

ENERGY & POWER

Emerging Trap

- Oceanic Oxygen Depletes Slowly
- Are We Headed To A Point Of No Return
- Unplanned RE Expansion May Trigger New Crisis



North-West Power Generation Company Limited

(An Enterprise of Bangladesh Power Development Board)



Market Share

- ✓ 3063 MW generation capacity.
- ✓ Highest among all govt. companies.

09
Power Plants,
Total: 3063 MW

Start of Electricity Sales

- ✓ COD of 1st Power Plant



Contributed 14% of Country's total Generation in FY 2021-22

Commencement of Business

- ✓ Started with 02 development projects.



Registration & Incorporation

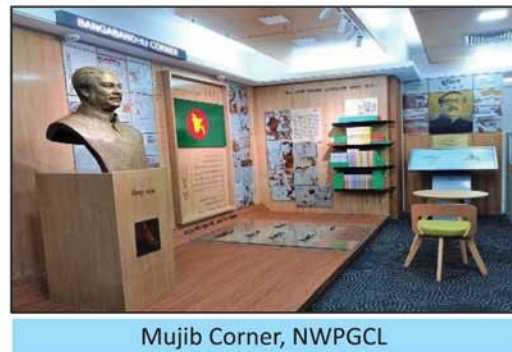


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The renewable energy (RE) target should be finalized after fixing the actual power demand of 2041. It seems that the existing national power grid cannot evacuate power to be generated by even half the RE projects in the pipeline. Appropriate planning needs to be formulated and adopted for the expansion and development of green energy in the country... Prof Dr. Ijaz Hossain tells EP

Individual's opinion does not necessarily reflect editorial policy of Energy & Power



Fortnightly Magazine, Vol 21, Issue 10, November 1-15



EDITORIAL

In Bangladesh, passionate discussions about embracing green energy have gained momentum thanks to Prime Minister Sheikh Hasina's bold pledge to increase renewable energy generation capacity to 40% of the country's total power generation by 2041. Right now, renewable energy (RE) accounts for just 4.23% of the total capacity, facing hurdles like solar projects not being used to their full potential and financial challenges for investors. Despite a significant 166% increase in bulk power tariffs over 17 years, the power sector continues to suffer losses, impacting the economy deeply. Wise voices are calling for a thoughtful strategy, emphasizing transparency, cost analysis, and careful consideration of economic consequences. Looking at global leaders like Germany, we learn the importance of balancing green energy dreams with economic realities. Among the hurdles, experts highlight the potential of incorporating cross-border hydroelectricity, solar trading, and nuclear power into a comprehensive green energy plan. Failing to craft such a plan could jeopardize Bangladesh's dream of becoming a developed nation by 2041. There is a bitter experience in the rental, quick rental of power plants and IPPs. For political influence, many unnecessary power plants have increased the reserve margin. These have created huge financial impacts and the burdens are transferred to the end users.

It's a reminder of the urgent need for a well-thought-out, economically viable, and seamlessly integrated green energy roadmap that aligns our aspirations with practicality.

h i g h l i g h t s



21

About half of Earth's oxygen comes from the ocean and is also consumed by marine life. The lion's share of this production is from oceanic plankton — drifting plants, algae, and some specific bacteria that can photosynthesize. One particular species named Prochlorococcus is the smallest photosynthetic organism on Earth. But these little bacteria produce up to 20 percent oxygen in our entire biosphere. More in Climate

COVER



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The voices are gradually getting louder in favor of green energy but without considering the concerns over socioeconomic and technical capabilities. Bangladesh can completely get rid of fossil fuels by 2050. Following the Prime Minister's announcement to increase renewable energy generation capacity to 40% of the country's total power generation by 2041, the demand for the inclusion of this target in the national plan has been intensified.

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Energypac has achieved the prestigious status of **Superbrands 2023-2024**



Encouraged by the readers and patrons, the EP would continue bringing out Green Pages to contribute to the country's efforts in its journey towards environment-friendly energy.

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Are We Headed To A Point Of No Return



OPEC Secretary General Receives Highest Rank of Brazil's Prestigious Order of Rio Branco



Haitham Al Ghais, OPEC Secretary General, was presented recently with the highest rank of the Order of Rio Branco (rank: Grand Cross) of the Federative Republic of Brazil in recognition of his distinctive achievements in the fields of energy and international cooperation, as well as the exceptional efforts exerted to promote dialogue and cooperation between OPEC and non-OPEC oil-producing countries in the interest of

stability in the global oil market.

The honor was conferred by Ambassador Mauro Vieira, Brazil's Minister of Foreign Affairs, during a ceremony held at the Itamaraty Palace in Brasilia.

The prestigious Order is bestowed by the President of the Federative Republic of Brazil, who serves as the Grand Master of the Order, through a presidential decree.

It was created in memory of the notable Brazilian diplomat and former Minister of Foreign Affairs, Jose Maria da Silva Paranhos Junior, who is widely regarded as the father of the Brazilian diplomacy, to recognize distinguished individuals with outstanding merits that have provided meritorious service, and carried out actions and deeds worthy of honorable mention.

QatarEnergy Signs 27-Year LNG Supply Deal with TotalEnergies



Affiliates of QatarEnergy and TotalEnergies signed two long-term LNG agreements under which QatarEnergy will supply of up to 3.5 million tonnes/year (tpy) of LNG from Qatar to France.

LNG will be delivered ex-ship to the Elengy subsidiary

Fosmax LNG-operated Fos Cavaou LNG receiving terminal in southern France on the Mediterranean coast in the heart of the Marseilles-Fos Port, with deliveries expected to start in 2026 for a term of 27 years.

LNG volumes will be sourced from the two joint ventures between QatarEnergy and TotalEnergies that hold interests in Qatar's North Field East (NFE) and North field South (NFS) projects.

Excelerate Charters Sequoia FSRU to Petrobras

Excelerate Energy Inc. and Petróleo Brasileiro SA (Petrobras) have signed a 10-year contract to charter the floating storage and regasification unit (FSRU) Sequoia, starting Jan. 1, 2014.



The FSRU Sequoia has a storage capacity of 173,400 cu m and can operate as both an FSRU and a traditional LNG carrier. The FSRU has been providing regasification services at the Bahia Regasification Terminal (TR-BA) in Bahia, Brazil. The terminal has a regasification capacity of up to 700 MMcf/d.

Under agreement, Excelerate will continue to deploy the

FSRU to provide regasification services in Brazil, primarily at TR-BA, the company said in a release Oct. 17.

Since 2012, Excelerate has provided regasification services in Brazil at Petrobras' LNG terminals in Bahia, Guanabara Bay, and Pecém. The company's FSRU Experience reached send-out capacity of 1.06 bcf at the Guanabara Bay LNG Regasification Terminal in 2020.

Shell Agrees to Extend Partnership for Oman LNG

Shell plc subsidiary Shell Gas BV and partners in the Oman LNG LLC venture signed an amended shareholders' agreement for Oman LNG LLC extending the business beyond 2024. Oman LNG in turn signed various agreements to secure its gas supply until 2034, Shell said in a release Oct. 23.



Under these agreements, Shell Gas will remain the largest private shareholder in Oman LNG, with a 30% shareholding, and continues its role as technical adviser.

In addition and based on previously signed term sheets, Shell International Trading Middle East FZE will purchase up to 1.6 million tonnes/year (tpy) of

LNG from Oman LNG from 2025 to 2034, making Shell the largest LNG off-taker from Oman LNG. Oman LNG operates a three-train plant with production capacity of 11.4 million tpy of LNG.

Shell in Oman holds interests in Petroleum Development Oman (34%), Oman LNG (30%) and Shell Oman Marketing Co. (49%). In January 2023, Shell started producing gas from Mabrouk field in Block 10, in which Shell holds 53.45% interest.

Turkish Ambassador Calls on Nasrul Hamid



Turkish Ambassador to Bangladesh Ramis Sen paid a courtesy call on State Minister for Power, Energy and Mineral Resources Nasrul Hamid at his office in the ministry. They discussed various issues related to

mutual interest.

These covered both the nations' culture, import-export business, economy, investment, and power and energy.

Urging Turkey to invest in power-energy and mineral resources sectors in Bangladesh Nasrul Hamid focused on development of different sub-sectors.

The ambassador invited the state minister to attend the centenary ceremony of the declaration of Turkey.

Sylhet Gas Fields Holds 41st AGM



Sylhet Gas Fields Ltd (SGFL) organized its 41th Annual General Meeting (AGM) at Pan Pacific Sonargaon in the capital recently.

SGFL Chairman and Additional Secretary for Power and Energy Division S

M Jakir Hossain along with Petrobangla Chairman Zanendra Nath, SGFL Managing Director Md Mijanur Rahman, SGFL directors and shareholders were present in the meeting, said a press release.

The company earned a total of Tk 1638.12 crore income during 2022-23 by producing gas, condensate, petrol, diesel, kerosene and NGL. It also deposited Tk 565.86 crore to the government treasury.

BREB Bill Payments Now More Easy Thru' Nagad



Rural people can now easily pay postpaid bills

of Bangladesh Rural Electrification Board (BREB) through Nagad app. To this end, the country's leading mobile financial service provider entered into an agreement with the BREB at a five-star hotel in Dhaka

Energypac, Nidec Sign MoU to Introduce Wide Range of Solutions

A MoU signing ceremony was held between Energypac Power Generation PLC and Nidec Industrial Automation India Private Ltd. at Energy Point, Dhaka recently, says a press release.



Humayun Rashid, Managing Director and CEO, Energypac Power Generation PLC and Srinivasan R, Director - After Sale Service, Leroy-Somer, Nidec Industrial Automation India Private Ltd., signed the MoU on behalf of their respective organizations. Additionally, Mohammad Masum Parvez, Chief Business Officer, Power and Energy Division and Md. Afzal Hossain, Senior Manager, PED Service and Spares, Energypac, was also present at the signing ceremony.

Nidec Leroy-Somer is a world leader in electromechanical drive systems, electronic drive systems, and industrial alternators.

Since 1919, Leroy-Somer has been present wherever people have needed to produce electricity and transmit movement. Now, under the signing agreement, people from Bangladesh will

also be able to use Nidec's top-notch motors and alternators, which is a very important part of the generator.

The solutions are reliable with innovative, providing a wide range of applications in all types of industries. Simultaneously, Energypac is also offering Nidec's spare parts, after-sales support, and warranty-related services for medium and high-voltage alternators (20 kVA to 4 MVA).

Humayun Rashid, Managing Director and CEO of Energypac Power Generation Ltd., said, "We are thrilled to partner with Nidec in offering their wide range of electric solutions here in Bangladesh. As the leading power engineering company in the country, we have always focused on enhancing consumer experiences. This partnership is yet another step forward in ensuring that our products and services will continue to be the customers' first choice."

recently, says a press release.

BREB Chairman Md. Selim Uddin, BREB Member (Finance) Dipankar Biswas, Directorate General (Additional Responsibilities) of Directorate of Posts Tarun Kanti Sikder, and Founder and Managing Director of Nagad Ltd. Tanvir A Mishuk

were present at the signing ceremony.

Top officials of both organisations also attended the event. BREB Secretary Hasina Begum and Nagad's Executive Director Md Shafayet Alam signed the agreement on behalf of their respective sides at the event.



পাওয়ার গ্রিড কোম্পানি অফ বাংলাদেশ লিঃ
POWER GRID COMPANY OF BANGLADESH LTD.
(An Enterprise of Bangladesh Power Development Board)



PGCB Bhaban, Avenue-3, Jahurul Islam City, Aftabnagar, Badda, Dhaka-1212 Web : www.pgcb.gov.bd

মানসম্পন্ন বিদ্যুৎ নিরবচ্ছিন্নভাবে দেশের সকল মানুষের নিকট পৌঁছে দেয়াই আমাদের অঙ্গীকার

- * গ্রিড উপকেন্দ্র, গ্রিড লাইন ও টাওয়ার জাতীয় সম্পদ, তা রক্ষা করা সকলের দায়িত্ব।
- * গ্রিড উপকেন্দ্র, সঞ্চালন লাইন ও বৈদ্যুতিক টাওয়ারের গুরুত্বপূর্ণ যন্ত্রাংশ চুরি প্রতিরোধে সহায়তা করুন, বিদ্যুৎ বিপর্যয় থেকে দেশকে বাঁচান।
- * উচ্চ ভোল্টেজের বৈদ্যুতিক টাওয়ার ও লাইন হতে নিরাপদ দূরত্ব বজায় রাখুন।
- * বিদ্যুতের গ্রিড লাইন ও টাওয়ার হতে নিরাপদ দূরত্বে স্থাপনা নির্মাণ করুন।
- * বৃক্ষ রোপনে গ্রিড লাইন ও টাওয়ার হতে নিরাপদ দূরত্বে স্থান নির্বাচন করুন।
- * বিদ্যুৎ ব্যবহারে সাশ্রয়ী হোন। আপনি বিদ্যুৎ সাশ্রয় করলে তা অন্য একজন ব্যবহার করতে পারে। এমনকি সাশ্রয়কৃত বিদ্যুৎ গুরুতর অসুস্থ কারও জীবন বাঁচানোর কাজে লাগতে পারে।
- * বিদ্যুৎ অপচয় রোধে সচেতনভাবে ফ্যান, বাতি ও অন্যান্য বৈদ্যুতিক যন্ত্রপাতি ব্যবহার করুন।
- * বিদ্যুৎ সাশ্রয়ী (LED/CFL/T5) বাল্ব ব্যবহার করুন।
- * যথাসম্ভব দিনের আলো ব্যবহার করুন।
- * বিকাল ৫:০০ টা হতে রাত ১১:০০ টা পর্যন্ত সময়ে বিদ্যুতের চাহিদা বেশী থাকে। এ সময় দোকান, শপিংমল, বাসা-বাড়ীতে আলোকসজ্জা হতে বিরত থাকুন।



Rampal Power Plant's Second Unit Begins Trial Run



The second unit of the coal-based Rampal Thermal Power Plant in Bagerhat began power generation on a trial basis recently.

It will generate 400 MW of electricity at the beginning of the trial production, said Anwarul Azim, deputy

general manager of the Bangladesh-India Friendship Power Company Limited (BIFPCL), on 24 October.

On 17 December 2022, the first unit of the thermal power plant started operations.

Despite several closures since then, the power plant's first unit is currently operational.

The power generation capacity of the two-unit power plant is 1,320 MW.

Govt Gets Three Months to Implement Automated Fuel Pricing



The government has been granted three months by the International Monetary Fund (IMF) to implement the automatic price formula for fuel oil in a bid to adjust prices in line with the world market.

A delegation of the global lender agreed to the time extension during a meeting with the Finance Secretary Khairuzzaman Mozumder recently, said officials of the Finance Division.

Earlier, the government was supposed to introduce

an automatic system of fuel oil pricing in coordination with international rates by the end of next December.

Sources said that the government is not willing to increase the prices of fuel oil before the elections, and that is why it appealed for more time from the IMF.

Officials at the finance ministry said that the Bangladesh Petroleum Corporation has meanwhile prepared a formula and submitted it to the Energy Division, referring to pricing every three months or one month. Once implemented, the price of fuel oil will increase by Tk10-15 per liter.

Saudi Lubricants Introduces 'Safe Highways' Campaign to Prevent Road Accidents



Saudi Lubricants, a brand of the country's one of the leading business groups RFL, has launched a public awareness campaign titled 'Safe Highways' to prevent road accidents.

The campaign, which started on October 11, will continue for six months.

As part of the campaign, Saudi Lubricants will hold rallies at 21 different places of the country on the National Road Safety Day on October 22.

The other events of the campaign include identifying the accident-prone areas and adding it to Google map, training of drivers during the campaign, branding on heavy vehicles with awareness information to prevent road accidents, said a press release.

RN Paul, managing director of RFL Group, gave details about the campaign at a press conference at PRAN Center in the capital's Badda today.

Fourth Batch of Uranium for RNPP Reaches Rooppur

The fourth consignment of uranium, the nuclear fuel for Rooppur Nuclear Power Plant, has arrived in Pabna's Rooppur under special security arrangement.



A convoy carrying the fresh nuclear fuel entered the project area recently.


Confirming the development, Pabna Superintendent of Police Akbar Ali Munshi said upon its arrival in the project area, both Bangladeshis and Russians, who were involved in the project, warmly greeted the convoy. The convoy, transporting uranium,

departed from Dhaka in the morning, crossed the Bangabandhu Bridge, and reached the Rooppur project area via Nature's Banpara.

Earlier on September 28, the first consignment of fuel for the Rooppur Nuclear Power Project arrived in Bangladesh. The next day, on September 29, fuel was taken to the project area under special security measures.

Emerging Trap

Mollah Amzad Hossain



In Bangladesh, once the Pandora box is opened in any new initiative, many investors jump into it. There is a bitter experience in the rental, quick rental of power plants and IPPs. For political influence, many unnecessary power plants have increased the reserve margin. These have created huge financial impacts and the burdens are transferred to the end users. The country must develop a green electricity basket. But there is no scope for going faster than feasible. The cost will burst if unplanned development is made. The country is apprehended to fall into a new crisis if it fails to advance formulating a green energy strategic plan through integrating all policies and strategies for 2041 and 2050.

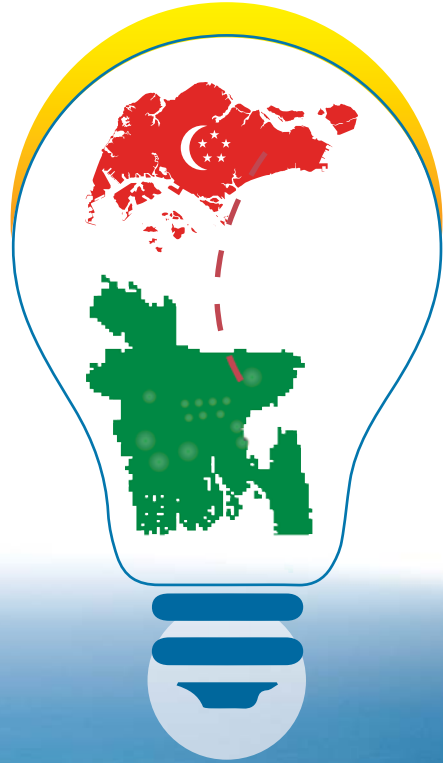
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The voices of experts and environmentalists are gradually getting louder in favor of green energy development but without considering the concerns associated with socioeconomic and technical capabilities. The greatest risk of talking about the challenges is that the progressives without any hesitation term them fossil-fuel lobbyists. Environmentalists believe that the government can completely get rid of fossil fuels by 2050 if it wishes. Recently, a roadmap toward achieving this goal has also been announced. Following Bangladesh Prime Minister Sheikh Hasina's announcement to increase renewable energy generation capacity to 40% of the country's total power generation by 2041 during the COP26 summit, the demand for inclusion of this target in the planning has been intensified. The Power Division says they were working on achieving the target. Right now, the RE capacity is 1194 MW or 4.23% of the total generation capacity, including hydropower, 6.5 million Solar Home Systems (SHSs), solar irrigation, grid solar, and wind. Frustratingly, not more than 10% of the SHSs are being used now, leaving IDCOL, the investor, at bay as it is struggling to recover the loans provided against the small units of solar power. In recent times, around 600 MW of solar electricity has been connected to the power grid - the largest is 200 MW from a single unit. Letters of Intent (LoIs) have also been issued for 108 more solar projects. If implanted, the total generation capacity will be around 10,000 MW.

Expectations of Power Division and Reality

Against the backdrop, the Power Division in collaboration with Bangladesh Solar and Renewable Energy Association (SREDA) recently organized a workshop titled "Renewable Energy Development: Approaching to Low Carbon Energy Transition" with the slogan: "We hope to have our 40% energy from Renewable Energy by 2041." This slogan may encourage the green-energy proponents at home and abroad, but it hardly gives confidence to the local



energy experts. With the existing actual contribution of RE to the energy mix at less than 1%, taking it to 40% in 18 years sounds like a wild dream. Prof. Dr. Ijaz Hossain, former Dean of BUET, termed it unrealistic and said: "It's impossible to achieve this considering the Bangladesh context". Representatives of donor organizations, investors, and some other experts taking part in the discussion at the workshop viewed that it would be possible to achieve as they placed their arguments. Senior Secretary of Power Division Habibur Rahman explained that the plan was based on the government's consideration of a possibility. Dr. Ijaz does not have any reservations agreeing with a "possibility" but stressed making a realistic demand projection before finalizing the plan for 2041. In the present plan, the demand forecast at 52,000MW by then appears unrealistic, he said, adding that it would not exceed 35,000MW.

According to a joint presentation of PGCB and GIZ at the workshop, it is not possible to evacuate more than 10% of the total power demand to the grid from variable renewable energy (VER) from solar and wind. For that matter, required technical upgrading needs to be finalized. Otherwise, apart from nuclear power, the baseload power generation capacity will have to be restricted to 40% of the demand. This may increase the cost of generation manyfold. At the

same time, this may make the power transmission system unstable. The PGCB observed that the entire power supply chain needs to be automated in strict compliance with the grid code. This will take considerable time and a sizable investment. The average cost of generation in 2021-22 was BDT 8.94/unit and by now has increased to BDT 11/unit. The sole buyer, Bangladesh Power Development Board (BPDB) is now selling it at an average tariff of BDT 6.12/unit. Consequently, the BPDB is on the verge of bankruptcy. Due to the financial crisis, the BPDB is not able to make timely payments for the electricity they purchase from different sources. In such a situation, the BPDB is concluding contracts for buying power from RE and other sources.

How Transparent is RE Generation?

It is being widely circulated that the expansion of RE will greatly reduce the requirement for the import of coal, crude oil, petroleum products, and LNG. The drainage of foreign currency will be significantly eased. The cost of power from the first ever 3 MW capacity solar power plant of Bangladesh is 18 cents/unit. The cost of generation of the last 200 MW capacity solar power plant is 15 cents/unit. BPDB informed that the average cost of generation of the new solar power contracts being concluded now is 12 cents/unit. The cost of generation of the 108 RE projects in the pipeline will vary between 9-10

cents/unit. BPDB pays more than 10 cents. Unit for the wind power bought from the wind power plant that has started partial operation. It can be said that though RE will cost less than liquid fuel-based power, it will be more expensive than coal and gas-based power. The only advantage is that the natural fuel is free. When the attention of energy finance analyst Shafiqul Alam of the Institute for Energy Economics and Financial Analysis (IEEFA) was drawn, he said the cost of solar power would be reduced by 89% between 2010 and 2021. Consequently, the levelized cost of solar power now in the world is 4.5 cents/unit. In Bangladesh, it ranges 7.1-7.6 cents/unit. Adding profit, the tariff would be 8.5-9.0 cents/unit in Bangladesh. There is no sign that the cost will reduce in Bangladesh in the future. Though RE contributes a lot to reducing carbon emissions and expanding the green energy portfolio, RE cannot ensure the least-cost power supply in Bangladesh.

Dr. Golam Moazzam, Research Director at the Center for Policy Dialogue (CPD), said that not only furnace oil, but it is also possible to get electricity from RE at a lesser cost than coal and LNG. An official of BPDB, on condition of anonymity, claimed that Bangladesh must not be considered the same as India and Middle Eastern countries. RE can never be made available here at a lesser cost than fossil fuel. He informed EP that Germany is a country that uses higher RE now. The cost of power in Germany now is double that of most West European countries. He said different categories of users including industry owners are already in crisis with higher prices of electricity and fuel. He questioned whether Bangladeshi consumers could afford to pay a higher cost of carbon-free electricity.

RE Prospect in Bangladesh

From various studies conducted in Bangladesh, it appears that solar



radiation and wind velocity are moderate in Bangladesh. The range of solar radiation in Bangladesh is 4-6.5 KM/hour in each square KM. The radiation is less in the northwest and higher in the southeast. The American National Renewable Energy Laboratory (NREL) was the first to conduct a study on the wind power potential of Bangladesh. The study evidenced that wind velocity varies from 5.0 to 7.5 meters/second. Based on this, a project at Maheshkhali has already started partial operation. A few more projects are now at different stages of implementation and a few others are under negotiations. An ADB-assisted study on the possibility of offshore wind power has been completed. The wind speed is moderate for shallow and deep offshore wind power generation. The ADB-appointed consultant is due to submit its report in November 2023.

Solar: Few studies have been made to assess the extent of solar and wind power prospects in Bangladesh. A study has also been conducted about the prospect of energy from biomass. An NGO working in Bangladesh claims that it is possible to generate up to 120 gigawatts of solar power in Bangladesh.

The World Bank has also completed a study, finalizing a plan for a 20,000MW solar power generation possibility at Jamuna River Char in Jamalpur. But before investing in land acquisition and power evacuation facilities, the development plans needed to be firmed up. International Finance Corporation (IFC), conducting a study on 323 water bodies of Bangladesh, has identified prospects of up to 11,000 MW capacity floating solar generation. Sayef Tanzeem Qayyum, Regional Lead of the World Bank Water Resources Group, informed the above at the Power Division-organized workshop.

According to SREDA, it would be possible to generate 2,000 MW of power from rooftop solar. Shahriar Ahmed Chowdhury of United University has formulated a Solar Power Generation Road Map for

SREDA. It stated a target of around 40,000MW of solar power generation by 2041. SREDA later set up a review committee, headed by Dr M Tamim, Dean of BUET. The committee, reviewing the pros and cons, thought that it would be wise to go for 5,000 MW solar power generation by 2041. The Power Division is yet to finalize the road map.

Wind Power: The study of American NREL suggests that the coastal areas of Bangladesh have a prospect of generating up to 30 gigawatts of wind power. The ADB-engaged consultant has also finalized the assessment report. CESI has completed a study at 13 shallow offshore and 17 deep water prospects. They have found wind velocity of 5.5-7.5 meters/second. They found that the possibility is the highest at Maheshkhali shallow offshore area. The total possibility of generation at 30 locations, according to them, is about 10 gigawatts. The Power Division intends to start working after receiving the final report.

Solar Irrigation: Solar irrigation is

considered a bright prospect in the development of solar power in Bangladesh. Around 3,000 solar irrigation pumps are now in operation in Bangladesh. On the other hand, 1.3 million diesel-driven pumps and 45,000 electricity-driven pumps are in use for irrigation. The government has taken up a plan for converting all irrigation pumps to solar-powered ones in phases. The Solar Irrigation Road Map has been prepared after a study conducted by the ADB. The government has also approved it. According to it, by 2031 around 45,000 solar pumps will be set up to replace the diesel-driven ones. According to the ADB, US\$1.8 billion of investment is required for this. Thoughts are there for developing a fund for this. The Economic Relations Division (ERD) has recently requested the ADB to prepare an action plan for implementing the roadmap.

Rooftop Solar

The price of grid power continues to increase. The cost of generation has also increased following the increase in gas prices of captive power generation. Hence industries have now become interested in rooftop power generation, gathering momentum after SREDA announced the net-metering policy. Already rooftop solar has contributed 40 MW power. It is expected that within the next couple of years, it may grow to 1,000 MW. It would not only save costs but also assist industries in achieving green compliance. A model corporate Power Purchase Agreement (PPA) is now being finalized with the assistance of USAID. Studies evidence that only 17% of the energy required for textile industries may come from rooftop solar. But to continue the present trend of exports, industries must increase green energy use. A model contract is being developed for this. Industries can directly conclude PPAs with solar power plant companies that will supply their generated power to the grid while the industries will earn the green-energy credit.

Both OPEX and CAPEX models are being used. Still, there exist a few challenges in recovering investments in



the OPEX model. The government is trying to resolve these. There are issues in sourcing investments too - only the IDCOL is now providing the low-interest loans for it.

VRE and Grid Stability

Discussion is continuing about the limit of evacuation Variable Renewable Energy (VRE) in the National Power Transmission Grid of Bangladesh. Some studies have recently been carried out as well. The ADB-assisted survey was carried out in 2020. A claim has been made in the survey report that the grid can accept up to 25% VRE with any upgrade. However, it has been mentioned that for ensuring 2,000 MW assured generation in the interest of grid stability, supply of at least 350 MW gas supply for power generation will be required in specific areas. Otherwise, the power deficit can be overcome quickly as and when VRE generation suddenly becomes unavailable.

Reviewing the information on the power demand for the year up to February 2023 the Institute of Energy Economics and Financial Analysis (IEEFA) claimed that the grid without causing any issue can accept up to 1,700 MW of solar power during winter and 3,400 MW during summer. This will increase with the growth in demand.

A power transmission grid on a standalone basis cannot ensure the

stability of the power value chain. This will require integrated development and modernization of generation, transmission, and distribution. The assessment of demand for distribution utilities is still manual. Any generation unit before getting connected to power must run operation in free governor mode of operation (FGMO) following the grid code. Using this, generation units can adjust generation based on actual demand on a real-time basis using a spinning reserve. But unfortunately, only 28 power plants out of 150 are now operating in FGMO. All these are gas-based. Another source informed EP that the Payra Coal Power Plant of BCPCL operates with FGMO. The VRE grid should ensure the utilization of a 1,000MW spinning reserve. Unfortunately, only a few of the 28 gas-based power plants operating on FGMO can be kept in operation for chronic gas crises. Consequently, PGCB has only a 100-120 MW spinning reserve for frequency control of the grid. PGCB sources confirmed that it is possible to technically accept up to 10% VRE. But for that spinning reserve to that extent needs to be kept available.

One official of PGCB on condition of remaining anonymous informed EP that there are more impediments. In the 25-gigawatt system in Bangladesh, the 1,200 MW capacity Rooppur Nuclear Power Plant is the largest single unit. The generation capacity of the Russian

Federation is 250 GW. There the capacity of the largest single unit is 1000 MW. PGCB took up a project for bringing all grid-connected power generation units to FGMO in 2019. Unfortunately, BPDB and private sector-owned generation companies did not respond positively. The utilization rate in Europe is higher as almost all the generation plants operate on FGMO mode. Even the VRE units also run on FGMO. There is no issue of frequency control as there exists a synchronized grid in Europe. Even in neighboring India, no power generation unit can start commercial operation without obliging the grid code.

GIZ in collaboration with PGCB has completed a study about grid integration of VRE. It among others stated that by 2030 evacuation of up to 10% VRE of the total capacity will be possible. But there exist issues there as well. The two units of the RNPP will be ready for commercial operation in 2026. These units must be run above 90% plant load factor. To use 10% VRE during the day, the coal and gas-based base load plants may need to be operated at 40-50% load factor. These may create technical issues. On the other hand, less efficient operation will increase the cost of generation. There are hardly any simple cycle gas-based power plants in the country now. This will require bringing into operation expensive liquid fuel-based plants as and when VRE generation will diminish. Given the above thinking about 30-40% VRE in the context of Bangladesh is completely unrealistic. It can never be implemented.

Solar Power and Wind Energy

The size and capacity of grid-connected solar power plants now depend largely on the availability of land. But this is not technically right. An extensive mapping needs to be done of the national power grid for its actual capacity for evacuating solar electricity. That information must be used in deciding what capacity solar plants should be located where. That should be the basis for solar power plant installations. It is believed that the capacity of the national power grid for evacuation of



solar electricity has not been considered while taking an initiative of 108 solar power plants with a total capacity of 10,000 MW now at different stages of implementation.

The World Bank has recently talked about the prospect of a 20,000 MW solar power generation in the Jamalpur Chair area. In the prevailing reality of the Bangladesh power sector, it is an unrealistic thought. However, there are opportunities for setting up off-grid capacity solar power plants at different upazilas. These will reduce stress on grid power. Experts believe that, whether fossil fuel-based or VRE, all power plants must be constructed in strict compliance with grid code. Solar power will be available for 5-7 hours during the day. For the remaining hours, demand needs to be catered with traditional fuel-based power plants. But 30-40% wind power in 10% VRE will be the right mix. This power can be available from the afternoon till midnight during peak hours.

Recently a 30 MW capacity windmill has started operation. There is a possibility of another 60 MW wind Power plant starting operation towards the end of the current year. About 1000 MW of wind power is expected to be available within the next 7 years. The solar power generation capacity by that time may increase

from 600 MW to 4000 MW.

Challenges of Investment and Tariff

Opportunities for accessing investment for solar power plants are still very limited in Bangladesh. IDCOL and BIFFL are providing lower-interest loans. The possibilities for getting longer-term loans from commercial banks are very limited. Experts are suggesting that the government set up a special fund for providing investment in RE expansion and development. Suggestions are also for the government to initiate various preparatory measures for accessing global funds dedicated to the expansion of green fuel. The average tariff of solar power plants in operation now is 12 cents/unit. The average tariff of the power from plants in the pipeline will be 10 cents. These are higher than the power from coal and gas power plants but less than expensive liquid fuel-based power.

VRE and Storage

There are popular thoughts that for grid stability and making RE available on a 24/7 basis the government must plan for storage. Now for 1 MW of solar power generation the required investment is about US\$0.8 million. According to a study conducted by the National Renewable Energy Laboratory, the estimated cost of storage of 1 MW for 1 hour is US\$8 million. As such storage does not appear to be a viable solution soon. We must increase VRE in a

planned manner in phases. Otherwise, VRE may create a new crisis in the future for the power sector.

Conclusion

Bangladesh's power sector is accounting for more than BDT 4.00/unit loss even after increasing the bulk power tariff by 168% over the past 15 years. The increase in retail tariff is 119%. The price of liquid fuel and gas has also increased many folds. The power and energy sectors are now about 60% dependent on imports. Huge dollars are required to meet the expenses of imported fuels – coal, liquid fuel, and LNG. Huge payments have become outstanding. Payments of IPPs cannot be made on time due to delays in getting subsidies. Many experts, economists, researchers, and environmentalists observe that developing RE at a faster pace can be a way to confront the situation. There is no denying that RE will increase the green energy portfolio and the fuel will be coming from its source. However, there is no reliable study about the cost of RE.

Germany is a global leader in RE use. Their investment in RE is sky-high. The power tariff there is double that of most European countries. The levelized cost of solar electricity in Bangladesh is 7.6 cents though the global average is 4.5 cents. The price of power from the existing solar plants is 12 cents. The price of power from plants in the pipeline will be 10 cents. This is less than furnace oil and diesel-based power, but much higher than coal, imported LNG-based power, and nuclear power. We must seriously consider cost before taking up new RE projects.

In Bangladesh, once the Pandora box is opened in any new initiative, many investors jump into it. There is a bitter experience in the rental, quick rental of power plants and IPPs. For political influence, many unnecessary power plants have increased the reserve margin. These have created huge financial impacts. The burdens are transferred to the end users. Learning lessons from above RE expansion



must follow a well-thought-out plan and approvals must be given through strictly following a road map. Entrepreneurs must be selected through a transparent process through fair competition. These were, however, not followed in the case of 108 projects for which LOI has been issued. No thoughts have been given about the possible economic impacts of higher tariffs on the cost of generation. Can the power grid evacuate all power? Many believe that considerable idle payments will be paid if all projects get ready for commercial operation.

Finally, Bangladesh needs to take appropriate measures for reducing carbon though it has no specific obligation for it. Bangladesh has already launched an initiative. The power and energy sectors are at the forefront of it. Considerable achievements have been already made through increased efficiency in energy use. Getting investment has also become easier for the adoption of the latest less emitting technology for power generation from coal and gas. We have no scope for keeping our fingers tight from developing green power expansion. We must proceed very carefully in solar and wind power generation. Because the cost of wind power will be much higher in Bangladesh for low wind velocity and going for expensive offshore wind. The government has opportunities to reduce

the cost of solar power. Experts have suggested fixing the tariff through auctions after leasing land after acquisition and development and creating facilities for the evacuation of power to the grid. These may make it possible to bring a tariff below BDT 6.00/unit (5 Cent). Following the business-as-usual process, there is no possibility of reducing the cost and the tariff.

Finally, Bangladesh must develop a green electricity basket. There is no scope for going faster than feasible. The cost will burst if unplanned development is made. This will seriously impact industrialization and create miseries for end users. In our green electricity basket, we must integrate cross-border hydroelectricity, cross-border solar trading, and nuclear electricity alongside our own solar and wind power. Biomass, web energy, and hydrogen must be there in priorities. Global experts believe that nuclear electricity will play a major role in net zero target achievement though some countries like Germany do not agree to consider nuclear electricity as green energy.

Bangladesh will run into a new crisis if it fails to advance formulating a green energy strategic plan through integrating all policies and strategies for 2041 and 2050. These will hinder our vision of growing into a developed economy by 2041.

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Bangladesh Petroleum Sector Issues And Challenges

Engr. Khondkar Abdus Saleque

Bangladesh is a crude oil importing country and imports most of the petroleum products except a marginal volume available from the lone Eastern Refinery Limited (ERL). From a recent report, it appeared that Bangladesh imported petroleum products worth BDT 96,605,000 million in July 2023 as compared to BDT 65,177,000 million in June 2023. Petroleum products data is updated every month. We are aware that the lone discovery of oil was made in 1987 while development well drilling was made in Sylhet 7 for gas

at Chiknagul Haripur. Some crude oil was produced for a couple of years. Otherwise, Bangladesh imports crude for refining at the lone refinery ERL set up at North Patenga, Chattogram in the 1960s. Over the last 52 years since independence, a second refinery either in the public or private sector could not be constructed. Even the modernization and upgrade of ERL could not be completed yet. Bangladesh imports crude oil from different countries. But due to the shallow draft of Chattogram port, bulk crude is imported by mother

vessels which anchor in the deep sea. The crude is then transported from mother vessels by smaller vessels to ERL Jetty. It takes time and causes losses during transportation. To overcome these a project titled Single Point Mooring (SPM) has been implemented for transporting crude oil from mother vessels to storage facilities at Kutubdia, Maheshkhali and from there to ERL using submarine pipeline. The long-drawn SPM was due to start commercial operation early 2023. But for last minute technical issues the operation is being delayed. Another imported project of BPC, liquid fuel transportation pipeline from Chattogram to Godnail Dhaka and from Godnail to Hazrat Shahjalal International Airport is also taking a long time. When these are put into operation, a significant amount of wastages through leakages and pilferages will be reduced. Some people have doubts about safe operation of liquid fuel pipelines in Bangladesh. But there are smart technologies for policing the operation. Bangladesh and India have jointly implemented a liquid fuel pipeline from Numaligarh Refinery, India to Syedpur in Bangladesh. Bangladesh is importing petroleum



products using this pipeline. Given the global fuel market turbulence, Bangladesh must address issues and challenges of the liquid fuel supply chain for efficient use. Otherwise, it will be extremely difficult for Bangladesh to absorb price shocks and supply chain disruptions. Bangladesh needs to ensure a sustainable supply of fuel (smart fuel mix) for the smooth operation of industries. The demand for fuel petroleum products, LPG and LNG will continue to increase and Bangladesh has little other options to increase reliance on imports from the global market.

BPC

Bangladesh Petroleum Corporation (BPC) as a 100% state-owned enterprise under the Ministry of Power, Energy, and Mineral Resources is responsible for importing, processing, distribution, and marketing crude oil, and petroleum products in Bangladesh. Private sector companies are only involved in importing, bottling, and transportation of LPG. Petrobangla company RPGCL imports LNG, and two private sector companies Excelerate Energy USA and Summit Energy Bangladesh convert LNG to RLNG in FSRU anchored off the coast of Moheshkhali Cox's Bazar.

Top Five Countries in Crude Oil Refining in Asia Pacific Region

Countries	Capacity in Million Barrels Per Day
China	18.80
India	04.97
South Korea	03.35
Japan	3.34
Singapore	1.51

Petrobangla company GTCL evacuates RLNG and transports it to load

Refining Capacity of Some SAARC Countries

Countries	Capacity in Million Barrels Per Day
India	18.80
Pakistan	450,000 bbl per day
Sri Lanka	38,000 bbl per day
Bangladesh	15 lakh tonnes per annum

centers using the national gas transmission grid.

Records indicate that Bangladesh in the recent past imported crude oil worth BDT 96,605,000 million in July 2023 and BDT 65,177,000 million in June 2023. The major suppliers are Qatar, Egypt, USA, Nigeria, Kuwait, UAE and Sri Lanka.

The ERL was incorporated under the

Indian Companies Act in 1963 with 35% share of EPIDC (East Pakistan Industrial Development Corporation), 35% shares belonging to Burma Oil Company and 30% to private entrepreneurs. From November 1985, the BPC became 100% shareholder of the ERL.

The ERL went on stream with three processing units – Crude Distillation Unit, Catalytic Reforming Unit and Hydrodesulfurization Unit. Later, the following new process units were added. An Asphaltic Bitumen Plant, Long Residue Visbreaker Unit, Mild Hydrocarbon Unit (MHC), In 2007 ERL Engineers converted MHC to NGC (Natural Gas Condensate Unit.)

Refining Capacity of Asian and South Asian Countries

For sustainable Energy security, a country should have enough refining capacity as well as storage capacity of both crude oil and refined products of its own for addressing any uncertainties in the supply chain management. Unfortunately, in 52 years of Bangladesh independence Bangladesh could neither set up a second refinery nor increase the capacity of ERL. Bangladesh relies exclusively on crude import and heavily on import of Petroleum Products.

Four top countries have huge domestic markets but imagine a tiny country Singapore has become a major refining and trading company in the region through setting up refineries.

Issues of Petroleum Products Supply Chain Management in Bangladesh

We all are aware that Bangladesh does not produce crude oil. Associated gas separates condensates in some gas fields. These are processed to get some petroleum derivatives. One LPG plant set up at Golapganj Sylhet is no longer in op-



eration and another condensate processing plant set up at Rashidpur, Habiganj does not get enough condensate to run at capacity. Lone refinery imports crude from different countries, processes and BPC markets the products through its marketing utilities. For the shallow draft of Chattogram port, crude oil and other petroleum products imported using large vessels are kept anchored in the deep sea and transported through lighterage vessels to the ERL. This requires time and significant volume of wastage happens through leakages and pilferage. The BPC took up the SPM (Single Point Mooring) project. China Petroleum Pipeline Engineering Company Ltd (CPP) was engaged in the installation of the SPM with double pipelines under \$467.84 million preferential Chinese credit. The project was supposed to come into commercial operation by 2020. But it is still waiting to start commercial operation. If completed it can save time and eliminate wastages in crude oil and petroleum products transportation owes an explanation about the delay.

BPC is also implementing a liquid fuel pipeline from Chattogram to Godnail Dhaka and another pipeline for transport of Jet Propulsion Oil from Godnail to Shahjalal International Airport, Dhaka. The project taken up by BPC in 2015 is a 246 km pipeline run from Padma Oil Depot of BPC at North Patenga to Godnail in Narayanganj. In Bangladesh usually large pipelines are constructed by Petrobangla Companies: GTCL and TGDCL. But BPC was given that task. Per original plan the pipeline was to be completed by 2017. For various challenges for design change, ROW issues it could be started even by 2019. BPC in September 2017 announced that Bangladesh Army would manage implementation of the project. The experience of Bangladesh managing the operation



of liquid hydrocarbon pipelines is extremely bitter. GTCL had struggled a lot in combatting theft and pilferages of the Koillashtilla to Ashuganj condensate pipeline. However, it has been alleged that contractors engaged for the construction of the pipeline for lack of experience are struggling to complete the pipeline. There are also complaints about quality and quality control of the pipeline. It is not sure yet when the pipeline will come into operation and how safely it can be operated. BPC also owes an explanation about the delay and quality control of the important national asset.

However, the construction and commissioning of a liquid fuel pipeline from a Refinery at Numaligarh, Assam India to Parbotripur, Bangladesh is a milestone achievement. This pipeline has been commissioned and is used for importing Petroleum products from India. There exist at least another three Indian refineries not too far from the Bangladesh border. Bangladesh must explore whether it is possible to import liquid fuel by constructing pipelines. If necessary Indian refineries may import crude using the SPM facility of Bangladesh and transport it by Railway or by constructing pipelines.

Bangladesh Must Execute Plans for Petroleum Sector Professionally

In the wake of the volatility of the global fuel market and inadequacy of infrastructure of Bangladesh, the incumbent government must review the existing capacity of BPC and EMRD in managing the operation of Petroleum sector. The project planning, implementation, procurement management of BPC leaves many grey areas. Anyone can question why SPM took so much time to execute. What is going wrong in liquid fuel pipeline construction from Chattogram to Dhaka? If GTCL can successfully construct so many large diameter cross-country high-pressure pipelines why BPC could not collaborate with GTCL and Petrobangla is executing the pipeline construction? Bangladesh must act professionally in dealing with highly technical infrastructure development. These must have transparency and accountability. Bangladesh should seriously consider setting up at least a second refinery at Maheshkhali, Payra or any other suitable places. If necessary, there can be a PPP project. Local private sector may be integrated in the process.

EP

Engr. Khondkar Abdus Saleque,
Energy Consultant



Established in 1991, Confidence Cement PLC. is one of the largest producers of cement in the country. It is also a leading Blue-Chip company in both Dhaka & Chittagong Stock Exchange and has been the top 20 performing companies for the last 30 years.

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Confidence Infrastructure (CIL), Confidence Group's vehicle in the field of construction and development of new infrastructure in power, railways, telecom, road networks, dredging and river protection combines manufacturing of various middle to light engineering products with its front end services for highest amount of local value addition.



DTL is an International Gateway (IGW) service provider, offering high quality call routing and call termination facilities having its own International Internet Gateway (IIG) and National Internet Exchange (NIX). In 2019, DTL launched its ISP operations with brand name, MiME.



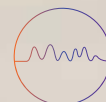
Started in the year 2017, Confidence Power Holdings (CPHL) now owns and manages four Independent Power Plants (IPP), two in Bogura, and one each in Rangpur and Chattogram region aspiring to take its total capacity to over 1,000MW by 2023.



Confidence Tower Holdings Ltd.



Kirtonkhola Tower Bangladesh



Oceanic Oxygen Depletes Slowly

Govinda Shil

With the hyper-growth of some algae in the ocean due to climate change, they are creating a “Dead Zone” with very low levels of oxygen needed for plankton and marine animals to survive. So far a total of 530 such ‘Dead Zones’ have been detected by scientists the number of which may increase over time. A dead zone is like the oceanic equivalent of a hot desert, with reduced biodiversity due to the extreme conditions.

Dead zones can form naturally but the vast majority are linked to either agricultural practices or the impacts of climate change. The largest dead zones are the Gulf of Oman - 63,700 square miles, the Baltic Sea - 27,027 square

miles, and the Gulf of Mexico - 6,952 square miles. The overall extent of dead zones across the world is likely to be at least 95,000 square miles.

The UN Environment Program reported some 146 dead zones in 2004 in the world’s oceans and 405 in 2008. Therefore, it appears that the number of such zones is increasing steadily.

Dead Zones are created following ‘Eutrophication’, which is characterized by excessive plant and algal growth due to the increased availability of one or more limiting growth factors needed for photosynthesis, such as sunlight, carbon dioxide, and nutrient fertilizers. Eutrophication occurs naturally over centuries as lakes age and

are filled in with sediments. Also, it takes place in the oceans, rivers, and estuaries. These nutrients usually come from commercial fertilizers applied to agricultural land, but they could also come from private land and pollutants like sewage and stormwater.

If too much fertilizer is applied, plants cannot take up these nutrients and they remain in the soil. When it rains, the fertilizer is washed away, making its way into waterways.

When excess nutrients from pollution, including nitrogen and phosphorous, enter waterbodies, they enhance the growth of algae leading to “Algal Bloom.”

As the algal bloom perishes, it starts to sink into deeper waters and the decomposition of algae surges biological oxygen demand. In turn, this removes large amounts of oxygen from the water. It also increases the levels of carbon dioxide, which lowers the pH of seawater.

Any mobile animal life within this oxygen-depleted, or hypoxic water, will swim away if they can. Immobile animal life dies, and as they decompose and are consumed by bacteria, the levels of oxygen fall further.

It is worth citing here that photosynthesizing algae in the ocean produces around 50% of oxygen in the atmos-



phere. There was quite scanty oxygen in the atmosphere or the ocean before the evolution of photosynthesizing bacteria that produce oxygen.

According to various research, temperature affects the volume of oxygen in water because warm water holds less oxygen than cold water. Thus, global warming can reduce oxygen in the ocean, lakes, rivers, and streams, leading to changes in species populations.

About half of Earth's oxygen comes from the ocean and is also consumed by marine life. The lion's share of this production is from oceanic plankton — drifting plants, algae, and some specific bacteria that can photosynthesize. One particular species named *Prochlorococcus* is the smallest photosynthetic organism on Earth. But these little bacteria produce up to 20 percent oxygen in our entire biosphere. That's a higher percentage than all of the tropical rainforests on land combined.

Calculating the precise percentage of oxygen generated in the ocean is difficult. The oxygen amounts are constantly changing. Scientists can use satellite imagery to track photosynthesizing plankton and estimate the volume of photosynthesis occurring in the ocean. However, sometimes satellite imagery cannot tell the whole story. The amount of plankton changes seasonally and is affected in response to changes in the water's nutrient composition, temperature, and other factors. Studies also show that the amount of oxygen in specific locations varies with the time of the day and with the tides.

According to *Nature Journal* (published on February 16, 2017), ocean models forecast a decline in the dissolved oxygen inventory of the global ocean of one to seven percent by the year 2100. This is being caused by a combination of a warming-induced decline in oxygen solubility and reduced ventilation of the deep ocean. It is assumed that such a decline in the



marine oxygen content could affect ocean nutrient cycles and the marine habitat. It may have potentially detrimental consequences for fisheries and coastal economies. Some regional observational data show a continuous decrease in oceanic dissolved oxygen concentrations in most of the regions of the global ocean. However, there were a few areas where oxygen levels rose. Prior work attempting to resolve variations in dissolved oxygen concentrations at the global scale reported a global oxygen loss of 550 130 teramoles (One mole is 6.02×10^{23} molecules or number of particles) per decade between 100 and 1,000 meters depth based on a comparison of data from the 1970s and 1990s.

The magazine says that they have found that the global oceanic oxygen content has decreased by more than two percent (4.8 2.1 petamoles) since 1960, with large variations in oxygen loss in different ocean basins and at different depths.

The scientists suggest that the changes in the upper water column are mostly due to a warming-induced decrease in solubility and biological consumption. The US Smithsonian Environmental Research Center worked out in their research a few years ago on how to

save oxygen in the ocean. They cited 8 ways to save oxygen.

Treat Wastewater to Get Rid of Nitrogen and Phosphorus

Cleaning up sewage isn't fashionable, but it works. Senior citizens of Great Britain saw oxygen in the Thames River bounce back in the 1960s and 1970s when people treated their wastewater to remove harmful chemicals. A 10-fold increase in the number of species in the river followed. Cities are hot spots for nutrient pollution. Making the copious waste they generate a little cleaner can help much.

Make Farming More Efficient

Agriculture is another major cause of nutrient pollution. Much of it comes from fertilizers that are based on nitrogen and phosphorus. But many crops receive far more fertilizer than they could ever absorb. The excess flows into water bodies to create oxygen-sucking algal blooms. Better farming practices can help solve climate change. Agriculture is now responsible for over 10% of the greenhouse gas emissions across the world.

Capitalize on Forests and Wetlands

This is the most widely-touted climate change solution. Plant trees, preserve them, and restore forests. Forests and wetlands are indispensable for their power to pull carbon out of the atmosphere. But in the

right places, they can also combat nutrient pollution. Both ecosystems act like sponges, soaking up excess nitrogen and phosphorus from the land to fertilize their plants. When planted beside a stream, they can absorb nutrient pollution before it enters the water.

Deploy Real-Time Monitoring Networks

Nothing beats having eyes on the ground—even if those eyes could be hundreds of sensors drifting in the water. An international Argo Float Program has nearly 4,000 floats in open ocean waters around the world. Roughly 300 of those floats are equipped with oxygen sensors that take data every 10 days. Argo is an international program that measures water properties across the world's oceans using a fleet of robotic instruments that drift with the ocean currents and move up and down between the surface and a mid-water level.

Use Fish as "Mobile Monitors"

Fish have small, calcified growths called 'otoliths' in their ears. As they grow, they record the composition of the water as the fish swims through it. Scientists are just now starting to read these otoliths like tree rings, attempting to trace if they have passed through low-oxygen waters.

Act Globally and Locally

When an issue impacts the entire world—be it climate change, low oxygen, or plastic pollution, international networks are critical for understanding the full scope. A 'Global Ocean Oxygen Network' team was the first such network to put oxygen loss in Earth's waters at the forefront of its mission. Global groups can shape policy as well: When the United Nations crafted its plans to combat climate change, it relied heavily on reports from the Intergovernmental Panel on Climate Change.

Look at the Whole Ecosystem

When oxygen plummets, it can reverberate through the entire marine

food web. But for decades, governments have set fishing rules that treat each species separately, like an island—crabs, oysters, salmon, tuna, etc. It is starting to change. Managers are starting to embrace a more "ecosystem-based" approach that looks at how everything in an ecosystem connects.

Create Marine Protected Areas with Flexible Boundaries

Marine protected areas work. Studies have shown they're among the most successful programs for helping fish populations rebound, increasing catch for fishers outside protected areas, and helping fisheries remain strong and healthy in the face of climate change.

The ocean is losing its breath. It is the prime time for all of us to act and keep the oxygen level at the right proportion for our survival.

EP

Govinda Shil,
Freelance Journalist



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Dr. Saleemul Huq

An Indelible Legacy

Mizan Khan & Towrin Zaman, ICCCAD



It is very difficult to write something about a person like Prof. Saleem, who was visionary and revolutionary, an inspiration and mentor, a scholar and an academician. To those who had met him - what stood up as the most was his pleasant and kind persona – endless humility, very economic in explaining something, with no verbosity, rarely taking up floors than needed. His words carried gravitas and wisdom, forcing others to listen when he spoke. He was also a good listener. That is why, above all his accomplishments and credentials, we will remember him for the person he was. He was one of the finest gentlemen we ever met.

Dr. Huq will be remembered for his fearlessness in pursuit of climate justice, never pandering to the powers that be.

He was never hesitant in pointing out their inaction and double standards. He was never disrespectful, but also never minced his words - the way he found the balance between his honesty, humility and courage in expressing himself over issues of climate justice.

As a Bangladeshi climate scientist, Dr. Huq was appointed Officer of the Order of the British Empire (OBE) in 2022 for his services to climate change. He contributed to the IPCC reports as Lead Author and Contributing Lead Author in a number of its assessments. In fact, he dedicated his whole life to promoting adaptation, resilience and loss and damage issues under the UNFCCC process. For his endless contributions, Dr. Huq was elected as one of Nature's 10 premiere scientists in 2022, also being

awarded with the Butony Award, and the National Environment Award by the Government of Bangladesh. Just this year, Dr. Huq was appointed as Advisor by the COP28 Presidency, followed by his nomination as the Advisor on Climate Change by the UN Secretary General.

With all these laurels and recognitions – it was such a wonder that he was so much grounded – working with the most vulnerable communities of the world. From adaptation to loss and damage and to locally-led action, he never stopped pushing boundaries, always showing us pathways to follow for finding solutions.

To his colleagues at the International Center for Climate Change and Development (ICCCAD), Dr. Huq will be cherished and immortalized for his humbleness and accessibility. He was the fastest responder on Earth in communications. He was a guide, philosopher and mentor to not only his colleagues, but to thousands of young professionals the world over. This is evident in thousands of condolences pouring in the ICCCAD inbox.

Dr. Huq's qualities and personality, as much as if not more than his accomplishments, shape his legacy. We only wish that all his millions of admirers will carry his flag to realize his unfulfilled dreams in the areas of locally-lead adaptation, capacity building, loss and damage, and women empowerment.

EP



Adani Importing Coal At Prices Higher Than Market Value

EP Desk

India's Adani Group has imported billions of dollars of coal at higher prices than market value, according to a report published recently. For that, India's consumers have to pay more for electricity. Over the past two years, Adani used offshore intermediaries in Taiwan, Dubai, and Singapore to import \$5.0bn worth of coal at prices that were at times more than double the market price.

The Financial Times also examined 30 shipments of coal from Indonesia to India by Adani. In all cases, prices in import records were far higher than those in corresponding export declarations. The Adani Group denies any wrongdoing. It said the FT story is based on an "old, baseless allegation", and is "a clever recycling and selective misrepresentation of publicly available facts and information". The allegation of inflating fuel costs was first made seven years ago in a probe by the Directorate of Rev-

enue Intelligence, the Indian finance ministry's investigative unit that polices economic crime.

Opposition politicians in Adani's home state of Gujarat have accused the group of overcharging for electricity since 2018. The company said it has been vindicated by the DRI's decision this year to withdraw an appeal to the Supreme Court in a case against one of the 40 importers named in 2016. "The issue of overvaluation in the import of coal was conclusively settled by India's highest court of law," it said. The unresolved nature of the DRI investigation and the apparent continuation of the alleged practices raise fresh questions about the relationship between Adani and the administration of Prime Minister Narendra Modi. Gautam Adani has been described as "Modi's Rockefeller". His group controls 10 listed companies and has thrived over the past decade,

becoming India's biggest private thermal power company and biggest private port operator.

In January 2019, the DL Acacia, a 229m-long bulk carrier with a South Korean owner and Panamanian flag, departed the Indonesian port of Kaliorang in East Kalimantan carrying 74,820 tonnes of thermal coal destined for the fires of an Indian power station. During the voyage, something extraordinary occurred: the value of its cargo doubled. In export records, the price was \$1.9mn, plus \$42,000 for local costs. On arrival at India's largest commercial port, Mundra in Gujarat run by Adani, the declared import value was \$4.3mn. The DL Acacia cargo was one of 30 shipments imported into India by Adani Enterprises that the FT examined in detail. According to the Indonesian declarations, these 30 representative sailings — totaling 3.1mn tonnes — cost \$139mn, plus \$3.1mn in shipping and insurance costs in Indonesia. The values declared to customs officers in India came to \$215mn, suggesting the voyages made up to \$73mn in profits, far more than plausible shipping costs. Coal trading is typically a high-volume competitive business with profit margins in the low single digits. Priced in dollars per tonne, one expert in the Indonesian trade said "Anything more than a couple of dollars above the market rate raises an eyebrow". Adani Enterprises, the group's oldest and most valuable company, generates the lion's share of its sales and profits from its coal trading division called Integrated Resources Management.

Adani appears to have paid the largest average premium to a Singapore busi-



Adani's Mundra Port in India

ness run by a former employee. Pan Asia Tradelink, previously named Pan Asia Coal Trading, has supplied Adani with 6.6mn tonnes of coal for \$1.1bn since September 2021, according to customs records reviewed by the FT. The average price of \$169 per tonne was a 30 per cent premium to the price of coal Adani sourced itself. Pan Asia primarily supplied Adani Power and did not have other Indian customers for coal in the records reviewed by the FT. Pan Asia shares a tiny office with two other companies in an unglamorous building containing many small businesses. A person there declined to speak to the FT or to accept a letter. The company did not respond to emailed questions, or written questions pushed under the door.

It's possible that the three middlemen supplied high-quality coal that fetched higher prices, and that the customs records are an incomplete catalogue of their dealings. Much of the coal supplied by the middlemen was indeed high quality according to its calorific value, or the total energy released during combustion, as listed in Indian import docu-

ments. But it was also typically priced far more than benchmark price assessments relied on by the industry for coal of that quality. Data provider Argus maintains a range of benchmark prices for Indonesian coal between 3,400 and 6,500 gross calorific values per kilogram.

Of the Indian import records reviewed, 311 shipments originating from Indonesia listed the calorific content of coal supplied to Adani by the middlemen. All but a few were priced at a premium to what the closest Argus benchmark price had been two to four weeks earlier, the typical shipping time from Indonesia to Gujarat. The median premium was 14 per cent.

The data suggests some other suppliers may also be declaring imports of Indonesian coal at prices higher than the Argus benchmarks. Repeating the analysis for imports by companies other than Adani during the same period, the median premium was 17 per cent.

Power generators in India are typically paid based on long-term "cost-plus" contracts that factor in degrees of fixed

and variable costs. Over the past decade, as both the price of coal and the amounts imported rose, there have been multiple long-running disputes and litigation in the Indian courts related to how prices are set.

Many of those costs are passed on to the public only indirectly. Power generation, transmission, and distribution in India is the responsibility of a patchwork of public and private companies regulated at the state and national levels. Parts of that network are financially fragile: rating agency Standard & Poor's estimated in June that the mainly state-owned distribution companies that supply consumers had accumulated losses of about \$70bn. In 2016, the DRI investigation suspected that the value extracted from illicit over-invoicing of coal was Rs300bn, then worth about \$5bn.

In August this year, opposition politicians in Gujarat accused the state government of making almost \$500mn in excess payments to Adani Power over five years under a power purchase agreement linked to the price of coal.

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Nasrul Hamid Seeks Thai Cooperation in Energy Sector



Thailand Pirapan Salirathavibhaga at the United Nations Conference Center in Bangkok in Thailand.

At the meeting, various issues of mutual interest were discussed.

State for Power, Energy and Mineral Resources Nasrul Hamid has discussed energy cooperation with the Deputy Prime Minister of Thailand during his visit to the South-East Asian nation recently.

According to the Ministry of Power, Energy and Mineral Resources Ministry, a four-member Bangladesh delegation, led by the state minister met with Deputy Prime Minister and Energy Minister of

Nasrul focused on the investment, energy and economic cooperation between the two nations and also increasing the use of safe lithium batteries in electric vehicles in Bangladesh.

The deputy prime minister of Thailand emphasized on increasing energy cooperation, saying that both countries can benefit if mutual cooperation can be increased through discussion.

EP

DESCO Posts Massive Tk 5.41b Loss last FY

The Dhaka Electric Supply Company, or DESCO, which started operating over two decades ago, has posted a massive loss of Tk 5.41 billion in the past fiscal year, the largest in its history.

Managing Director Kausar Ameer Ali says the vast differential for the listed company is due to the depreciation of the taka against the dollar and for selling power at prices below the production cost.

The depreciation of the taka accounted for Tk 4.28 billion of the total loss, while selling at a discount led to losses of Tk 1.13 billion.

Despite taking huge losses, the company will still pay

dividends of Tk 1 per share to shareholders for a total of approximately Tk 397.57 million.

The funds will come from the company's reserves of Tk 22.21 billion.

From July 2022 to June 2023, the company has reported losses of Tk 13.61 per share.

The entirety of the loss came in the nine months from October last year to June this year.

From July to October last year, the company made a profit of Tk 0.29 per share, or over Tk 115 million. Then, from October to December, each share led to losses of Tk 0.08, or Tk 31.8 million.

EP

Bangladesh to Trim High-Sulfur Fuel Oil Import 20% in Oct

Bangladesh will import 20% less high-sulfur fuel oil (HSFO) in October due to a shift in power generation sources to coal and cooler temperatures, according to a report by S&P Global Commodity Insights.

Quoting Faisal Khan, president of the Bangladesh Independent Power Producers' Association, the report says the country is likely to import around 200,000 tonnes of 180 CST HSFO with 3.5% sulfur content in October, down from about 250,000 tonnes in September.

The HSFO import volume for October 2023 is anticipated to be less than half of what it

was in the same month in 2022 when the country imported approximately 450,000 tonnes of HSFO.

180 CST HSFO stands for 180 centistokes high-sulfur fuel oil that is used for generating electricity in Bangladesh and the country's private sector imports the major share to run their power plants, while state-run Bangladesh Petroleum Corporation imports the remaining.

Earlier in September, Bangladesh trimmed imports of HSFO by a third due to reduced demand from the power generation sector as monsoonal rains had brought down peak summer temperatures.

EP

SS Power Second Unit Starts Commercial Operation

After successfully generating power from its first unit, the privately-owned SS Power Plant started commercial production from its second unit on October 22, said authorities.

The commercial production of the first unit started at 12:01 pm on September 17.

Both the units of SS Power Plant, the country's largest privately-owned power plant, are now commercially producing electricity to supply sufficient power as per the demand of the national grid.

A high-level delegation of PDB visited the plant on October 19 before starting commercial production.

The delegation included PDB



Dhaka Chief Engineer ABM Ziaul Haque, Coal Power Generation Director Rukon Uddin, Deputy Director of the same organization Nazmul Haque, PDB Deputy Secretary (Company Affairs) Nazmul Huda, PDB Dhaka Subdivisional Engineer (Energy Auditing) Tamim Khan, Directorate of Coal Power Generation (DCPG) Assistant Engineer Sanjida Parveen, Director (Design and Inspection-2) of PDB Dhaka Shahidul Islam, Superintendent Engineer of Energy Auditing Unit of PDB Dhaka Sohail Hosain Serazi and others.

EP

Bangladesh to Work with Asia-Pacific Region for Sustainable Energy: Nasrul



State Minister for Power, Energy and Mineral Resources Nasrul Hamid recently said Bangladesh will work in unison with the Asia-Pacific region to build a secure, sustainable and interconnected energy future.

"Regional cooperation, strategic partnerships and policy coordination will realize the existing potential. There is a special need for collective and integrated initiatives to address the challenges of the existing energy system," he said.

The state minister made the

remarks while addressing the 3rd Asia Pacific Energy Forum (APEF3) organized by ESCAP in Bangkok, Thailand, said a press release here.

United Nations (UN) Under Secretary General and UNESCAP Executive Secretary Armida Salsiah Alisjahbana presided over the forum while Thailand Deputy Prime Minister as well as Energy Minister Pirapan Salirathavibhaga, and ministers and representatives from ESCAP member countries also spoke at the function. **EP**

Summit Power Eyes Upward Adjustment of Income, with Power Price Hike

Summit Power has sought more time to disclose its earnings for FY23 on the ground that it awaits adjustment of the electricity price by the government to overcome loss of profit rendered by currency devaluation.

The plea has already been granted by the Bangladesh Securities and Exchange Commission, extending the deadline from 28 October to 31 December.

The private power producer said it would publish financial data for FY23 and the first quarter of FY24 together on 31 December.

An Analyst, who is very familiar with the power business and knows about the company, said Summit Power was buying time maybe because their financial



performance for FY23 would look bad and that would create jitter in the stock market.

Company spokesperson Mohsena Hassan, however, said, "Our auditor and our consultant say if we publish the results now that will be misleading."

In a stock exchange filing recently, Summit Power, which supplies electricity to Bangladesh Power Development Board (BPDB) and Bangladesh Rural Electrification Board (BREB), said they had applied for compensation from the BPDB and that a response to the request was still pending. **EP**

German Solar Industry Looks to Rise Again



A decade after a wave of bankruptcies all but wiped out the German solar industry, the sector is looking to reestablish itself in the face of stiff competition from abroad.

Overproduction in China and massive government subsidy programs in the United States mark the struggle to stay profitable for a business that used to boom in

Germany.

In Bitterfeld-Wolfen, a solar cell plant opened in 2021 by the Swiss group Meyer Burger on the site of defunct German producer Q-Cells is

a sign of a possible renaissance.

'We managed to recruit a number of former employees in the sector, and we are benefitting from their know-how,' the director of the Meyer Burger factory, Jochen Fritsche, said.

At the plant in the eastern German city, a million of the blue cells roll off the line each day, ready to be assembled into the modules that make up solar panels.

Production at the factory is largely automated, with just

some 50 employees overseeing the non-stop manufacturing process via computer screens.

First, the silicon wafers that form the basis of the cells are dipped in a chemical solution. Then they are given a reflective grey coating, dried and cut in two.

The outcome of this high-precision industrial process — the details of which are closely guarded by Meyer Burger — is a cell which is said to yield 20 per cent more energy than the competition. **EP**

Nasrul for Cross-Border Connectivity to Build Sustainable Energy System



State Minister for Power, Energy and Mineral Resources Nasrul Hamid recently hoped that regional cross-border connectivity will make an effective contribution to building a sustainable energy system.

"The regional cross-border connectivity will make an effective contribution to building a sustainable energy system. At the same time, it will build stronger cooperation networks by increasing efficiency, balancing various energy-sources and solving geopolitical issues," he said.

The state minister made the remarks while addressing the ministerial meeting titled 'Aligning Power System Con-

nectivity and Sustainable Development: The Green Power Corridor Framework' at the Third Asian and Pacific Energy Forum (APEF3) organized by the Economic and Social Commission for Asia and the Pacific (ESCAP), the most inclusive intergovernmental platform in the Asia-Pacific region, in Bangkok, Thailand, a press release said here.

Noting that strong energy cooperation and regional interconnection will ensure sustainable power supply in the Asia Pacific region, he said the contribution of renewable energy to Bangladesh's power generation portfolio has been increasing bit by bit.

By 2025, at least 4,000 megawatt (MW) of electricity generated from renewable sources will be connected to the national grid, he mentioned. **EP**

Collaborative Efforts Essential to Accelerate SDGs in Asia Pacific

UNDP and key partners from the Private Sector convened in Dhaka on a three-day discussion to initiate dialogue to align efforts towards realizing the Sustainable Development Goals (SDGs) in the Asia Pacific.



The Regional Partnership Exchange brings together selected business leaders, Foundations and UNDP teams to discuss and align the efforts of the partners and UNDP in mobilizing resources for scaling impact and accelerating the development progress in Asia.

Importantly, the Partnership Exchange will facilitate learning and enable the initiation of new dialogues and scalable partnerships that will extend into 2024 and beyond.

These discussions serve as crucial touchpoints for private sector partners and UNDP to come together, engage in interactive discussions on the possibilities, and

address key bottlenecks in accelerating inclusive and sustainable growth in the Asia Pacific region.

Christophe Bahuet, UNDP Deputy Regional Director, highlighted the growing cooperation between UNDP and businesses across Asia and the Pacific and the positive impact this is having on national and local development.

However, he stressed that the UNDP-private sector cooperation has a strong growth potential. "There is much more that UNDP and companies can do together and this Regional Exchange can help us identify concrete opportunities to expand existing partnerships and start new ones." **EP**

Energy World Set to Change Significantly by 2030: WEO

Major shifts underway today are set to result in a considerably different global energy system by the end of this decade, according to the IEA's new World Energy Outlook 2023.

The phenomenal rise of clean energy technologies such as solar, wind, electric cars and heat pumps is reshaping how we power everything from factories and vehicles to home appliances and heating systems.

The latest edition of the World Energy Outlook (WEO), the most authoritative global source of energy analysis and projections, describes an energy system in 2030 in which clean technologies play a significantly greater role than today.

This includes almost 10 times as many electric cars on the road worldwide; solar PV generating more electricity than the entire US power

system does currently; renewables' share of the global electricity mix nearing 50%, up from around 30% today; heat pumps and other electric heating systems outselling fossil fuel boilers globally; and three times as much investment going into new offshore wind projects than into new coal- and gas-fired power plants.

All of those increases are based only on the current policy settings of governments around the



world. If countries deliver on their national energy and climate pledges on time and in full, clean energy progress would move even faster.

However, even stronger measures would still be needed to keep alive the goal of limiting global warming to 1.5 °C. **EP**

Mitsubishi Power Begins Commercial Operation of Sixth M701JAC Gas Turbine for Thailand GTCC Power Plants



the reliability of the state-of-the-art JAC gas turbines.

Going forward, construction will proceed as planned, with all eight units expected to be in operation by fall 2024.

Mitsubishi Power, a power solution brand of Mitsubishi Heavy Industries, Ltd. (MHI), has completed installation of the second of four M701JAC units at a natural gas-fired power plant project in Rayong Province, Thailand.

Operation commenced on 1 October 2023, and follows the start of operations for the first unit at the end of March.

This latest installation is the sixth consecutive unit from the Rayong and Chonburi sites to be completed in line with the contract schedule. The previous five units for the project have exceeded 50,000 actual operating hours (AOH), demonstrating

Commenting on the start of operations for the latest system, Worapong Vivatanavanich, Chief Project Development Officer for Gulf Energy Development, said: "As with the previous project in Chonburi Province, we faced several challenges, but were able to draw on our previous experience in executing the project. I commend the fact that the second unit started operation as originally scheduled. Going forward, based on a strong relationship of trust, I am confident that we will be able to complete the entire project as scheduled."



India's Natural Gas Demand to Rise 4% in 2023: IEA

India's natural gas demand is set to grow by 4 per cent in 2023 and rise at an average annual rate of over 8 per cent till 2026, a medium-term forecast by the International Energy Agency (IEA) has shown.

Released recently, it also showed that global gas demand is on course to grow by an average 1.6 per cent a year between 2022 and 2026, down from an average of 2.5 per cent a year between 2017 and 2021.

Following a steep 6 per cent decline in 2022, liquefied natural gas (LNG) imports into India increased by 8 per cent in the first eight months of 2023 compared to the same period of the previous year. Primary gas supply increased by 2 per cent.

Since June, spot LNG prices have fallen to below the \$15 per metric million British thermal unit (MMBTU) threshold, which led to a positive demand response from the industry and the power sector, the report said.

During the next five years, India is set to add over 20 billion cubic metres (bcm) of natural gas incremental demand, the report said.

The industry is set to remain the largest contributor to this growth, accounting for close to 40 per cent of the total increase.



Govt Mulls RLNG Import from India



greater contingency plan for failsafe fuel supply, amid volatility on global energy market.

In an initial bid, around 300 million cubic feet per day (mmcf) would

Bangladesh government moves to import re-gasified liquefied natural gas (RLNG) from India through cross-border pipeline under a

be brought in from India's H-Energy by 2025, State Minister for Power, Energy and Mineral Resources (MPEMR) Nasrul Hamid said recently.

He said state-run Petrobangla would also get an additional 200mmcf gas by then from private company Dipon Gas, which is planning to import around 500 mmcf of RLNG from India. "They would sell the remaining 300mmcf to private consumers."

This is going to be a second cross-country pipeline between India and Bangladesh for carrying energy. The first one has been carrying diesel from India since its inauguration on March 18 last, said sources.

India's H-Energy, a subsidiary of Hiranandani Group, has intended to supply RLNG from Digha in West Bengal to Khulna in Bangladesh after laying a

275-kilometre cross-border pipeline from Kanai Chatta in East Midnapore district to Shirampur in Khulna.

With this end in view, the state energy corporation, Petrobangla, had inked a memorandum of understanding (MoU) with H-Energy a couple of years ago.

The initial target is to import RLNG equivalent to around 1.0 million-tonne per annum (MTPA) from H-Energy through this pipeline to feed the 800MW Rupsha combined-cycle power plant, owned by state-owned North West Power Generation Company Ltd (NW-PGCL), for 22 years.



Scientists Test Fukushima Fish after Nuclear Plant Water Release



A team of international scientists collected fish samples from a port town near Japan's crippled Fukushima nuclear plant recently, seeking to assess the impact of the plant's recent release of treated radioactive water into the sea.

The study by the UN's nuclear watchdog is the first since the water release began in August, a move that drew criticism from local fishermen and prompted China to ban all imports of marine products from Japan over food safety fears.

Scientists from China, South Korea and Canada observed the collection of fish samples delivered fresh off the boat at Hisanohama port, about 50 kilometers south of the plant which was destroyed in the 2011 earthquake and tsunami.

The samples will be sent to laboratories in each country for independent testing, the International Atomic Energy Agency (IAEA) said.

"The Japanese government has requested that we do this and one of the reasons they want us to do this is to try and strengthen confidence in the data that Japan is producing," said Paul McGinnity, a research scientist with the IAEA overseeing the survey. **EP**

Qatar Signs 27-Year Gas Deal with Britain's Shell

Qatar has agreed to supply British firm Shell with natural gas for 27 years, the Gulf emirate's state-owned energy company announced recently.

Since Moscow's invasion of Ukraine last year, European countries have scrambled to replace lost deliveries of natural gas from Russia.

Qatar will supply 3.5 million tonnes of gas a year under the deal, QatarEnergy said, following two agreements with Shell for a share of the Gulf state's huge North Field gas expansion project.

"We are delighted to sign these two long-term LNG sale and purchase agreements with Shell that

will further enhance our decades-long relationship and strategic partnership in Qatar and around the world," Qatari Energy Minister Saad al-Kaabi said.

"These agreements reaffirm Qatar's commitment to help meeting Europe's energy demands and bolstering its energy security with a source known for its superior economic and environmental qualities," he added.

In October last year, Shell inked a deal with QatarEnergy for a 9.4 percent stake in Qatar's North Field South project, the second phase in the expansion of the world's largest gas field, which extends under the Gulf into Iranian territory. **EP**

Growing Backlog in Payments to IPPs a Bottleneck in Power Sector

The growing backlog in payment obligation is emerging as a major problem in the power sector that may impede the sector's growth.

According to official sources, the payment mode in the government's power purchase agreement (PPA) with the private sector has mainly been made in foreign currency, especially the US dollar.

As per the existing arrangement, as a single-payer, the state-owned Bangladesh Power Development Board (BPDB) pays to the private power producers in local currency against its purchase of electricity.

Under the PPA, the private power producers are allowed to convert the payments into US dollars to meet their different kinds of payment obligations like bank loans, fuel and machinery imports, and foreign staff salaries.

If the investors are foreign companies, they can repatriate their profits in US dollars, said the officials of the BPDB.

They also noted that the BPDB always remains in constant contact with power producers, their banks and the central bank to smooth the foreign currency repatriation. **EP**

bp Starts Full Commercial Operation of Expanded Tangguh LNG Plant

bp plc loaded and shipped the first cargo of liquefied natural gas (LNG) produced by the third liquefaction train at the Tangguh LNG plant, in Papua Barat, Indonesia.



The Oct. 18 shipment, to be delivered to Indonesia's state-owned power generator PT PLN (Persero) at its regasification terminal in Arun, Nanggroe Aceh Darussalam province, Indonesia, marks the start of full commercial operation of the expanded Tangguh LNG plant, the operator said in a release Oct. 19.

Start-up of Tangguh Train 3 will add 3.8 million tonnes/year (tpy) of LNG production capacity to the existing two-train plant, bringing total plant capacity to 11.4

million tpy (OGJ Online July 1, 2016).

Total gas production at Tangguh is expected to account for over a third of national gas production, said Dwi Soetjipto, chairman of SKK Migas, Indonesia's oil and gas regulatory agency.

"Tangguh is the largest LNG producer in Indonesia and the production from Tangguh's three-train operation will significantly contribute to the national gas production target of 12 [billion scfd] by 2030." **EP**

Two Grid-Connected Solar Power Plants Receive Approval



The Cabinet Committee on Government Purchase (CCGP) in a virtual meeting recently approved a number of proposals including setting up of two grid-connected solar power plants in the power sector and import of LNG.

Capacity extension of LNG terminal and new deal for import of LNG were also among other proposals approved by the committee in the meeting presided over by Finance Minister AHM Mustafa Kamal.

As per the Proposal, a Consortium of Max Infrastructure Limited and Hangzhou Boiler Company will set up a 180 MW (AC) solar power plant in Sadar Upazila of Jamalpur district.

State-owned Bangladesh Power Development Board (BPDB) will purchase electricity from the plant over the period of 20 years at a total cost of Tk 6,410.40 crores at a tariff rate of 10.989 (0.9 US Cents) per kilowatt hour.

Enegon Renewable (BD) Limited and PWR Energy Trading LLC, a subsidiary of Orion Group, will set up a 130 MW (AC) solar power plant in Gazaria Upazila of Munshiganj district.

The BPDB will buy electricity from the plant over a period of 20 years at a total cost of Tk 4,634.40 crore at a tariff rate of Tk

11 (10 US Cents) per kilowatt hour.

Cabinet purchase body approves proposals including 3 solar power plants in private sector.

The BPDB will purchase service from General Electric (Switzerland) GmbH., through direct purchase method (DPM) for damaged compressor repair service of Gas Turbine of Ghorashal 3rd Unit Re-Powered Combined Cycle Power Plant at a cost of Tk 167.98 crore.

The BPDB will award contract to Joint Venture of (1) TSCO Power Ltd.; (2) Confidence Infrastructure Ltd. and (3) Vicar Concrete Products to supply 24,300 SPC poles under Lot-1 of the project 'Modernization and Capacity Building of Distribution System (Khulna Division) Tk 69.40 crore.

The BPDB will award contract to Joint Venture of (1) Contech Construction Ltd.; (2) Poles & Concrete Ltd. and (3) Pasha Poles Ltd., to supply 24,297 SPC Poles under Lot-3 of the same project cost of Tk 69.39 crores.

The committee approved the Petrobangla's proposal for a Deed of Amendment to the LNG Use Agreement draft for extension of the

JERA Paid \$200m in Capacity Charge Since 2019



Japan's Energy For a New Era, a partially government-owned Japanese power company, pocketed about \$200 million in capacity charge since investing less than \$500 million in Bangladesh four years ago, revealed a report released by Bangladesh Working Group on External Debt recently.

The JERA currently has ownership over 783MW installed power generation capacity since it bought 22 per cent share in Summit Power and 49 per cent share of the 750MW Meghnaghat power plant owned by the Reliance Power in 2019.

Like other private investors in the power sector, Bangladesh guaranteed profit on JERA's investment with capacity charge which the power plants will con-

tinue to generate for about two more decades.

Two more liquefied natural gas-based power plants with installed capacity of 1,301MW are expected to begin operations by this year with a capacity charge that will earn JERA \$1.55 billion over their lifetime of 22 years.

'It is clear that JERA's target is to get profited from building unnecessary power plants in poor and developing countries in Asia, including Bangladesh,' read a line of the report.

'JERA's intention has never been to ensure energy security of the citizens,' said the report. **EP**

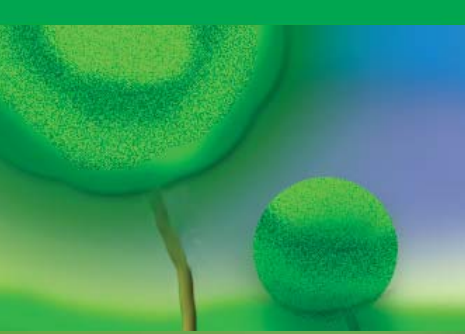
regasification capacity of Moheshkhali LNG terminal of the Excelerate Energy Bangladesh Ltd (EEBL) from 500 MMCFD to 600 MMCFD.

It also approved a proposal of the Petrobangla for the negotiated bid for import of 0.85 MTPA from January 2026 to 2027 and 1.00 MTPA from 2028 to 2040 from Excelerate Gas Marketing Ltd Partnership and also its Draft LNG SPA (sales and purchase agreement) at Contract Price, offered at 13.35% Dated Brent+0.30) USD/MMBtu.

The CCGP also approved another proposal of Petrobangla to import an LNG Cargo (33.60 lakh) MMBTU from the spot market (23rd of 2023) at a price of \$17.55 per MMBTU at a total cost of Tk 762.36 crore.

Saudi-Bangladesh JV company gets nod to set up 300 MW solar power plant at Rampal

Vitol Asia Pte., Ltd, Singapore, was awarded the contract under "Prompt Supply of Electricity and Energy (Special Provisions) (Amendment) Act-2021". **EP**



Green page

Bangladesh, EU Sign €400m Partnership Deal for RE



President of the European Commission Ursula von der Leyen together with Prime Minister Hasina recently launched the negotiations on a new Partnership and Cooperation Agreement to expand and develop the relationship between the EU and Bangladesh at the Global Gateway Forum.

On this occasion, the EU, the European Investment Bank (EIB) and Bangladesh signed agreements worth €400 million for renewable energy projects to contribute to a sustainable green transition of Bangladesh's power sector. It is also aimed at meeting the country's climate mitigation targets.

Five additional cooperation actions,

worth €70 million, supporting education, decent work, green construction, e-governance and the prevention of gender-based violence were also launched.

Speaking in Brussels, President Ursula von der Leyen said: "The EU and Bangladesh have been reliable and trusted partners for 50 years. Now, we are taking this partnership

even further, to reap the opportunities of the green transition under Global Gateway. The European Commission, the EIB and Bangladesh will join forces to support renewable energy and tackle climate change. This €400 million investment will make a difference for the people of Bangladesh and its economy".

Prime Minister Sheikh Hasina said: "We are confident that this initiative will enable developing countries such as Bangladesh to fight climate change, to address infrastructure gaps, invest in renewable energy, digital innovation, healthcare, education and much more. The Global Gateway is a sign of friendship, of partnership, of trust, of symbiotic interdependence".

EP

Acwa Power Signs Cooperation Deal with Chinese Partners

Saudi-listed ACWA Power, the world's largest private water desalination company, leader in energy transition and first mover into green hydrogen, has signed seven cooperation agreements with Chinese firms during the third Belt and Road Forum in Beijing, for solar, green hydrogen and water desalination projects.

The agreements reaffirm ACWA Power's commitment to collaborative

sustainable development by leveraging its ongoing partnership with Chinese investors, financiers, EPC contractors and material suppliers.

The agreements were signed with entities including State Power Investment Corporation, one of the largest state-owned power generators in China; the Beijing headquartered Bank of China; civil engineering firm Power China Group; power and infrastructure solutions provider Energy China Group; and solar panel manufacturer Jinko Solar.

EP

IDCOL Awards Scholarship and Integrity Award

Infrastucture Development Company Limited (IDCOL) recognized the academic excellence of outstanding students and awarded an integrity award to its employees at its head office on 22 October 2023.

As part of its Corporate Social Responsibility (CSR) initiatives, IDCOL awarded one-time scholarship to the four exceptional students, who are children of IDCOL employees. These students



demonstrated remarkable academic results in their SSC & HSC.


In addition, the Integrity Award recognizes the outstanding commitment and unwavering integrity showcased by IDCOL employees in their professional endeavors. Their dedication serves as an inspiration for all the others to uphold the highest standards of honesty and ethical conduct in their respective fields.

Alamgir Morshed, Executive Director & CEO, IDCOL was present as the chief guest at the event.

EP

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Grid Security Must be Ensured Through Technology: Nasrul Hamid



State Minister for Power, Energy and Mineral Resources Nasrul Hamid recently underscored the need to ensure grid security with the help of modern technology.

“A safe grid and its security is a must. Because the conventional way could not deal with the uncertainty which was created in the global context,” he said this while addressing a workshop on ‘Smart Grid Experience Day’ at Biyut Bhaban.

The Boston Consultant Group (BCG) organized the workshop as part of the Smart Grid Roadmap in Bangladesh Phase-2 implementation, financed by United States Trade and Development Agency (USTDA).

General Electric (GE), Microsoft, IBM and Oracle presented separately demo labs on ‘Art of the possible for a smart grid Innovation Demo Lab’ in the workshop.

Nasrul Hamid said plans should be made according to the forecast coordinating the modern systems and technology, adding, “A sustainable system cannot be developed without quick decisions with a positive attitude.”

“It is a must to modernize and integrate the overall system of electricity and fuel to meet benefits and challenges of the 21st century. And the smart grid will be the backbone of all systems,” he added. **EP**

Biofuel Gaining Traction for Energy Transition: GlobalData

Renewable fuels are biofuels that are produced using advanced biomass such as wastes from agriculture, forestry, food processing, and non-edible crops. These are rapidly gaining popularity among refiners globally due to their potential role in the global energy transition, when compared with petroleum fuels.

Hence, biofuels such as renewable diesel and sustainable aviation fuel (SAF) are attracting investments from downstream companies around the world, says GlobalData, a leading data and analytics company.

GlobalData’s thematic report, “Biofuels,” provides an overview of the global biofuels industry and its

potential role in the global energy transition.

It benchmarks leading companies, such as Neste, Marathon Petroleum, Valero, and Phillips 66, based on their active and upcoming capacity in renewable fuels. It also evaluates the industry, technology, and regulatory trends within the biofuels industry.

Biofuels are intended to blend with conventional fuels, and even potentially be used as transportation fuels in the long-term to reduce the dependency on fossil fuels. Hence, the biofuel production process is largely similar to that of crude oil refining. **EP**



Registration for 'Bicchuron' Begins in Search of Renewable Energy Ideas

With a vision to encourage the youth to share fresh and innovative ideas on the renewable energy sector to make Bangladesh self-reliant in this sector, Young Bangla has joined forces with Ministry of Power, Energy and Mineral Resources and Green Delta Insurance Company to organize the renewable energy idea startup competition known as “Bicchuron.”

Those interested can submit their ideas until October 15th by visiting the link.

Organizers said campus activation is already underway to submit ideas for Bicchuron. There has been a lot of response from students and teachers, according to the organizers.

Any ideas related to smart power and energy can be submitted to this competition. This time, young Bangla’s



page has invited people to submit ideas on 7 topics, according to a press release. The issues are: Smart Production, Environment and Energy, Distribution and Management, Smart Grid Solutions, Energy Demand Forecasting, Smart Operation and Energy Monitoring and IoT Based Power and Energy Solutions.

This time 20 innovative ideas will be recognized. Financial, technical and management support will be provided by the organizers to make the top 10 ideas a reality. **EP**

Bangladesh Introduces Rooftop PV Requirement for Big, New Buildings



Bangladesh has implemented a new rule stating that new buildings with rooftop spaces exceeding 92.2 square meters must install net-metered solar power systems as a prerequisite for grid connection.

Bangladesh is poised to witness a substantial increase in rooftop PV generation as the government mandates the installation of net-metered solar systems in newly constructed residential, educational, medical, industrial, and commercial buildings as a prerequisite for new grid connections.

For buildings with rooftop spaces exceeding 92.2 square meters, net-metered solar power system is obligatory.

Owners seeking single-phase grid connections must install a net-metered solar system with a minimum capacity of 1 kW, while those requiring three-phase connections must meet a 3 kW capacity requirement.

The same rules apply to schools, hospitals, and charitable organizations with at least 1,000 square feet of rooftop space.

Additionally, the new regulation stipulates that industrial and commercial customers in need of grid connections up to 80 kW must install a rooftop PV system equivalent to 15% of their total load. Customers requiring connections between 80 kW and 500 kW must install a PV system representing up to 12% of their load capacity, while those with loads exceeding 500 kW must install a rooftop array representing up to 10% of their load capacity.

Furthermore, existing buildings wishing to enhance their grid connection load capacity must adhere to the same rules by installing additional rooftop solar systems. **EP**



Sunny Albania Turns to Solar Power to Fuel Development

Along southwestern Albania's coastline, the sun shines bright -- warming the 234,828 new solar panels at the Karavasta power station that will be connected to the country's energy grid in the coming weeks.

In less than two years, the French-owned Voltalia company has built the largest solar-powered plant in the Western Balkans, where much of the



region remains reliant on fossil fuels including coal.

Located on 200 hectares of land provided by the Albanian government on the edge of the Karavasta lagoon national park, the plant will be able to generate 140 megawatts, powering hundreds of thousands of homes in the country of just 2.8 million people.

The surge in energy will be a welcome shot in the arm for the Balkan country -- where power outages were long a scourge following the collapse of its communist governments in the early 1990s. And while the grid has stabilised in recent years, power cuts are still common.

Albania currently receives approximately 99 percent of its electricity from hydroelectric power stations. But with regular droughts and ramshackle energy infrastructure dating back to its communist era, Albanian has struggled to keep pace with the country's break-neck development fuelled by the millions of tourists it welcomes annually. **EP**

ACWA Power, Dutch Entities to Jointly Explore Green Hydrogen Export Corridor



ACWA Power, the world's largest private water desalination company, leader in energy transition and first mover into green hydrogen, has signed a Memorandum of Understanding (MoU) with Zenith Energy Terminals, GasLog and Port of Amsterdam to explore the viability for a green hydrogen export corridor between ACWA Power's

global hydrogen production sites and the port of Amsterdam.

The companies exchanged the MoU during the Saudi-EU Investment Forum, which took place in Riyadh on 23 October. The forum was co-hosted by the Ministry of Investment of Saudi Arabia (MISA) and the European Union (EU).

This MoU builds upon a previous agreement signed between Saudi Arabia and the Netherlands, aiming to enhance cooperation in various sectors such as clean hydrogen, marine transport technologies, standards, certification, and the establishment of efficient international supply chains connecting both countries. **EP**

Bangladesh, USA Keen to Address Climate Change Challenges



US Special Presidential Envoy for Climate John Kerry has said that the US has been engaging with countries to reduce global emissions and working with institutions like the World Bank on funding issues.

Regarding investment in Bangladesh's renewable sector, Kerry said that the US would be willing to be a partner in helping Bangladesh achieve its climate goals.

Bangladesh and the United States are keen to deepen their bilateral relations in ad-

ressing the defining challenges of climate change, according to the Bangladesh Embassy in Washington.

This was expressed at a meeting between Special Envoy to Prime Minister of Bangladesh for Climate Change Saber Hossain Chowdhury, MP and John Kerry held recently at the latter's office at the U.S. Department of State.

The envoys discussed mitigation, adaptation funding, technology transfer as well as loss and damage and shared perspectives to forge greater collaborations bilaterally and on global climate platforms including at the United Nations Climate Change Conference (COP). **EP**

Govt to Provide Incentives to Eco-Friendly Brick Manufacturers: Environment Minister

Environment, Forest and Climate Change Minister Md Shahab Uddin recently said the government will provide incentives to eco-friendly block brick manufacturers.



"The emissions from brick kilns are extremely detrimental to the environment. Therefore, we should actively promote the use of eco-friendly block bricks as a substitute for traditional bricks," said the minister. He urged everyone to embrace the change despite initial challenges.

The environment minister made the remarks while addressing as the chief guest at the inauguration of the

eco-friendly China-Bangla Hall Block Factory located at Temukhi, Kumargaon in Sylhet recently.

The minister said the current government is working to ensure a liveable environment for the people of the country.

Various programs are being implemented to prevent noise pollution, he added, referring to the recently announced public awareness program about noise pollution. **EP**

EU to Seek Virtual Elimination of Fossil Fuels at COP28



transition" -- but without setting a deadline as NGOs hoped.

"(The European) Council stresses that the transition to a climate-neutral economy will require a global phase-

out of unabated fossil fuels and a peak in their consumption in this decade", said a statement released after the meeting of EU environment ministers recently.

At the same time the 27 European nations will advocate "the importance of having the energy sector predominantly free of fossil fuels well before 2050", a formula expressed this time without the mention of "unabated". **EP**

The EU will seek a global phase-out of fossil fuels and for their use to reach a peak in this decade, according to the member states' common position adopted unanimously.

At the COP28 UN climate talks in November, the bloc will also call for eliminating "as soon as possible" subsidies for fossil fuels which do not serve to combat energy poverty or ensure a "just

India to Push Developed Nations to Become 'Carbon Negative' Before 2050



make its proposal at the COP28 climate summit in Dubai later this year.

"The rich countries should become net negative emitters before 2050 to enable the world

India wants to push developed nations to become carbon negative rather than carbon neutral by 2050, arguing that would allow emerging market economies more time to use fossil fuels for development needs, two Indian government sources said.

India, which is resisting calls to commit to a deadline for phasing out its own use of coal and other fossil fuels, is set to

to achieve the target of global net-zero by that year while allowing developing nations to use the available natural resources for growth," one of the government officials said.

Developed countries including the United States, Britain, Canada and Japan are targeting net zero by 2050. China has committed to net zero by 2060 while India has committed to reaching that goal by 2070. **EP**

Norfund Climate Investment Fund in Bangladesh in Advancing RE



business climate for renewable energy by improving governance and transparency, well-regulated markets and smart incentives that promote the right kind of investments.

Ambassador of Norway to Bangladesh Espen Rikter-Svendsen recently said access to capital is so important to develop the renewable energy industry.

"Reliable and experienced financial partners are key to facilitate for further developments in renewable power generation," he said.

The Ambassador also stressed on removing obstacles and create a dynamic

The Norwegian Embassy in Dhaka, in collaboration with Norfund and the Nordic Chamber of Commerce and Industry in Bangladesh (NCCI), hosted the seminar to introduce the Climate Investment Fund (CIF) to Bangladesh.

The event highlighted Norway's significant commitment to support the transition to renewable energy in Bangladesh. **EP**

Countries Asked to Slash Cooling Emissions by 68pc by 2050



represents a tough request given the cooling industry is only expected to grow.

The emissions from both the refrigerants and the energy used

in cooling now account for about 7 per cent of global greenhouse gas emissions, and are expected to triple by 2050 as temperatures continue to rise.

There will be about 3 billion more air conditioners installed around the world beyond the roughly 2 billion currently in place, said Noah Horowitz, program director of the Clean Cooling Collaborative nonprofit. "We cannot just

With climate warming leading to more air conditioning use worldwide, dozens of countries including China, India and the United States are being asked to commit to a global pledge that would require at least a 68 per cent reduction in cooling-related emissions by 2050.

The Global Cooling Pledge - set to be announced at the upcoming United Nations climate summit, COP28 -

UNDP-Sponsored Workshop Tells Bangladeshi Youths to Join Climate Fight

To empower the youth of Bangladesh to take a leading role in addressing the country's climate challenges in the upcoming Climate Conference of parties-CoP28, "Youth Engagement in Climate Change Negotiation Process" workshop was organized by the United Nations Development Program (UNDP) recently, in Dhaka, where over 30 youths from across Bangladesh took part.

The youth of Bangladesh, with a population of 45.9 million, are particularly vulnerable to climate impacts, affecting their socioeconomic well-being, security, physical and mental health, and their sense of the future.

Unfortunately, their participation in political decision-making processes, both nationally and internationally, remains limited despite the far-reaching consequences of these decisions on their

have business as usual."

The COP28 Presidency held by the United Arab Emirates is leading the pledge alongside the U.N. Environment Program's (UNEP) Cool Coalition.

With the global temperature now 1.2 degrees Celsius warmer on average than during the preindustrial era, the world is seeing more intense heatwaves. At 1.5C of



future livelihoods, the workshop was told.

The event was organized with the aim of addressing this critical issue by building youth capacity. The daylong workshop empowered young leaders with the knowledge and skills to effectively engage in climate negotiations, allowing Bangladesh to advocate for equitable, low-carbon, and climate-resilient development.

Also, it helped young climate negotiators with the formal negotiation process of the United Nations Framework Convention on Climate Change (UNFCCC), enhancing their ability to engage in international climate forums effectively. **EP**

warming, hundreds of millions of people could face one week per year of deadly humid heat that would be unsurvivable without access to cooling.

Achieving the pledge's commitments will require major investment in the rollout of more sustainable cooling technology, aided by government incentives and bulk procurement, experts said. **EP**

Estimate Cost of Climate-Induced Damages Bangladesh Faces Before COP28, JS Committee Asks Govt



The parliamentary standing committee on environment recently asked the government to assess the possible damages in Bangladesh due to climate change before the COP28 beginning on November 30.

The parliamentary body also suggested the environment ministry to take appropriate measures for recovering Tk 536 crore of Climate Change Trust Fund, which remains in the Padma Bank Limited as FDR.

The recommendations came

from the 41st meeting of the Parliamentary Standing Committee on the Ministry of Environment, Forest and Climate Change, which was presided over by its chairman Saber Hossain Chowdhury at the Parliament Bhaban, said a press release.

The committee, in the meeting, asked the ministry to prepare a list by estimating the possible damages to be caused to Bangladesh due to the climate change before the 28th Conference of the Parties (COP28).

The United Nations Climate Change Conference will take place from November 30 to December 12, 2023 in Dubai, the United Arab Emirates (UAE). **EP**

Anti-ESG Movement Could Hit Wealth

The backlash against ESG - the use of environmental, social, and governance factors in investing - could hit your wealth, warns the CEO and founder of one of the world's largest independent financial advisory, asset management and fintech organizations.

The warning from Nigel Green of deVere Group comes as the IEA's World Energy Outlook for 2023 published recently reveals that demand for oil, coal and natural gas is set to peak by 2030.

It also follows findings from a separate report published in

the journal Nature Communications that damage from the global climate crisis has amounted to \$391 million per day over the past two decades.

The deVere CEO says: "The International Energy Agency's World Energy Outlook shows that there's a major evolution taking place in how the planet is powered. From 2030, oil, coal and natural gas will play a significantly less dominant role.

"The unprecedented rise of clean energy technologies, including wind, solar, heat pumps and electric cars, will play a vital role. **EP**

France Insists on Nuclear for 'Green' Hydrogen

France recently repeated calls to class hydrogen produced with atomic power as "green", lining up a new clash with Germany over nuclear's role in Europe's energy plans.

"The development of the hydrogen market will be delayed if there is no equal treatment between renewable and low-carbon hydrogen," the French ambassador to Germany Francois Delattre said in Berlin.

Low-carbon electricity for hydrogen production included nuclear power, Delattre said at

an event to mark German network operator OGE's move to join the H2Med project to bring hydrogen from the Iberian peninsula to the rest of Europe.

Discussions are ongoing between EU member states on a package of regulations that will determine whether volumes of the gas produced with nuclear power can be considered "green".

"Much progress remains to be made on this equal treatment and we must mobilize together in this direction," Delattre said. **EP**

AIIB, UAE COP28 Presidency Partnership to Accelerate Energy Transition in Asia

The Asian Infrastructure Investment Bank (AIIB) and the COP28 Presidency are collaborating to mobilize much-needed climate investment



capital and accelerate clean energy investments to address critical resource gaps in Asia and beyond.

Jin Liqun, AIIB President and Chair of the Board of Directors welcomed Dr. Sultan Al Jaber, COP28 President at AIIB's headquarters on Oct. 16, 2023 to formalize the partnership.

"This is an important step forward for AIIB in advancing the 2030 agenda and the goals of the Paris Agreement," said President Jin.

"It reflects AIIB's firm

commitment to work with all development partners in creating innovative approaches, unlocking additional capital and delivering value where most needed."

Under the partnership, AIIB and the COP28 Presidency intend to co-develop innovative financial structures to scale up private and institutional capital mobilization.

Among them is the initiation of a new blended finance structure as part of shared efforts to drive capital into green initiatives. **EP**

ICCB Seeks Climate-Smart Agri Practices for Bangladesh



Promoting the adoption of climate-smart agricultural practices for Bangladesh is crucial to improve smallholder farmers' capacity to adapt to climate change and mitigate its impact as well as help to achieve the United Nations Sustainable Development Goals, said a leading chamber.

"Climate change reduces agricultural productivity and leads to greater instability in crop production, disrupting the global food supply and resulting in food and nutritional insecurity," according to the editorial of the current news bulletin of International Chamber of Commerce-Bangladesh (ICCB) released recently.

Climate change increases the risk for the most vulnerable countries and people by affecting livelihoods and income in rural areas; marine, coastal terrestrial and inland ecosystems, said the chamber.

The negative impacts of climate change are already being felt, in the form of increasing temperatures, weather variability, shifting agro-ecosystem boundaries, invasive crops and pests, and more frequent extreme weather events.

"Agriculture is a major part of the climate problem. Climate change is reducing crop yields, the nutritional quality of major cereals, and lowering livestock productivity. The most significant adaptation investment is needed in agriculture," said the chamber. **EP**

MAN Energy Solutions and Energy Dome Collaborate on CO2 Battery Technology

MAN Energy Solutions and Energy Dome, an LDES solution provider based in Milan (Italy), have entered into a Memorandum of Understanding (MoU) for a non-exclusive collaboration.

Both companies are committed to exploring the potential of integrating their individual technologies and competencies to further optimize Energy Dome's CO2 Battery technology, a pioneering

long-duration energy storage system addressing the increased need for energy storage solutions worldwide.

Matteo Falco, Head of Industries, Region Europe at MAN Energy Solutions, said: "Long-duration energy storage systems are vital to the success of the energy transition as they are the perfect complement to clean yet volatile renewable energies. Unfortunately, energy storage is lagging behind alternative

High Fossil Fuel Use Putting UN Climate Targets Out of Reach: IEA

The International Energy Agency warned recently that energy policies must evolve if global warming is to be limited to 1.5 degrees Celsius above pre-industrial levels, saying fossil fuel use is still "far too high".

"As things stand, demand for fossil fuels is set to remain far too high to keep within reach the Paris Agreement goal of limiting the rise in average global temperatures to 1.5 degrees C," or 2.7 degrees Fahrenheit, the agency said.

"This risks not only worsening climate impacts after a year of record-breaking heat, but also undermining the security of the energy system, which was built for a cooler world with less extreme weather events," the IEA said in its annual report.



"Bending the emissions curve onto a path consistent with 1.5 degrees Celsius remains possible but very difficult," it said.

Without substantive policy changes worldwide, global average temperatures could rise by around 2.4 Celsius this century, it said.

The report comes just weeks from the COP28 summit beginning in November in Dubai, the latest of the global climate summits hosted by the United Nations since 1995 aimed at stabilizing greenhouse-gas emissions and climate change. **EP**

energy production and preventing its widespread implementation. Various technologies with different capacities and characteristics must be utilized to bridge this gap. This is why we are very excited to embark on this new collaboration with Energy Dome. Together, we will leverage our collective strengths and expertise to accelerate the deployment of sustainable energy storage plants."

Energy Dome's technology is based on a closed thermodynamic transformation of CO2 between its gaseous and liquid states. When operating in charge mode, the CO2 is withdrawn from an atmospheric gasholder, the Dome,



and compressed into an inter-refrigerated compressor, driven by a motor.

The heat generated from the compression is stored in a thermal energy storage system, whereas the CO2 is liquefied and stored in vessels under pressure at ambient temperature with zero atmospheric emissions.

This allows for high-density energy storage without using extreme cryogenic temperatures. **EP**

Unplanned RE Expansion May Trigger New Crisis

The renewable energy (RE) target should be finalized after fixing the actual power demand of 2041. It seems that the existing grid cannot evacuate power to be generated by even half the RE projects in the pipeline. Appropriate planning needs to be formulated and adopted for the expansion and development of green energy. Wind energy and other sources of RE must be given required priority attention. We must bear in mind that achieving energy security with RE may not be the cheaper option. In the context of Bangladesh, the cost of RE plus battery will be much higher than that of fossil fuel.

Prof Dr. Ijaz Hossain, Energy and Climate Expert and former Dean of BUET observed this in an exclusive interview with **Mollah Amzad Hossain**, Editor of Energy & Power.

Bangladesh is going to set a target of 41% contribution of RE to its total power generation capacity projection in 2041. Do you think that it is achievable?

It is not very clear what the government wants to do. If it is 40% energy generation, it is unrealistic. It simply cannot be achieved. Even 40% of electricity, i.e., MWh, cannot be achieved. But if we are thinking of 40% of the total installed capacity it may be achieved. But for that, we must carefully work out the realistic demand of 2041 before making such a plan. Our installed capacity should have a maximum of 20% reserve margin.

An implementation strategy must also be formulated along with the plan. Year-wise targets of RE generation must also be fixed. How will these be evacuated for use? What will happen after sunset when Solar Power is not available? It

has also to be decided from when we will go for storage.

60,000 MW generation capacity target has been decided for achieving by 2041. How realistic do you think it is?

Please note that 60,000 MW of generation capacity has been planned for 2041. The demand has been considered to be 52,000 MW. In my opinion, this projection is unrealistic. Reviewing the data of the past 15 years it appears that annual growth of demand is 1000 MW. The highest demand in 2023 is 16,000 MW. At the present rate of demand growth, it will reach 34,000 MW in 18 years. The government has plans to rationalize demand through adopting and implementing energy efficiency and conservation. As a result of these interventions – though demand in industries may grow at a faster rate – the total demand in 2041 may not grow far beyond 34-35 Gigawatt. Hence generation capacity need not grow more than 40 Gigawatt. 40% of this from RE will then be 16 GW. There should not be any problem achieving this from Solar and Wind Resources. There is also the possibility of importing hydroelectricity from Nepal and Bhutan.

For facilitating the evacuation of nuclear power from Rooppur to make a section of the power transmission grid compatible with N (-) 2, it is said that work will be completed in 2026. How much RE can be evacuated to the national power grid in that scenario?

Institute of Energy Economics and Financial Analysis (IEEFA) recently concluded a study about the limit of RE evacuation to the national power grid. Up to 1,700 MW of solar power can be evacuated during winter and 3,400 MW



Prof Dr. Ijaz Hossain

We must plan carefully keeping in mind that solar power generation capacity does not remain idle ... No new baseload power plants should be constructed until the role of RE in the power supply has been thoroughly evaluated.

during the summer. On that basis, we assume that up to 2,000 MW during winter and 4,000 MW during summer can be evacuated in 2026. Wind Energy was outside this study. As such not more than 3,000 MW of solar power can be added by this time. 600 MW is already connected. 1,400 MW will be added soon. 1,000 MW will come from rooftop solar. If we go for more, some solar power during the day will need to be curtailed. Or some capacity of baseload power plants shall have to be reduced. These will eventually increase the cost of generation.

Grid-connected solar power generation capacity is 600 MW and wind power is 30MW. Another 108 solar projects with a total capacity of 10,000MW have been in the

pipeline. It is being said that these may be available within the next 7 years. What are your observations?

The entire 10,000 MW of solar power, if these become available by 2030, cannot be evacuated to the national power grid. We must go for storage in that situation. We must ensure a contingency management plan alongside expanding solar power generation taking into consideration demand management if RE for some reason becomes unavailable. There will be grid stability issues even if 50% of projects in the pipeline are ready for operation. We must plan carefully keeping in mind that solar power generation capacity does not remain idle. The initiative must be taken by the government to set up at least 4 GW capacity simple cycle intermediate load gas-based power plant and 2 GW peak load gas-based power plant capacity for managing the intermittency of solar PV power. No new baseload power plants should be constructed until the role of RE in the power supply has been thoroughly evaluated. The government may acquire from the private owners the furnace oil-based power plants due for retirement as an alternative to simple cycle power plants. That will create some cushion for getting power on an interim basis without having to pay capacity charges.

We must bear in mind that when all issues are considered the cost of green power may not be less than traditional fossil fuel-based power. This must be considered during planning for expanding RE and Green Power contributions. Therefore, there is a great need to seek international green finance to offset some of the high costs of RE.

How much RE can be evacuated to the transmission grid without storage?

For ensuring the operation of baseload power plants at appropriate plant load factor there will be problems in evacuating more than 2,000 MW of solar power to the grid. We must go for storage. Even after the reducing trend of storage cost, electricity cost will be at least double the present level. If the unit

cost of solar is 10 cents during the day, it will be 20 cents with storage. On the other hand, the cost of gas-based generation using imported LNG will be less than Tk 15 per unit. Solar power is of course carbon-free. We must consider how the government will absorb the impacts of higher costs.

What according to you are the challenges for Bangladesh in the transition from fossil fuel to renewable energy? What should the government do to confront the challenges?

Cost is the main challenge of energy transition. In our case finding investment is a major issue. There is no justification for thinking that the transition to RE will give huge savings. The major gain is that the source of energy is domestic. We can no longer explore our gas cheaply. On the other hand, the government has not yet decided to extract its coal resources.

I believe that the capacity of each solar project need not exceed 50 MW considering our land availability problems. On the other hand, the government can set up 20 MW capacity solar plants at each upazila on its land using its own money. These can be four units of 5 MW each or 2 units of 10 MW. These will make a major contribution in catering to the load during the day. Gradually part of this power capacity can be connected to storage, or hydrogen can be produced if the cost of technology comes down. These will reduce stress on the power grid in transporting variable power.

The cost of grid power now is not less than 12 cents per unit. What can the government do to reduce the cost?


Yes, the average cost of solar power per unit in Bangladesh is about 12 cents when all the costs are considered. Considering the dollar exchange rate, this is very high in Takas. It is much higher than that in neighboring countries. To confront the challenges, the government may provide similar incentives they provided to fossil fuel power generators. Government must

arrange land, develop and hand it over to entrepreneurs. The government must also invest in infrastructure to evacuate power. Operators would only be required to pay land lease fees. These incentives may lead to getting solar power at 5-6 cents per unit. Even adding the cost of land including development and cost of transmission facilities the cost may not exceed 8 cents per unit.

There exists tax and VAT for Rooftop solar and IPP. These should be withdrawn. All the impediments must be eased in the approval and implementation process. Only in that situation, the cost of RE be reduced.

What should be done according to you in getting access to grants from green climate funds and low-interest borrowing?

Please note that Bangladesh has no obligation to reduce emissions. But Bangladesh on its initiative has adopted projects for increasing contributions of green energy. There is no doubt that these will increase the cost of generation. But for the growth of industries and keeping the economy rolling it is essential to ensure a sustainable supply of power and energy at affordable prices. For this, we must do whatever is required to get grants from green climate funds and other global carbon offsetting sources. We must prepare an extensive database of our green power development requirements and approach them.

For these, we must compute and compile the extent of carbon reduction for the actions being taken in implementing environment-friendly projects. We must articulate what contributions these are making in achieving net zero. We need to develop competent human capital for all these works. We must endeavor to get grants for each unit of green power developed maintaining international standards from international organizations. Otherwise, Bangladesh will be exposed to the high cost for each unit of green power added. Bangladesh is already under unbearable stress of subsidy. 

ARE WE HEADED TO A POINT OF NO RETURN

Reverse Swing



Farid Hossain

Political violence and labour unrest has made a comeback in Bangladesh. On Saturday (Oct 28) police and protesters clashed in central Dhaka leaving one cop and a political activist dead, scores injured and many vehicles torched. The clashes broke out centering the anti-government rally called by the country's main opposition Bangladesh Nationalist Party (BNP). The fallout of the violence has been far reaching. In an instant response to what it said police attacks on its rally BNP called for nationwide hartal (general strike) the next day on Sunday, the first working day of the week. Public response to the shutdown was mixed with a few vehicles venturing on the streets, but offices, both government and private, went ahead. Violence, however, erupted in parts of the capital city where at least three buses were torched and police clashing with BNP and Jamaat-e-Islami party activists in some places outside Dhaka. The opposition did not stop here. They announced to enforce a three-day nationwide blockade of roads, railways and waterways. On the first day of the blockade on Tuesday (Oct 31) no

disruption in train and river ferry operation was reported, but long-distance buses halted. The capital city, known for its bumper-to-bumper traffic, saw a few buses, cars and ride sharing bikes with the number of commuters fewer than seen on the normal days. The overcrowding, a main feature of the capital city, almost vanished. The opposition protesters took out processions in some places of the city, but they were not much visible. Instead, hundreds from the ruling Awami League marched through parts of the city chanting "Action, Action, Direct Action." This meant they were damn prepared to resist the opposition.

The unrest has been unexpected. For months BNP and its allies have been campaigning on the streets for a free, fair and peaceful national election. Insisting that a free and fair vote is not possible under the watch of Prime Minister Sheikh Hasina the opposition parties want the premier to step down and transfer power to a set of unelected non-partisan individuals to oversee the polls. The general election in the country is likely to be held in January

next. The opposition says it will boycott the vote and try to disrupt it unless their demand is accepted. Hasina's government and her ruling Awami League have refused to resign, rejecting the opposition demand as unconstitutional. She has vowed to go ahead with the polls. She won't wait for the BNP to be on the election train. She has also refused to sit with the opposition for a dialogue for a negotiated end to the stand-off on the election despite advice from civil society members at home and some Western powers, notably the US and the EU. In his latest meeting with the Chief Election Commissioner Habibul Awal on Tuesday (Oct 31) US Ambassador in Dhaka Peter Haas renewed Washington's call for the government and the opposition to sit across the table to reach a consensus on how to hold a free democratic election in Bangladesh. Also on Tuesday, media reports in Dhaka said that US State Department spokesman Mathew Miller voiced concern over the latest round of political violence saying it would take actions in the interest of democracy in Bangladesh.

Adding a new dimension to the political violence, workers at the country's readymade garment industries, the key earner of the country's foreign exchange, have also taken to the streets to demand a raise in their wages. They are demanding that the RMG workers are paid a minimum wage of Tk23,000 a month. In some places in northern Gazipur and Ashulia police fired into agitating workers killing at least two workers and leaving some injured. A couple of factories were set on fire.

What is now happening in the country has the potential to take the country to a point of no return.

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