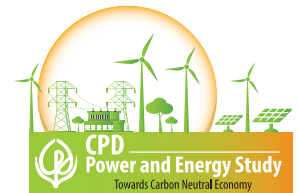


# Currents of Change

## Quarterly Brief of the Power & Energy Sector of Bangladesh

Volume 1, Brief No. 2  
October-December 2023



### Key Highlights

- The second quarter of FY24 (October- December 2024) has performed poorly in terms of energy transition point of view
- The Government of Bangladesh decided to import re-gasified liquefied natural gas (RLNG) from India through the cross-border pipeline along with the approval of two new LNG regasification FSRUs.
- Due to the stagnant progress of renewable energy, an estimated 319.77 MW from renewable energy could not be added to the grid.
- The government has secured USD 2.7 billion or BDT 30,022 crore for renewable energy projects from foreign sources.
- According to CPD study (2023), the country is experiencing moderate stress due to energy and electricity-related concerns with the highest stress level reported in Rangpur in October 2023.

**Khondaker Golam Moazzem, Helen Mashiyat Preety, Jebunnesa, Faisal Quaiyyum and Mashfiq Ahasan Hridoy**

### 1. BACKGROUND

The second quarter (Q2) of Fiscal Year (FY) 2024 (October-December 2023) was particularly significant for the power and energy sector as several policy decisions were made from national and international perspectives. Some of these are: the Conference of the Parties (COP) 28 was held on December 2023; the much-anticipated Integrated Energy and Power Master Plan (IEPMP) was approved; given the national election, different political parties have put their sectoral pledges; the Ministry of Power, Energy and Mineral Resources (MoPEMR) has been initiating proposals on domestic gas exploration and Liquefied Natural Gas (LNG) import; and Bangladesh obtained foreign financial assistance or investment for renewable energy projects.

The quarterly is segregated into eight broad sections, including a brief snapshot of the major policy and operational decisions, power and energy sector performance, renewable energy deployment status and the reflection of the first quarterly brief's recommendations in the policy decisions of this quarter and provides remarks on the overall health of the power and energy sector during this quarter. Additionally, this brief contains a featured interview of H&M- one of the largest apparels importers of Bangladesh regarding the clean energy and green growth initiatives and some snapshots of CPD's on-going study to present the household stress levels associated with various power and energy incidents.

### 2. MAJOR DECISIONS TAKEN DURING OCTOBER-DECEMBER 2023

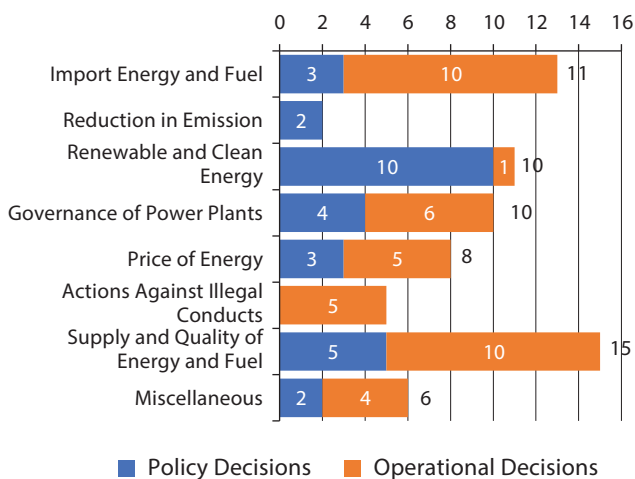
**Policy Decisions:** During Q1 of FY24, the government prioritised renewable energy policies, leased- in state-owned jute mills' rooftops for solar projects, promoted industrial/ commercial rooftop solar to address land scarcity, and offered loans covering 80 per cent of installation costs, indicating a policy shift from fuel imports and supply to renewable and clean energy (Figure 1).

#### Centre for Policy Dialogue (CPD)

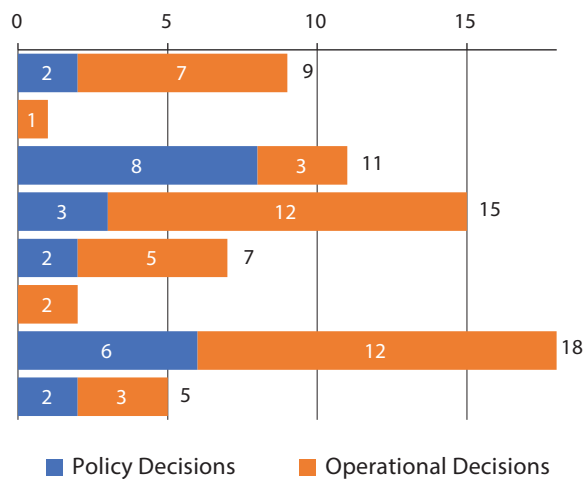
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Keeping up with the trend, in Q2 of FY24, the government emphasised policy decisions around renewable and clean energy, which represented the highest number of policy decisions. A notable policy decision in this regard was the authorisation of two solar power plant projects. Additionally, the government approved the European Commission's funding agreements for renewable projects and Denmark's green investment proposal. In Q2 of FY24, the government did not intensify its policy focus on energy and power supply quality. Key actions included adopting a policy to attract private sector investment in refining and marketing refined oil products, initiating hydrocarbon exploration, and conducting maintenance services. In September 2023, the MoPEMR, was supposed to adjust the price of petroleum oil to a market-based pricing mechanism. However, the tariff adjustment was delayed to March 2024 to balance consumer affordability with the financial health of energy providers. Regrettably, no policy measures were taken during this quarter to reduce the emissions. Overall, the policy actions during this quarter demonstrated a concerted effort to manage energy resources responsibly while paving the way for innovative and sustainable energy solutions (Figure 2).

**Figure 1** Government and Government Relevant Authorities' Action Focus Point During July and September, 2023



**Figure 2** Government and Government Relevant Authorities' Action Focus Point During October and December, 2023



**Source:** Authors' compilation from various newspapers and relevant government websites.

**Operational Decisions:** In Q1 of FY24, the government focused on stabilising energy supply by making key decisions like using current exchange rates for settling import costs and procuring LNG cargoes. While efforts to promote renewable and clean energy were minimal, measures to reduce carbon emissions were absent (Figure 1).

During the Q2 of FY24, the government's operational decisions continued to address the challenges of energy import, power and energy supply, and quality maintenance. Similar to Q1 of FY24, there was a significant effort to ensure a consistent and quality energy supply, with operational actions peaking in this area. Specific measures included the settlement of overdue import bills for Bangladesh Petroleum Corporation (BPC), initiatives to secure long-term LNG supply agreements, and the reception of substantial coal shipments to support power production. Key decisions included regional energy co-operation, strategic imports of re-gasified liquefied natural gas (RLNG) from India, and securing LNG cargoes and coal supplies to boost national energy reserves. However, there was a notable downturn in actions towards emission reduction, with only a single operational action recorded in this quarter, indicating an area that may require greater attention in the future policymaking. The operational focus was on securing a reliable energy supply chain and enhancing the infrastructure to support the country's energy demands (Figure 2).

**Conference of the Parties (COP) 28 and Bangladesh:** The COP28 was held in Dubai, United Arab Emirates, in December 2023. Led by the COP28 Presidency, the Global Renewables and Energy Efficiency Pledge stood as a cornerstone, aiming to phase out fossil fuels by 2030 and aligning with the Paris Agreement. The key takeaways from COP28 are as followed:

- Nearly 200 countries pledged to transition away from fossil fuels, a decision marking the first time a COP agreement explicitly focused on fossil fuels.
- The agreement called for tripling new investments in renewable energy. Bangladesh has also been a signatory of this statute.
- Only USD188 million was pledged for adaptation, significantly lower than the many billions needed, especially for vulnerable island states.
- Progress was made on the Loss and Damage Fund established to aid communities affected by climate change, but funding commitments were deemed insufficient.
- The final text of COP 28 agreement sets emissions reduction targets but lacks details on implementation strategies.
- The upcoming Nationally Determined Contributions (NDCs), due to be presented between the end of 2024 and early 2025, are expected to provide more clarity on individual country targets and pathways.

### 3. POWER SECTOR DURING OCTOBER- DECEMBER 2023

**Generation:** During this quarter, installed generation capacity reached 29,152 (on grid and off-grid), per capita power generation was 602 Kwh and per capita consumption was 464 Kwh . The maximum peak generation during Q2 of FY24 was 14356 MW, while the unutilised generation capacity was 11,459 MW. A seasonality in energy generation can be observed through the generation pattern. Given the trend of declining demand during the winter season in Bangladesh, there is an overall decline in the use of all kinds of fuels. However, the diminishing trend is not very smooth, particularly in oil-based power plants. A volatile trend for the daily cost of fuel oil is observed where the highest cost recorded during this quarter was as high as BDT 60.79 crore and as low as BDT 33.59 lakh (Figure 3). A substitution trend between coal and oil persists, and no significant measures have not been taken to expand the gas reserve for low-cost electricity (Table 1).

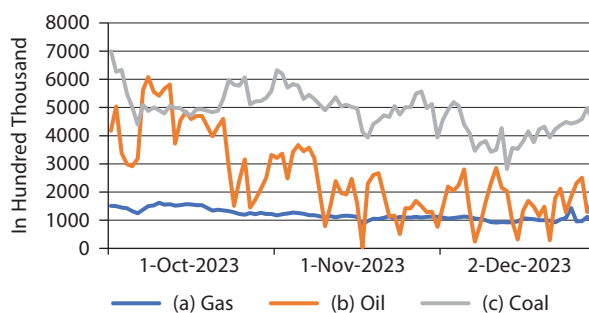
**Transmission & Distribution:** As of December 2023, at the end of this quarter, the transmission lines stood at 14,948 circuit km, and distribution lines are at 643,000 km while having a grid sub-station capacity of 65,790 Mega Volt Amp (Table 2). The transmission and distribution system has made progress in the last two quarters, especially in distribution lines and grid substation capacity. This progress may have been possible due to the increase in the number of transmission and distribution system development projects. Several ADP projects on power distribution have been initiated and implemented in the past few years. The ADP projects have increased

**Table 1 Per unit fuel cost based on plant type**

Plant Type	Per Unit Generation cost (FY2022-23)
Gas	5.13
Coal	11.51
HFO	23.42
Diesel	39.72

Source: BPDB annual Report FY2022-23.

**Figure 3 Per day Fuel Cost of Powerplants (Taka)**



Source: BPDB Daily Generation Report.

**Table 2** Table 2: Progress in Transmission- Distribution system

Indicators	Start of Q1 (Jul' 23)	End of Q1 (Oct'23)	Start of Q2 (Dec' 23)
Transmission lines (Circuit Km)	14,717	14,934	14,948
Distribution lines (Km)	629,000	643,000	643,000
Grid sub-station capacity (MVA)	61,525	64,000	65,790

Source: BPDB Monthly Report.

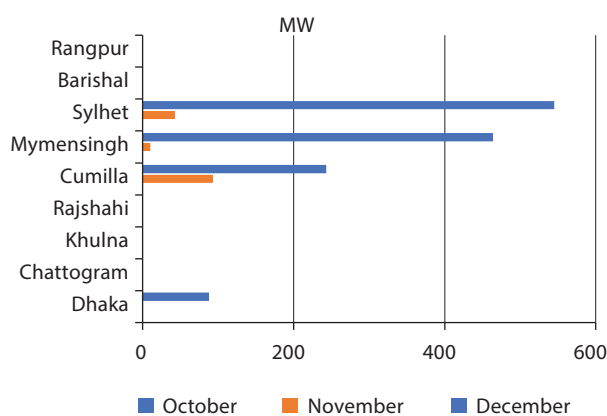
from 22 to 30 from FY2023 to FY24. In addition, during this quarter, the Asian Development Bank approved a USD 160 million loan to Bangladesh, which may contribute to the further development of Dhaka's power distribution network. Such initiatives are also required for outside of Dhaka region.

**Load Shedding:** During this quarter, the demand and supply gap of power generation decreased from 1340 MW in October to 0 MW in December 2023, again reflecting the seasonal decline in the demand for power during the winter season. Figure 4 reflects the load-shedding scenario in various regions of Bangladesh during October, November, and December of 2023. The graph indicates that, despite declining electricity demand, Sylhet, Mymensingh, and Cumilla experienced more power outages than other regions in the country. Additionally, the CPD stress survey (details in Section 8) reveals that Rangpur and Khulna divisions experienced the highest stress levels during October and November 2023, while moderate stress levels were prevalent throughout Bangladesh due to electricity supply. This contradicts the load-shedding pattern shown in Figure 4, which indicates zero load-shedding in Rangpur and Khulna during the quarter.

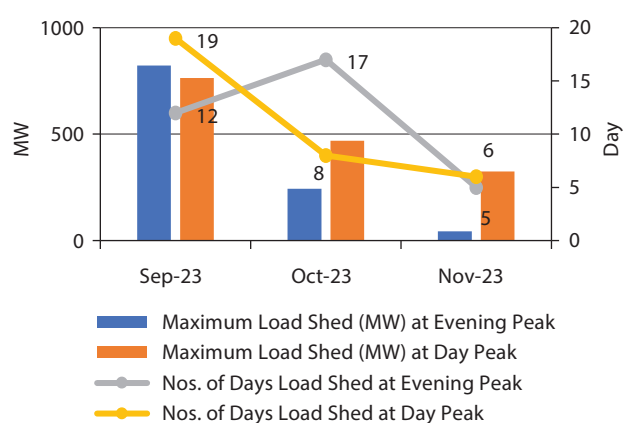
Figure 5 portrays further insights into the load-shedding pattern in the regions. It shows that from September 2023, even though the amount of load shedding and the number of load shedding at the evening peak is declining, the day peak load shedding is declining at a lower rate than the evening.

The duration of the interruption pattern reflects interesting findings. In the previous quarter, the outage duration due to tripping or emergency maintenance was higher than the outage due to scheduled maintenance or project work. Whereas

**Figure 4** Figure 4: Zone wise Load-shed at Evening Peak (Generation end) in MW

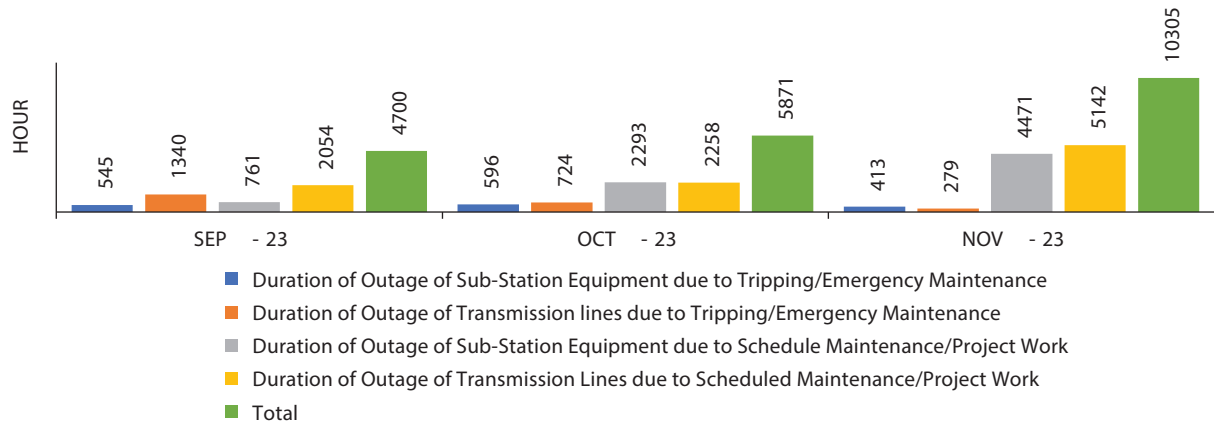


**Figure 5** Figure 5: Monthly Load Shedding pattern (Sub-station end)



Source: BPDB daily generation data and BPDB monthly report.

**Figure 6** Figure 6 :Summary of Monthly Tripping and Outage (EMERGENCY & SCHEDULED)



Source: BPDB monyhl report.

during this quarter, the outage duration due to scheduled maintenance and project was higher than the outage due to tripping or emergency maintenance. The pattern indicates that development work to enhance efficiency and increase the capacity of the transmission distribution system may be taking place.

In both cases, the duration increased compared to the previous quarter, rising from approximately 5016 interruptions in August to 10305 interruptions in November 2023 (Figure 6).

**Fossil Fuel Phaseout and New IPPs:** During this quarter, two gas based Independent Power Plants (IPPs) were scheduled to be phased out according to their contract expiration date. Horipur Power CCPP, Narayanganj (360 MW) was expected to be phase out on 30 November 2023, and Doreen 22 MW, Tangail (22 MW) was expected to be expired on 11 November 2023. Based on the Bangladesh Power Development Board's (BPDB) daily generation report, two power plants with zero generation output are still listed. However, according to BPDB data, no plant has expired during this quarter (Table 3). This discrepancy calls for further inquiry to determine if the two IPPs have been paid capacity charge despite not generating power after the phase out date. On the other hand, a new Coal-based power plant called 'Chattogram 2x612 MW Coal-based Power Plant (1st Unit)' has started operating with a capacity of 612 MW. This plant was expected to be commissioned in December 2022. A delay of 10 months has been observed, which may cause further expiration process congestion in the future.

**Table 3** BPDB's Financial Statement

(BDT crore)

Indicators	FY2022-23	FY2021-22
Operating Revenue	51,847.02	44,322.2
Operating Expenses	95,386.28	71,857
Operating Loss	-43,539.26	-27,535.2
Net Non-Operating Expenses	5,057.23	3,821.3
Subsidy From Govt.	39,534.95	29,658.2
Comprehensive Income for the Year	(-11,765.49)	(-3,233)

Source: BPDB Annual Report.

**The Financial Situation of BPDB:** BPDB published its annual report for FY2022-23 on 1 January 2024. According to the report, BPDB incurred a net loss of BDT 11,765.49 Crore in FY 2022-23, which exceeded the revised budgeted net loss of BDT

6,957.72 Crore by BDT 4,807.77 Crore. Operating revenue slightly increased to BDT 51,847.02 crore as the power tariff has been revised multiple times in FY2023. The operating expenses rose to BDT 95,386.28 crore due to the increase in electricity purchase from IPPs. BPDB has paid BDT 59,022.74 crore to the IPPs in order to purchase electricity. The increasing operating expense has surpassed the operating revenue, resulting in an operating loss of BDT 43,539.26 Crore. Even with the help of government subsidies worth BDT 39,534.95 crore, net loss of BDT 11,765.49 crore for FY2022-23 is shown (Table 3).

## 4. ENERGY SECTOR DURING OCTOBER-DECEMBER 2023

### 4.1 Natural Gas Status in October-December 2023

**Gas Demand and Supply:** During the Q2 of FY24, the gas supply, including LNG, was roughly stable. The shortage of imported RLNG mainly drove a gas shortage at the beginning of October 2023 and mid-December 2023. In the last quarter, the share of LNG of total gas supply was as high as 32 per cent (Figure 7).

**Gas Exploration:** During the Q2 of FY24, a new gas reserve was found in an abandoned well of Kailashtila under Sylhet Gas Field. On the other hand, gas extraction from well no 2 of the Kailashtila gas field in Sylhet's Golapganj had been suspended for a long time. The newly discovered well with the depth of 2,570 metres, was identified in four layers, with the lower level yielding 25 million cubic feet at a flowing pressure of 3250 psi, totaling 43.1 billion cubic feet.

According to, Bangladesh Economic Survey 2023, Bangladesh's total gas reserves amount to 40.23 trillion cubic feet, with proven and probable recoverable reserves at 28.62 trillion.

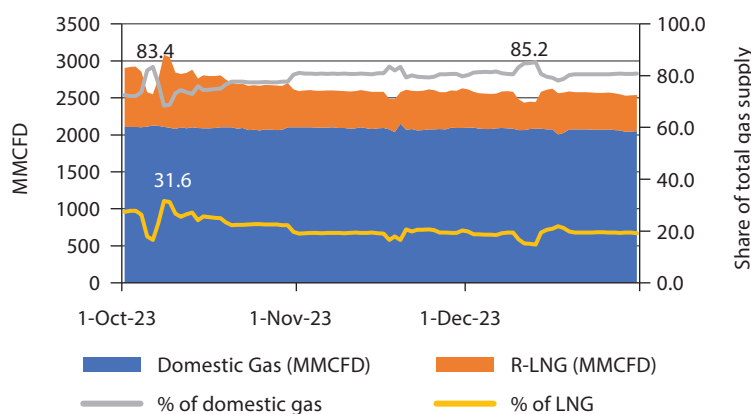
In line with the government initiative to drill 46 wells by 2025, 14 wells under Sylhet Gas Fields are undergoing drilling and re-drilling activities. Of these wells, three wells—Sylhet's well no 8, Kailashtila's well no 7, and Beanibazar's well no 1—supply 16-18mmcf of gas to the national transmission line daily. Till the previous quarter, there are 13 wells of SGFL, producing 98 mmcf of gas per day.

The government has also planned to float international bidding for offshore hydrocarbon exploration in the Bay of Bengal before the 12th general election. However, no progress has been made on this initiative so far.

### 4.2 Imported LNG Status in October-December 2023

**LNG Import:** The Government of Bangladesh decided to import re-gasified liquefied natural gas (RLNG) from India through the cross-border pipeline during the Q2 of FY24. In an initial bid, around 300 million cubic feet per day (mmcf) would be brought in from India's H-Energy by 2025. Additionally, Bangladesh has entered into a long-term sales and purchase agreement with USA-based Exceleerate Energy to purchase liquefied natural gas (LNG) for 15 years starting in 2026. The agreement will enable the second-largest economy in South Asia to buy 1 million tonnes of LNG per year from the American company.

**Figure 7 Gas Supply (October-December 2023)**



Source: PetroBangla Daily Gas Report.



**LNG Infrastructure in Bangladesh:** Capacity extension of the LNG terminal and related infrastructure along with a new LNG import deal were approved in Q2 of FY24. Cabinet Committee on Government Purchase in a meeting on 6 December 2023 approved the proposal of Exceleerate Energy Bangladesh Ltd, and Summit Oil & Shipping Co Ltd, a subsidiary of the Summit Group to establish 2 new FSRUs to regasify imported liquefied natural gas (LNG).

### 4.3 Coal Import During July-December 2023

During the last two quarters, July-December 2023, the import of coal has been increased exceedingly. A total of 67 lakh 25 thousand tonnes of coal was imported in the last six months of July-December, 2023. The growth in coal import has exceeded 104 per cent compared to the same period of last year. This coal is mainly imported for coal-based power plants. Currently, 7 coal-based power plants are in operation. During the last two quarters, particularly from August to December, generation from coal-based power plants have surpassed oil based power plants driving the coal demand and import upwards.

### 4.4 Fuel Oil During October-December 2023

**Fuel Oil Stock and Demand:** According to BPC sources, as of 28 December, the current stock of diesel is 170,000 tonnes, sufficient to meet the demand for 14 to 15 days. The current stock of jet fuel is 9,685 tonnes, that can provide for 4 days. In the last quarter, BPC required petrol, octane, and furnace oil stock.

**Oil Import:** During the Q2 of FY24, the government approved the import of 38 lakh tonnes of refined fuel oil through direct purchase in 2024. Bangladesh has also opened up investment by the private sector in setting up refineries and marketing refined oil products both for domestic consumption and export. The Energy and Mineral Resources Division (EMRD) adopted a new policy and published a gazette notification to this effect. The energy ministry has announced the discovery of new oil reserves in Sylhet while drilling the gas well, with potential oil reserves of 8-10 million barrels.

**Financial Burden of BPC:** The BPC has not been being able to settle the fuel import bills for the past one and a half years mainly due to the dollar crunch. The financial burden even increased more during the previous quarter. As of the end of December 2023, BPC's outstanding payments have reached 253 million dollars, although the dues surpassed 450 million in October 2023.

## 5. RENEWABLE ENERGY DURING OCTOBER-DECEMBER 2023

**Renewable Energy Progress during October-December 2023:** The trajectory of renewable energy advancement in the October-December 2023 quarter displayed a continuation of challenges seen in previous quarters. The sector's progression was marked by delays, with no new power plants becoming fully operational on schedule or after the expected dates. These setbacks resulted in a significant shortfall in renewable energy production, with an estimated 319.77 MW of clean electricity generation missed due to the delays. This gap reflects a persistent hurdle in meeting the nation's renewable energy targets and represents a lost opportunity for more environmentally friendly and cost-effective energy production. All the power plants initially delayed in the 1st Quarter of FY24 and supposed to be operational in December 2023 are delayed again and scheduled to be operational in 2024 (table 4).

In the Q1 and Q2 of FY2024, there were delays in the full commercial operation of a solar power plant and a wind power plant, both of which are currently only partially operational. Furthermore, Sonagazi solar plant, originally scheduled for completion in December 2023, experienced a delay until 2024 due to a capacity extension of 25 MW. Within this quarter, the government has sanctioned the development of 10 new power plants harnessing renewable energy sources. These include a 180 MW solar power facility in Jamalpur, a 100 MW solar plant in Feni, and an 11 MW waste-to-energy plant in Brahmanbaria.

### Renewable Energy Financing during October-December 2023:

During the second quarter of FY24, Bangladesh obtained foreign financial assistance or investment for renewable energy projects, totaling USD 2.7 billion, equivalent to BDT 30,022 crore (based on the exchange rate of 9 January, 2024), from international partners including the Norwegian Investment Fund, the European Commission, and Denmark. Additionally, it is noteworthy that these financial arrangements are not in the form of foreign loans,

which means they will not exert pressure on the country's foreign reserves for repayments in the foreseeable future. There is no change in the financing scheme from the 1st quarter.

**Table 4** Progress status of renewable-based power plants scheduled to operate commercially in 2023 (during October and December 2023)

Progress Status	Number of Power Plants During July-September 2023	Number of Power Plants During October-December 2023
Fully Operational on Time	0	0
Fully Operational but Delayed	3	0
Partially Operational but on Time	1	0
Partially Operational but Delayed	0	2
Delayed	9	8
Construction Starts	N/A	1
Projects Approved	N/A	10

Source: Authors' Calculation from BPDB Monthly Reports of 2023 and SREDA.

**Integrated Energy and Power Master Plan (IEPMP), 2023:** The Ministry of Power, Energy and Mineral Resources (MoPEMR) has approved and published the final Integrated Energy and Power Master Plan (IEPMP) 2023 on 27 November 2023. The IEPMP has been developed with a view to establishing a clean and efficient energy supply/demand system as the platform for sustainable development of Bangladesh with a long-term energy plan up to 2050. The plan is not aligned with the objective to achieve renewable energy target of Bangladesh with an over estimation of future power demand.

- The preferential biases in the demand estimation (58 GW by 2041) methodology will ultimately make it unrealistic to achieve 40 per cent of the power demand from clean energy.
- The plan set a target of 40 per cent of clean energy by 2041 (24 GW) of which only 9 per cent is traditional renewable energy (5280MW), and rest (18,720MW) is focused on nuclear and advanced technologies such as CCS, hydrogen, ammonia.
- The new plan heavily focuses on the extraction and production of domestic coal instead of imported coals reflecting a "coal transition" rather.
- IEPMP still promotes fossil fuels particularly LNG in the form of LNG, coal and coal-based energy.
- This initiative is rather an indication of how government has started to work towards the opposite direction of energy transition.

## 6. CONCLUSION: FOLLOW-UP OF THE PREVIOUS QUARTER AND WAY FORWARD

The overall performance of the power and energy sector during the Q2 of FY24 remains similar to that of Q1 of FY24. Progress in the transition to renewable energy is stagnant compared to the previous quarter. In one hand, none of the renewable energy power plants have commissioned its commercial operation on time. On the other hand, coal power generation keeps increasing at an alarming rate. These counter-actions signal the governments' unwillingness to expedite Bangladesh's energy transition. On an assertive note, in Q2 of FY24, Bangladesh obtained a hefty sum of foreign financial assistance or investment for renewable energy projects from international partners and should continue to do so. Even though the final IEPMP was launched, it failed to stress the importance of energy transition in Bangladesh by 2041. The



MoPEMR with SREDA should must ensure the timely commissioning of renewable energy power plants in the next quarter and stop substituting oil-based power generation with coal-based power generation.

## 7. Featured Interview of Industry Stakeholder: H&M Group, Bangladesh

**Interviewee:** *Mr Faisal Rabbi*; Stakeholder Engagement & Public Affairs Manager, H&M Group, Bangladesh

### 1. H&M Group targets reducing absolute greenhouse gas (GHG) emissions across their value chain by 56 per cent by 2030 and at least 90 per cent by 2040 (against a 2019 baseline). How does H&M Group plan to implement the agenda in Bangladesh?

At H&M Group, our goal is to reduce absolute greenhouse gas (GHG) emissions across our value chain by 56 per cent by 2030 and by at least 90 per cent by 2040 (against a 2019 baseline). We will also balance out the remaining 10 per cent of unavoidable emissions to reach net-zero by 2040 through carbon dioxide removals. These goals were verified by the Science Based Targets Initiative (SBTI) in September 2022. We are focusing on a several areas to reach these targets. Starting from minimising our energy use across our whole value chain — including our own operations and logistics activities and throughout our supply chain. We are also working to source 100 per cent renewable electricity in our own operations and engaging with partners and suppliers to push for their increased use of renewable electricity, heat, and steam. We're a RE100 member company. We stopped onboarding new suppliers with coal boilers in their facilities since January 2022. We are also developing new circular business models and reducing our dependency on virgin materials which will be important steps to reduce our climate impact.

Our group goal applies to all production countries from which we source and needless to mention Bangladesh being one of our most important sourcing market, our focus remains on promoting energy efficiency and utilising renewable energy sources. We are also eager to explore the potential of renewable fuel sources to decrease our reliance on fossil fuels.

While we have been working with our suppliers to increase energy efficiency and installing solar panels on rooftops, we need to acknowledge this will not be enough. Approximately half of the energy in our supply chain in Bangladesh is thermal energy (heat) generated in natural gas boilers. To decarbonise RMG, the industry needs to move towards electrification. This means that the national grid will need to be able to meet the industry's needs in terms of capacity and continuity.

Giving access to renewable electricity generated outside factory premises (offsite) is crucial. Corporate Power Purchase Agreements (CPPA) allow direct trade between garment suppliers and renewable developers; and it is a direct mechanism to dramatically increase renewable energy generation and connect renewable electricity to export focused sectors like RMG. This will also have effects beyond our value chain. To us it's clear that generating renewables will not be enough - we need to ensure connectivity through CPPA for textile factories, as claiming the attributes of the renewable electricity they are using is crucial.

### 2. The company has a goal to source 100 per cent renewable electricity to run its operations and supply chain by 2030. That is a medium to long term plan. Does H&M Group have any year wise target and operative plan to execute it? What is the workplan of H&M Group to achieve this goal?

In support of our overall climate goals, we aim to source 100 per cent renewable electricity in both our own operations and our supply chain by 2030. This requires a systemic change in the energy frameworks of our production countries. This is notable through advocacy for legislation supportive of Power Purchase Agreements and improved electricity grid connectivity in our production markets. Besides our advocacy for CPPA framework in Bangladesh; together with Bestseller

we have announced plans to develop Bangladesh's first utility-scale offshore wind project to increase the availability of renewable electricity in the country. We have translated our overall goal and ambition into our climate roadmap which sets year on year internal target for ourselves. We are currently working with our suppliers as well to develop their own climate roadmap which will help them set-up annual targets and plan to achieve them.

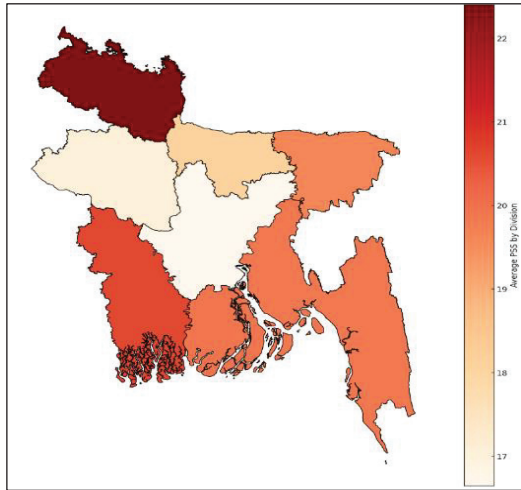
### **3. H&M Group aims to source all their electricity from renewable sources by 2030 while the textile industry in Bangladesh remains dependent on captive gas-based power plants. How does H&M Group plan to make this transition happen? Will it a phase-by-phase approach? Have you already selected the factories that will stop using captive and start renewables immediately?**

We have recently had promising conversations with Power Division and feel encouraged to work together with our suppliers to present a concrete proposal for the possible way forward. Together with USAID, we have assessed the current legislation in Bangladesh, and we believe that a Corporate PPA can be realised within existing legislation. We have submitted a draft Framework for Corporate PPA, and we are looking forward to the approval of this at the earliest possible time. Along with the CPPA framework we also need wheeling charge framework, Environmental Attribute Accounting System, and tariff mechanism to be established so that CPPA can become a business norm for the textile industry in Bangladesh.

In close collaboration with our valued business partners, as mentioned just a question ago, we have formulated a comprehensive roadmap outlining yearly targets to reduce greenhouse gas (GHG) emissions. This roadmap outlines the steps we will take to improve our processes, utilise renewable energy sources both on and off-site, and adopt energy-efficient practices. These practices include the replacement of existing boilers with efficient, electric or biomass boilers, as well as the implementation of disruptive technologies such as waterless dyeing. By working together towards achieving these targets, we aim to contribute towards the group's net-zero target. However, we need to be careful here as electric boilers need more space and involve much higher investment cost, without going into too many details, we need to reduce the need for thermal energy through the process innovation which is as mentioned just a moment ago reducing water in our processes.

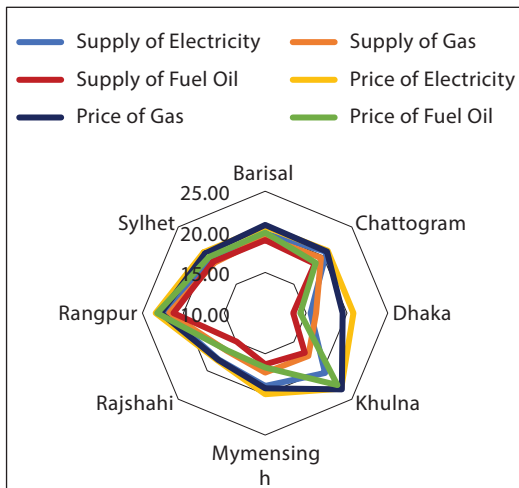
### **8. Snapshots from 'LIGHTS OUT, STRESS IN: ASSESSING STRESS AMIDST POWER AND ENERGY CHALLENGES IN BANGLADESH'**

CPD's ongoing study, 'Lights Out, Stress In: Assessing Stress Amidst Power and Energy Challenges in Bangladesh' explores household stress levels across Bangladesh to pinpoint the factors that contribute to household stress and influence perceptions. To measure stress levels, they utilised the Perceived Stress Scale-10, modified to accommodate these six scenarios, with cumulative scoring. The stress levels are categorised as follows: 0-13 points indicate low stress, 14-26 points suggest moderate stress, and 27-40 points are indicative of high stress. The primary survey for the study took place in November 2023, with some preliminary findings highlighted in this quarterly report.



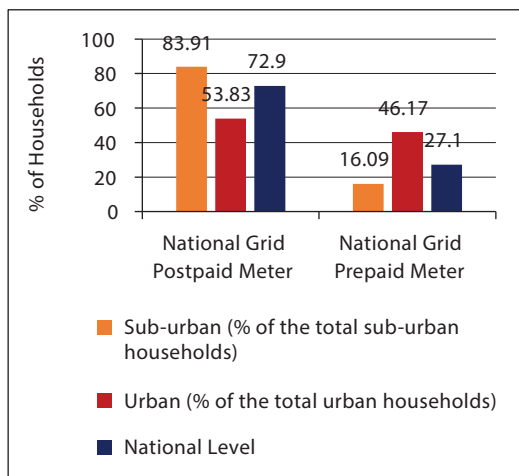
**Figure 8: Average Perceived Stress Scale Across Divisions: Overall Stress Level**

The figure reveals that in October and November 2023, while moderate stress levels were prevalent across Bangladesh, Rangpur and Khulna divisions faced the most stress, whereas Dhaka's households were the least stressed.



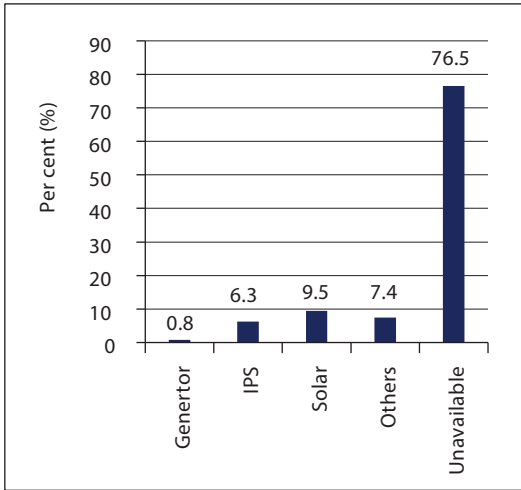
**Figure 9: Average Perceived Stress Score Across Divisions: Six Different Scenarios**

The graph illustrates the average perceived stress scores for various divisions in Bangladesh, based on six different energy-related scenarios. The data shows that Rangpur and Khulna divisions consistently reported the highest stress levels across all scenarios, while Dhaka, despite experiencing lower stress overall, exhibited relatively higher stress connected to local incidents. Interestingly, Rajshahi's households displayed a uniform moderately lower stress response to each scenario.



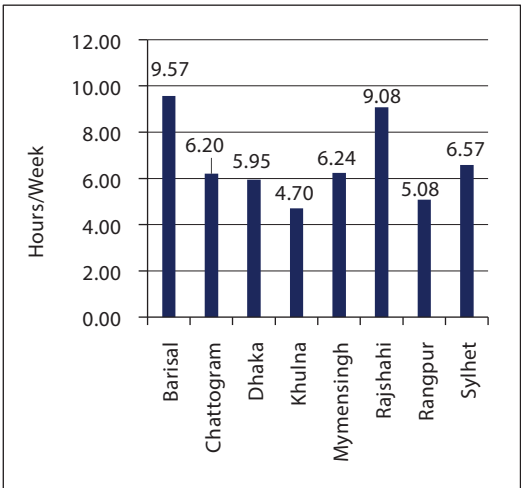
**Figure 10: Source of Electricity Across Urban and Sub-urban Households, and National Level (%)**

A significant majority of sub-urban households (83.91%) rely on postpaid meters connected to the national grid, while a smaller portion (16.09%) uses prepaid meters.



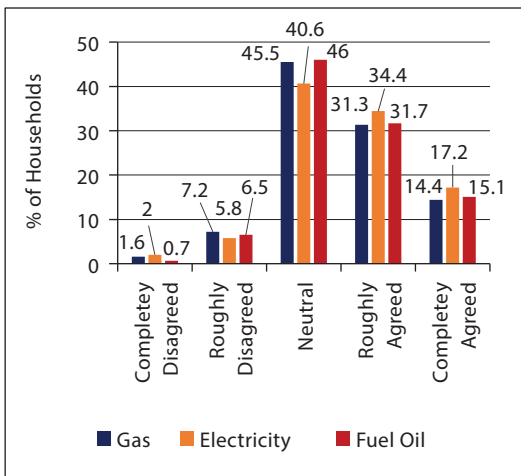
**Figure 11: Backup System During Electricity Outage (% of Households)**

A small fraction of households has generators (0.8%) and solar systems (9.5%), while a slightly higher number use IPS units (6.3%). Notably, a significant majority (76.5%) do not have any backup system in place during power outages.



**Figure 12: Barisal experiences the highest average outages, followed by households from Rajshahi and Rangpur with significant outage hours**

Dhaka, Chattogram, and Khulna face a moderate level of outages, while Sylhet has the least. This data is indicative of the variability in electricity supply reliability in different regions of the country.



**Figure 13: Level of Agreement: Various Fuel and Energy Production Pollutes Environment**

A small fraction of households disputes the environmental impact of energy production. Many remain neutral, suggesting uncertainty or lack of awareness. A comparable number acknowledge that energy production, especially fuel oil, contributes to environmental pollution.