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December 16, 2021

ENERGY & POWER

It's Full Yet Dim

- Stable Prices of Fuel, Power Essential for Industries
- Self-Mining Gold as Fuel, 4R Products from Plastic Waste
- Bangladesh @50: Electricity Lights Almost Entire Country

Special Issue

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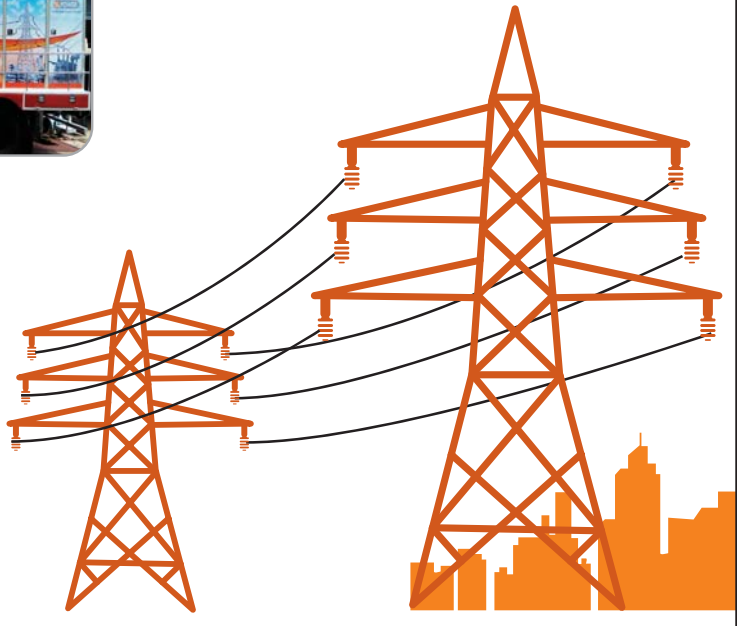

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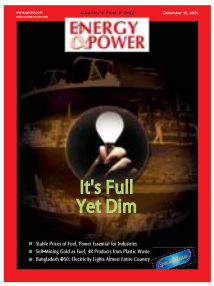
Increased reliance on imported energy will certainly put pressure on the fuel and electricity prices in the domestic market. However, we should keep in mind that the energy prices do not affect the competitiveness of industries and go beyond the affordable level of the consumers. For managing this stress, our own coal resources could be utilized with clean technologies … Asif Ibrahim tells EP



ENERGY & POWER

EDITORIAL

Bangladesh's power sector is progressing well and has made at least one milestone achievement over the last 50 years since the country's independence. Almost the entire population of the landmass is now under the coverage of grid electricity. There are, however, criticisms about its supply quality due to frequent disruptions particularly in the rural areas. The achievement was also marred by the fact that the present price of electricity is considered to be much higher than expected or affordable levels. This is where the achievement went beyond Bangabandhu Sheikh Mujibur Rahman's vision to ensure energy for all at affordable prices as a strategy for economic development of the country. The progress on developing the primary energy sector lagged far way behind the requirement, forcing the country to become increasingly dependent on imports. There is also an apprehension that the country's import dependence would gradually increase to 90 percent by 2030 unless there are any large hydrocarbon discoveries in the country by then. Necessary efforts towards new discoveries are also seen absent as of now.

If the situation continues with the present trend as far as primary energy is concerned, the cost of electricity would soar beyond any estimates. So, it is high time to give aggressive drive to develop the primary energy sector of the country.

highlights

COVER

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In Sweden, PWs are called Gold as recovered from mining old landfill sites with gold plated electronics. An integrated research, lab tests and 4R methods and its products have been contributing to reductions in environmental health hazards, GHG emissions and climate change and meet "Net Zero 2050" of the UNFCCC. ...more in Climate

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Bangladesh is celebrating the golden jubilee of its independence this year. Incidentally, the celebration of birth centenary of Bangabandhu Sheikh Mujibur Rahman also continues. It goes without saying that the energy sector is evolving along the footprint of Bangabandhu's political doctrine for the economic development. But questions are being raised whether Bangladesh is pursuing the right track to ensure power and energy for all equitably at affordable price.

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Green page

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.

Green page

Hydropower Generation in Nepal, Bhutan to Benefit Bangladesh, India: PM

IDCOL Plans Big for Industrial Rooftop Solar

The Infrastructure Development Company Ltd (Idcol) has big plans to invest in industrial rooftop solar power projects in line with the government target to meet 30 per cent of Bangladesh's energy needs from clean sources by 2030.

Through its investments, the fully state-owned specialized non-bank financial institution (NBFI) aims to generate cheaper electricity, cut emissions and dependency on fossil fuels, and eventually complete the Mujib Climate Prosperity Plan (MCPP).

Under the MCPP, Bangladesh intends to obtain 30 per cent of its energy from renewable sources by 2030 with a significant portion of that electricity coming from rooftop solar power systems.

The MCPP is pursuing global green investment funds for domestic green energy development programs, and taking initiatives to enhance the public-private financial sector's capabilities in this regard.

"Initially, Idcol will finance rooftop solar projects that will generate about 300 megawatts of electricity by 2024," said Abdul Ilahi, chief executive officer (in-charge) of the NBFI.

"If current investments are successful, we will go for bigger projects as Bangladesh has potential to generate a few thousands megawatts of electricity from rooftop solar power systems," he added.

Prime Minister Sheikh Hasina has said Bangladesh and India can be benefited by generating hydropower in Nepal and Bhutan as it will be clean energy.

The prime minister said this while Indian Foreign Secretary Harsh Vardhan Shringla paid a courtesy call on her at her official residence Gono Bhaban recently.

Prime Minister's Press Secretary Ihsanul Karim briefed reporters after the call.

Shringla said some "small issues" across the border between Bangladesh and India can be settled through holding meetings between Border Guard Bangladesh (BGB) and Border Security Force (BSF).

The Prime Minister also agreed on it, said the Press Secretary.

Sheikh Hasina mentioned that in Bangladesh, 99 percent people are now under electricity coverage. "The government is providing solar energy where there is no grid line," she said.

The meeting was attended by Indian High Commissioner to Bangladesh Vikram Kumar Doraiswami, Policy Adviser in the Ministry of External Affairs Ashok Mullik from the Indian side and Principal Secretary Dr Ahmad Kaikaus from the Bangladesh side.

Contents

China to Cut Gasoline, Diesel Retail Prices

China will cut the retail prices of gasoline and diesel soon, the country's top economic planner said recently.

The prices of gasoline and diesel will go down by 430 yuan (about 67.46 U.S. dollars) per tonne and 415 yuan per tonne, respectively, according to the National Development and Reform Commission.

Under the current pricing mechanism, if international crude oil prices change by more than 50 yuan per tonne and remain at that level for 10 working days, the prices of refined oil products such as gasoline and diesel in China will be adjusted accordingly.

China's three biggest oil companies, namely China National Petroleum Corporation, China Petrochemical Corporation and China National Offshore Oil Corporation, have been asked to maintain oil production and facilitate transportation to ensure stable supplies.

Chevron Sets $15b Capital, Exploratory Budget for 2022

Chevron Corp. has set a 2022 organic capital and exploratory spending program of $15 billion, at the low end of its $15-17 billion guidance range and up more than 20% from 2021 expected levels.

This program supports the operator's objective of higher returns and lower carbon, including about $800 million in lower carbon spending, the company said in a release Dec. 1

The program excludes expected inorganic capital of $600 million in anticipation of the formation of a renewable fuel feedstocks joint venture with Bunge.

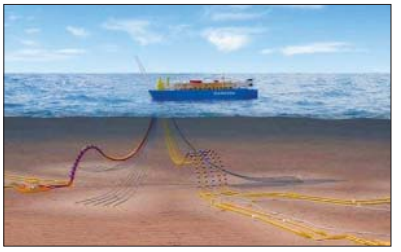
In the upstream business, about $8 billion is allocated to currently producing assets, including about $3 billion for Permian basin unconventional development and about $1.5 billion for other shale and tight assets worldwide.

Additionally, $3 billion of the program is planned for major capital projects under way, of which about $2 billion is associated with the growth and wellhead pressure management project at Tengiz field in Kazakhstan.

Some $1.5 billion is allocated to exploration, early-stage development projects, midstream activities and carbon reduction opportunities.

About $2.3 billion of planned organic capital spending is associated with the company's downstream businesses.

Santos Confirms JERA's Participation in Offshore Barossa Project



Santos has signed an agreement to sell a 12.5% interest in the Barossa gas/condensate project in the Timor Sea to an Australian subsidiary of JERA.

Following completion, expected during the first half of 2022, JERA will reimburse Santos for its share of capex on the project to date, with the total consideration likely to be around $300 million.

JERA has a 6.1% stake in the Darwin LNG complex that will receive Barossa's production.

Santos expects first LNG from Barossa in the first half of 2025. The facilities comprise an FPSO, subsea production wells, supporting subsea infrastructure and a gas export pipeline connected to the existing Bayu-Undan to Darwin LNG pipeline.

PTTEP Finds More Gas Offshore Sarawak

PTTEP has discovered gas with the Nangka-1 exploration well in block SK417 offshore Sarawak.

The well was drilled to a TD of 3,758 m (12,329 ft) in September, after encountering sweet gas in mid to late Miocene Cycle VI clastic reservoir.

PTTEP HK Offshore operates the shallow water block, 90 km (56 mi) offshore Sarawak, in partnership with Petronas. The concession was awarded in 2018 following the Malaysia Bid Round 2017.

Petronas senior vice president of Malaysia Petroleum Management, Mohamed Firouz Asnan said this was the second gas find in the Baram Province this year, following Dokong-1 in the same block.

"The finding of contaminant-free gas in Nangka-1 reaffirms sweet gas opportunities within the area…The availability of existing facilities within the region will allow the petroleum arrangement contractors to monetize their discoveries quicker and cheaper through tieback solutions," he added.

In its latest results statement, Petronas revealed that its subsidiary in Turkmenistan produced first oil from the Garagol Deniz West development in block 1 of the Turkmen sector of the Caspian Sea on Aug. 5, 54 days ahead of schedule.

Ten days later, the unmanned Garagol Deniz Drilling Platform (GDDP-A) supplied 6,000 b/d of oil to the PC(T)SB gas treatment plant onshore gas terminal.

Nasrul Assures Financial Support to Research in Energy, Power

State Minister for Power, Energy and Mineral Resources Nasrul Hamid has said that his ministry will provide financial support to promote research and creative work in the energy and power sector.

"We will provide financial support from Bangladesh Energy and Power Research Council to any creative and research work by the youths in the power and energy sector", he said while addressing the economic award giving ceremony at Independent University, Bangladesh (IUB) in Dhaka.

A total of 788 students of the university received the academic awards for Spring Semester while 423 for Summer Semester and 572 for Autumn Semester in the function.

DPDC Recalls Beginning of Electrification in Country

Dhaka Power Distribution Company Ltd organized a discussion in the conference room of DPDC recently to commemorate the commencement of electrification in the country.

December 7 of 1901 is a memorable day in the history of electrification in Bangladesh region as the Nawabs' house in Dhaka, Ahsan Manzil, was illuminated for the first time with electricity on the day.

DPDC managing director Bikash Dewan was chief guest of the programme, presided over by executive director Abdullah Noman. At the beginning of the program, a video documentary on the history and progress of electrification in Bangladesh was screened.

DPDC executive director (finance) Md Golam Mostafa and executive director (engineering) Md Gias Uddin Joardar were also present on the occasion.

Gazipur PBS Launches 'Priority Service Card'

Gazipur Palli Bidyut Samity - 1 has launched "Priority Service Card" for freedom fighters, migrant workers, the disabled and senior citizens.

The card distribution program was held at the samity's conference room recently.

The priority service cards were handed over to the 22 consumers including 15 freedom fighters, five migrant workers, and one disabled and one senior citizen on the occasion.

Petrobangla Gets New Chairman

Nazmul Ahsan, Additional Secretary has joined as Chairman of Bangladesh Oil, Gas & Mineral Corporation (Petrobangla) recently.

Prior to his joining as the Chairman Nazmul Ahsan served as the Director (Admin) of Petrobangla and Joint secretary of Energy & Mineral Resources Division (EMRD).

He joined in the 13 batch of Bangladesh Civil Service (Administration) cadre in 25 April, 1994.

During his long and versatile career, he served in the field Administration in different capacity including the Deputy Commissioner (DC) of Khulna and Satkhira.

He also served in the Power Division and Energy & Mineral Resources Division (EMRD) in different prestigious positions. He did his graduation and post-graduation degree in Physics from Dhaka University.

Energypac Bags Award

Energypac Power Generation Ltd from Bangladesh had recently been honored as 'The Most Sustainable Power Engineering Company' by the Global Economics, said a press release.

A total of 12 business enterprises from around the world have been awarded at this year's edition.

The Global Economics Awards has been introduced with a view to recognizing the contributions of the best market players in their respective fields.

It identifies business entities that leave no stone unturned to come up with the best work and business practices to contribute to their regional and global economies.

This year, Energypac has been accoladed as the most sustainable power generation company from Bangladesh.

Humayun Rashid, managing director and CEO of Energypac Power Generation Ltd, said on this occasion, 'We are so happy to be recognised as the most sustainable power engineering company. Energypac believes in marching forward and carrying out developments using clean energy and methods. This award will inspire us to be more committed to our vision as a company.'

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12kg LPG Cylinder Price Reduced by Tk85

The price of 12-kg liquified petroleum gas (LPG) cylinder has been reduced to Tk1,228 from Tk1,313.

Bangladesh Energy Regulatory Commission (BERC) revised down the price recently.

Prices of other LPG cylinders of different sizes will be reduced by Tk7 per kg, according to the BERC.

Prices of LPG cylinders were increased by Tk422 in past four months.

Meanwhile, the price per liter of auto gas has been fixed to Tk57.28 for December trade which was Tk61.18 last month.

The price of per kg centrally controlled (reticulated) LPG has decreased from Tk106.19 to Tk99.08.

ACC Lodges Graft Case Against Former Titas Gas CBA Leader

The Anti-Corruption Commission (ACC) has filed a case against Faruk Hasan, a former sales assistant and ex-general secretary of the Collective Bargaining Agent (CBA) of Titas Gas Transmission and Distribution Co Ltd in Dhaka's Karwan Bazar, for allegedly acquiring illegal assets.

Afnan Jannat Keya, assistant director of the commission, filed the case recently.

The national anti-graft commission said the former CBA leader abused power during his tenure and amassed Tk1.70 crore illegally.

On June 9, following preliminary investigation, the commission directed to submit the statements of all the movable and immovable wealth acquired in the name of Faruk Hasan, his wife and dependents within 21 working days.

Faruk collected a form for submission of his wealth statement and then applied for an extension. The court extended the deadline by 15 working days.

After Faruk still failed to submit the wealth statement, the ACC decided to file the case against him.

Why Govt Shouldn't be Directed to Re-fix Kerosene, Diesel Prices: HC

The High Court recently issued a rule asking the government to explain in a week why it should not be directed to re-fix the tariff of petroleum products including kerosene and diesel as per relevant provisions of Bangladesh Energy Regulatory Commission (BERC) Act, 2013.

In the rule, the court also asked the respondents to show causes why the inaction of BERC chairman to finalize three rules and provisions, made in 2012 regarding fixing the petroleum products, through gazette notification should not be declared illegal.

Senior secretary at the ministry of energy and mineral resources, BERC chairman, and other officials concerned have been made respondents to the rule.

The bench of Justice Md Mozibur Rahman Miah and Justice Md Kamrul Hossain Mollah came up with the rule following a writ petition filed by Consumer Association of Bangladesh (CAB) on November 14, seeking necessary directives on the respondents over this issue.

GTCL Earns Tk 740.9m Profit

The 28th Annual General Meeting (AGM) of Gas Transmission Company Limited (GTCL) was held in Dhaka recently.

Chairman of GTCL Board of Directors and Senior Secretary at the Energy and Mineral Resources Division Md. Anisur Rahman presided over the meeting. Its shareholder and member of Board of Directors A B M Abdul Fattah who is Chairman of Petrobangla was also present along with all other shareholders and directors of the company, says a press release.

The Audited Accounts & Management Report for the fiscal year 2020-21 of the company were approved by the shareholders at the AGM.

During the FY 2020-2021, the company earned an amount of Tk 11.20 billion (1,120.17 crore) in revenue by transporting 25,597.17 million cubic meters of gas and 361.33 million liters of condensate.

The company earned Tk 2.37 billion (237.85 crore) in pre-tax profit and Tk 740.9 million (74.09 crore) in after tax profit.

A total amount of Tk 7.53 billion (753.17 crore) was contributed to the public exchequer.

It's Full Yet Dim

Mollah Amzad Hossain

Bangladesh is celebrating the golden jubilee of its independence this year. Incidentally, the celebration of birth centenary of the Father of the Nation Bangabandhu Sheikh Mujibur Rahman also continues. It goes without saying that the energy sector is evolving along the footprint of Bangabandhu's political doctrine for the economic development. But questions are being raised whether Bangladesh is pursuing the right track to ensure power and energy for all equitably at affordable price. The electricity coverage reaches 100 percent, but its soaring prices as well as less-than-required quality of supplies have sparked criticism about the achievement that the lights illuminated the country but not up to the mark.

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EXCELERATE ENERGY

Bangabandhu's energy vision had three distinct objectives. These were establishing sovereign rights of citizen over natural resources, creating competent institutions for exploration and exploitation of own primary fuel resources and creation of qualified, efficient own human capital for championing resources harnessing, development and management of operation. He also empowered these organizations for working independently without interference. These did not dawn upon him instantaneously. His long cherished vision from 1960s was economic emancipation of Bangladesh by transforming the exclusively agro-based economy to industrial one. His energy vision was based on his long cherished ideology.

Resources Ownership, Creation of Institutions and Human Capital

His revolutionary vision and charismatic leadership could create new dimensions and dynamism in the energy sector even within the three and a half years before his unfortunate gruesome murder. BOGMC–BOGC (Petrobangla) was created. It was tasked for exploration, development and utilization of petroleum resources, import and distribution of petroleum products. Unbundling the Water and Power Development Board, Bangladesh Power Development Board was created. Bangladesh Mineral Exploration Development Corporation (BMEDC) was created for exploration and development of coal, hard rocks and other mineral resources. Bangladesh was the first country in Asia that formulated and adopted Maritime Boundary Law. Bangabandhu knew through extensive homework that the maritime area of Bangladesh must be very rich in resources. Groundwork done by Bangabandhu government facilitate Bangladesh resolving long outstanding maritime boundary disputes with Myanmar and India. Incorporation of rights of the citizen on resources of Bangladesh in the constitution emanated from his realization that the erstwhile leasing out of petroleum resources development to foreign companies on royalty basis did not really serve the interest of the nation. At the beginning Bangladesh Petroleum Limited took over resources left by Pakistan Petroleum Limited (PPL) in the Sylhet region. Through a crafty energy diplomacy of Bangabandhu, it was possible for Bangladesh to take over Anglo Dutch Company Shell BV-owned five major gas fields (Titas, Bakhrabad, Habiganj, Rashidpur and Koilashtila) and Titas Gas Transmission & Distribution Company for a mere 4.5 million pound sterling. Another major milestone was formulating Production Sharing Contract (PSC) and engaging 6 companies for 8 offshore blocks in the Bay of Bengal for exploration of oil in the wake of the first oil shock triggered by Arab-Israel war. It was possible doing all these works in only one year. Bangladesh was the first country in South Asia braving the offshore exploration.

The installed capacity of power generation was around 500 MW when Bangabandhu had formed the BPDB. But the actual generation was a little over 200 MW. Hydropower and liquid fuel were the only source of power. Small capacity gas-based power generation just started at Shahjibazar, Habiganj and Shiddhiraganj. But Bangabandhu had overarching vision. It was ensuring equitable power and energy supply to all at affordable cost. East Pakistan was neglected during the then Pakistani regime. Bangabandhu included the rights of all citizen for power in the Bangladesh constitution of 1972. It was a very rare development in the world. Plans were made to make Ashuganj and Ghorshal as new power generation hub. Former Soviet Union and West Germany extended their helping hands to Bangabandhu's endeavor. It merits mentioning here in 2021 that Bangabandhu's daughter-led present government reached the dreamt vision in ensuring power supply to all. There are, however, debates when or how power supply to all would be possible.

Bangabandhu had encouraged BMEDC in exploration of limestone from Jaypurhat, granite from Maddhyapara and coal from Jamalganj. Unfortunately, Bangabandhu could not see his vision translated into reality before he embraced death.

Post-Bangabandhu Energy Sector

Bangabandhu and for that matter the national energy vision was letting three organizations of energy and power sector working with full autonomy. He posted very competent and capable persons as chief of these entities. The chief executives enjoying the rights and privileges of full secretaries were working under the direct supervision of the head of the government. But autonomy of the power and energy sector was among targets of the conspiracy against Bangladesh and Bangabandhu. First, Petrobangla was degraded. It's autonomy was curved. The status of chairman was lowered. Senior professionals gradually opted out of the job. The Bangladesh vision for ensuring power and energy supply to all at affordable cost stumbled.

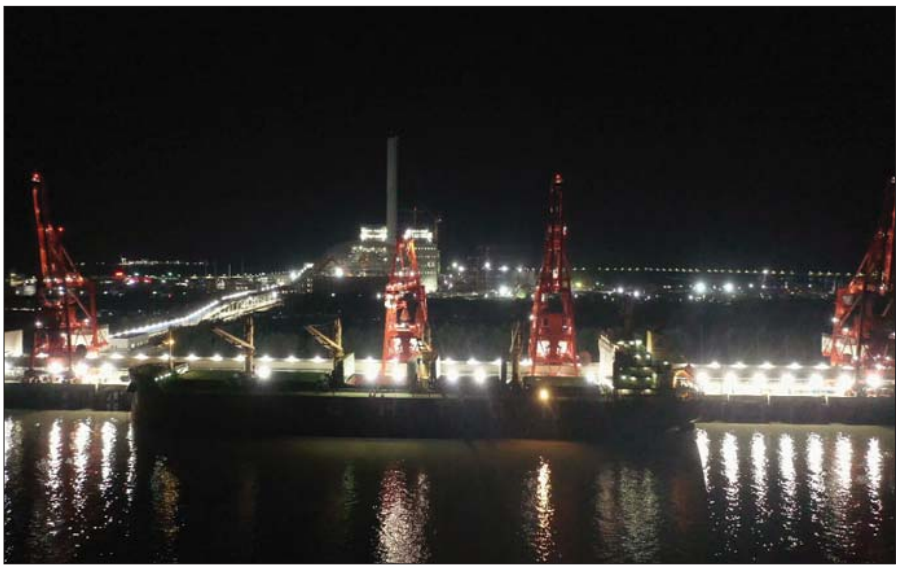
All would acknowledge that Bangladesh including energy sector had reverse ride from August 1975 to 1996. The real mission for turning around started in 1996 with the return to power of Sheikh Hasina-led Awami League government. But due to the change of government in 2001, the momentum was again stalled. But even the Awami League returning to power again in 2009 could not recover the momentum that was created during the period from1996 to 2001. Energy sector did not get the priority attention, harnessing of primary energy remained grossly

neglected. Policymakers claim that "for changed global context" it was not possible for giving priority to own primary fuel. But experts, analysts and observers believe that failure of the present government in giving required priority to exploration and development of own primary fuel for ensuring sustainable energy security would go down as a historic failure.

Power Sector

Generation: As far as power generation infrastructure is concerned, Bangladesh has achieved a major milestone over the last 50 years. It has been possible to bring almost the entire population under the coverage of the power grid. Until 2000, very few believed that it would be possible so soon. Engr. Mohammad Hossain, Director General of Power Cell, specialized organization of the power sector, said the government instead of taking hasty decisions in confronting the diabolic power sector situation prevailing in 2009 took a well planned pragmatic approach. That was the reflection of Awami League's election pledge of 2008. Successful phase-wise implementation of the plan has yielded the present comfortable state of the power sector. He is optimistic that the targets set for the power sector as prime mover of national economic vision of 2030 and 2041 would be duly achieved on time.

Now the installed capacity of power including import from India is little over 22,000MW. Considering the off-grid captive generation, the capacity is over 25,000MW. In 2008, it was around 5,000MW. Over the last 12 years, the installed capacity has increased to around 18,000MW. The contribution of the private sector is about 45%. The remaining comes from the BPDB companies as well as BPDBs joint ventures with foreign companies. The plan is achieving 40,000MW capacity by 2030 and 60,000MW by 2041. The generation cost has increased due to increased reliance on imported liquid fuel for depletion of indigenous natural gas. Fuel mix as envisioned in the power sector master plan for reducing generation cost could not be achieved. In the PSMP 2010, coal was given priority as fuel for power but in the PSMP 2018, the contribution of coal was slashed. The latest plan of the government is further reducing the contribution of coal and increasing the gas-based power generation. This would create further challenges in limiting generation cost. The government has done no studies yet to see whether this would ensure power supply at affordable cost.



Night view of Payra coal power plant Photo: BCPCL

Distribution: It merits mentioning here that the 'power to all by 2020 program' of the present government has been achieved. For a developing country like Bangladesh, it is a major milestone. As per the government claim, 99.75% of the entire population now have access to power supply. But for reaching power to remote villages in a hurry, too much investment has been made in extending the power distribution network without detailed techno economic feasibility study. Consequently, REB and PBSs may have to incur operating losses over the next few years. But the greater challenge of the distribution system is ensuring quality power supply on an uninterruptible basis. However, distribution utilities claim they would be able to ensure quality uninterruptible supply to the urban areas by 2023 and rural areas by 2025. But the poor pace of industrialization in different areas of Bangladesh creates major risks and challenges for distribution utilities. Industries also are not much interested in grid power as gas based captive power costs 30-40% less than grid power. Though there is a notion that for lack of reliability, the industries are not much interested in grid power. Actually if not 100%, the distribution utilities have achieved capability for reliable power supply to major industrial areas. Some experts believe that the distribution segments like generation should be opened for private sector investment. This would create competition and enhance customer services.

Transmission: Compared with generation and distribution, the power transmission segment lags way behind. In absence of an evacuation facility, 50% of the 1,320MW generation capacity of Payra power plant remains idle. In some small areas, power supply

during peak hours gets interrupted for constraints of the power grid. Officials responsible for power transmission claimed that land acquisition complexities and COVID-19 affected timely implementation of most transmission expansion and upgradation projects. In some areas the transmission lines constructed following the generation plan are also lying unutilized or underutilized. PGCB has greater challenges till 2024. Power supply from Rooppur Nuclear Power Plant may be impeded in 2025 if the transmission grid upgrading and evacuation facilities are not completed on time. Nuclear power plants once commissioned must keep generating constant base load. Creating a world-class reliable evacuation facility for the Rooppur plant on time is now a major challenge for PGCB.

There is another mentionable challenge. Going with the global trend, Bangladesh has also adopted a plan for increasing the contribution of renewable energy. Creating grid storage and integration facilities are another challenge. These are at the primary stage and relevant persons are working on it.

National Program for Reducing GHG Emission and Preparation of Power Sector

Power division is working with the ministry of environment for reducing carbon emission. Three sectors have been identified for reducing greenhouse gas emission by 5% unconditionally in accordance with the Nationally Determined Contribution (NDC). These are power, industry and transport sectors. MoPEMR is maintaining close liaison with all. Successes achieved were greater in applying state of the art modern technology and energy efficiency targeted in the road map per original NDC. But it could not be assessed yet how much carbon emission could be reduced. That is why the world cannot be informed about the level of achievement. Bangladesh has submitted an updated NDC to the UNFCCC. It states that it will reduce emissions by 22% by 2030. Up to 90 million tonnes of carbon emissions can be reduced if the target could be achieved. Unconditional reduction target now is 6.73%. For 22% carbon emission reduction, Bangladesh would need US$176 billion by 2030. Power sector alone would need 49%. US$ 58 billion would be required for unconditional emission reduction. 95% works for carbon emission reduction would be required to be accomplished by power and energy sectors through mitigation.

Bangladesh has started advancing, taking due preparations. Efficiency in the power generation has increased to 40% from 29% over the past 10 years. By 2041 the government plans it to reach above 50%. As a primary initiative, the government has announced canceling the implementation plan of 10 coal-based power plants totaling 8,500MW capacities. Considering gas/LNG as transition fuel and with a view to reducing emissions, the government is moving ahead with the formulation of an integrated power and energy master plan. Plan has also been made for increasing the contribution of renewable energy. The government has finalized investment plans and identified potential sources.

Prime Minister Sheikh Hasina and other policy makers at different national and international forums have already informed the national vision of 40% contribution of RE to generation capacity under the Mujib Climate Perspective Plan by 2040. Responding to a question, Habibur Rahman, Secretary of Power Division, informed that the plan is for up to 40% generation from renewable energy sources by 2040. Sustainable and Renewable Energy Development Authority (SREDA) has already finalized a draft solar master plan for 20,000 MW power generation from solar by 2040. A special committee formed by the Power Division has also completed a review. It mentioned the generation of 5,000 MW power from solar by 2030 which appears to be practical. Mohammad Alauddin, Chairman of SREDA, mentioned that the present contribution of RE including hydropower is about 3%. Ongoing plans, if implemented, can definitely achieve 5,000MW RE generation by 2030. He is very optimistic about achieving Energy Efficiency. We have already mentioned that the target for 20% reduction fuel requirement for power has been set by 2030 through energy efficiency. From 2015 until now, it has been possible to achieve a 7% reduction already.

Dr. Mizan R Khan, Deputy Director International Centre for Climate Change and Development, Independent University, mentioned the power sector has made commendable achievements in reducing GHG emissions. But there is no information and data on how much emission reduction has been achieved in total from different sectors and subsectors. From now on, there must be arrangements for calculating and computing actual reduction of emissions following international norms and procedures for achieving NDC targets. This would play an important role in accessing funds from external sources for achieving conditional emission reduction targets.

Primary Fuel

Coal: The governments over the past three decades could not take decisions on exploiting around 3.0 billion tonnes (equivalent to 76 Tcf of natural gas) of superior quality coal reserves. Only a marginal portion of coal has been extracted from Barapukuria, one of the five discovered coalfields. For technical reasons, mining from the only mine may be suspended any time. For depletion of proven reserves of natural gas, coal

could be the most affordable option for power generation till 2050. But the silence of the government over the past 10 years is leaving it buried underground. Bangladesh rather opted for imported coal as an alternate source for power generation. For negligible carbon footprint, Bangladesh does not have any obligation for reducing emission. Yet, its announcement for canceling 10 coal power projects signals the government's vision to phase out coal. Countries like China and India would continue their coal power generation till 2060 and 2070 respectively. There are contrasting opinions about Bangladesh's turning away from coal too early. In an estimate of Consumers Association of Bangladesh, the bulk price per unit of power over the past 11 years has increased from Tk 2.37 to Tk 5.17. This increase is 118%. The average retail sales price has increased from Tk 3.76 to Tk 7.13. The rate of increase is 90%. Experts related to the energy sector observed that Bangladesh is accounting for huge subsidies in the power sector. The main reasons for this is reduced dependence on own fuel and increased reliance on imported liquid fuel and LNG for power generation. According to them, the greatest failure of the energy and power sector is the failure in exploration and utilization of the country's own primary fuel. They strongly suggested giving a fresh look at their own coal resources for ensuring power supply at an affordable price till 2041. Though it would not be as easy as before.

Exploration of Gas

Gas and oil exploration intensity in the Bengal Basin over the past 100 years is not at all encouraging. The works achieved some momentum from 1996 to 2001, but again lost it unfortunately. The government is working on a BAPEX-based exploration program for discovering 4-5 Tcf new gas reserves in onshore areas by 2027. BAPEX will implement this on standalone and under JV with foreign companies. Resolution of the maritime boundary disputes with Myanmar and India was a milestone event. But Bangladesh could not harvest any crop from the success yet. Over the past years, there has been no success from less than minimum offshore exploration. Around 15 Tcf gas has been consumed over the past 20 years, but against that about 3 Tcf new gas has been added. The entire proven reserve would be used up by 2031 if no big reserve is discovered in the meantime. There is no option but the gas-based economy relying exclusively on imported LNG. That would leverage Bangladesh setting gas prices following the global trend of LNG price. It is open to doubt if that would even keep the present rate of industrial development going. But many believe that fresh challenges would emerge for graduating to a developed economy by 2041 without expanding domestic fuel utilization.

Bapex team carry on its seismic survey Photo: Bapex

Achievement of Nuclear Power Dream

Work on the nuclear power project at Rooppur is progressing smoothly. The 2400MW plant appears on track to come into operation by 2024. Prime Minister Sheikh Hasina is making her father's dream come true. This mega project worth US$13 billion would brighten Bangladesh's image in the world map. The other major aspect is a competent human capital is being developed simultaneously. This is the greatest achievement of Bangladesh in the golden jubilee of Bangladesh's independence. But the well-coordinated success of bringing the plant into commercial operation is still eagerly awaited. Nuclear plants would create a far better option than other imported fuel-based power generation when supplying power at an affordable price is growing into a headache. In the changed global situation, it would act as a source of non-carbonized energy generation.

Power Import

Power import from India through power trading commenced in 2013 after years of intensive negotiations. Now 1,160MW power is being imported. This import is done through two border inlets at Bheramara and Comilla. Import of hydropower from Nepal and Bhutan reached pre-contract stage. When implemented it would be another milestone achievement of accessing

regional power from renewable energy sources. Bangladesh is also working on the possibility of importing solar power from India. Another project for importing coal power from an Adani Group power plant in India is nearing completion.

Experts are optimistic that transforming the 50 years' achievement of the power sector into a BBIN (Bangladesh, Bhutan, India, Nepal) power grid would soon facilitate real time power trading like North America and Europe.

Import Challenges of Primary Fuel in Bengal Delta

Policymakers during discussions often strongly argue that even countries like Japan, Korea and Taiwan can be developed relying exclusively on imported fuel, why Bangladesh cannot do it? For the sake of argument, let us say Bangladesh economy can absorb the price shock of fuel imported from the volatile global market. Why do policymakers not take into consideration the shallow coastal area of Bengal Delta for setting up import infrastructures? For the abandonment of the deep sea port plan by Payra port authority, the import of coal for the already put into operation Payra 1,320MW power plant has presented a huge challenge. For shallow draft of sea route, 8,000 to 13,000tonnes of coal is being transported to the power plant jetty using 50,000 tonnes capacity coal carriers. It is adding to the cost of generation and also creating risks in coal supply. Challenge of coal import for Rampal power plant would be more acute. A deep sea port is being created at Matarbari. There would be no issue of transporting coal for the power plant at Matarbari. There was a proposal for converting a coal port into a coal transshipment terminal (CTT). But for Bangladesh's phasing down of coal power generation, the CTT project may lose emphasis. This would cause an increase of coal transportation costs to the remaining imported coal based power plants. For shallow draft, both coal transportation and setting up deep sea ports are equally prohibitively expensive.

LNG ship on the way to FSRU at Maheskhali

Sensing delays for setting up Land-Based LNG Terminals (LBLT) for shallow coastal area, import of LNG started in 2018 using Floating Storage and Regasification Unit (FSRU). Now two FSRUs have a combined capacity of 1000 MMCFD. In 2021, these could supply 650 MMCFD everyday on an average. But Bangladesh energy sector is in a limbo absorbing world gas market crash over the past few months. Pressure of subsidy has grown intense. Work for a LBLT at Matarbari is progressing. Some sources believe that its commercial operation will not begin before 2026. For a technical glitch of a subsea pipeline operation of one FSRU is now handicapped and may not be restored before January 15, 2022.

According to the plan, Bangladesh would need supply of 6,500 MMCFD gas in 2041. About 6,000 MMCFD would be required to be imported. This might increase the cost of fuel manifold. Bangladesh would have to rely on the global market for energy pricing. We must bear in mind that in October-November, Bangladesh had to buy LNG at US$ 33/MMBTU. Bangladesh would need to remain ready for absorbing shocks of rapidly fluctuating price of fuel in the global market. There is no reason to believe that Bangladesh is prepared for that situation now.

Conclusion

Taking into consideration the Bangabandhu's energy vision, the achievement of the power sector is not only an exception, but also an example for the rest of the world. It has achieved international acclamation as well. Ensuring access of power to all by Mujib's birth centenary is a milestone. The constitutional right for access of power to all has been established. But there is a saying shadow stays at the bottom of a lamp. Primary fuel is an essential ingredient for power generation. Exploration of own fuel - coal and gas - has been neglected. Awami League returned to power 21 years after the gruesome murder of Bangabandhu along with most of his family members. During 1996-2001, work in power and energy sectors were accomplished in a closely coordinated manner following Bangabandhu's energy vision. From 2009 till now, Awami League has been in the state power. But energy sector development could not recover any momentum. Rapidly dwindling primary fuel supply from local sources is continuously increasing the generation cost of power. Many studies evidence that in the current trend by 2030 Bangladesh would become over 90% dependent on imported fuel. Cost would increase beyond any estimates. Success of the power sector would get blurred. This is the right time giving primary fuel supply the required priority. That was among the highest priorities of Bangabandhu for developing Sonar Bangla. EP

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TotalEnergies

Energy, Power Sectors and Golden Jubilee of Bangladesh

Mohammad Mosharraf Hossain

The indomitable spirit unleashed by the liberation war has propelled Bangladesh's remarkable economic growth. The quadrupling of food production, the growth and diversification of the agriculture sector, and the flourishing of the manufacturing sector, which contributed to explosive export growth, are all manifestations of the achievements made by the country from its birth till today. Bangladesh has surpassed Pakistan in most economic and social indicators, while it is fast catching up with India in economic indicators and has bested the neighboring country in many social indicators. It is well known that energy plays a vital role in poverty eradication, economic growth, sustainable infrastructure development and security of any country. In Bangladesh, electricity is the most widely used form of energy and generation of electricity is intrinsically linked with the availability of fuels like oil, gas and coal. It will not be an exaggeration to say that the phenomenal growth of different economic indexes owes much to the achievements in the energy and power sectors during the period under consideration.

Electricity

Bangladesh Power Development Board (BPDB), a statutory body, was established on May 31, 1972 by Presidential Order No. 59 after bifurcation of erstwhile Bangladesh Water and Power Development Authority. BPDB had started its operation with a generation capacity of only 500 MW. In its 50 years' service, the installed capacity of the country increased to 22,031 MW (Installed capacity 25,235 MW including captive & off-grid renewable energy) at the end of the FY 2020-2021. Favorable government policies have attracted private investment and Independent Power Producers (IPP) that are now producing about 46% of the total power in Bangladesh. The latest achievements of the power sector could be summarized as:

Total installed capacity was 22,031 MW, which includes 10,146 MW Public, 1,244 MW JV, 8,141 MW IPP/SIPP, 1,089 MW Rental Power Plant, 251 MW under REB (for PBS) and 1,160 MW import from India. The maximum peak generation was marked as 13,792 MW. Total net energy generation in FY 2020-21 was 80,423 MkWh. The overall thermal efficiency (Net) of the public-sector power plants in FY 2020-21 was 40.70%. During fiscal year 2020-21, a total length of 552.398 circuit kilometer transmission lines was added to the system through different projects. Total length of the 400 KV transmission line increased to 950.14 circuit km. The total length of the 230 kV transmission line is 3,658 circuit km. The total length of the 132 kV transmission line increased to 8,227.8 circuit km.

The global decision to move away from fossil fuels to renewables would put an extra burden to look for a way out to enter the renewable era in the not too distant future

BPDB has been functioning as a single buyer in the power market of Bangladesh. BPDB purchases electricity from the public and private generation entities and sells bulk electricity to all the distribution utilities including its four distribution zones. Distribution entities purchase electricity from BPDB and in the FY 2020-21, bulk electricity sales to the distribution utilities increased to 76,323 MkWh. Total revenue collection also increased to Taka 3,97,608 million. Electricity is supplied to the end use consumers through Dhaka Power Distribution Company (DPDC), Dhaka Electric Supply Company (DESCO), West Zone Power Distribution Company Limited (WZPDCL), Rural Electrification Board (REB), Northern Electricity Supply Company Ltd (NESCO) and BPDB's Four distribution zones. In the FY 2020-21, BPDB has extended about 1,595 distribution transformers with 358 MVA capacity as a part of continuous improvement of the system. BPDB covered electrification in 204 thanas/upazilla and 6,470 villages within its four distribution zones. Some impressive progress has been made in increasing power supply, growing at an average annual pace of 14% per year

between 2010 and 2019 that is unprecedented in the history of Bangladesh. Grid based installed power generation capacity was 5,823 MW in 2010 which was raised to 18,961 MW in 2019 which is a laudable achievement. Commensurately, progress was also made in transmission and distribution services that helped to connect people to electricity in both urban and rural areas. Thus, access to electricity reached 95% in 2019. If the present pace of connection is sustained, it is expected that connectivity will reach 100% level by 2021.

Natural Gas and Coal

To portray the contribution of primary fuel in the national economy, it may be mentioned that just in the FY 2019-20, Petrobangla and its companies produced 882.61 billion cubic feet (BCF) of natural gas, which was equivalent to 23.40 million metric tonnes of oil worth 8.17 billion USD. Besides, about 3.83 million barrels of condensate was extracted from natural gas in this timespan. A portion of it was fractionated into petrol, diesel and kerosene at the process plants of 3 companies under Petrobangla, and the rest of the condensate was sold to Bangladesh Petroleum Corporation (BPC) and private fractionation plants. The lone coal mining company of Petrobangla, BCMCL extracted about 8,11,138 metric tonnes of coal in this fiscal year. That is, Petrobangla and the companies under its umbrella provided fuels, around three-quarters of the country's total commercial energy supply, worth around 8.54 billion USD in aggregate to the energy basket of the country in FY 2019-20.

Since the first discovery of natural gas in Bangladesh in the year 1955, until today, including the recent discovery of Zakiganj-1 gas field, 28 gas fields have been discovered in this country. Reserve estimation of Zakiganj-1 gas field is underway by BAPEX. Excluding Zakiganj-1, total initial recoverable proven plus probable gas reserve of 27 fields has been estimated to be at 28.29 trillion cubic feet (TCF); out of this estimated proven recoverable reserve

Country's only coal mine at Barapukuria

(P1) is 21.5 TCF while the recoverable probable (P2) reserve is 6.79 TCF. Up to December, 2020 as much as 18.24 TCF gas has been produced, leaving only 10.05 TCF of recoverable gas in 2P category. Currently, 20 gas fields are in production with 105 wells on-stream. Gas supply in the country increased from 600.86 BCF in FY 2007-08 to 994.4 BCF including R-LNG in FY 2019-20 attributed to various development programs undertaken by Petrobangla during this period. Of this production, grid power consumed the largest share, about 455.9 BCF (45.84%) followed by captive power and industry which consumed 151.6 BCF (15.24%) and 155.7 BCF (15.65%) respectively; fertilizer 54.6 BCF (5.49%), domestic 132.7 BCF (13.34%), CNG 36.1 (3.63%) and commercial and tea-estates together 8.8 BCF (about 0.78%) in FY 2019-20.

Gradual transformation of the country's economy from the agrarian towards industrial one, marked by higher economic growth and consequent uplift of standard of living, is calling for rapid growth in energy demand in recent years. 5 new gas fields (Sundalpur, Srikail, Rupganj, Bhola North and Zakiganj-1) have been discovered, 16 new gas structures have been delineated; 19 exploration and 50 development wells have been drilled, and workover of 39 wells have been completed. These activities added a gross flow capacity of about 1,506 million standard cubic feet per day (MMscfd) with net addition of about 1,006 MMscfd due to natural decline in flow capacity of some wells as well as depletion of 2 gas fields (Sangu and Feni). As a result, gas supply including regasified LNG has risen to more or less 3,250 MMscfd. At the same time, a total of 1,222.19 km transmission pipelines has been laid under different projects in addition to installation of 3 compressor stations, which has contributed to larger flow of gas in the system.

Although the problem of energy shortages has been confronting for a long time, the pace of exploration has been rather slow in the past, leaving large areas of the country still unexplored or underexplored. To come out of this paradox, Bangladesh Petroleum Exploration and Production Company Limited (BAPEX) along with Bangladesh Gas Fields Company Limited (BGFCL), Sylhet Gas Fields Limited (SGFL) and International Oil Companies (IOCs) have embarked on implementation of extensive exploration programs that include drilling of 12 exploration wells, 22 work-over wells and 9 development wells during 2020 to 2024. Other than this, BAPEX has conducted 3,500 line-kilometer (lkm) of 2D seismic survey from 2017 to June, 2021 in the onshore.

In order to reduce overwhelming dependence on natural gas and diversify the sources of energy supply, Petrobangla has developed the first coal mine of the country at Barapukuria. At present, Barapukuria Coal Mine is producing approximately 3,000-3,500 metric tonnes of coal daily. About 8,11,138 metric tonnes of coal was produced in the FY 2019-20. Currently, the entire coal extracted from this mine is used to fuel the only coal fired 525 MW thermal power plant of the country located in Barapukuria.

To meet the fuel shortage, Petrobangla is importing liquefied natural gas (LNG) in tandem with its endeavors to scale up exploration activities for new resources in the country. With a view to facilitating the government to attain the targets of 2030, 2031 and 2041, measures have been taken to accomplish all necessary activities relating to LNG including installation of floating and land-based terminals. In the meantime, 2 floating storage and regasification units (FSRUs) have been installed (by EEBL and Summit LNG Terminal Co. PVT. Ltd) at Moheshkhali for supplying 500 MMscfd of regasified LNG (RLNG)each and RLNG is being supplied to the national grid from these 2 terminals.

It is encouraging to note that exploration offshore is also gathering momentum. Initial exploration activities are in progress in blocks SS-04 and SS-09. ONGC Videsh Ltd. (OVL) has completed 3,008 lkm of 2D marine seismic survey data acquisition and carried out 2,520 lkm 2D OBC survey. OVL has started drilling of Kanchan-1 exploratory well in block SS-04 from 29 September, 2021. OVL is also in the process of awarding a contract for drilling of two more offshore exploratory wells to be drilled in 2022 both in block SS-04 and SS-09. In block SS-11 Santos acquired and interpreted 3,146 lkm 2D seismic data and identified 7 leads. In order to attract more investment in offshore oil and gas exploration, an agreement was signed between TGS-SCHLUMBERGER JV and Petrobangla to conduct a total of 32,000 lkm 2D Non-Exclusive Multi-Client Seismic Survey in the offshore area of Bangladesh with the object of getting an idea of the offshore geology. Depending upon the prevailing pandemic situation, a new offshore bidding round under the Offshore Model PSC 2019 is likely to be announced shortly. Besides bringing most areas of the country under natural gas pipeline networks including crossing the river Jamuna and Padma, discovery and production from the only oil field in Sylhet and also successful introduction of CNG in the transport sector in the country are added feathers in the cap of Petrobangla during the period under consideration.

A view of Matarbari under construction coal port

Petroleum Products

Bangladesh has been dependent on importing crude oil and finished petroleum products since its independence in order to provide security to energy supply to the country. Due importance has been given for enhancing the storage capacity of liquid fuels. As a result of such a practical approach, the storage capacity of fuels in the country has increased manifold. In addition to this, the short and mid-term planning for improvement of fuel supply to the national; economic development centers were meticulously drawn and implemented which resulted in good achievements in the supply of liquid fuels to the door steps of the consumers. Presently, the storage capacity of liquid fuel is 13.20 lakh metric tonnes which will be enhanced to about 19 lakh mt by 2023. Uniform pricing policy, irrespective of location, has enabled the supply of fuels to the consumers of different categories of products at uniform prices. With a view to modernize the distribution system, country wide pipelines for petroleum products are being planned and would be implemented expeditiously. To improve the receiving facilities of imported crude and petroleum products, the jetty facilities are being modernized. Also arrangement for a single mooring pipeline from the anchorage of Kutubdia to Chattogram is under active implementation stage which would help speedy discharge of commodities from foreign ships anchored at the deep sea. For easy distribution of petroleum products, a 205-mile pipeline from Chattogram to Dhaka is under implementation. On the other hand, to ensure seamless supply of quality aviation fuels to the national and international airlines, a specialized jet fuel pipeline from Narayanganj to Kurmitola is under construction. To facilitate import of fuels from India, the 130 km India-Bangladesh Friendship Pipeline is in the advanced stage of implementation. To enhance the processing of crude oil capacity in the country, the second unit of Eastern Refinery is also being implemented. Other major achievements in the

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Petroleum sector are introduction of LPG to the domestic consumers and private sector was encouraged to step in the business while Naphtha, a byproduct in the ERL processing of crude oil, earlier used to be exported at a nominal price but BPC arranged and helped local private sector to set up plants to process naphtha within the country as value added products.

Perspective Plans

Progress with increasing private sector participation in the energy sector including power generation is encouraging. The policy debacle has been the inability to adopt a comprehensive coal policy that has virtually stopped domestic coal extraction. Imports of coal appeared necessary to support the expansion of coal-based power plants. So far coal accounts for only 3% of power generation as compared with the target of 53% under Perspective Plan 2021. As per this plan, regarding Rooppur Nuclear Power Plant, it is envisaged that it will start generating power by 2023. Renewable energy progress has been slow. On-grid some 80 MW of solar power has been added between FY2010 and FY2018. Off-grid, a total of 334 MW of renewable energy, primarily solar-based, has been added over the same period. Overall, the share of total non-hydro renewable energy-based power has increased at 2.8%. The heavy reliance of PP2021 power generation strategy on fossil fuel is a matter of concern that needs to be revisited in view of Bangladesh's commitment to contain the growth of carbon emission. Regarding energy efficiency, there is a target of 15% reduction of primary energy consumption by 2021, 20% by 2031 and 25% by 2041. Progress in reducing transmission and distribution (T&D) losses has been steady, falling from 15.73% in FY2010 to 11.96% in FY2019. While evaluating the success of the energy and power sector, it is to be admitted that the availability of cheap natural gas provided a catalytic agent for the speedy advancement of the generation capacity. Introduction of the private sector in terms of small power generation and quick rental power stations worked as a coordinating force to meet the electricity demand in a short period of time. Introduction of CNG and LPG in the private sector also boosted the availability of energy to the consumers with comfort and ease. With all these in the private sector, the missing link was the regulatory measures to make a competitive market atmosphere so that the consumers could have the benefit of efficient operations. Same goes with rental power stations where the buyback process of electricity from the private sector power station operators needs to be replaced with competitive prices for power purchase systems.

Future Prospect

The global anxiety on climate change and the need to contain the emission of greenhouse gasses have shaken the energy world and coupled with the distortion in the energy demand and supply emanating from the pandemic pushed the fossil fuel prices to an exorbitant level. Bangladesh cannot be a case in isolation under such a scenario. With the fast-depleting natural gas and having no sign of discovering a new gas field of world standard and world leaders' summit on climate change declaring a holy war on fossil fuels; paradigm shift from coal, natural gas and oil to renewable energy sources is a matter of time. Green energy project should be taken up without any loss of time for the incremental demand of electricity through harnessing off-shore wind energy, pumped energy from river water, solar and other conceivable and implementable green sources of energy which need to be dovetailed with writing off the fossil fuel-based power stations. While different forms of renewable sources of energy are being talked about as replacement fuels, most of the sources are new for Bangladesh. As such detailed techno-economic feasibility study must be religiously undertaken for all the available options before jumping into the band wagon of renewable energy.

Conclusion

It is well known that energy plays a vital role in poverty eradication, economic growth, sustainable infrastructure development and security of any country. In Bangladesh, electricity is the most widely used form of energy. So, future economic growth significantly depends on the availability of electricity. To meet the growing demand for power in Bangladesh, a total of 32,745 MW power stations have been designed and are in different stages of implementation. The government is set to allow five coal-fired power plants to convert to the LNG-fired and dropped 10 coal-fired power plant projects as it seeks to revise the country's Power System Master Plan (PSMP) that earlier gave priority to coal. After the adjustments in the plan, finally the national grid power sector will have 13,313MW surplus electricity by 2041 including possible import of hydroelectricity from neighboring countries. However, global concern for climate change issues is going to be difficult for all including Bangladesh. The crux of the problems on net zero emission, revision of PSMP, import need of LNG etc. moves around the fuel needs of the power stations in the country. Power sector, for so long, had free access to the indigenous gas and small coal at a cheap price and these advantages are going to be curtailed soon. Now with the additional power stations on the drawing board, fast depleting gas fields and no new gas fields in sight, heavy import liability of fuels including LNG, uncertainties are looming over the energy sector in the country. On top of all adverse factors, the global decision to move away from fossil fuels to renewables would put an extra burden to look for a way out to enter the renewable era in the not too distant future. Bangladesh needs to attach higher priority to shifting from fossil fuels to renewable energy to ensure that the transition period from the present position to that of the renewable era is less turbulent.

EP

Mohammad Mosharraf Hossain;
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বসুন্ধরা
এল. পি. গ্যাস লিমিটেড

সমুদ্রের বুকে জেগে আছে ভরসা

বসুন্ধরা এল. পি. গ্যাস লিমিটেড-এ যুক্ত হয়েছে বিশ্বমানের প্রযুক্তি নিয়ে প্রথম বাংলাদেশের পতাকাবাহী এলপিজি ক্যারিয়ার **"বসুন্ধরা এলপিজি চ্যালেঞ্জার"**। শুরু হয়েছে-"শিপ টু শিপ ট্রান্সফার"। ৪৪০০০ মেট্রিকটন সক্ষমতার বিশাল এ জাহাজ আমাদের গর্ব, আমাদের সকল গ্রাহকের অধিকার।

ভরসা রাখুন স্বাচ্ছন্দ্যে থাকুন

হটলাইন: ১৬৩৩৯

50 Years of Energy Sector

Saleque Sufi

From December 16, 1971 to December 16, 2021. Fifty years have whistled by. It is not a long time for a nation's life, nor is it too short. Of course, Bangladesh has made huge achievements in many areas. Yet it had some major failures in some areas. Seen in the mirror of a neutral observer it can be assessed that weathering many issues and challenges of a climate vulnerable country, impeded by absence of democracy (military rules), corruption, and mismanagement, Bangladesh has done impressively well in many sectors. The nation can provide food and shelter to 170 million people living in a small country - the entire country is under grid power supply, many success stories in health care and medical care systems. The sustained economic development even during the COVID-19 pandemic evidenced the strong will to win of the nation. Yet due to policy limitations and strategic failures, the national energy security is in a state of bothering. In the post-COVID new normal world, Bangladesh has to realign its energy policy by making it time-tested for embracing the challenges that have appeared from Bangladesh graduating from Least Developed Country (LDC) to Developing Country status. The coming into operation of several mega projects (Padma Multipurpose Bridge, Karnaphuli River Tunnel, Rooppur Nuclear Power Plant, Matarbari Power and Energy Hub etc.) would turn Bangladesh into a vibrant and effervescent development hub of South and South East Asia. At the same time, it would present new challenges.

The celebration of the golden jubilee year of the historic achievement of independence culminates on December 16, 2021. For those of us who have witnessed the blood birth of the brave nation, it reflects upon many nostalgic bitter sweet memories. Making a humble beginning from the ruins of destructive nine and a half months of war, Bangladesh is now a symbol of development. Once termed unjustifiably "A Bottomless Basket", Bangladesh is now admired and adored as a busy bustling prestigious hub of development. Undeniably, Bangladesh has stumbled over and across many barriers and obstacles, encountering many challenges. Yet there have been many challenges as well. This write up would attempt to make an assessment and evaluation of the energy sector over the past 50 years of independent Bangladesh. Bear in mind that Bangladesh witnessed rules of Military dictatorships for 15 years from 1975-1990 when the nation had bumpy rides in reverse directions. It also witnessed relentless struggles for restoration of democracy. One must admire Bangladesh for achieving food autarky, bringing the entire country under grid power supply, more or less successfully tiding over the COVID-19. The fact that the economic growth stayed above most countries is a testimony of the resilience of the nation and strong national will for survival. Yet there were some failures, some policy limitations. Frequent visits of natural calamities, legacies of bureaucracy-induced corruption have created impediments and also acted as major barriers in achieving greater progress in the energy sector. Bangladesh could achieve greater self-sufficiency in the energy sector had it not drifted away from the Energy Philosophy of its Father of the Nation Bangabandhu Sheikh Mujibur Rahman. Yet in summary, we have no hesitation to agree that there have been huge achievements and at the same time some failures. Failures in the energy sector partially overshadowed historic achievements of the power sector. Power generation capacity reached almost 22,031 MW, still sustainable supply of quality power and energy to all at affordable cost on an uninterruptible basis could not be achieved. All segments of the power value chain could not be developed simultaneously. Bangladesh failed in exploring and exploiting its substantial superior quality coal reserve, did very

Occidental was allowed to develop the Petrobangla-owned Jalalabad Gas Field. The management of operation of Bakhrabad gas field was not done professionally. However, the BNP government signed an agreement with leading mining company BHP for exploration of coal at Phulbari

little in exploring potential petroleum resources offshore and onshore, and could not ensure transparency and accountability in energy sector planning, management of operation. Consequently, in post-COVID new normal world, new challenges have surfaced such as "How Long Bangladesh can survive relying on imported fuel?"

Milestone Achievements in 50 Years

In 1971 when Bangladesh achieved independence, the entire rural areas were without grid power supply. There was no gas grid or pipeline gas supply for 70 million people. In 2021, the entire nation of 170 million people will have access to grid power supply, gas grid has covered almost the entire length and breadth of the country. It could be much better if democracy was sustained, bureaucracy did not spoil professionalism. Yet a vibrant power and energy sector facilitating sustained economic development at an impressive rate is no mean achievement. Bangladesh achieving status of developing nation from LDC is a major milestone achieved. Irrespective of what has been achieved and what not, the energy sector contributions must not go unnoticed. Of course, there are many issues and challenges. The nation still has to get across and over the thorny passage for achieving the national vision of 2041.

Failures of Energy, Power Sector in 50 Years

The failures which have created issues and uncertainties are that we have not been able to explore and exploit coal resources. BMDC has ceased to exist. It was first condensed into Petrobangla creating a Mining Directorate and now even that directorate no longer exists. We are not sure that emerging reality would make it possible ever now to exploit the coal reserves of Bangladesh. Not developing Petrobangla in functional lines as a professional organization is a failure. Instead of engineers, geologists and other line professionals, planning policies and leading execution of works by bureaucrats spearheading Petrobangla led to mining not being done and exploration and exploitation of petroleum resources remaining well below minimum requirements. Not even starting offshore exploration in 7-8 years since resolution of maritime boundary disputes with neighbors is another failure. For the same reasons, Petrobangla and companies could not achieve required skills and efficiency. Deficit of own primary fuel is a major challenge for achieving sustainable energy security. Not exploiting the discovered gas resource of Shahbazpur gas field to its potential and connecting it to the national gas grid is another failure. Not following aggressively the tri-nation gas pipeline project (Myanmar-Bangladesh-India) proved counterproductive for Bangladesh. In 2021, the power sector officials with higher pay and benefits are performing way better than the energy sector where similar pay scales could not be introduced. Consequently, talented young professionals cannot be retained causing a huge brain drain. Although part of one ministry, yet there exists a visible lack of coordination between the Power Division and Energy Division. There are too many organizations but combined achievements are not impressive. BERC could not grow as per its mandate to create level play ground between public and private sector energy and power companies.

Chevron operated Bibiyana gas field

Bangabandhu Doctrine of Sonar Bangla

The Father of the nation got only about three and a half years in his mission to rebuild the war-ravaged Bangladesh. He set the solid foundation for a strong Bangladesh nation weathering huge challenges. He dreamt of supplying power to all, he dreamt of equitable energy supply to all at affordable cost in the 1970s. Deep in his heart Bangabandhu Sheikh Mujibur Rahman believed that riverine delta Bangladesh must be possessing substantial petroleum and mineral resources. His vision was exploring and exploiting these engaging his own people.

The nation has realized paying heavily as to why the Father of the nation wanted Bangladesh to become self-reliant on its own petroleum and mineral resources. Spending most of his life from 1947-1971 behind the bar for his relentless struggle for the emancipation of the nation, Bangabandhu envisioned a Bangladesh exploring and exploiting its own potential petroleum and energy resources. His vision of Golden Bengal was to transform agro-based Bangladesh into an industrial nation. His vision was that "the golden boys would create golden Bengal turning resources into reserves." It was also like great Malaysian leader Mahathir Mohammad relying on Bhumiputra leading erstwhile Malaysia to modern Malaysia. Based on

the vision, Bangabandhu had created Bangladesh Oil, Gas and Mineral Corporation (BOGMC) and later Bangladesh Oil and Gas Corporation (BOGC now Petrobangla) and Bangladesh Mineral Development Corporation (BMDC – now ceased to exist). He also created the Bangladesh Power Development Board (BPDB). Even the Rural Electricity Board (REB) was later created based on his vision of power to all. We all know that it was only possible to take over 5 major discovered gas fields (Titas, Habiganj, Rashidpur, Bakhrabad, Koillashtilla) from Shell BV for a nominal price of 4.5 million Pound Sterling in 1975. He also championed Petrobangla launching an oil exploration campaign in the Bay of Bengal. In his limited time from January 1972 to August 1975, he also took initiative for exploiting coal and hard rock. Bangabandhu also envisioned the creation of Shiddhirganj, Ghorashal, Ashuganj and Chattogram as power hubs.

BOGC and BMDC were first grade corporations. The CEOs acting as advisors of the head of the government enjoyed full liberty and autonomy in taking their own actions. There was no bureaucratic control, no political interference. Bangladesh made a great start in the power and energy sector. Using his excellent relations with the former Soviet Union, Algeria and West Germany, he could send Bangladeshis for training and engage companies of those countries in the energy and power sector of Bangladesh. Unfortunately, all his historic initiatives retarded significantly from traitors and conspirators implementing their nefarious designs in killing him with most of his family members in August 1975 and other major leaders in November the same year.

Assessment of Development from 1975 to 1990

A momentum has been created to let the energy sector grow as the backbone of the national economy. But corruption and mismanagement creeping into the governance of the energy sector for absence of functional democracy created challenges. Creation of Bakhrabad Gas Systems Limited (BGSL) as a vertically integrated Petrobangla enterprise for bringing Southeast Bangladesh under the ambit of gas supply and further development of Jalalabad Gas Transmission and Distribution System (JGTDSL) were major achievements in the gas sector. Development of Bakhrabad, Feni, Rashidpur, Koillashtialla, Beanibazar Gas fields, construction of North South Gas Pipeline, discovery of oil at Sylhet 7 were milestones. At the same time the growth of Ashuganj, Ghorashal, Shahjibazar, Fenchuganj, Raujan as power hubs were also achievements. But at the same time corruption crippled energy and power sector. SAIPEM Syndrome and Scimitar Scam were major corruption incidents. Theft and pilferage in the power and energy sector almost stalled the development. Donors and development partners turned their backs from power sector development. Even the financing in the energy sector became tied with many covenants. Petrobangla losing status as a grade one corporation was a major blow to its growth. Nothing has been done in the mining sector and gas exploration activities shrunk to bare minimum.

A view of Summit Bibiyana power plant

The Decade of 1990s (1991-1996)

Through the relentless struggle of combined opposition political parties, the country got relief from military dictatorship in 1990 with restoration of democracy. The BNP government voted to power and tried somehow to restore sanity in the power and energy sector. Yet the legacy of misrule and corruption continued. SAIPEM and SCIMITAR crises were not dealt with appropriately. Occidental appeared on the scene in a not too proper manner. The BNP government took no initiative for developing BAPEX and letting it operate as a national flagship company in the upstream segment. Occidental was allowed to develop the Petrobangla-owned Jalalabad Gas Field. The management of operation of Bakhrabad gas field was not done professionally. However, the BNP government signed an agreement with leading mining company BHP for exploration of coal at Phulbari and with Chinese company for mining at Barapukuria. But during this time excessive production from the Bakhrabad gas field hastened depletion of the gas reserve and created a crisis in Chattogram region. Government failed in expediting construction of Ashuganj-Bakhrabad Gas transmission pipeline for evacuating stranded gas from northern gas fields to gas-starved South Eastern Bangladesh. However, creation of Gas Transmission Company Limited (GTCL) in the midstream was a milestone achievement of the BNP regime in 1994. However, the BNP government left office in 1996 with a trouble-prone energy and power sector

having a huge gas deficit, power loadshedding.

Glorious Period of Energy and Power Sector (1996-2001)

The Awami League-led government voted to power in 1996 and made milestone achievements in the power and energy sector in 5 years. The major successes were:

- Completion of Ashuganj-Bakhrabad gas transmission pipeline and creation of national gas grid in the eastern part of Jamuna river by 1997.
- Expansion of national gas grid across Jamuna River to Western Region to Sirajganj, Pabna.
- Construction of Beanibazar-Koilashtila pipeline linking it with the national grid.
- Development of Jalalabad, Shangu offshore gas field, Salda, Norshingdi and Meghna gas fields and connecting these with the national gas grid.
- Introducing IPP, SIPP policy and starting works on gas-based Meghna and Haripur combined cycle power plants, Barge Mounted Power plants. Small off-grid gas based power plants.

By 2001 the nation not only got over the chronic power and energy crisis but had a reasonable surplus. Several other power plant contracts were under negotiation. But discovery of Bibiyana gas field after a major blow out in Magurchara by Occidental created controversies. UNOCAL (taking over OCCIDENTAL) pressed for gas export to India constructing a pipeline. The Awami League government did not agree with the proposal. The period from 1996 to 2001 would remain as a golden chapter for Bangladesh's energy and power sector. As it would be evidenced from 2001 to 2021, the energy sector lost momentum and could not match the growth of the power sector. Eventually the imbalance created caused the present uncertain energy security.

Gains Reversed in 2002-2006

All the hard work, all the gains achieved during 1996-2001 were undone and reversed during 2002-2006. Apart from the trouble-prone 80 MW Tongi power plant, not a single new power plant could be constructed. Coming to power with the promise for exporting gas, the government failed to do that for legitimate resistance of stakeholders. Government did not let BERC grow as a truly independent entity as a watchdog in the energy and power sector protecting the interest of all stakeholders. It could neither strengthen BAPEX for exploration of Petroleum nor could manage exploration by IOCs properly. It entered into a lopsided contract with a weak IOC NIKO. Major blowouts at Tengratila caused a huge loss of resources. Not a single new gas field could be discovered. Rather rapid depletion of gas from discovered gas fields started creating a gas crisis. BNP had a historic opportunity for entering an agreement with Myanmar and India for a tri-nation gas transmission pipeline from Myanmar to India across Bangladesh with provisions for Bangladesh accessing the gas resource of Myanmar. Government failed to proceed positively. The Phulbari coal crisis was deliberately created to frustrate the mining initiative. Massive corruption and mismanagement during BNP–Jamaat rule reversed all gains.

BNP scrapped negotiations and discussions for many power plants initiated by the previous government. Only one troublesome 80 MW Tongi power plant was added and works of some projects initiated during the previous government was completed. Consequently, when the BNP-Jamaat coalition government was made to exist, the diabolic power and energy crisis almost made life and living standstill in 2006.

Evaluation of Performance (2009-2021)

After two years of interim government in 2007-2008, the Awami League-led government returned to power in 2009. The immediate challenge was resurrecting the rocking boat of power and energy. Some 10-12 hours of daily unbearable power loadshedding not only stalled the industrial development and economic growth but also created pains in life and living. Launching short, medium and long term actions, the situations were brought under reasonable control by 2010. The government by adopting Speedy Supply of Power and Energy (Special Provision) Act 2010 set up several liquid fuel based rental and quick rental power plants. The act bypassed the standard tendering process. Unfortunately, that law still continues although it was originally designed for a limited term. In 2021, the government claimed to have total installed generation capacity with captive 25,235 MW and 1160 MW imported from India. For fuel supply deficit (gas and coal) and constraints of power transmission system, the government is struggling to ensure sustainable supply of quality power to all on an uninterruptible basis. The government for failures in exploiting their own coal and petroleum resources is now increasingly moving towards imported fuel (coal, LNG, LPG and petroleum products). For system constraints it has to retain about 7,000 MW liquid fuel based power. It has to account for a huge capacity charge keeping most of these idle. The government cannot make industries relying on grid power supply.

Nevertheless, bringing the entire nation under grid power supply, starting import of power through cross border trading, commencing import of LNG using FSRUs, resolving maritime boundary disputes are major achievements. The overall situation in 2021 is very different from 1971. We are not sure the government could achieve the energy vision of Bangabandhu. Much improved power supply situation ensured achieving impressive economic development. Graduation from LDC to developing country status is the outcrop of improved power and energy supply. In summary, one must admire the achievements. It could still be much better, however. It is up to individuals to consider whether the glass is half full or half empty.

EP

Saleque Sufi;
Contributing Editor, EP

Self-Mining Gold as Fuel, 4R Products from Plastic Waste

Prof. Mahbub Hasan *and* Md. Abdus Sattar

Mixed Plastic Wastes (PWs) have been revealed as the most valuable source of diesel fuel, syngas and many valuable products in most of the developed and developing countries. In Sweden, PWs are called "Gold" as recovered from mining old landfill sites with gold plated electronics. An integrated research, lab tests and 4R methods (recycle, re-use, reduce and recover) and its products have been contributing to reductions in environmental health hazards, GHG emissions and climate change and meet "Net Zero 2050" of the UNFCCC. The most innovative 4R method is "Pyrolysis" producing fuels from condensed syngas, and solid charcoal. This research paper focuses on the "Pyrolysis" process to transfer "PW to Fuel" based on outputs of a "Feasibility Study on Waste to Energy in 6 Municipalities" (UNDP Report, 2017).

Introduction

Global lives and ecosystems are being severely threatened due to dumping of plastic wastes mixed with organic, combustible, non-combustible solids, and e-waste such as electronic equipment, metals, glass, pet bottles, polybags, containers, tires, plastic furniture and utensils etc. Uncontrolled dumping of those plastic wastes clogging the city drains, canals, ponds, lakes, rivers and sea shores threatening fish population, aquatic animals and plants Mixed Plastic Waste Collection and Manual Processing system in Bangladesh.

UN Secretary-General Antonio Guterres (Tweet, Nov. 5, 2021) said: "How we produce and use energy is the main cause of the climate crisis. Ensuring that everyone can access clean and affordable energy will fast-track the transition to net-zero emission, and the achievement of Global Goals (2021)."

According to a quote from the COP26: "Negotiations in Glasgow have delivered top-up that should lift to US$100 billion the annual flow of capital to developing countries – a commitment made in Copenhagen in 2009. While the details have yet to be clarified, US proposals to write off legacy debt to developing countries in return for climate pledges is one of the innovative financing solutions starting to come through. Developing countries themselves have levers they can pull to improve the flow of private capital for green projects, including fiscal incentives (Wood Mackenzie, 2021)".

PW NRC fuel indicate a low research octane rating of 79.2 and a motor octane rating of 72.6, which is lower than commercial gasoline. Higher octane rating is expected with appropriate fractionation which will be confirmed in the future per the ASTM specifications

A Source of Green Energy

Plastic waste is a widely used item in everyday life and its importance is increasing in the present day world. Because of the growing use and importance of plastic, waste management has become a major headache for developing South Asian countries like Bangladesh, India, Nepal, Pakistan and Sri Lanka.

In Bangladesh, the greatest constraint is to sort out plastic items from garbage collected from all over the municipalities by van drivers or the vendors selling mixed plastics with solid waste (known as Bhangri). In absence of street side collection boxes, most household wastes are dropped at the designated collection centers of the municipal wards. Prior to loading waste in dumping trucks, most of the valuable PWs and metals are separated from organic wastes except polybags in organic waste (Star, 2020)

Waste Management Problems

Currently, most of the municipal waste management is controlled by syndicates of the city conservancy department and the ward commissioners. Plastic waste collection, recovery and recycling businesses are limited to processes of shredding, cutting to granules and selling to plastic recycling factories and industries making kitchen pots, buckets, tables, chairs, furniture and utensils. The largest plastic recycling industry is PRAN-RFL which is selling many fancy plastic items at home and abroad. Nevertheless, the percentage recycling plastic waste is less than 8% in Bangladesh (Sun, 2020), 9% in Canada (ECA, 2020) and 10.5% in Australia (Rasul, 2021).

Those data reveals that there are high potentials to monetize over 92% of plastic waste to fuel and many high value 4R products with application of appropriate technologies.

Successful PW Projects

Based on success stories of developed countries like Sweden, Denmark and Norway, our plastic waste-induced problems may be turned into invaluable wealth through innovative and giant recycling system. In Sweden, for example, private waste recycling companies recovered precious metals from mining old landfill sites 100 years old and sold at gold price.

In Bangladesh and most other countries in the world, fossil fuels are predominantly distilled from imported oil, which creates an economic and political dependence on foreign supplies. Recently, gasoline and diesel have been subject to a large price hike which has badly affected the regional budget planning in industrial and transportation fuels. Combined impact of economic, political, and environmental pressure provides the motivation to reduce the use of conventional transportation fuels. In urban areas of the United States, vehicle emissions are the largest single source of air pollution and greenhouse gases. Emissions from gasoline cars include unburned hydrocarbons, which are responsible for ground-level ozone and smog; nitrogen oxides (NOx), which contribute to ozone, carbon monoxide (CO), a toxic byproduct of incomplete combustion and a health hazard; sulfur dioxide (SO2), which contributes to acid rain and carbon dioxide (CO2), a greenhouse gas that contributes to global warming. The exhaust from gasoline vehicles or from evaporative emissions include many other harmful compounds, including benzene, toluene, xylenes, styrene, 1,3-butadiene, aldehydes, ketones, phenols, halogenated hydrocarbons, and trace metals (Sattar, Mh, 2017).

Elective powers created from PW source can possibly conquer numerous financial and ecological issues, by giving a consistent, minimal expense wellspring of fuel, by giving nearby work in energy creation, and by giving fuel types that are cleaner and produce less hurtful emanations. A lot of innovative work in elective energizes has zeroed in on biomass, for instance, making cellulosic ethanol from non-palatable biomass sources. Nonetheless, biomass energy requires enormous measure of arable land to be given to the development of plant sources. Elective fills produced from homegrown sources have been proposed as an answer for power age, and numerous elective powers are being created dependent on sun based, wind, and biomass. In the USA, National State Research Inc. (NSR) has developed a different alternative hydrocarbon fuel which is produced from abundant solid waste plastic materials (some research outputs of Waste Technology Inc. at NSR Inc. quoted: "The NSR research yield as fuel contains extra hydrocarbons when contrasted with business gas with an octane rating of 87 (gasoline-87)." There are likewise different advantages in getting fills from squander plastic materials. Squander plastic is bountiful and its removal establishes enormous issues for the climate. Plastic doesn't separate in landfills, it isn't handily reused, and it corrupts in quality during the reusing system. In any case, compound cycles, for example, pyrolysis and de-polymerization can be utilized to securely change over plastics into hydrocarbon powers that can be utilized for transportation, weighty industries and power generators. The United States produces 30 million huge loads of plastic waste each year, and since one tonne of plastic can be changed over into 420 gallons of fuel, there is the possibility to make 12.6 billion gallons of fuel cross country yearly from squander plastic. This could supplant up to 9% of U.S. fuel utilization. The transformation interaction of changing waste plastic materials over to fluid hydrocarbon fuel has been effectively exhibited in a lab

The Pyrolysis Rate of Different Raw Materials: Waste Tires, Rubber and Plastic:

Material	Item	Fuel oil	Steel wire	Carbon black	Combustible gas
Tires	Truck tires	45%-50%	15%-20%	30%	5%-10%
	Car tires	40-45%	10%-15%	40%	5%-10%
	Motorbike bike tires	30%-35%	5%-10%	10%	5%-10%
Rubber	Cable	25%-35%			
	Shoe sole	25%-35%			
	Mixed shoe sole	20%-30%			
	Slipper	20%-30%			
	Waste fiber carpet	30%			
	PMMA	40%			
	Other mixed rubber	35%			
Waste plastic	PE	85%-95%			
	PP	80%-90%			
	PS	80%-90%			
	ABS	40%			
	Pure white plastic	60%-70%			
	Fishing net, safety net	45%-50%			
	Plastic brand	20%			
	Pulp	20%-30%			
	Daily life rubbish	30%-50%			
	Pure plastic cable	60%-80%			
	Pure plastic cable	60%-80%			
	Pure purchase bag	50%			

Source: Beston (2021)

scale. The upsides of NSRs method are its effortlessness, which would permit districts to build nearby fuel creation plants; its capacity to deal with numerous plastic sorts; and its capacity to deliver an assortment of fuel types for various Industries and transportation needs, e.g., for gas, diesel, or aeronautics motors (Dr. Sarker, 2021).

Pyrolysis Process

The Pyrolysis process involves heating the plastic to form liquid slurry (thermal liquefaction in the range 670°-820°C), partial cooling of the slurry, distilling the slurry in the presence of a cracking catalyst, condensing the distillate to recover the liquid hydrocarbon fuel, and routing the remaining slurry residue back into fresh slurry to undergo another catalyzed distillation/condensation process. No additional chemicals are used in the pyrolysis process, and it is 99% leak-proof and pollution-free.

Outputs and Monetization

In Bangladesh, mixed plastic waste generates about 70-80% crude oil which may undergo further distillation process to produce diesel and solvent to be used as fuels for power generator and transportation (ASPM, 2015).

Fortan pyrolysis machine: Small capacity pre-fabricated machines are found feasible because it operates at the lowest cost, potable and easy to install in 7-10 days.

Technology of Distillation

The plant consists of a furnace (1), pot (boiling tank, 2), the distillation column (3), condenser (4), reflux divider (5), operation area (6), distillate cooler (7), four storage tanks (8), pressurization system (9).

Furnace has heat rating of 100 kW. Type of fuel –any solid furnace fuel. On customer request, the plant can be provided with liquid-fuel burner and gas burner.

The pot is a horizontal cylindrical tank placed directly on the furnace. There are gas pipes inside the pot. Hot gases from the furnace get to the pipes; make two turns, giving the heat to the raw material in the pot. The pot is equipped with level indicators to control the level of liquid in the pot. There is a pressure-gauge on the top equipped with pump and valves to pump the raw material in from the pipes and tanks. Distillation column (3) consists of several side-bars (sections). There are retaining plates inside of each section. Space between plates 250 mm, diameter of the column is 400 mm. Sections are insulated with mineral wool (Sattar, 2019).

The condenser (4) locates at the top of the column. It is a horizontal shell-and-tube heat exchanger with two distribution chambers at the ends, connected with pipelines. Cooling water moves in the space between the pipes. Vapors from the top of the column get through pipelines to the distribution chamber, then to the pipe space, where they are condensed and overcooled. The condensate flows in the opposite distribution chamber, then to the reflux divider (5).

For heavy fractions temperature can exceed 300C, so the distillate goes from the divider through pipelines to the distillate cooler (7). Further, the condensate is turned to the overflow device that turns condensate to the appropriate tank.

Residue in the pot with the temperature up to 380C is turned through the cooler of residue to the storage tank of residue. The residue must be poured out in such temp to keep safe temperature of it. The temperature should be around 60 - 80C.

There are four storage tanks. Those are

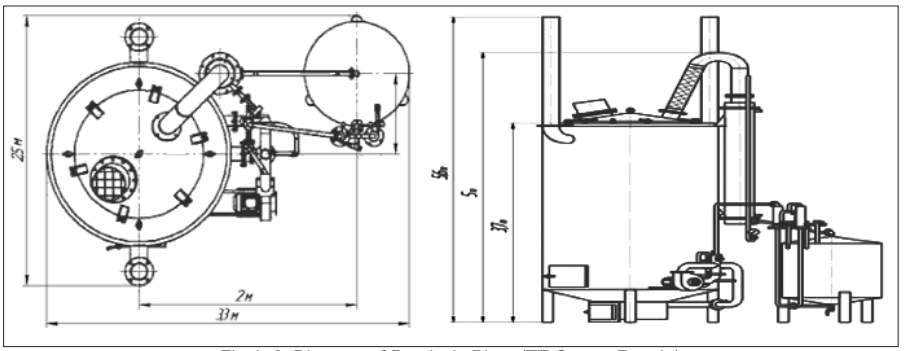


Fig 1, 2: Diagram of Pyrolysis Plant (TT Group, Russia)

vertical cylindrical tanks with capacity of about 1 m3 each. They are equipped with pumps to pump distillates out (SGS Lab, 2018).

A simple catalytic process for de-polymerizing waste plastic to synthetic crude oil has been developed and further refined using a laboratory scale double condensation process. Characterization studies by GC and GC-MS indicate the de-polymerization product is essentially all straight chain hydrocarbons when linear thermoplastic polymers are used as the feed. Further testing is in progress with high-fuel-efficient automobile engine in our laboratory (SGS, 2020).

To end this article, an alarming message to the global community is quoted (COP26): "Nature knows no political boundaries. The triple planetary crises of climate change, biodiversity loss, and pollution affect everyone, everywhere. Negotiators at the COP26 must show ambition & solidarity to avert conflicts, save the planet and our future ..."

Conclusion

A simple catalytic process for de-polymerizing waste plastic to synthetic crude oil has been developed and further refined using a laboratory scale double condensation process. Characterization studies by GC and GC-MS indicate the de-polymerization product is essentially all straight chain hydrocarbons when linear thermoplastic polymers are used as the feed. Both GC and DSC studies indicate the product includes hydrocarbons ranging from C3 to C27, a range that includes commercial gasoline-87 and diesel fuel.

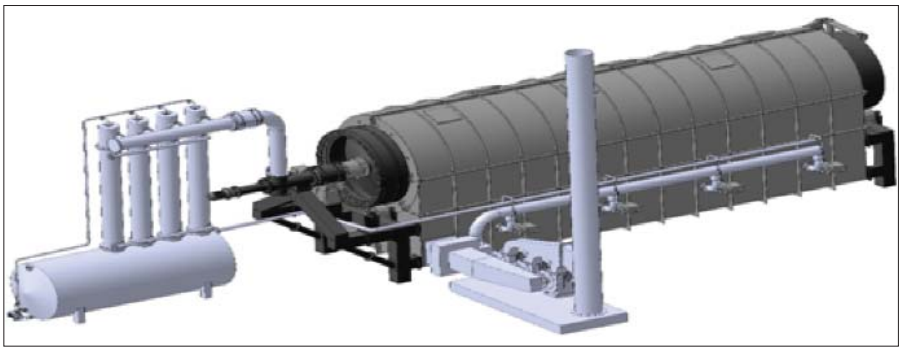
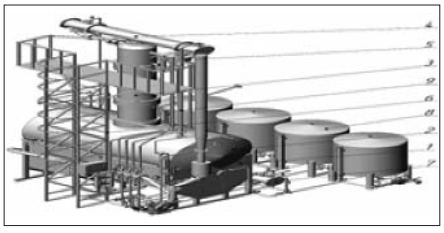


Fig. 2: Small capacity Pyrolysis machine (TT Group, 2018) PYROLYSIS (Machines, and Process Diagram, Capacity: 5tpd)) The Pyrolysis Raw Materials: Waste Tires, Rubber and Plastic:

Source: YouTube, FORTANPyrolysis (2021)

Initial analyses of PW NRC fuel indicate a low research octane rating of 79.2 and a motor octane rating of 72.6, which is lower than commercial gasoline. Higher octane rating is expected with appropriate fractionation which will be confirmed in the future per the ASTM specifications. In contrast, an automobile test driving with PW NRC fuel shows competitive advantage in mileage over commercial gasoline-87 while using a low-fuel-efficient engine. A calculated 16.7% higher mpg is observed with PW NRC fuel when compared to gasoline-87. Further testing is in progress with high-fuel-efficient automobile engine.



Fig,-3 Distillation Plant (Russia, 2018)

In Bangladesh, prospects of PW to fuel and many valuable products through 4R process is phenomenal. In this country, only small and low-cost pyrolysis machines are applicable. Unfortunately, most investors, banks, finance companies and quick money makers failed in the past 20 years in absence of skills, institutional R&D but syndicated corruption. Those syndicates deliberately misused public money in attempts to large-scale plants but failed.

If 3M Energy Limited get any opportunity from Bangladesh government to implement PW to energy, we are struggling to demonstrate that recycling PW in small capacity machine.

References: UNDP report (2017): "Feasibility Study on Waste to Energy Conversion of 6 Municipalities in Bangladesh", COP26–Glasgow (2021), IEA report (2021), UNEP and Climate Action Forum, CRC-Cooperative Research Centre (Australia.)

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Fig.4-Waste Pyrolysis Oil & Refined Oil

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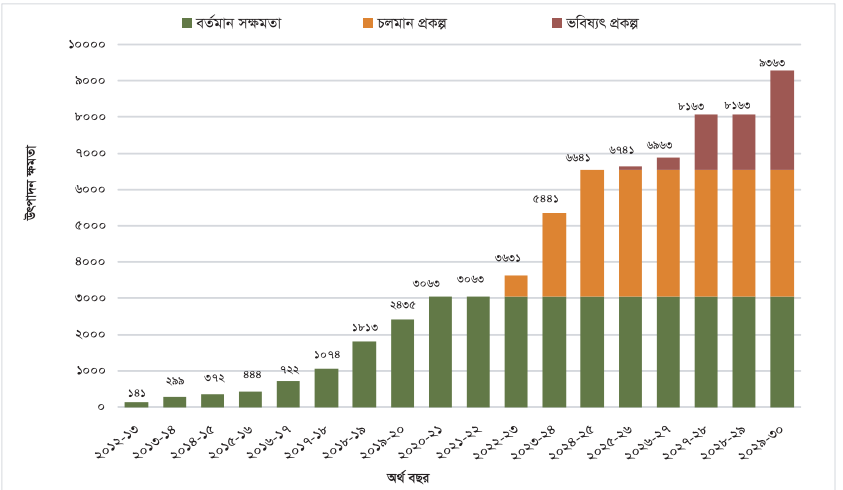
নর্থ-ওয়েস্ট পাওয়ার জেনারেশন কোম্পানি লিমিটেড

দেশের উন্নয়ন অগ্রযাত্রায় গর্বিত অংশীদার

দ্রুত বিদ্যুৎ উৎপাদন বৃদ্ধির স্বীকৃতি স্বরূপ মাননীয় প্রধানমন্ত্রী শেখ হাসিনা'র হাত থেকে **পুরস্কার** গ্রহণ করছেন নর্থ - ওয়েস্ট পাওয়ার জেনারেশন কোম্পানি লিমিটেড এর প্রধান নির্বাহী কর্মকর্তা প্রকৌঃ এ.এম. খোরশেদুল আলম

এক নজরে কোম্পানির সার্বিক চিত্র

- মোট বিদ্যুৎ কেন্দ্র - ৯ টি
- বিদ্যুৎ উৎপাদন ক্ষমতা - ৩০৬৩ মেঃওঃ
- চলমান প্রকল্পের সক্ষমতা - ৩৫৭৮ মেঃওঃ
- ভবিষ্যৎ প্রকল্পের সক্ষমতা - ২৭২২ মেঃওঃ
- ২০৩০ সাল নাগাদ বিদ্যুৎ উৎপাদন লক্ষ্যমাত্রা - ৯০০০ + মেঃওঃ



NORTH-WEST POWER GENERATION COMPANY LIMITED

নর্থ-ওয়েস্ট পাওয়ার জেনারেশন কোম্পানি লিঃ

আইএসও ৯০০১:২০১৫, আইএসও ১৪০০১:২০১৫ এবং আইএসও ৪৫০০১:২০১৮ সনদপ্রাপ্ত

(বাংলাদেশ বিদ্যুৎ উন্নয়ন বোর্ডের একটি প্রতিষ্ঠান)

ইউটিসি ভবন (৪র্থ তলা), ৮ পান্থপথ, কাওরান বাজার, ঢাকা-১২১৫

ফোন ঃ ৯১৪২০৬২, ফ্যাক্স ঃ ৯১৪৩৭৪৫, Website : www.nwpgcl.gov.bd

New Exploration Targets in Bengal Basin

Mortuza Ahmad Faruque

Bangladesh is heading towards a deeper crisis of gas supply in the near future, unless there is further reserve growth and discovery. So far, all the easy structural targets have been drilled with significant successes. Upcoming ventures need to address complicated structural-stratigraphic or solely stratigraphic prospects. As for reservoirs, turbidites offer new frontiers for petroleum exploration. There is clear evidence of petroleum play in offshore Bangladesh associated with deep water turbidites within the vicinity of Bay Bengal.

An online technical session on "Turbidites: New Exploration Targets in Bengal Basin" was held on 30 October 2021 under Mir Moinul Huq Memorial Lecture Series-10. About fifty geoscientists participated from Australia, USA, Canada, Norway, UK, Brunei and Bangladesh. The session chair was Naz Husain, who joined from Houston. The Moderator was A.M. Manowar Ahmad, Ex Consultant Geologist, BAPEX and Nazim Ahmed acted as the Chief Coordinator from Calgary.

The Keynote Speaker was Dr. Md. Aminul Islam, Associate Professor & Head of the Department of Geosciences, University of Brunei. He opined that the deep water turbidites have massive hydrocarbon potential and represent one of the most promising exploration targets for hydrocarbons.

Dr. Islam mentioned that our offshore blocks SS-10, SS-11 and DS-12 are situated on the northern margin of Rakhaine Basin which seems a huge potential for gas accumulation. This is high time to redirect our exploration initiative to offshore turbidites without further delay. Initially the exploration target may be considered on block SS-11 followed all the way up to Shahbazpur via Kutubdia and Sangu. Later further exploration can be extended westward. Recent discoveries in West Bengal, Krisna Godavari and Mahanandi Basin adjacent to Bengal Basin is an eye opening for us. If we want to offset the future gas crisis, we may consider the deep water turbidites as our new exploration frontiers.

A study on 3D modelling of turbidite reservoir from a known gas field of New Zealand was also discussed by Dr. Islam. This study tries to develop all possible models which best characterize the deep water turbidite reservoir in New Zealand and similar experience can be shared with other petroleum basins.

Dr. Islam has given emphasis on acquiring new data and reinterpretation of existing seismic to figure out the prospects of drilling in the anticlinal structure between Chattak and Jalalabad, drilling of exploration wells at Blocks SS-10, SS-11 and DS-12 which are located in the immediate vicinity of Rakhine Basin, Myanmar. Apart from those, he suggested expediting our exploration activities offshore and looking for deep water prospects and searching for stratigraphic traps below the Eocene self edge up to Kushtia-Jessore-Satkhira-Khulna in the bordering areas of Ashok Nagar in West Bengal of India.

Dr. M. Julleh Jalalur Rahman, Professor of Geosciences at Jahangirnagar University, was a guest speaker of the session and gave his opinion on turbidite deposit in onshore Bengal Basin. As usual, after the presentation, a question-and-answer session was conducted where many of the participants interacted with Dr. Aminul Islam.

EP

Mortuza Ahmad Faruque;
Former Managing Director, BAPEX

শেখ হাসিনার উদ্যোগ ঘরে ঘরে বিদ্যুৎ

পাওয়ার গ্রিড কোম্পানি অব 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।

30 Firms Awarded for Green Initiatives

The labour ministry presented the "Green Factory Award" to 30 firms in six categories recently for their outstanding contribution in saving the environment and employment creation.

Begum Monnujan Sufian, state minister for labour and employment, handed over the awards at Osmani Memorial Auditorium in Dhaka. Prime Minister Sheikh Hasina joined the event virtually.

The recipients include 15 garment factories, three food processing companies, four tea estates, two leather goods industries, three plastic factories and three pharmaceutical factories.

Bangladesh is the global leader having 152 green garment buildings, of which 44 are platinum rated, 93 gold and nine silver while four gained a "Leadership in Environmental and Energy in Design" certification from the United States Green Building Council (USGBC).

Of the top 10 green garment factories, nine are in Bangladesh. More than 500 garment factories are waiting to be certified by the USGBC for green initiatives.

The awarded garment factories are Remi Holdings, Tarashima Apparels, Plummy Fashions, Mithila Textiles Industries, Vintage Denim Studio, AR Jeans Producer, Karooni Knit Composite, Designer Fashion, Kenpark Bangladesh Apparel (Kenpark Unit 2), Green Textile (Unit -3), Four H Dyeing and Printing, Wisdom Attires, Mahmuda Attires, Snowtex Outwear and Auko -Tex.

The food processors are Habiganj Agro, Akij Food and Beverage and Ifad Multi Products.

The tea gardens are Gazipur Tea Garden, Laskarpur Tea Garden, Jagchhara Tea Garden and Neptune Tea Garden.

The leather goods factories are Apex Footwear and Edison Footwear.

The plastic industries are Bongo Building Materials, All Plast Bangladesh and Durable Plastic.

The pharmaceutical companies are Square Pharmaceuticals, Beximco Pharmaceuticals and Incepta Pharmaceuticals. EP

Invest in Bangladesh's Climate Projects: PM

Prime Minister Sheikh Hasina has sought investment from the Asia-Europe Meeting (ASEM) partners in Bangladesh's long-term climate projects such as Delta Plan.

"I invite all interested ASEM partners to invest in projects under our long-term Bangladesh Delta Plan and Mujib Climate Prosperity Plan," she said.

The prime minister said this in a video message aired on the last day of the two-day 13th virtual ASEM Summit streaming from Phnom Penh, Cambodia recently.

She also called upon Asia and Europe to work in unison to mobilize finances and technology to effectively fight climate change.

Marking ASEM's 25th anniversary, the summit brought together the leaders of the European an Asian member countries, the EU and the Asean Secretariat.

The overall theme of ASEM13 is "Strengthening multilateralism for shared growth".

Cambodia currently holds the rotating ASEM presidency. EP

Empower BERC for Good Governance

Rights activists emphasized strengthening sovereignty of the Bangladesh Energy Regulatory Commission (BERC) to bring good governance in the country's energy sector.

Addressing a discussion, they criticized the government interference into the regulatory body and said such interference was a major reason behind irrational fuel price hike.

Consumers Association of Bangladesh (CAB) organized the discussion at the Jatiya Press Club auditorium in Dhaka on the backdrop of recent fuel price hike.

In his speech, CAB chairman Ghulam Rahman called for a sustainable price model.

"Bangladesh should focus on a sustainable price model. Then it won't have to change tariff multiple times," he said.

CAB chief said, "The fare price is mandatory to speed up the economy. We demand a price stabilization fund to keep the prices stable in the market."

"When BPC (Bangladesh Petroleum Corporation) made a profit of Tk 430 billion, there was no initiative to reserve the fund," he added. EP

PM Directs to Bring Remaining Char People Under Electricity

Prime Minister Sheikh Hasina has directed authorities concerned to bring the people of chars and remote areas, who are still outside the purview of the power network, under the power facility quickly.

"Prime Minister Sheikh Hasina has directed to bring the families living in the remote areas under the power facility rapidly. She asked all concerned to take new projects if necessary," said a press release, quoting Secretary to the Prime Minister's Office (PMO) Md Tofazzel Hossain Miah.

The official said the Premier gave the directive as thousands of families in the remote char areas of Gangachara Upazila of Rangpur district were still deprived of access to electricity.

According to officials concerned, necessary works have started to bring the remaining people residing in chars and remote areas under the power facility as soon as possible following the directives of the Prime Minister.

The government has so far been able to bring 99.75 percent of people under the national grid and solar panels in remote and remote areas as Prime Minister has said that no house or family will be in the dark, said Md Tofazzel Hossain Miah. EP

NESCO Employee's Death from Electrocution Sparks Protest in Rajshahi

An employee of the Northern Electricity Supply Company Limited (NESCO), who was critically injured while working without safety gear in Rajshahi city recently, died while undergoing treatment at Khwaja Yunus Ali Medical College and Hospital in Sirajganj.

The deceased is Rajaul Islam (35).

Rejaul's death sparked protest as the officials of NESCO went into work abstention and gathered in front of the office in Rajshahi's Gourhanga intersection.

They also shouted slogans demanding punishment of three engineers, including an executive engineer for their "irresponsibility that led to the accident".

The protestors claimed that Rejaul was assigned to work on an electric pole without turning off the main electric line and was also not treated properly. EP

Power Sector Needs $65b Investment

State Minister for Power, Energy and Mineral Resources Nasrul Hamid has said that Bangladesh needs $65 billion in investment in the power sector to meet growing demand.

He said there will be huge demand in power and energy sector as more than 40 economic zones are being developed across the country.

"These economic zones will create huge opportunity for industrial sector to set up manufacturing units," he said while making a keynote presentation on "Power and Energy Sector: Change Ahead" at a seminar at the Bangladesh International Investment Summit 2021 at a city hotel recently.

Nasrul said Bangladesh has been offering best policies in the region for the foreign investors to come in the power and energy sector.

"Specially, power transmission and distribution segment and renewable energy could be very potential sector for private investors", he added.

Nasrul noted that steps have been taken to reduce carbon emission by 49 per cent in power and energy sector by 2030. EP

Energypac Signs MoU with Global Learning Management

Energypac signed an MoU with Global Learning Management Ltd at Tejgaon in Dhaka recently, said a press release.

Under this agreement, both parties will work together as Strategic Business Partners.

Sheikh Naweed Rashid, chief strategy officer, Energypac Power Generation Limited and Md Ateak Ullah Masud, founder and CEO of eSchool of Life signed the agreement on behalf of the respective organizations.

Both parties are interested to work together in providing essential online education, training and skills development on different important trade and subject.

During the event they discussed the importance of e-learning and the role it will play in our future and looking forward to working together and developing a state-of-the-art learning management system. EP

Plan for Multiple Use of Matarbari Seaport

Matarbari deep seaport may be used for multiple purposes to make the investment economically viable, said State Minister for Power, Energy and Mineral Resources Nasrul Hamid.

"We have discussed the matter with the Prime Minister when PM's principal secretary Dr Ahmad Kaikaus raised the issue," he said.

The state minister said the stakeholders would share the revenue from the seaport through formation of a development authority.

He explained how the seaport could be used for different purposes.

"Our plan is multiple use of the port. For example, the country depends on import for edible oil. If we fix a pipeline in the deep seaport, the cost of import will shrink," Nasrul said.

This is how the port can be used for more than one purposes, he said.

According to him, the investment of the port will not be economically viable if used for a single purpose. EP

'Stop Double Source Tax to Skip Power Tariff Hike'

The National Board of Revenue (NBR) is scrutinizing a request of the Power Division of the Power, Energy and Mineral Resources Ministry for exemption of source tax to curb electricity price hike.

Earlier, the Power Division of the ministry sent a letter to the NBR Chairman seeking exemption source tax at power distribution stage.

In the letter, the Power Division said the Power Development Board (PDB) deducts 6 per cent source tax when it buys electricity from the public and private companies.

But, if the source tax is deducted at distribution stage again, there is no other option, but to increase electricity price, the letter said.

So, the Power Division requested the NBR chairman to take necessary steps to exempt source tax at the distribution stage.

An NBR official said that the country's tax authority is now examining the proposal of PDB. It will take a decision in this regard after proper scrutiny. EP

Construction of 150MW Power Plant Starts in Gazipur

The foundation stone laying ceremony of a 150MW power plant was held at Sreepur upazila in Gazipur recently.

Max Infrastructure Limited, a sister concern of Max Group, will construct the power plant under the management of BR Powergen.

Muhammad Iqbal Hossain Sabuj, the lawmaker from Gazipur-3 constituency, laid the foundation stone of the proposed BR Power Plant. Engineer Ghulam Mohammad Alamgir, chairman of Max Group, was present as the special guest at the inaugural ceremony presided over by Mohammad Fakhruzzaman, managing director of BR Powergen.

Engineer Alamgir said Max Group has been working tirelessly for the development of the country all the time. The construction of the power plant will be completed within the next 15 months. Max Infrastructure Limited is in overall charge of the project (EPC).

The duration of the project is 20 years. The proposed BR power Plant has received environmental clearance. BR Powergen has appointed Max Infrastructure to design and construct the power plant as per government policy. EP

Petrobangla to Appoint Foreign Consultants to Amend Model PSC

As many as eight foreign consulting firms with experience of having worked and brokered deals in the oil and gas industry, are interested to bag a role advising Petrobangla and its need to amend its Model Production Sharing Contract (PSC), if it really wants to attract the international oil companies to the country's offshore gas blocks

According to official sources, five of the eight firms which submitted their respective Expressions of Interest (EOI) to Petrobangla are from the United Kingdom while one each from India, Singapore and the United Arab Emirates (UAE).

They said Petrobangla received their proposals on November 21, the deadline of submission of the EOI.

"Now we will scrutinize their proposals to pick one of them to do the job," said an official.

He said the consultant will mainly help the state-owned hydrocarbon corporation further amend the Model PSC 2019, in order to attract international oil companies (IOCs) amid the volatile international fuel market.

He noted that the principal upstream energy body will appoint an experienced foreign consultant to draw up the amendments that would convince the IOCs to invest in Bangladesh's offshore gas fields. EP

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Excelerate Energy Organizes Tree Plantation Program

Excelerate Energy (Excelerate), a US-based LNG company, organized a tree plantation program on November 17 at Zero Point, Moheshkhali Island in Cox's Bazar.

Excelerate employees, with the help of the local community, business leaders, and officials, planted 10,000 mangroves on two acres of land to help raise environmental and climate awareness as well as protect the island from coastal erosion, says the company in a statement.

Habib Bhuiyan, Country Manager for Excelerate Bangladesh, was present along with representatives from Rupantarita Prakritik Gas Company Limited, Gas Transmission Company Limited, Bangladesh Coast Guard, Forest Department, local administration, and the fishing community.

"Our goal for this initiative was to help conserve the coastal environment as well as inspire action across the local community," said Habib Bhuiyan.

Consistent with Excelerate's core values (Stewardship, Accountability, Improvement, and Leadership) and Corporate Social Responsibility, the focus areas of health, education, and climate, the company conducted various charitable activities across Bangladesh over the past year. EP

Omera LPG Holds Partners Meet with Festivity

Omera Petroleum Limited (OPL) held a grand event for its valued partners at Grand Sultan Tea Resort and Golf from November 30 to December 1, last.

Plethora of activities made the distributors spend two amazing nights where they took part in a number of business session and fun activities, says a press release.

Omera Petroleum Limited CEO Tanzeem Chowdhury was the chief guest of the event and the award moments marked the recognition of the best performing partners in various categories.

M/S Maa Enterprise Proprietor Selim Khan bagged a brand new SUV for being the National Top and Regional Star Performer followed by many others who were recognized for their performances with pick-up truck, motorbikes and many more valuable items that will add value to their business.

The event started with a moment of silence for all the channel partners and employees who succumbed in Covid-19 followed by a remembrance of moments for those who survived the Covid-19.

OPL Chief Marketing Officer (CMO) Abul Kalam took the lead for Business Session where he highlighted the objectives, priorities, strategic way forward, transformation and many other important business insights. EP

Dipon Group Inks MOUs with Saudi Company for $1.7b Investment

Saudi Arabian private sector investor Engineering Dimension International LLC and Dipon Group have inked two memorandum of understanding (MOUs) worth 1.70 billion US Dollars.

The signing ceremony took place at the newly constructed Embassy premises at Baridhara in presence of the honorable Saudi Ambassador to Bangladesh.

The investment aims at setting up gas transmission and distribution infrastructure in the western region in Bangladesh, fertilizer factory, paper, and sugar industry.

The private sector investment commitment materialized immediately after closure of the International Investment Summit 2021 being organized by BIDA.

As per MOU, Dipon Group will be arranging gas for all Saudi led investment projects and other interested parties. Gas will be imported from India through a gas pipeline to be built under private initiative.

Gas Authority of India Limited (GAIL) agreed to supply gas on long term basis by building pipeline from its national grid to Bangladesh border with transfer facilities.

It is to be noted GAIL will ensure uninterrupted long-term supply of gas and it has a track record of never failing in its supply commitments. The pipeline work from Indian border to connect nearest national grid point in western region of Bangladesh will be built within 12 to 18 months from the date of signing the long-term supply agreement. EP

Bangladesh, India to Focus on Eco-Friendly Transportation, Green Tech

Bangladesh and India will be focusing on eco-friendly transportation and green technologies in the coming days, while taking forward the pending issues in the relationship.

Indian Foreign Secretary, Harsh Vardhan Shringla, said this after holding a meeting with his Bangladeshi counterpart, Masud Bin Momen, at the Foreign Service Academy in Dhaka recently.

"We discussed a whole range of issues. There were no major differences. There are only areas that we can take forward. We will be focusing on promoting eco-friendly ways of communication, including rail and river, renewable energy, environmental opportunities and digital cooperation -- issues that engage the youths," he told journalists after the meeting.

The connectivity projects are going very well. Now there are five of the six rail connections restored and the sixth one, Akhaura-Agartala railway, will be completed next year. Also, Chilahati-Haldibari route will be officiated soon, he said.

"We want to promote eco-friendly ways, railway is one of that," he said.

Masud Bin Momen said they had a very fruitful discussion on the pending issues including connectivity, green energy, green technology, e-commerce and ways of how both the countries can go forward. EP

Bay of Bengal Resources to be Tapped in Environment-Friendly Way: Shahriar Alam

State Minister for Foreign Affairs Md. Shahriar Alam has said Bangladesh, empowered by the peaceful resolution of its maritime disputes, is looking to benefit from the resources of the Bay of Bengal in an environmentally-friendly manner.

He made the remark while speaking as the chief guest at a conference titled "Inspired by Bangabandhu's Vision of Regional and Global Peace: Envisaging Regional Peace and Cooperation in the Bay of Bengal".

The conference was organized jointly by the Ministry of Foreign Affairs (MoFA) and the Centre for Bay of Bengal Studies (CBoBS) of Independent University, Bangladesh (IUB) at the IUB auditorium in the city recently.

The hybrid event, with actual and web-based participation, was a curtain-raiser for the World Peace Conference being convened by the government of Bangladesh in Dhaka December 4-6, 2021 to highlight and carry forward Father of the Nation Bangabandhu Sheikh Mujibur Rahman's vision of world peace.

The State Minister said from the production of clean energy to the development of new and sustainable industries in fields as diverse as bio-tech and aquaculture, Bangladesh needs to invest in knowledge, develop marine sector skills, and encourage innovation and business. EP

Mitsubishi Power Upgrades Gas Turbines at Senoko Energy

Mitsubishi Power, a power solutions brand of Mitsubishi Heavy Industries, Ltd. (MHI) has completed upgrade works for two GTCC power plants with M701F gas turbines at Senoko Energy in Singapore.

This has helped to improve energy efficiency and reduce approximately 15,000 tons of carbon emissions annually, equivalent to removing over 4,500 cars from the road a year.

The upgrade is part of a long-term service agreement (LTSA) concluded under a consortium with Mitsubishi Corporation. Mitsubishi Power applied its latest gas turbine technologies to the M701F gas turbine, achieving a heat rate improvement by reducing the volume of cooling air, which results in reduced carbon emissions.

The successful upgrade led to Senoko Energy receiving Honorable Mention in the Best Practices category for the National Environment Agency's EENP Awards. EP

Green page

Hydropower Generation in Nepal, Bhutan to Benefit Bangladesh, India: PM

Prime Minister Sheikh Hasina has said Bangladesh and India can be benefited by generating hydropower in Nepal and Bhutan as it will be clean energy.

The prime minister said this while Indian Foreign Secretary Harsh Vardhan Shringla paid a courtesy call on her at her official residence Gono Bhaban recently.

Prime Minister's Press Secretary Ihsanul Karim briefed reporters after the call.

Shringla said some "small issues" across the border between Bangladesh and India can be settled through holding meetings between Border Guard Bangladesh (BGB) and Border Security Force (BSF).

The Prime Minister also agreed on it, said the Press Secretary.

Sheikh Hasina mentioned that in Bangladesh, 99 percent people are now under electricity coverage. "The government is providing solar energy where there is no grid line," she said.

The meeting was attended by Indian High Commissioner to Bangladesh Vikram Kumar Doraiswami, Policy Adviser in the Ministry of External Affairs Ashok Malik from the Indian side and Principal Secretary Dr Ahmad Kaikaus from the Bangladesh side.

EP

IDCOL Plans Big for Industrial Rooftop Solar

The Infrastructure Development Company Ltd (Idcol) has big plans to invest in industrial rooftop solar power projects in line with the government target to meet 30 per cent of Bangladesh's energy needs from clean sources by 2030.

Through its investments, the fully state-owned specialized non-bank financial institution (NBFI) aims to generate cheaper electricity, cut emissions and dependency on fossil fuels, and eventually complete the Mujib Climate Prosperity Plan (MCPP).

Under the MCPP, Bangladesh intends to obtain 30 per cent of its energy from renewable sources by 2030 with a significant portion of that electricity coming from rooftop solar power systems.

The MCPP is pursuing global green investment funds for domestic green energy development programs, and taking initiatives to enhance the public-private financial sector's capabilities in this regard.

"Initially, Idcol will finance rooftop solar projects that will generate about 300 megawatts of electricity by 2024," said Abdul Baki, chief executive officer (in-charge) of the NBFI.

"If current investments are successful, we will go for bigger projects as Bangladesh has potential to generate a few thousands megawatts of electricity from rooftop solar power systems," he added. EP

বিদ্যুৎ বিভাগ
বিদ্যুৎ, জ্বালানি ও খনিজ সম্পদ মন্ত্রণালয়

বিদ্যুৎ ব্যবহারে সাশ্রয়ী হউন

- বিদ্যমান আইন অনুযায়ী দোকানপাট, মার্কেট ও বিপনী বিতানসমূহ রাত ৮:০০ টার মধ্যে বন্ধ করুন।
- পিক আওয়ারে রি-রোলিং মিল, ওয়েল্ডিং মেশিন, ওভেন, ওয়াশিং মেশিন, ইস্ত্রি ইত্যাদির ব্যবহার বন্ধ রাখুন।
- বিকাল ৩:০০ টা থেকে রাত ১০:০০ টা পর্যন্ত সিএনজি পাম্প বন্ধ রাখুন।
- সুপার মার্কেট, পেট্রোল পাম্প ও সিএনজি স্টেশনে অতিরিক্ত বাতি ব্যবহার করবেন না।
- এলইডি বাল্ব ব্যবহার করে অর্থ সাশ্রয় করুন।
- হলিডে স্ট্যাগারিং এর নিয়মানুযায়ী সাপ্তাহিক ছুটির দিনে দোকানপাট বন্ধ রাখুন।
- এসি'র তাপমাত্রা ২৫° সেলসিয়াস বা তার উপরে রাখুন।
- দিনের বেলায় জানালার পর্দা সরিয়ে রাখুন ও সূর্যের আলো ব্যবহার করুন।
- বৈদ্যুতিক আলোক সজ্জা ও অতিরিক্ত লাইট/ফ্যান ব্যবহার পরিহার করুন।
- ঘর থেকে বের হওয়ার সময় বিদ্যুতের সুইচ বন্ধ করুন।
- অবৈধ বিদ্যুৎ ব্যবহার থেকে বিরত থাকুন।
- ইজিবাইক, অটো রিক্সা ইত্যাদির ব্যাটারি অবৈধভাবে চার্জ করবেন না।

বিদ্যুৎ বিভাগ

Inspiring Innovation Among Youth on Sustainable Energy

Sustainable and Renewable Energy Development Authority (SREDA) in cooperation with Renewable Energy and Energy Efficiency Program (REEEP II) organized a national competition titled 'Bikiron' to create awareness among university students about energy efficiency and conservation and encourage them in conceiving innovative ideas. The closing ceremony of Bikiron was held recently.

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is implementing REEEP II on behalf of the German Federal Ministry for Economic Cooperation and Development.

SREDA has been taking various initiatives to spread awareness on energy efficiency and conservation. As part of Mujib Borsho celebrations, SREDA launched a nationwide awareness campaign titled "Shasroye Jalani, Shomriddho agami (save energy, brighten your future)". Bikiron was organized as part of this campaign.

The State Minister of Ministry of Power, Energy and Mineral Resources Nasrul Hamid MP, inaugurated the competition on September 9, 2021.

Innovative solutions were invited through www.bikiron.org from university students on three categories: increasing energy efficiency in residential and commercial buildings (Energy-Smart Buildings), improving quality of life using sustainable energy technology in rural areas (Energy-Smart Villages), and making children and adolescents aware of energy conservation (Energy-Smart Children).

The teams had the opportunity to further strengthen their ideas with the help of renowned experts from the sustainable energy sector. Three webinars for each category were organized for their capacity development.

More than 100 teams from universities across Bangladesh submitted their ideas. After a rigorous screening process, 23 teams made it to the final round. On 11 November, they presented the ideas to a jury board comprised of public and private sector experts and academia. The winners were announced on the same day.

The closing ceremony was organized to recognize these young aspiring innovators, and also to provide them guidance in their entrepreneurial journey.

Sonia Bashir Kabir, Founder, SBK Tech Ventures and Koen Everaert, Team Leader, Green Inclusive Development and Social Protection, EU Delegation spoke about the challenges and opportunities in taking a sustainable energy idea from ideation to implementation from a Bangladeshi and Global Perspective respectively.

EP

Green page

Govt Encourages Renewable Energy: Nasrul

As part of the global campaign to expand renewable energy and reduce greenhouse gas, the government has been encouraging power generation from renewable sources.

"It is necessary to innovate such a technology that would occupy less land to generate solar power," State Minister

for Power, Energy and Mineral Resources Nasrul Hamid said recently.

He said it is necessary to introduce mix fuel in power generation, adding, "Developed countries have been working with hydrogen for transforming as energy. It's time to think about ocean energy, wind power and rooftop solar system."

"Now Bangladesh is generating electricity from renewable energy sources at 730.62 MW with installation of 60 lakh Solar Home Systems (SHSs) across the country as part of green and clean energy campaign globally," Nasrul said.

He said the government has brought two crore marginal people under electricity coverage through Solar Home System and as part of the government campaign for expansion and installation of renewable energy sources in the country, the ratio of renewable energy source will be 40 percent in power generation in future.

EP

Momen Seeks German Investment on EVs for Green Transition

Foreign Minister Dr AK Abdul Momen has sought German investment on electric vehicles and locomotives here to help Bangladesh's endeavor for green transition as part of its efforts to mitigate climate change.

He made the urge when newly appointed German Ambassador to Bangladesh Achim Tröster called on him recently at state guest house Padma here, a Foreign Ministry press release said.

Acknowledging Germany as one of Bangladesh's largest trading partners, Dr Momen invited the German Chamber of Commerce and Industry to set up its office in Bangladesh. EP

Cabinet Body Approves Solar, Hybrid, Waste Power Generation Proposals

The Cabinet Committee on Government Purchase (CCGP) recently approved five sector proposals including a big one for setting up a waste-based 42.5MW power generation project at Kaultia under Gazipur City Corporation.

The approval came from the 40th meeting of the CCGP in this year held virtually with Finance Minister AHM Mustafa Kamal in the chair.

Briefing reporters after the meeting virtually, Cabinet Division Additional Secretary Md Shamsul Arefin said that a total of 16 proposals were approved as one proposal from the ICT Division was withdrawn from the meeting.

He informed that Canves Environmental Investment Company Limited, China will set up the power plant with Taka 14,408.01 crore with its investment.

Bangladesh Power Development Board (BPDB) will have a 25-year contract with the Chinese company where the unit cost of per kilowatt hour electricity would be Taka 17.20.

Arefin said Bangladesh-China Renewable Energy Company Private Ltd would set up the 60MW solar park with Taka 1,649.12 crore at Sagarkandi Union under Sujanagar upazila of Pabna where the unit price for per kilowatt hour electricity would be Taka 8.48.

The CCGP meeting approved another proposal from the BPDB under which Cyclect Energy Pte Limited, Singapore would set up a 50MW solar power plant with Taka 1,322.40 crore under a 20-year contract at Krishnapur under Jibannagar upazila of Chuadanga with the unit price for per kilowatt hour electricity to be Taka 8.16.

Western Renewable Energy Pvt Ltd would set up a 3MW solar-battery-diesel driven hybrid power plant with Taka 459 crore under a 20-year contract at Monpura Island under Monpura upazila of Bhola where the unit price for per kilowatt hour electricity to be Taka 21.25.

Apart from this, the day's CCGP meeting approved another proposal from the Power Division under which Bangladesh-China Renewable Energy Company Private Ltd would set up a 68MW solar power park with Taka 1,798.48 crore under a 20-year contract at Sirajganj with the unit price for per kilowatt hour electricity to be Taka 8.16. EP

Green page

Deal for Setting Up 42.5 MW Waste Power Plant at Amin Bazar

The government has signed an agreement to set up a 42.5 MW waste burn method power plant at Amin Bazar, as it is not harmful for environment.

"Incineration method for power generation from wastage burn is the best in Bangladesh than the process of Japan and Europe," Local Government, Rural Development and Cooperatives (LGRD) Minister Tazul Islam said this while witnessing a contract signing ceremony as the chief guest at Sonargaon Hotel in the city.

Chaired by Power Division Secretary Md Habibur Rahman, the programme was also addressed, among others, by

State Minister for Power, Energy and Mineral Resources Nasrul Hamid, Dhaka North City Corporation Mayor Md Atiqul Islam, Local Government Division Secretary Helaluddin Ahmad and Chinese Ambassador to Dhaka Li Jiming as special guests.

The minister said the government decided to generate electricity by burning wastes, as it is not harmful for environment.

The agreements were signed with local government division, power department, North City Corporation and China Machinery Engineering Corporation for setting up the power plant. EP

Govt to Develop Sustainable Irrigation System: Razzaque

Agriculture Minister Dr Md Abdur Razzaque recently said the government has put special emphasis on developing sustainable irrigation system and utilization of water resource in the country.

He was addressing as the chief guest a seminar titled "Online survey for sustainable development of micro-irrigation" at Bangladesh Agriculture Development Corporation (BADC) auditorium in the city's Manik Miah Avenue.

Razzaque said the government has taken different initiatives for modernizing irrigation system over the last 12 years.

That's why Bangladesh attained unprecedented success in irrigation system including expansion of irrigation facilities, enhancement of irrigation skills, installation of underground pipeline for stopping water wastage, enhancing use of surface water, he added.

Terming water as invaluable asset, the minister said irrigation is very important for ensuring food security and enhancing crop productivity.

But water is wasted in various ways in farming especially in irrigation and this should be reduced, he said. EP

Humayun Urges UNIDO to Mobilize Green Tech for Countries in Transition

Industries Minister Nurul Majid Mahmud Humayun urged the United Nations Industrial Development Organization (UNIDO) to mobilize green and innovative technologies for the countries in transition.

The minister attended the high-level opening ceremony of the 19th General Conference of UNIDO virtually, said a press release.

Presidents of Madagascar, Rwanda, Kenya, the Prime Minister of Tunisia, UN Secretary General Antonio Guterres, among others, participated and delivered speeches at the high-level opening segment of the 19th General Conference of the UNIDO.

While highlighting the rapid industrial development of Bangladesh in recent years, Humayun mentioned that Bangladesh has been making a structural transformation of its economy by implementing multiple mega projects, setting up sustainable industries, high-tech IT parks, implementing Digital Bangladesh program, and diversifying its exports. EP

ADB Announces Support for Task Force on Climate-Related Financial Disclosures

The Asian Development Bank (ADB) has declared its support for the Task Force on Climate-Related Financial Disclosures (TCFD), reaffirming its commitment to building a more resilient financial system, increasing transparency, and safeguarding against risks from climate change through enhanced disclosure.

"By signing up to this important initiative, ADB is demonstrating its commitment to manage climate-related risks and embrace the opportunities presented by the low-carbon transition," said ADB Managing Director General Woochong Um.

The Financial Stability Board created the TCFD as a framework to improve and increase reporting of climate-related financial information for consistent use by organizations to inform their stakeholders. ADB joins more than 2,500 organizations in publicly declaring support for the TCFD initiative, said a press release.

ADB is implementing TCFD's recommendations to raise awareness of climate-related risks across its portfolio of operations in its developing member countries, resulting in better risk management and more informed strategic planning. EP

Several Demands Fulfilled at COP26: Minister

The United Nations Climate Conference (COP26) in Glasgow did not meet all expectations; it, however, met many long-standing demands of Bangladesh, said Environment, Forest and Climate Change Minister Shahab Uddin recently.

COP26 member states have been asked to come up with ambitious and strong plans to reduce greenhouse gas emissions, with a view to limit global warming to 1.5 degrees Celsius," he said while addressing a workshop as the chief guest at the Department of Environment.

The workshop titled "World Climate Conference (COP 26): Expectations, Achievements and Future Action Plans" was organized by the environment ministry.

Md Ziaul Haque and Mirza Shawkat Ali, two DoE directors presented a keynote paper at the program.

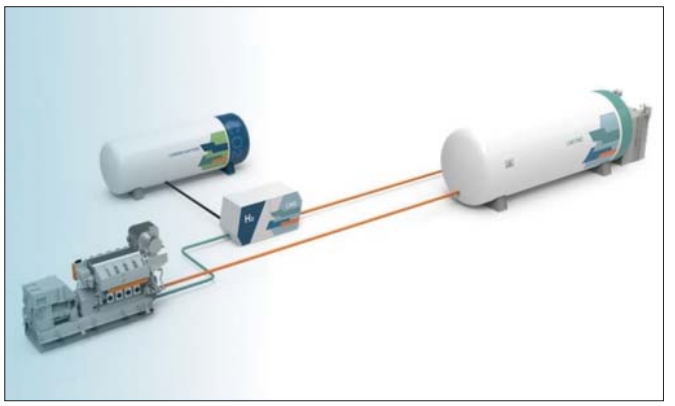
"In addition to doubling adaptation financing by rich and industrialized countries in tackling climate change in developing countries, emphasis has also been laid on bringing 50:50 equilibrium between adaptation and mitigation financing in various COP26 decision texts," said Shahab. EP

CONFIDENCE INFRASTRUCTURE

CONTRACT SIGNING BETWEEN FOOD MINISTRY AND CONFIDENCE INFRASTRUCTURE AND GSI, USA JV

CONSTRACTION OF STEEL SILO AT NARAYANGANJ

PRIDE IN BANGLADESHI INFRASTRUCTURE



Wärtsilä Develops Viable Hydrogen Solution for Shipping Industry

Wärtsilä, together with class society RINA, ABB, Helbio – a subsidiary of Metacon AB, the Liberian Registry, and an energy major have joined forces to deliver a solution with hydrogen as marine fuel.

The aim is to have a scalable and sustainable solution that will exceed the IMO 2050 target for a 70% reduction in carbon intensity without the need for an extensive infrastructure investment.

This offers the shipping industry a pathway to low-carbon operations within a reasonable time frame, according to Wärtsilä.

Current difficulties and cost considerations regarding the production, distribution, and onboard storage of hydrogen have so far limited the sector's interest in its direct use as a marine fuel.

However, by producing hydrogen onboard, and using readily available LNG, the solution becomes far more viable and in a much faster time than would otherwise be possible.

"Our gas engines are already able to use mixtures of hydrogen and LNG, and our future efforts will be to reach 100% hydrogen fuel. We are totally committed to supporting in every way possible the decarbonization of shipping operations. This project is one more example of this commitment, and we are very pleased to be partnering with other stakeholders to make the IMO 2050 target achievable. This project will give owners a real chance to stay ahead of the competition in terms of efficiency and sustainability," said Lars Anderson, Director, Product Management & Sales Support, Wärtsilä Marine Power.

The concept is based on combining LNG with steam to produce hydrogen and CO2. The hydrogen produced will be used directly in a mix with natural gas in internal combustion engines or in fuel cells, thus eliminating the need for hydrogen to be stored onboard. EP

Energy Efficiency Hub Launched to Boost Cooperation on World's 'First Fuel'

The Energy Efficiency Hub – a global platform for collaboration aimed at delivering the social, economic and environmental benefits of more efficient use of energy – was launched on 1 December at an event hosted at the International Energy Agency in Paris.

The Hub's initial 16 members are Argentina, Australia, Brazil, Canada, China, Denmark, the European Commission, France, Germany, Japan, Korea, Luxembourg, Russia, Saudi Arabia, the United Kingdom and the United States.

The Hub aims to facilitate government-to-government exchanges on efficiency policy, regulation and implementation, focusing on topics relevant to real-world challenges faced by its members.

The launch event showcased digitalization, efficient equipment and appliance deployment, best energy efficiency technologies, and energy management best practices as areas of collaboration.

"Hub Members span the globe, from East to West and from North to South, together accounting for over 60% of energy use and carbon dioxide emissions," said Ulrich Benterbusch, Deputy Director General of the German Federal Ministry of Economic Affairs and Energy, who will serve as Chair of the Hub's Steering Committee. EP

bp Plans Major Green Hydrogen Project in Teesside

bp recently confirmed it is planning a new large-scale green hydrogen production facility in the North East of England that could deliver up to 500Mwe (megawatt electrical input) of hydrogen production by 2030.

To be developed in multiple stages, HyGreen Teesside is expected to match production to demand and build on experience to drive down costs.

bp is aiming to start production by 2025, with an initial phase of some 60MWe of installed hydrogen production capacity. A final investment decision on the project is expected in 2023.

Hygreen Teesside is the latest addition to bp's integrated UK business portfolio, which includes 3GW gross of offshore wind in the Irish Sea, delivering 16,000 UK charging points by 2030 and bp and Aberdeen city's partnership deal.

bp is working with industry, local administration such as Tees Valley Combined Authority ("TVCA") and the UK government to increase the pace of decarbonization in transport. EP

শেখ হাসিনার উদ্যোগ
ঘরে ঘরে বিদ্যুৎ

মুজিব শতবর্ষ MUJIB 100

বাড়ছে বিদ্যুৎ হচ্ছে উন্নয়ন গড়ছে বাংলাদেশ

হরিপুর ৪১২ মে.ও. কম্বাইন্ড সাইকেল পাওয়ার প্লান্ট, হরিপুর, নারায়ণগঞ্জ

সিদ্ধিরগঞ্জে স্কুল ভবনের ছাদে সৌর বিদ্যুৎ কেন্দ্র

সিদ্ধিরগঞ্জ ২x১২০ মে.ও. পিকিং পাওয়ার প্লান্ট, সিদ্ধিরগঞ্জ, নারায়ণগঞ্জ

সিদ্ধিরগঞ্জ ৩৩৫ মে.ও. কম্বাইন্ড সাইকেল পাওয়ার প্লান্ট, সিদ্ধিরগঞ্জ, নারায়ণগঞ্জ

জাতীয় উন্নয়নে মানসম্মত বিদ্যুৎ উৎপাদনে ইজিসিবি লি. অঙ্গীকারবদ্ধ

ELECTRICITY GENERATION COMPANY OF BANGLADESH LTD.
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ইলেক্ট্রিসিটি জেনারেশন কোম্পানী অব বাংলাদেশ (ইজিসিবি) লিঃ

(বাংলাদেশ বিদ্যুৎ উন্নয়ন বোর্ডের একটি প্রতিষ্ঠান)

ইউনিক হাইটস (লেভেল-১৫ ও ১৬), ১১৭ কাজী নজরুল ইসলাম এভিনিউ, ইস্কাটন গার্ডেন, ঢাকা-১২১৭।

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Call for Putting Pressure on Major Emitters

Alongside undertaking different adaptation measures, Bangladesh should put pressure on countries that are largely responsible for greenhouse gas emission, said noted economist Qazi Kholiquzzaman Ahmad.

"We only emit one-third of a tonne of greenhouse gas per capita annually," he added.

He said this while speaking at a session on the inaugural day of Annual BIDS Conference on Development 2021" recently. The three-day event was organized by Bangladesh Institute of Development Studies, at a city hotel. It was also broadcasted virtually.

Kholiquzzaman said when compared, Bangladesh's emission is one-sixth of annual per capita emission of a developing country and one-thirteenth of global per capita emission.

He further said Bangladesh's greenhouse gas emission is "nothing" compared to most other countries.

Addressing as session chair, Kholiquzzaman, also chairperson of Palli Karma-Sahayak Foundation, said, "Despite being a least developed country, Bangladesh made some pledges in reducing greenhouse gas emission, which it wasn't bound to do. Instead, Bangladesh should undertake adaptation measures."

At the session, three research papers on climate change-induced migration -- undertaken by a team of researchers from Bangladesh, Norway, and Finland were presented. EP

Tesla Launches Electric Quad Bike in US for Kids

Tesla Inc has launched an electric quad bike for kids in the United States for $1,900, two years after the electric-car maker introduced the all-terrain vehicle (ATV) along with its pickup vehicle Cybertruck.

The four-wheel ATV - "Cyberquad for Kids" - is inspired by the Cybertruck model and will begin shipping in 2-4 weeks, according to the company website.

The bike, however, cannot be shipped to Hawaii, Alaska or Puerto Rico, Tesla said.

Musk had tweeted in 2019 that an electric ATV will arrive as an option for Tesla's much-anticipated and yet-to-be-launched Cybertruck, whose production has been facing challenges due to supply chain problems.

From launching an agave-based liquor "Tesla Tequila" to a humanoid robot prototype "Tesla Bot," the company has come up with multiple quirky products in the past. EP

Delhi Shuts Schools Due to Air Pollution

India's polluted capital recently ordered schools closed over dangerous smog levels, as the country's top court demanded officials take action to address the toxic haze.

New Delhi, one of the world's most polluted cities and home to about 20 million people, is cloaked in a thick blanket of smog every winter.

The city government shuttered schools in November but allowed classes to resume after claiming air quality had improved.

They reversed course after a Supreme Court hearing gave authorities 24 hours to reduce smog levels. "Small children have to go (to class) in morning fog. There's no respect," Chief Justice N.V. Ramana said. EP

US World's Biggest Plastic Polluter

The United States is by far the biggest contributor to global plastic waste in the world, according to a new report submitted to the federal government recently that called for a national strategy to tackle the growing crisis.

Overall, the US contributed around 42 million metric tonnes (MMT) in plastic waste in 2016 -- more than twice as much as China and more than the countries of the European Union combined, according to the analysis.

On average, every American generates 130 kilograms (286 pounds) of plastic waste per year, with Britain next on the list at 99 kilos per person per year, followed by South Korea at 88 kilos per year.

Entitled "Reckoning with the U.S. Role in Global Ocean Plastic Waste," the report was mandated by Congress as part of the Save Our Seas 2.0 Act, which became law in December 2020.

"The success of the 20th century miracle invention of plastics has also produced a global scale deluge of plastic waste seemingly everywhere we look," wrote Margaret Spring, chief science officer of Monterey Bay Aquarium, who chaired the committee of experts that compiled the report.

Global plastic production rose from 20 million metric tons in 1966 to 381 MMT in 2015, a 20-fold increase over half a century, the report said. EP

- গ্রাহক সংখ্যা ৬ লাখ থেকে ১৪ লাখে উন্নীত
- অনলাইনে বিদ্যুৎ সংযোগের আবেদন গ্রহণ
- ৭ দিনের মধ্যে আবাসিক সংযোগ প্রদান
- অনলাইনে বিদ্যুৎ বিল গ্রহণ
- সিস্টেম লস ১৮.১৮% থেকে ৬.৬৯%-এ হ্রাস
- মোবাইল অ্যাপস্ এর মাধ্যমে মিটার রিডিং সংগ্রহ
- Kiosk মেশিনের মাধ্যমে গ্রাহক সেবা প্রদান
- এসএমএস-এর মাধ্যমে গ্রাহককে বিদ্যুৎ সংক্রান্ত তথ্য প্রদান
- অনলাইনে গ্রাহক অভিযোগ নিষ্পত্তি
- বিতরণ লাইন ৩,৭০০ কিলোমিটার থেকে ৫,৮৫০ কিলোমিটারে উন্নীত
- বিদ্যুৎ চাহিদা ৯৫৭ মেগাওয়াট থেকে ১৬৭১ মেগাওয়াটে উন্নীত
- ৫ লক্ষ ৮০ হাজার প্রি-পেইড মিটার স্থাপন

সম্মানিত গ্রাহকদের প্রতি অনুরোধ

- পিক আওয়ারে (বিকাল ৫টা থেকে রাত ১১টা) এসি, ইস্ত্রি, মাইক্রো ওভেন, পানির পাম্প ব্যবহারে বিরত থাকুন
- বিদ্যুৎ সাশ্রয়ী LED বাল্ব ব্যবহার করুন
- অপ্রয়োজনীয় বাতি, ফ্যান ও সুইচ বন্ধ রাখুন
- নিয়মিত বিদ্যুৎ বিল পরিশোধ করুন
- রুফটপ সোলার ব্যবহার করুন, বিদ্যুৎ খরচ সাশ্রয় করুন
- প্রি-পেইড মিটার ব্যবহার করুন বিদ্যুৎ বিলের ঝামেলা থেকে মুক্ত থাকুন
- বিদ্যুৎ লাইন থেকে নিরাপদ দূরত্বে থাকুন
- বৈদ্যুতিক কাজে কেবলমাত্র লাইসেন্সপ্রাপ্ত বা সনদপ্রাপ্ত কর্মী নিয়োজিত করুন।
- বাড়িতে বা আঙিনায় পর্যাপ্ত আর্থিং স্থাপন নিশ্চিত করুন।
- মিটারিং সরঞ্জামগুলোর সুরক্ষা সিলে অবৈধ হস্তক্ষেপের আলামত থাকলে অতি দ্রুত তা ডিপিডিসিকে অবহিত করুন।
- বিল্ডিং নির্মাণের সময় বিল্ডিং থেকে উচ্চ-চাপ/নিম্ন-চাপ লাইনগুলি হতে পর্যাপ্ত নিরাপদ দূরত্ব বজায় রাখুন।
- অনুমোদিত লোড ও তারের বিদ্যুৎ পরিবহন ক্ষমতার অতিরিক্ত কোনো শীতাতপ নিয়ন্ত্রণ যন্ত্র বা বৈদ্যুতিক সরঞ্জাম ব্যবহার করা থেকে বিরত থাকুন।
- দুর্ঘটনা বা প্রাণহানী এড়াতে বাসা/কর্মস্থলের ওয়্যারিং নির্দিষ্ট সময় পরপর পরীক্ষা করানোর ব্যবস্থা নিন।

যে কোন অভিযোগ, সেবা বা তথ্যের জন্য যোগাযোগ করুন ডিপিডিসি'র কল সেন্টার ১৬১১৬ নাম্বারে ২৪ ঘন্টা সার্ভিস

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Reverse Swing

Farid Hossain

BANGLADESH @50: ELECTRICITY LIGHTS ALMOST ENTIRE COUNTRY

Bangladesh at 50 has been a success story. Ravaged by war and left in ruins at its independence half a century ago Bangladesh has defied doomsayers. Over the past five decades it has emerged from the war ruins to become one of the fast-growing economies of the world. The celebration of the nation's golden jubilee of independence from Pakistan has recently been greeted with the UN recognition of its economic growth upgrading it to the status of a developing nation. Bangladesh's socio-economic achievements, especially in the social sectors like child and maternal mortality, empowerment of women, schooling for girls, safe drinking water and public sanitation have even surpassed its big neighbour India. Today's Bangladesh is regarded with respect in the international arena.

In its 50 years of difficult journey Bangladesh has been a success story. Like many other sectors it has witnessed a phenomenal growth in electricity generation bringing in almost the entire country under the electricity coverage. It is now 99.75%. It has been a promise fulfilled by Prime Minister Sheikh Hasina's government to bring every village, apart from cities and towns, under electricity coverage during the Mujib year marking the birth centenary of Bangabandhu Sheikh Mujibur Rahman. Prior to the launching of the centenary celebration 40 out of our 64 districts were under full electricity coverage.

"We have been able to ensure 100% electricity coverage in villages in 410 Upazilas," the prime minister said at a function last year at the start of the Mujib Borsha. "We will light up every house in Bangladesh by bringing the remaining districts and upazilas [under full electricity coverage] in Mujib Borsho, and we have been working to achieve this goal."

The prime minister has kept her words. In 2009 when her Awami League party returned to power for the second time it inherited a power generation of 3,268 MW. In just 12 years since then Bangladesh is now producing up to 13,000 MW. A big leap indeed! Moreover, it has now a capacity of producing up to 25,000 MW (including the captive produced by the private industries). That means it is now capable of producing over 22,000 MW of electricity. A total of 146 power plants supply electricity to the national grid every day, of which 65 are gas-fired. The per capita electricity generation in the country stands at 510kWh at present.

It has witnessed a phenomenal growth in electricity generation bringing in almost the entire country under the electricity coverage. It is now 99.75%

The growth in the power sector is having its impact not only in the economic development but also in the social sector. From cities to the remote villages to the isolated islands people are having access to electricity. Admittedly, the supply of power is not as smooth and uninterrupted in the rural areas as in the cities the people definitely feel more satisfied with power than over a decade ago. Yes, there is loadshedding in the rural areas, but it is not as long or as frequent as before. The access to electricity is helping children in their studies at night, kerosene lamps have been replaced light derived from electricity. Small stores and cottage industries are making good business thanks to availability of power. Irrigation pumps are also being run on electricity in many areas helping agricultural growth. Electricity is truly transforming rural Bangladesh. During a recent visit to my village home not far from Mawa, the south-eastern site of Padma Multipurpose Bridge Ahmed Ali, who runs a small convenience store, said: "We are grateful to the daughter of Sheikh Shaheb (Bangabandhu) for lighting our village." "This helps us a lot."

It has been a good way to celebrate the 50 years of independence. But the journey has just started. The path ahead will not be smooth. One big challenge has been to keep the electricity price at rates affordable to the users. The task ahead in this regard is difficult as by 2041 when the government plans to produce 60,000 MW (40% from renewables) the country's dependence will be 90% imported energy, whose cost will fluctuate as per global market price. This again will push the electricity consumption cost high.

EP

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Stable Prices of Fuel, Power Essential for Industries

Asif Ibrahim

Reaching the present situation after getting out of the diabolic problem is indeed a great achievement. Now the challenge is ensuring sustainable supply of quality power to all end users like industrial, commercial and others. There is no option but to modernize transmission and distribution systems to ensure that.

Increased reliance on imported energy will certainly put pressure on the fuel and electricity prices in the domestic market. I am not in favor of providing subsidies. However, we should keep in mind that the energy prices do not affect the competitiveness of industries and go beyond the affordable level of the consumers. For managing this stress, our own coal resources could be utilized with clean technologies, but considering the need for ensuring sustainable development and protecting the environment.

Chairman of Chittagong Stock Exchange Limited Asif Ibrahim, who is also the Vice Chairman of Newage Group, former President of Dhaka Chamber of Commerce and Industry (DCCI) and founder Chairman of Business Initiative Leading Development (BUILD), made the observation in an exclusive interview with EP Editor ***Mollah Amzad Hossain.***

Bangladesh has brought 99.75% of its population under power grid coverage. How do you evaluate this achievement?

There cannot be any second opinion that the achievement of the power sector in this golden jubilee year of independence is a significant milestone. The power crisis in 2009 was deep and diverse. Reaching the present situation after getting out of the diabolic problem is indeed a great achievement. Now the challenge is ensuring sustainable supply of quality power to all end users like industrial, commercial and others. There is no option but to modernize transmission and distribution systems to ensure that. The cables should be taken underground in the urban areas. We have heard about those initiatives being taken by the distribution utilities.

Consumers Association of Bangladesh (CAB) has observed that despite bringing almost the entire country under the power grid, the price of electricity is going above the affordable limits of the consumers. In one of their studies, CAB claimed that the price of electricity at consumers' end increased by 90% and that of bulk by 118% from the levels of 2010. What do you say?

The concerns of CAB are not unrealistic. Electricity is also now a basic need like food and other essential commodities for quality modern living. Electricity is also the main driving force of industries and commerce. Hence, merely ensuring supply to all would not be enough. It must also be supplied at prices to be affordable to all. Otherwise, smooth operation of industries would be affected while the living standard of people will suffer.

Not many achievements were made in oil and gas exploration. It is almost certain now that its own coal reserves may remain unexploited. Bangladesh would continue growing into an almost exclusively imported fuel (coal and gas) dependent economy. The prices would also increase consequently. Can industries absorb the price shock? Can Bangladeshi export commodities maintain competitiveness in the global market?

You must have noticed that Bangladesh had enjoyed a comfortable period during the COVID-19 induced price crash in the international fuel market. That situation does not exist now. The price volatility in the global market would be there if Bangladesh continues to grow as an import-dependent country. Without wasting time any more, Bangladesh must not leave any stone unturned for exploring all avenues of oil and gas exploration. We are in favor of environmental impact management. There are many advanced technologies now for less emitting fossil fuel use. We are using the latest technologies of coal power generation. Where is the problem using clean coal

technology to exploit our own coal reserves? Many consider this as the best option for keeping electricity prices at an affordable level.

What is your opinion about the recent increase in liquid fuel prices? Would you suggest reducing the price now in the changed circumstance?

I am not in favor of providing any subsidy to liquid fuel. But this time there was no logic for increasing the prices of diesel and kerosene all of a sudden. In future, before increasing such price through executive order, all trade bodies must be taken on board. That would help better manage the multi-dimensional adverse impacts on the market.

It has been found on review of data of recent years that demand of grid electricity in the industrial sector is not increasing. Exclusive reliance on captive power is assigned as the reason for it. What can be done to get out of it?

It should not be judged so simply. There is a possibility of getting quality power supply on an uninterruptible basis if the connection is taken from a high voltage line. But huge investment is required for setting up the step down transformer. On the other hand, the gas-based captive generation-using industries were setting up cogeneration and trigeneration facilities to significantly reduce fuel cost. The cost is getting much lower than the grid power. It would not be possible to get out so soon from it.

I think the government should focus on the new special economic zones and ensure supply of quality power there through setting up modern, reliable infrastructures. It would discourage entrepreneurs to go for captive power generation and the demand for grid power would grow.

Trade bodies always give useful suggestions to the government about power and energy sectors. Entrepreneurs are the main users of energy and power. But now this is not happening. Do you think that this is happening due to the absence of proper leadership in the trade bodies? Is the government giving due attention to the suggestions?

I do not agree with you on this. The DCCI, CCCI, MCCI are regularly putting forward their analysis and recommendations to the government, which is also giving due attention to these. Besides, as the members of different committees, we are also providing our opinions. In my opinion, there must be continuous exchange of opinions between public and private sectors regarding issues and options of power and energy sectors.

Merely ensuring supply to all would not be enough. It must also be supplied at prices to be affordable to all. Otherwise, smooth operation of industries would be affected while the living standard of people will suffer

For a long time, entrepreneurs have been requesting forecasts of energy pricing. But the government so far could not provide it. What are your views?

This should be provided without wasting any further time. Especially keeping in view of graduation from LDC status, energy pricing forecasts for the next 5 years must be announced. Estimates must also be prepared for short, mid and long terms like 2030, 2040 and 2050. After every two years depending on the changed circumstances, the price can be adjusted. The entrepreneurs taking these estimates into consideration can better make investment plans.

RMG and textiles are the major export earners of Bangladesh. It is being said that these may not remain competitive if energy prices continue to increase. What are your views as a successful entrepreneur of the RMG sector?

For different reasons, the textile sector is under considerable stress. At the present increasing trend of electricity and fuel prices, the textile sector is struggling to remain competitive. I do not think that it would be possible for the sector to maintain competitiveness if the price of electricity and gas is further increased soon. Fresh challenges would emerge for the export earning sectors, including RMG and textiles, after Bangladesh's graduation from LDC to a developing economy. By then, Bangladesh will lose all advantages of an LDC. All export earning sectors should be kept immune from the energy price hikes. The government should take special initiatives in this regard.

Bangladesh by 2030 may become at least 60% and by 2041 90% dependent on imported primary fuel in the current trend. Can our economy absorb the price shock? What do you think are the ways to confront the challenges?

I have already mentioned my views above. Bangladesh through adopting modern, less-emitting technologies should continue to explore and exploit its own primary fossil fuel resources. That would limit carbon emission below acceptable limits. I do not believe that our economy is not yet resilient enough for absorbing price shocks of the volatile global fuel market. The government must adopt a comprehensive policy for managing the risks and challenges.

Initiatives for a few more nuclear power plants like Rooppur Nuclear Power Plant should be taken. Alongside Russia, France and China can also assist.

Do you think it would be possible to get out of exclusive dependence on imported fuel through increasing contributions of Renewable Energy?

Bangladesh has enabling policies for the growth of RE. But getting finance is a major issue. Financing challenges can be better addressed by creating some more organizations like IDCOL. EP

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