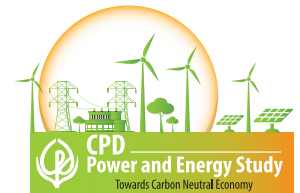


Currents of Change

Quarterly Brief of the Power & Energy Sector of Bangladesh

Volume 1, Brief No. 4

April-June 2024



Key Highlights

- The government has approved the national budget FY2024-25 of Bangladesh on 30 June 2024 with the allocation of BDT 30,317 crore for the Ministry of Power, Energy and Mineral Resources (MoPEMR), which is 3.8% of FY25 total budget
- Both the highest power generation (16,477 MW) and lowest power generation (4,554 MW) have been recorded during this quarter against the total generation capacity of 28,098 MW (on-grid and off-grid)
- A very high volatility has been observed in case of daily power generation cost due to the volatility of the fuel price in international market
- Gradual rise of LNG usage which reached its peak (936.3 mmcf/d), to as high as 40% of the total domestic gas supply
- The progress of renewable energy-based power plant has not witnessed any significant improvement from during this quarter. A total of seven renewable energy-based power plants (361.55 MW) that were supposed to be commercially operational in the FY24 are delayed.

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1. BACKGROUND

Fiscal Year (FY) 2024 comes to an end with the declaration and approval of national budget for FY25. The final and fourth quarter (Q4) of FY2024 (April-June 2024) was particularly significant. The energy security continues to suffer, and government's focus is to find out solution through deployment of fossil fuel supply. Power and energy sector-related steps undertaken by the government include: discovering another Kailashtila well and 21 mmcf gas being extracted daily, 2-year extension for Rooppur nuke plant loan repayments, procurement of three cargoes of Liquefied Natural Gas (LNG) worth BDT 1,350 crore from Singapore and Qatar, and announcement of Bangladesh-China JV to build 100MW solar power plant in Jamalpur district.

The quarterly for Q4 is segregated into six broad sections, including a brief snapshot of the major policy and operational decisions, development of the power and energy sector performance, renewable energy, and remarks on the overall health of the power and energy sector during this quarter. Lastly, the brief includes a featured interview with Mr Ahsan Khan Chowdhury, Chairman & CEO of PRAN-RFL Group on their new endeavour on renewable energy.

2. FEATURED INTERVIEW OF Mr Ahsan Khan Chowdhury, Chairman & Ceo of PRAN-RFL Group

Background: PRAN-RFL, one of the largest conglomerates in the country, is doing business in food processing, electrical equipment, machineries, ICT, etc. This business body is now planning to generate 150 MW of electricity from renewable energy, of which 100 MW will be generated from the rooftop solar PVs installed in the factory. PRAN-RFL have another 200 MW renewable energy in the pipeline and aim to generate at least 100 MW of renewable electricity every year.



Mr Ahsan Khan Chowdhury is the Chairman & CEO of PRAN-RFL Group.

Photo: courtesy.

Pran-RFL has shown a firm dedication and commitment towards the expansion of renewable energy at the company level. What was the motivation behind going for renewable energy?

Mr Chowdhury: Renewable energy is the future of Bangladesh and business has also started to realise it. Those who are yet to realise the necessity of renewable energy, will soon understand that any business needs to be sustainable to

grow and flourish. In future, renewable energy will be the pre-condition of doing business in the world. No business will be able to sustain in the export market without transitioning towards renewable energy and depending on the conventional fossil fuel-based power. So, if we want to do business and sustain in the long run, there is no alternative of renewable energy in Bangladesh.

After expanding its business, Pran-RFL aims to focus on renewable energy projects. Does PRAN-RFL group have any year-wise target that they want to achieve from renewable energy?

Mr Chowdhury: Pran-RFL is planning to generate 150 MW of electricity from renewable energy, of which 100 MW will be generated from the rooftop solar PVs installed in the factory. We have another 200 MW in the pipeline and aim to generate at least 100 MW of renewable electricity every year.

Is PRAN-RFL considering any feasible way to reduce the share of fossil fuel (diesel or gas) based captive power plant?

Mr Chowdhury: Undoubtedly, PRAN wants to reduce the share of fossil fuel usage in industry. We are planning to expand and use renewable electricity parallelly to the fossil fuel. The end goal is to be 100 per cent self-dependent through renewable energy.

To get power from renewable sources as the factories install rooftop solar systems, which type of enterprises are preferred? If so, will the existing building infrastructure help to install the solar system or does the building's infrastructure need to be changed?



Installation of solar rooftop of the RFL building at Habiganj Industrial Park (HIP).
Photo: courtesy

Mr Chowdhury: Our vision is that there will not be a single factory under PRAN-RFL that will not generate solar power through rooftop solar PVs. We have declared the installation of rooftop solar PV as a pre-condition for all our factories. The only infrastructural change we have to do is changing the tin roofing sheet of the buildings. In order to install solar PVs and sustain it in the long run, a specific high quality tin roofing sheet is needed. That is not a problem at all, because we need to regularly change the roof of rooftop solar panels after a few years.

What are the major challenges and limitations faced by PRAN-RFL in order to start renewable energy in Bangladesh?

Mr Chowdhury: The major limitation of renewable energy is, it is very costly and requires a hefty amount of investment. On top of that, the banking system of Bangladesh is not really renewable energy friendly. Rather, foreign long-term loans with low interest rates are more feasible for investing in the renewable energy in Bangladesh. Another limitation is land availability, as Bangladesh has not much of arable land, we cannot over utilise the existing arable lands of Bangladesh. We have to be very cautious about selecting which lands to be used for solar energy.

From the investment point of view, will Pran self-finance the renewable energy projects or it will be based on bank loans?

Mr Chowdhury: PRAN-RFL has utilised the available public and government funds available for renewable energy. We have particularly used the Bangladesh Bank renewable energy financing scheme. But we don't really want to depend only on government financing. Additionally, we are also looking for foreign investments for our next 100 MW of renewable energy.

From the industrial electricity demand perspective to what percentage share renewable energy can meet? Not only from solar PVs but also from the grid? Cost-wise is it possible to fully meet the factory operation from renewable energy?

Mr Chowdhury: We are moving towards a more labour-intensive economy as the investment opportunities are shrinking and will continue to shrink more in Bangladesh. So, our businesses will have to plan according to the current situation. As the usage of capital machineries will reduce in future, so will the demand of electricity. Keeping that in mind, we can achieve 100 per cent share of renewable energy in the industry level and ensure uninterrupted power supply for production as well. We must use battery storage system to do so.

As a profit-making business organisation, you have done a cost-benefit analysis of renewable energy. Will transforming to renewable energy be beneficial for businesses and factories?

Mr Chowdhury: The rate of return for renewable energy business is still very low. Hence, we need financing aligning with the renewable energy return period. For example, if I start a renewable power plant and reach break-even point in 12 years, we need project financing for 16 years. So, the financing period must exceed the renewable energy return period so that it can be a profitable business.

Do you think that other major businesses may consider renewable energy as a suitable option for the energy source and initiative similar to energy transition goals?

Mr Chowdhury: I believe everyone, and every business will be attracted towards renewable and will start generating and using renewable energy. If every business does its cost benefit analysis and start generating renewable energy for own consumption, they will realise that it is profitable and beneficial for business. Each industry should be independent, self-sufficient; and should not be dependent on government through initiating renewable energy generation.

3. MAJOR DECISIONS TAKEN DURING APRIL-JUNE 2024

a) Policy Decisions: During Q4 (April to June 2024), the focus of government policy decisions in the Power and Energy sector has contracted in number compared to the activity seen in the 3rd quarter of FY24. The latter period was marked by robust policymaking, particularly towards supply and quality of energy and fuel.

In the fourth quarter of FY24, Bangladesh's Power and Energy sector witnessed more engagement in policy formulation and execution, aimed at enhancing operational efficiency. Amidst ongoing challenges, the government sought a two-year extension for the 360 MW Haripur power plant, demonstrating a strategic effort to maintain energy stability while other infrastructural advancements are underway. Another significant policy initiative was the accelerated implementation of smart metres throughout the country. This move is set to upgrade energy management with improved billing accuracy, reduced losses, and better consumption oversight, marking a significant step towards modernising the national energy grid. Furthermore, the government has implemented substantial updates to legislation, thereby ensuring responsive pricing adjustments. Additionally, the Bangladesh Power Development Board (BPDB) has finalised two joint ventures with China in establishing two renewable energy power plants of a total generation capacity of 260 MW. These legislative efforts are expected to facilitate more efficient and sustainable energy production and distribution.

Figure 1 Government and Government Relevant Authorities' Action Focus Point During January and March 2024

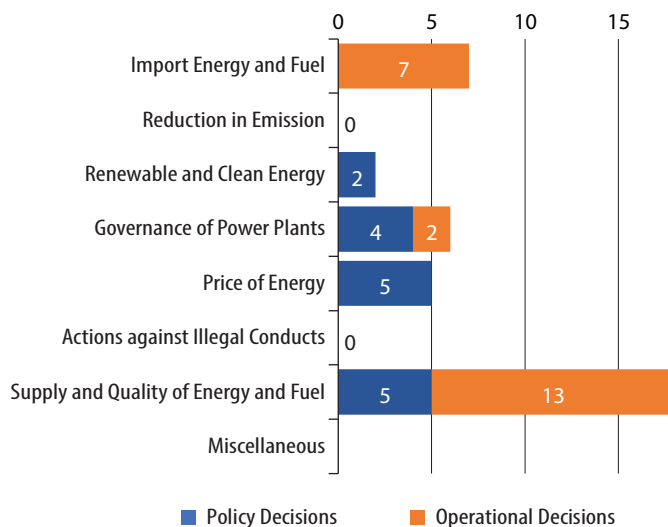
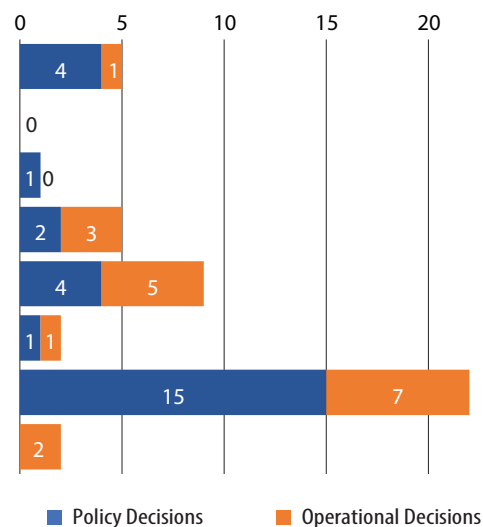


Figure 2 Government and Government Relevant Authorities' Action Focus Point During April and June 2024



Source: Authors' Compilation of Various News Papers and Relevant Government Websites.

b) Operational Decisions: In the final quarter of FY2024, there was a noticeable dip in the volume of operational decisions within Bangladesh's energy and power sector compared to the subsequent quarter, with a concentrated effort on addressing importation challenges, fuel supply stabilisation, and maintenance of quality. This trend has been consistently observed since the first three quarters. These included settling overdue import bills, overdue electricity tariff payments to the power plants, securing long-term LNG agreements, and receiving vital coal shipments for power production.

In the fourth quarter of FY24, Bangladesh's energy and power sector was marked by key operational decisions that directly impacted its efficiency and production capabilities. Notably, power production was partially halted at two units of the Chattogram Power Plant due to technical failures, indicating an urgent need for upgrades and maintenance. In response, the government and operational bodies emphasised enhancing plant reliability and reducing downtime. Meanwhile, the Matarbari Coal-fired Power Plant, despite being newly operational, faced significant logistical challenges due to the shortage of coal supply that impeded its expected output. Additionally, the operational regulations for CNG stations were adjusted to address the issues of low gas pressure, which had been affecting the transportation sector. These operational tweaks were aimed at maintaining a steady flow of gas, thereby ensuring that the energy needs of various sectors were met without significant disruptions.

Power and Energy Sector in the National Budget

The National Budget for FY2025 has been placed in the National Parliament on 6 June 2024. The Cabinet approved the proposed budget on 30 June 2024. Traditionally, the Power and Energy Sector is one of the top priority sectors in the National Budget. In FY2024-25, the Power and Energy sector has received an allocation of BDT 30,317 crores (increased by 7 per cent from RFY24). This accounts for 3.8 per cent of FY2025 total budget. As much as 96.5 per cent of total budget for the ministry is being allocated for the power division in the budget for FY2024-25. This budget gave more attention to transmission and distribution than generation of electricity. A total of 13 generation, 16 transmission and 28 distribution ADP projects are funded in FY2025. Of that 57 projects only 5 are renewable energy projects. In the bright side, the budget proposed an investment allocation of BDT 100 crores to expedite renewable energy. However, it is unsure where this allocation will be used.

4. POWER SECTOR DURING APRIL-JUNE 2024

a) Generation: During this quarter, the installed power generation capacity was 28,098 MW (on-grid and off-grid). Bangladesh experienced both the peak and lowest levels of on-grid power generation of the year. The peak on-grid power generation of 16,477 MW (343.98 MKWh) was recorded on April 30th, while the lowest power generation of 4,554 MW (150 MKWh) occurred on May 27th due to Cyclone Remal (Figure 3). As depicted in Figure 4, the cost of fuel for power generation remained highly volatile. Specifically, in case of using fuel oil in the fuel mix. An inconsistent trend has been observed with daily power generation costs ranging from a high of BDT 144.27 crores to a low of BDT 11.37 crores. This particularly highlights the challenges Bangladesh is confronting with its reliance on imported fuel for electricity generation, even over short periods. Notably, coal and oil exhibited a complementary effect during this quarter, contrasting with the substitution effect observed in previous quarters. As a result, gas was used relatively more as a substitute fuel, leading to increased domestic gas production and a larger volume of LNG imports. This shift was likely due to the high international prices of coal and oil during the quarter and the ongoing dollar crunch.

b) Transmission and Distribution: As of June 2024, at the end of the quarter, the transmission lines extended to 15,624 circuit kilometers, and the distribution lines reached 643,000 kilometers, with a grid substation capacity of 68,564 Mega Volt Amp. While the transmission lines and grid substations show progress, the distribution lines have remained stagnant for months (table 1). This stagnation suggests that the number of users at the demand end has not grown. However, the increased substation capacity indicates rising electricity demand among those who already have access.

c) Load Shedding: During the Q4 of 2024, the demand and supply gap of power generation widened. The high demand for power during the summer months is predictable and should have been accounted for in the government's preparations. With temperatures reaching 35 to 38 degrees Celsius in many districts, all five distributors, except the two in Dhaka (DPDC and DESCO), have received less electricity than needed (Daily Star). The Bangladesh Rural Electrification Board (REB), the distributor serving rural areas had a power shortage of 25 per cent less than its demand. This shortfall resulted in rural areas experiencing five to six hours of daily load shedding. As shown in Figure 5, the amount of load shed increased in all regions in June 2024 compared to May 2024.

Despite the progress of transmission lines and grid substations exceeding over the period, there was an increase in the number of interruptions in the transmission grid station network due to system issues, rising from approximately 4,820 hours of interruptions in

Figure 3 Daily Energy Generation by different fuel (MKWh)

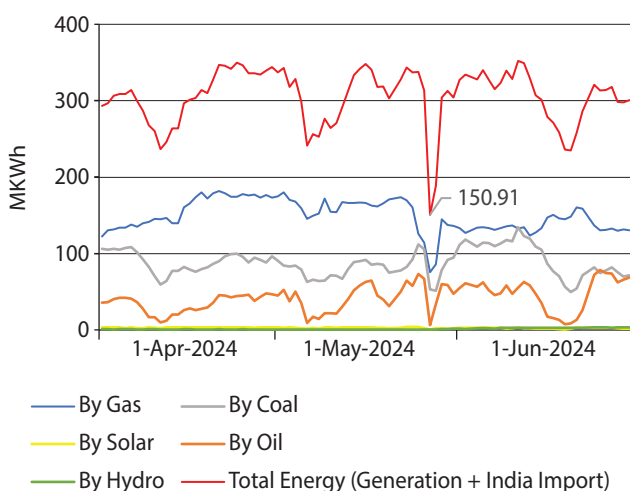
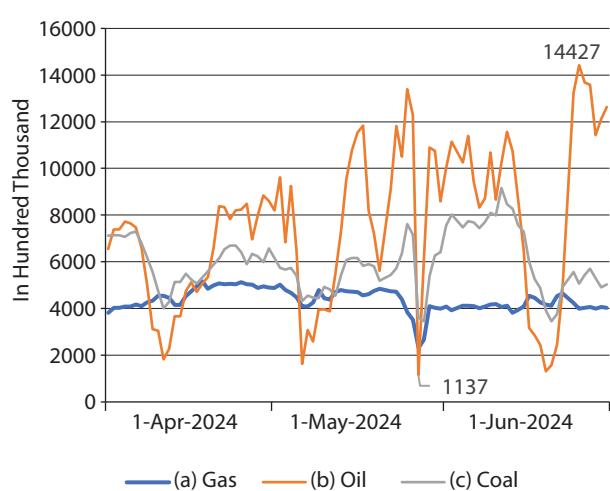


Figure 4 Per day Fuel Cost of Powerplants (in BDT)



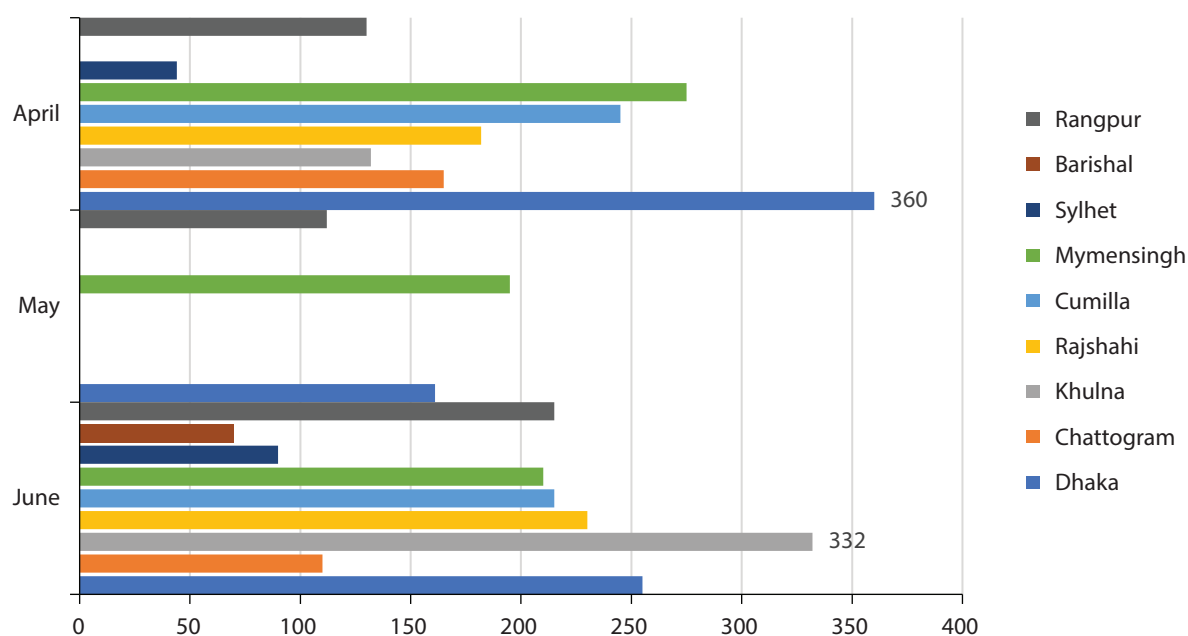
Source: BPDB Daily Generation Report.

Table 1 Progress in Transmission-Distribution of Electricity

Indicators	End of Q3 (March 2024)	End of Q4 (June 2024)
Transmission lines (Circuit Km)	15,357	15,624
Distribution lines (Km)	643,000	643,000
Grid sub-station capacity (MVA)	66,839	68,564

Source: BPDB monthly report.

Figure 5 Zone-wise Load-shed at Evening Peak (Generation end) in MW



Source: BPDB Daily Generation Report.

March to 5,763 hours of interruptions in August 2024. In addition, over 27 million consumers in the coastal region have experienced prolonged power outages due to Cyclone Remal. This includes 26.6 million consumers served by 80 units of the BREB and 453,081 consumers of the West Zone Power Distribution Company.

d) Fossil Fuel Phaseout and New IPPs: During this quarter, a gas-based IPP, namely Meghnagat 583 MW CCPP (Summit-II) with a capacity of 583 MW, was added to the grid while, Barabkunda 22 MW PP (Regent) SIPP with a capacity of 22 MW was phased out (Table 3). However, due to a lack of updated data on contract expiration dates and renewal of IPPs, tracking the timely phaseout of these IPPs has become troublesome. The BPDB needs to provide an updated database mentioning the commissioning and expiration date of IPPs.

5. ENERGY SECTOR DURING JANUARY- MARCH 2024

a) Gas Demand and Supply: During the last quarter of FY2024, the gas supply, including LNG, was mostly stable. The gas supply dipped three times during the last quarter of the year mainly due to the unavailability of LNG. However, the share of LNG of the total gas supply was as high as 40 per cent on 14 April 2024 (936.3 mmcf/d) (Figure 6), which is much higher than the LNG supply of the previous quarter. The total gas supply including both domestic gas and LNG was also much higher than previous quarters. The peak gas

Table 2 Key Quarterly Performance Indicators, FY2024

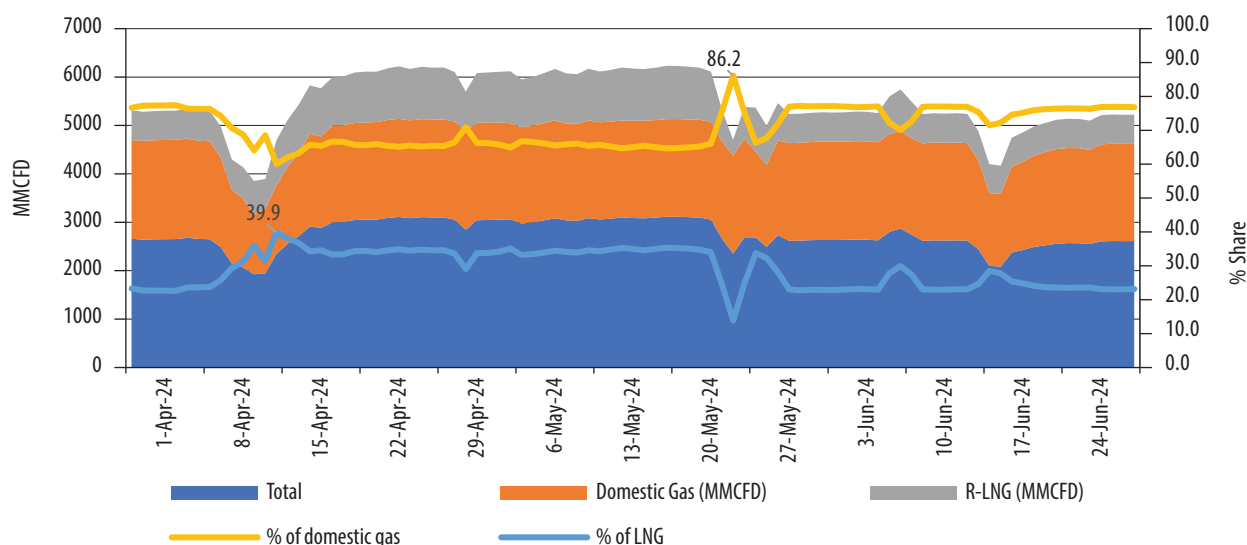
Indicators	Q1	Q2	Q3	Q4
Generation Capacity ¹ (MW)	27,834	29,152	30,067	31,452
Transmission lines (Circuit Km)	14,934	14,948	15,246	15,624
Distribution lines (Km)	643,000	643,000	643,000	643,000
Grid sub-station capacity (MVA)	63,895	65,790	66,839	68,564
Peak Loadshedding (MW)	1,100	244	666	1,727

Source: BPDB monthly report.

supply was observed on 19 May and a total of 3115.5 mmcf was supplied. This has happened because of the increased gas demand of gas-based power plants due to the shortage of coal and fuel oil for power generation.

b) LNG Import: PetroBangla continues to rely on the increasing LNG import from international market to address the shortage of the energy in gas-based power plants. The government now has moved to short-term contracts to ramp up imports of the fuel in the next

Figure 6 Gas (Domestic & RLNG) Supply during April- June 24



Source: PetroBangla Daily Gas Data.

Continuing priority given towards imported energy (LNG)

In FY2025, a total of 16 gas related projects is currently under implementation, 7 less than FY24. As per the budget speech, 48 wells will be dug by December 2025 but only 6 new wells are currently in the drilling phase and 7 will start in FY25. The increase of well digging, metering and survey project initiation is appreciated. In FY25, there are 2 LNG related projects. Bangladesh has seen annual LNG imports increase, and 2023 shipped in 5.2 million tonnes of the fuel. It has imported 2.6 million tonnes of LNG so far in 2024. This increase of LNG import will only hinder the renewable energy transition. Subsidy allocation of BDT 7,000 crores in LNG import is allocated in FY25, BDT 1,000 crores more than the previous fiscal year.

¹Including captive and off-grid renewables.

Table 3 Progress Status of Renewable Based Power Plants Scheduled to Operate Commercially in 2024 (During April and June 2024)

Progress Status	Number of Power Plants in Q3 of FY24	Number of Power Plants in Q4 of FY24
Fully Operational on Time	2	0
Fully Operational but Delayed	0	2
Partially Operational but on Time	3	0
Partially Operational but Delayed	0	1
Delayed	10	9
Construction Starts	0	3
Projects Approved	1	0

Source: Authors' Calculation from BPDB Monthly Reports of 2024 and SREDA.

two years. However, the initial plan was to opt for long-term LNG contracts. Perhaps a reduced gap in the CNG market between short and long-term as well as taking costly ways to import LNG are the reasons. Bangladesh has set a target to import 24 LNG cargoes from Gunvor in the next two years before starting imports from new long-term suppliers in early 2026. The prices of LNG to be procured from Gunvor will be determined on the basis of Japan Korea Marker, or JKM, benchmark index.

6. RENEWABLE ENERGY DURING APRIL-JUNE 2024

a) Renewable Energy Progress during April-June 2024: The renewable energy sector's trajectory in the April-June 2024 quarter showed less improvement compared to the previous quarter (Table 3). While delays remained a prevalent issue, there was a noteworthy change with two new power plants becoming fully operational, albeit two delayed from previous schedules. However, the continuation of nine projects remaining in the delayed status underscores the persistent obstacles that hinder the sector's pace. Consequently, these setbacks resulted in a significant shortfall in renewable energy generation, with an estimated 336.2 MW of clean electricity generation missed due to the delays. We can observe the beginning of three renewable energy projects during this quarter. Furthermore, within this quarter, the government has sanctioned the development of no new power plant, compared to 1 and 10 power plants from the two previous quarters, respectively.

b) Renewable Energy Financing during April-June 2024: During the fourth quarter of FY2024, Bangladesh did not obtain much of foreign financial assistance or investment for renewable energy projects compared to the third quarter, notwithstanding a significant improvement in the second quarter of FY2024. In this quarter, there was only a single reported instance of securing renewable energy finance: China and Bangladesh's joint collaboration on constructing 100 MW solar power plant in Bangladesh. The Chinese company will hold 70 per cent share of the solar power plant. The details of the investment size, however, were not disclosed. Additionally, SOLshare, a climate-tech company headquartered in Dhaka, has successfully raised USD 2.2 million in Series A+ funding. This investment was led by SBK Tech Ventures and is part of a larger USD 4 million financing round. There is no visible update in utilising the international funds (in various forms such as foreign loans, grants, etc.), associated with facilitating renewable energy in the 4th quarter, compared to the first and second quarter of FY2024.

CPD Power and Energy Publication during April-June 2024

1. Currents of Change [Brief-03] Quarterly Brief of the Power & Energy Sector of Bangladesh
2. The Future Unplugged: Forecasting a Comprehensive Energy Demand of Bangladesh – a Long Run Error Correction Model
3. How Bangladesh's Renewable Energy Sector Can Attract Chinese Overseas Investment: Addressing the Challenges
4. Overseas Investment in Bangladesh's Renewable Energy Sector: Case of Chinese Investment