friendly.

# Photo Gallery





## Renewable Energy Landscape in Bangladesh: Aspirations, Realities, and Pathways to Progress

Youth Perspective by **Md Hasin Israaq**

In a world on the brink of irreversible climate change, nations are grappling with the urgent need to revamp their energy strategies. Among these nations, Bangladesh finds itself at a crucial crossroads in its energy journey. As a vocal voice in fighting climate change, Bangladesh has the moral responsibility to follow the environmental guidelines and take such policies that align with climate agreements and commitments. However, as a developing nation of almost 170 million people, Bangladesh requires efficient and affordable options for the energy sector. This task has become even more challenging because of the supply shock inflation in the energy sector due to the ongoing war in Ukraine. However, it can be argued that Bangladesh's policy is not the most efficient; instead, a fresh approach towards renewable energy could take Bangladesh to the position it desires to be in.

As part of the Paris Agreement, all nations have committed to pursuing measures to keep global warming far below 2 degrees Celsius, ideally to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this goal, global carbon dioxide emissions need to be reduced by 45 percent by 2030 from 2010 levels and reach net-zero emissions by 2050. As a signatory of the agreement, Bangladesh has also recognised this as a global goal in the IEPMP 2023 (Integrated Energy and Power Sector Master Plan). The Mujib Climate Prosperity Plan also acknowledges these objectives' importance and pressing nature. The plan targets to reach 30% renewable energy by 2030 and at least 40% by 2041. On the other hand, the government's Vision 2041 program aims to increase power generating capacity to 30,000 MW by 2030 and 40,000 MW by 2040. Bangladesh must thus grow its RE power generation capacity to 12,000 MW by 2030 and 24,000 MW by 2041 to comply with the government's planned path to attain carbon neutrality. This comprehensive plan demonstrates Bangladesh's commitment to reducing climate change and promoting sustainable development.

Bangladesh has set an ambitious goal, but carrying it out would be exceedingly challenging. Bangladesh only produces 1158.1 MW of electricity from renewable energy sources, only 4.93% of the total electricity generation capacity. This indicates that, to fulfil the previously specified aim, the country must roughly tenfold its current renewable energy production capacity by 2030 and twentyfold by 2041. This would require a significant commitment from the government, both in terms of policymaking and funding.



However, the historical course shows a dramatic difference between ambition and accomplishment. Even eight years after the target date, the Renewable Energy Policy 2008's objective to increase renewable energy's contribution to 5% by 2015 and 10% by 2020 has yet to be achieved. This difference emphasises the complex difficulties in turning ambitious goals into successful outcomes. Several factors, including poor infrastructure, a lack of technical skills, and budgetary shortcomings, have exacerbated this gap. Identifying and tackling these issues serves as the cornerstone for developing strategies that can deal with the complexity of the future.

Nevertheless, there is an explanation given by the policymakers justifying this gap. They often argue that the goal was set at 5% by 2015 and 10% by 2020 to inspire and boost investing in renewable energy production, knowing it wouldn't be possible to achieve. Setting too ambitious targets, nonetheless, can hinder the development of a country by distorting resource allocation, obscuring reachable milestones, and increasing the likelihood of demoralisation and repeated failures. In addition to undermining long-term planning and creating unreasonable expectations among citizens, pursuing unachievable objectives erodes public confidence in the government's strategy on renewable energy. Such goals could also encourage unsustainable behaviour by ignoring social and environmental costs. The potential for incremental innovation and holistic development can be overlooked in the quest for quick wins.

A perfect example of looking for quick wins can be found in the recent strategic shift towards LNG, which is a prime example of misallocation of resources. Indeed, LNG was once an excellent alternative to coal for energy production as it was cheaper. On April 20, 2020, the price of Asian spot LNG was just USD 2.05/MMBtu. As a result, the government cancelled ten coal-fired power plants in 2021, deciding to make further investments in LNG. However, the government failed to get a favourable long-term agreement to buy LNG when the price was affordable. In October 2021, a significant supply problem prompted the price of Asian spot LNG to peak at USD 35/MMBtu, 17 times more than in February, making it no longer a cheaper option. Yet Bangladesh now plans a \$2.6 billion investment in liquefied natural gas (LNG) import capacity.

It would be a lie if someone told you that this price hike of LNG was unanticipated. The government's Power System Master Plan- 2016 predicted that solar and wind energy costs would decrease by 50% and 30%, respectively, while LNG prices would rise by 40% by 2040. Despite these findings, the government did not take concrete action to explore renewable energy sources. Perhaps the government couldn't trust the RE sector because it could not fulfil the previous RE targets.

At the same time, \$14.5 billion was invested in renewable energy in our neighbouring nation of India, an increase of 125% from the financial year 2020–21 and 72% from the pre-pandemic period of the 2019–20 financial year.



Rs 5,365 crore (\$655 million) has been spent in Gujarat, India, to create solar-wind hybrid power production capacity in 4-5 facilities, each of which would be able to generate between 2000 and 5000 MW of energy. We might have reached the goal of 12000 MW of energy production capacity through RE by 2030 if the \$2.6 billion we are investing in LNG was used for such projects. Thus, The government must put its faith in renewable energy and select realistic goals and policies.

The government alone cannot achieve its RE goals while maintaining economic growth. It needs to create a system where the general mass can heavily contribute. Interestingly, Bangladesh has installed over six million Solar Home System (SHS) units, thousands of rooftop units, street lights, and solar irrigation units since 1996. However, the general mass considers these solar panels as not long-lasting. This situation has occurred due to a lack of maintenance system. Here, the government can contribute massively by creating this system. The government can include training on fixing solar panels in the vocational training courses. The government has completed an electricity distribution workforce even at the root levels of the country. If these workers are trained in fixing solar panels, investing in solar panels for home electricity shall become a viable option for the general people and reduce pressure on the national grip. Net metering, a billing mechanism that credits solar energy system owners for the electricity they add to the grid, is also an excellent incentive for people to contribute to RE. The 'Net Metering Guidelines – 2018' has already been prepared by the government to do so. This way, the government will create a system that makes a demand for RE while ensuring supply as well. Nurturing existing renewable energy initiatives, for instance- solar street lighting projects, net metering systems, hard stance on controlling inefficient vehicles and so on, is also crucial.

In conclusion, Bangladesh's path toward a future powered by renewable energy sources has challenges and opportunities. The voyage demonstrates how the nation can cope with adversity and make the most of advantageous circumstances. Steady rules, smooth actions, and intelligent strategies are critical. By learning from the success of nearby countries, using resources well, and building complete energy systems, Bangladesh can get closer to its clean energy goals. Keeping things running smoothly, involving people, and evolving positively all increase the likelihood of success. As Bangladesh moves toward a cleaner energy future, working together, trying new things, and not giving up will be essential. The way ahead might be complex, but by staying strong and working together, Bangladesh can make its path and leave a lasting mark for the future.





## Blog

# Educational Institutions Functioning with Renewable Energy: footsteps for Bangladeshi institutions to follow

Blog by **Suprova Suvha Zaman**

There are a lot of arguments over alternative energy sources, where renewable energy is considered costly and impractical; there are also several educational institutions in the world that are running with renewable and green energy, reducing carbon emissions to a great extent and making a huge impact worldwide. These are the institutions that can be regarded as role models, and educational institutions in Bangladesh can follow them in building an eco-friendly campus.

As it is known to all, the future belongs to the youth. Educational institutions such as schools, colleges, and universities are the places where young people spend most of their time. These are the places where they can be made aware of environmental challenges and how to conquer them. Previously, academies were only offering courses and degrees on alternative energy. But recently, institutions have come forward to utilise renewable energy sources in practice, which creates a far better outcome for making students aware of the usage of renewable energy in real life. Some of the institutions are functioning with 100 percent renewable energy. They are not only demonstrating the use of solar panels, hydropower, or wind turbines but also showing that they are working towards improving these technologies and innovating new alternatives.

In the U.S.A., the EPA(Environmental Protection Agency) works with different organisations and communities to access, choose, and use green power, those renewable energy resources that provide the highest environmental benefit. Colleges and Universities fall under the category of those organisations. Besides The EPA, the Sierra Club, an American environmental organisation, works with colleges and universities. There are at least 50 prominent colleges in the U.S.A. that are using renewable energy to generate power. For instance, Guilford College emphasises solar heating. It is a kind of solar energy, except that the technology converts the sun's energy into systems for heating water or creating Air conditioning systems. The college has 200 panels producing over 9000 gallons of heated water daily. The majority of the college's residential and dining areas are provided with heat by this clean system. Allegheny College is another college that uses green energy. It uses geothermal heating and cooling systems.

The University of New Hampshire is an excellent example of an institution using green energy. Sierra Club announces this university as the second-most sustainable college in the U.S.A. It is in the lead of all the other colleges in innovation. The college has developed a system for processing methane from a nearby trash yard to run its cogeneration plant. It also has a centre for ocean renewable energy, developing hydrokinetic energy systems. The EPA declares that the college produces 65 per cent of its energy from wind power.

In Australia, the utilisation of renewable energy starts from the primary schools. For example, Broadmeadows Primary School is a public primary school that has been using clean energy since 2010. This school maintains solar panels and wind turbines that produce 6.12 kilowatts and 1.85 kilowatts of pure power, respectively. It has produced 80,125 kilowatts per hour from 2010 to 2019, reduced its Carbon dioxide emissions by 56,088 kilograms, and saved \$35000 in electricity expenses.

Apart from these countries, our neighbouring country, India, is also moving its institutions toward using renewable energy sources. The Canadian International School, Bangalore, can be considered ideal.

The Canadian International School, Bangalore, functions 100 percent on solar energy. The school needs 425,000 kilowatts of energy in a year, whereas they are generating 500000 kilowatts of energy per year. The power they are producing exceeds the school's requirement. The extra power is provided to the national grid for distribution. Additionally, there is a meter that measures how much electricity is produced by all panels on campus for students to experience the conversion of power practically.

There were some challenges that the Canadian International School had to face initially. The cost of installation of the solar panels was around three crores. However, the Karnataka State Government helped the school by giving incentives for installing the panels. In return, the school provides surplus energy to the government of Karnataka for public use.

Being India's first 100% solar-powered campus, the Canadian International School implements an eco-friendly maintenance policy. They do not use toxic cleaning supplies. They recycle sewage waste and encourage students to understand the garbage footprint. They invest in renewable energy. They claim that their institution is carbon neutral.

Renewable energy sources have always been criticised for being the costlier options. Still, interestingly, a government school in India has turned to solar energy to cut electricity costs. Government Model, Boys' Senior Secondary School in Himachal Pradesh, sets an example by doing so. This project is supported by the Green School Programme of the Government. This school produces 18 kilowatts of energy in 40 days by using solar panels.

The Himachal Pradesh Council of Science, Technology & Environment (HIMCOSTE) provides the necessary support to the schools that are trying to run by using renewable energy.

The institutions mentioned above prove that renewable energy sources are not impractical and can be cheaper sometimes. An institution can function by generating power from alternative sources and reducing carbon emissions by following their examples. Bangladesh, for its geological location, is vulnerable to climate change. Our educational institutions have a huge responsibility to reduce the severity of this crisis. They also need to come to the forefront of using

- renewable energy, which will result in less environmental pollution and more
- awareness among people. Our schools, colleges, and universities can use the
- institutions mentioned above as examples to develop their strategy to use
- renewable energy. Moreover, the innovation of new technology for using
- alternative energy sources should be given priority in the universities of our country.



# Published OpEds



**OpEd**

## **The Future of Renewable Energy in Bangladesh**

by **Dr Selim Raihan**



**OpEd**

## **Switching to Renewables is Easier than We Think**

by **Dr Selim Raihan**



**OpEd**

## **Bangladesh's Energy Sector: Short-term Success vs Long-Term Sustainability**

by **Md. Tuhin Ahmed and Sayed Arafat Zubayer**



**OpEd**

## **Potential Risks and Vulnerabilities Associated with Heavy Reliance on LNG Import and Strategies to Reduce Them**

by **Md. Tuhin Ahmed and Md. Abdul Aahad**





**OpEd**

● **How Realistic is the Draft Integrated Power Sector Master Plan?**

by Ms Israt Hossain



**OpEd**

● **Solar Energy Landscape in Bangladesh: Prospects and Problems**

by Ms Israt Hossain



**OpEd**

● **Renewable Energy in Budget FY 23-24: Understanding the Shortfall**

by Omar Raad Chowdhury and Mohammad Asaduzzaman



**OpEd**

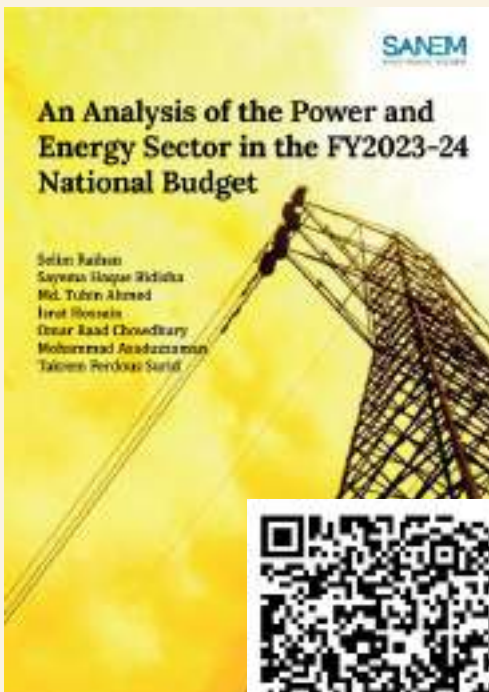
● **বাজেটে নবায়নযোগ্য জ্বালানিতে বরাদ্দ:  
ঘাটতি ও সম্ভাবনা**

by Omar Raad Chowdhury and Mohammad Asaduzzaman

# Report and Policy Brief

## An Analysis of the Power and Energy Sector in the FY2023-24 National Budget

To attain the transformation towards clean and renewable energy (RE), the Government of Bangladesh (GoB) formulated the “Mujib Climate Prosperity Plan” in November 2022 which sets an ambitious RE target of attaining the RE target of 30% by 2030 and 40% by 2041. Therefore, detailed and long-term financial planning is needed to attain the targets outlined in the national plans. This study analyses the power and energy sector in the national budget for FY2023-24. Putting RE at the forefront, this study investigates the priorities of the national budget FY2023-24 concerning RE. It incorporates a critical analysis of the Integrated Energy and Power Master Plan (IEPMP) and its implication for the national budget. It also provides an overview of the fiscal space for attaining the RE target for the national budget. Finally, it highlights some policy suggestions for the power and energy sector in the national budget for FY2023-24 considering the policy deficiencies and the government’s stated commitment towards energy security and clean and RE targets.



# Estimating Costs of LNG-based Power Generation and Devising Alternatives Pathways towards Green and Clean Energy

The global LNG market is witnessing increased demand from both emerging and developed markets, leading to substantial investments in LNG processing and transport infrastructure. However, like other countries, Bangladesh has been affected significantly by the global energy crisis and global LNG supply and price volatility. Given the country's heavy reliance on LNG and particularly on imported LNG, the available alternatives must be duly explored and evaluated to understand and choose the best energy mix available for the country. Through a critical analysis of alternative energy sources, this study, in particular aims at estimating the economic and environmental costs of reliance on LNG imports and their implication for the economy and exploring alternative pathways to LNG imports, especially renewable energy, to have a better understanding of Bangladesh's comparative advantage in this regard.



# Capacity-Building Activities



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# About SANEM

SANEM, launched in January 2007 in Dhaka, is a non-profit research organisation registered with Bangladesh's Registrar of Joint Stock Companies and Firms. It is also a network of economists and policymakers in South Asia with a particular emphasis on economic modelling.

SANEM aims to promote the production, exchange and dissemination of basic research knowledge in international trade, macro economy, poverty, labour market, environment, political economy and economic modelling. It seeks to produce objective, high-quality, country- and South Asian region-specific policy and thematic research. SANEM contributes to governments' policy-making by providing research support in individual and organisational capacities.

SANEM has maintained strong research collaboration with global, regional and local think tanks, research and development organisations, universities and individual researchers. SANEM encourages young researchers from Economics, Business and Social Sciences to undertake independent research on contemporary issues. SANEM has an internship program in place for fresh university graduates. SANEM arranges regular training programs on economic modelling and contemporary economic issues for Bangladeshi and other South Asian participants.

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