

MONTHLY

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ENERGY UPDATE



**TWO NEW WIND POWER
PLANTS INAUGURATED IN JHIMPIR**

**EMERGENCE OF CHEAPER SOURCES
HAS DILUTED HYDRO'S ATTRACTIVENESS**

**REDUCING
CLIMATE COSTS**

**GAS AND ELECTRICITY PRICES
ARE POLITICALLY SENSITIVE**

EXCLUSIVE INTERVIEW



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Chairman METRO WIND
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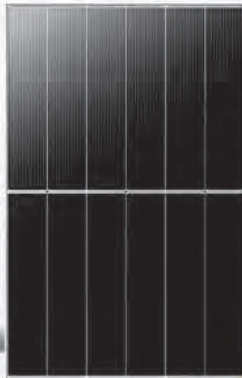
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Tackling ensuing gas crisis

Pakistan is likely to face severe gas crisis in the upcoming winter like the last year as demand will highly grow due to domestic, commercial, and industrial use.

There should be no denying that the gas crisis in the country is the result of ill-energy policies and lack of interest by all successive rulers who were seen usually busing in saving power chairs rather than making effective and efficient energy policies.

The successive governments have failed to raise gas resources in view of rising population, commercialization and industrialization.

Natural gas and imported LNG contribute more than 40 per cent to the country's current energy mix, including gas resources used in electricity generation. In recent years, the demand for gas has increased rapidly in Pakistan. However, gas exploration and production have declined, and the LNG operational and regulatory framework is weak, leading to a nationwide shortage and increased supply costs.

Although 78% of households have no access to natural gas in Pakistan, natural gas consumption in the domestic sector has grown by about 11% over the years- maximum growth among all the sectors. Supplying gas to households requires significant investments. The cost of gas supply to households is much higher than the cost of supply to the industry or power sector. In our gas prioritization policies over the years, this has not been taken seriously, leading to a shortage of gas supplies. Gas allocation policy has remained based on political priorities rather than on the objective of maximizing value addition. Low gas prices and inefficient gas allocations have encouraged higher demands.

Recently, Recently Minister of State for Petroleum Musadik Malik has also informed that the natural gas shortage would occur in the upcoming winter. Furthermore, OGDCL predicts as per a report that Pakistan's indigenous oil reserves will be exhausted by 2025. Current reserves will last a maximum of 15 years if demand is capped at present-day gas levels by 2030. This is an alarm bell for Pakistan to make hectic efforts to manage ensuing demand of gas in the winter season.

Pakistan is reportedly unable to attract any bidder for a long-term contract, which seems to be management failure. There is a sharp increase in gas demand in Pakistan, but due to the inefficient distribution of natural gas resources, Pakistan has been facing a colossal gas shortfall.

To meet gas crisis in the country, the government should import additional LPG this winter. There is dire need for a quick fix to the gas crisis so as to provide relief to the domestic, commercial and industrial users. It is the need of hour to conserve energy and boost renewables, particularly solar and wind energy. The country should also raise national and foreign investments in energy sector as the International Energy Agency has estimated that investments in the developing world should increase seven fold up to \$1 trillion. Pakistan should adopt a positive approach and boost economic ties with Russia as latter is the world's top natural gas exporter and the second largest exporter of oil. There is also need to develop energy sector ties with Iran to purchase gas with lower rates.



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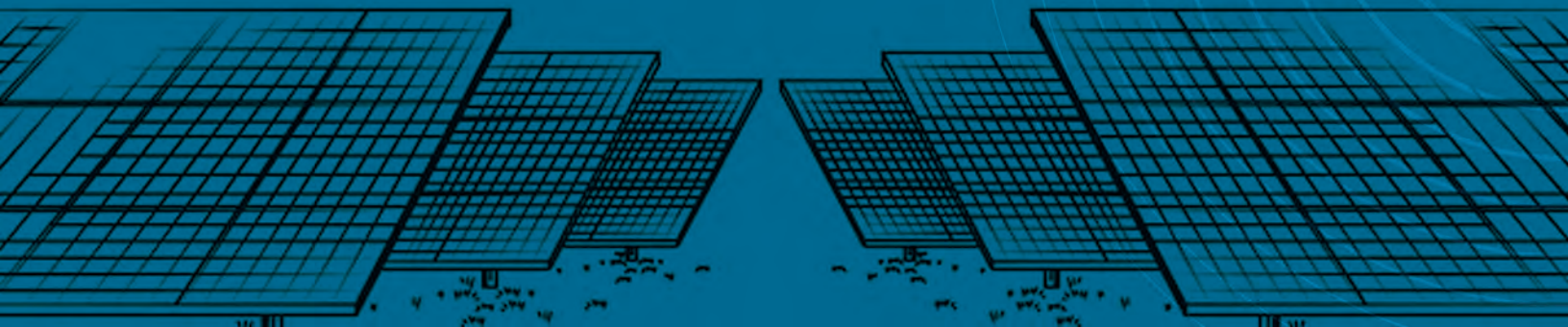


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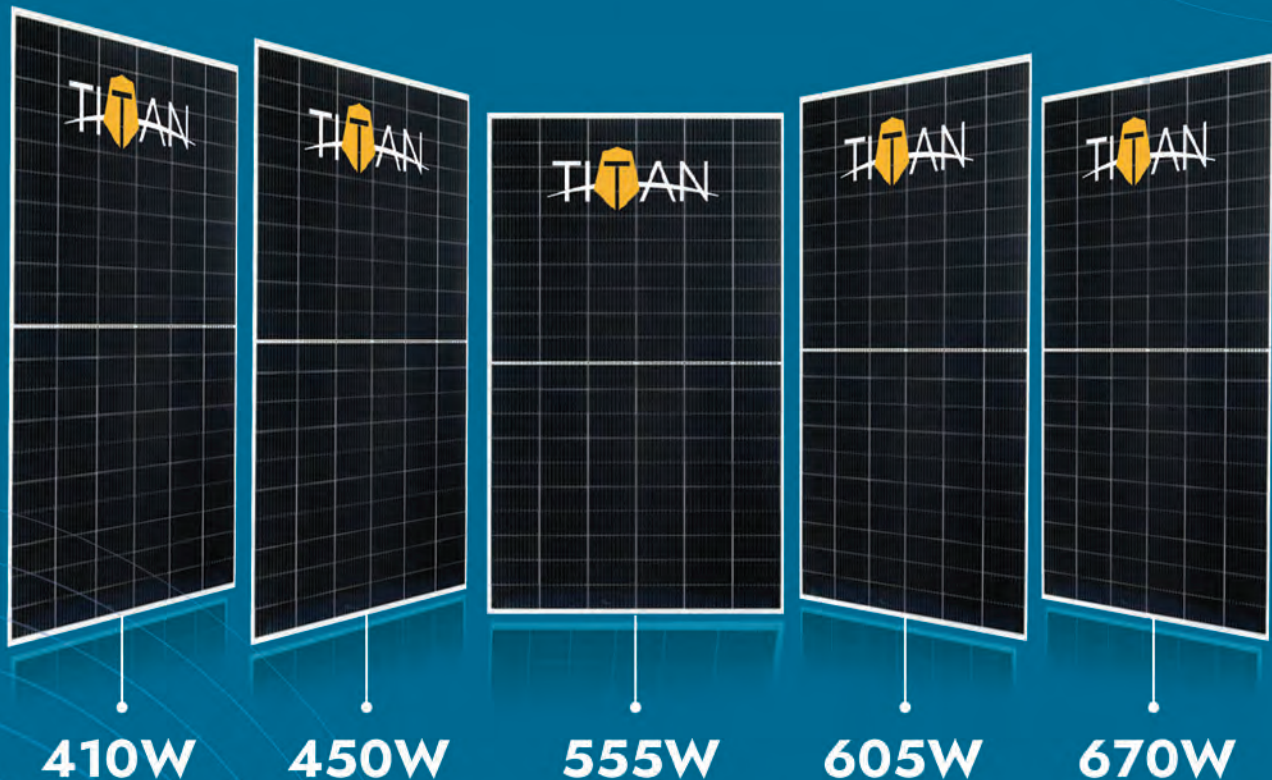
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Role of LPG in gas crisis-II

Gas and electricity prices are politically sensitive

— Syed Akhtar Ali —

Gas tariff and subsidies. Gas and electricity prices are politically sensitive issues. The IMF compares prices in USD terms in which an energy price hike may not appear to be too high. However, in rupee terms in which Pakistanis earn their income, the energy price increases have been too steep. Elections are approaching as well. While electricity prices have been increased, it would be very difficult to increase gas prices specially for the poor and middle classes.

There appears to be further scope for increasing the tariff of large gas consumers of the rich classes. New connections are being given at LNG prices, which are almost double the highest domestic slab. Either the supplies to posh areas may be reduced to incentivize them to shift to LPG or gas tariff may be increased to be comparable with LPG.

To be fair, supplies of LPG to posh areas should be ample. This sector wastes a lot of gas in heating space and water in inefficient appliances. They may be encouraged to switch to LPG. Technical assistance for conversion could be provided by gas companies. They have other options to use electrical appliances as well.

Up to now LPG has not been subsidized, except in a small way for LPG-Air mix plants. Enough subsidy has been going to the pipeline

gas sector. However, in our region in India, LPG cylinders have been subsidized. There is a case for LPG subsidies for the poor, especially, in the northern Pakistan where trees are cut for fuel needs in winters in particular. This causes landsliding and soil erosion. However, subsidised LPG can only be handled by public sector companies. Utility Stores Corporation can also play a role in LPG retail.

Alternative solutions

Finally, ample LPG supplies may have to be arranged by the government on the lines discussed above. Interestingly, the rural population, particularly the rural poor, will not be affected by the gas crisis. There is a blessing in deprivation.

Rural poor use biomass. Urban populace could diversify its dependence as well. Biogas and solar geysers could be promote and incentivised. Keeping aside the longer term biogas development programmes and issues, for rural-urban mixed areas, biogas can still be facilitated. Cheap Plastic made biogas generators can be made available which can supply biogas readily by filling organic vegetable and animal waste. Such generators could not cost more than Rs 10,000-15,000 per unit. Also, biomass cookers can be promoted.

Role of LPG in gas crisis — I

There are many other solutions. Expensive charcoal is used in commercial and rural

domestic sector. Much cheaper Thar coal briquettes can be used in these areas. In central Europe, coal has been used consistently and with the continuing crisis, Lignite may be used even more. Coal-Biomass briquettes are another possible product. All these options are indigenous and don't cause foreign exchange loss. One-size-fits-all solutions may not work or be enough to meet the challenge.

Other issues and proposals

LPG is heavier than natural gas and settles near ground while natural gas goes up. As a result, LPG is slightly hazardous. There are many LPG incidents and accidents every year due to this phenomenon. The use of unlicensed small industry LPG cylinders which use inadequate materials of poor quality is another reason for LPG cylinder explosions.

Ogra (Oil and Gas Regulatory Authority) and provincial governments should cooperate to control this. One is not sure if LPG marketing companies exercise due diligence in eliminating unlicensed bad quality LPG cylinders.

LPG is produced by oil refineries and is also extracted from oil and gas fields. LPG is thus locally produced from Karachi to KPK at various locations. It has to be cleaned in gas processing plants and is later transported to LPG marketing companies' cylinder-filling plants. LPG's central market is in Lahore. There is a case for exploring a project for installing an LPG pipeline from Karachi up to



a northern point. ISGS has prepared a proposal in this respect.

It is regrettable that JJVL, a large local LPG separation and processing plant, has been shut since July 2020 due to legal complications of royalties and ownership between JJVL and SSGC. It is hoped that the issue is resolved and a production of LPG of 10,000 tons per month is started, saving precious foreign exchange.

Under the new accountability laws, negotiating agreements with private parties should have become less riskier. The case for forming a 'Gas Tribunal' has been under consideration for a long time now. In addition to JJVL case, there are thousands of gas sector legal cases, which are at various stages of litigation. An early implementation of the tribunal proposal may be very helpful in resolving these cases in lesser time and money.

There is market fragmentation which has introduced economic inefficiency in the LPG sector. There are more than 200 LPG marketing companies. Consolidation of this market has been discussed for quite some time. How to go about it? It may not be easy. Taxation, pricing and licensing conditions may be used to incentivize mergers and acquisition among the marketing companies.

There are pessimistic trends in the production of local gas and imported LNG, while demand is increasing, adding to the demand-supply gap. LPG can play some role, at least, in catering to the needs of cooking food in homes.

There are many loose ends in the LPG sector. Many new developments are and will be taking place. LPG has price linkages with other competing fuels. In domestic and commercial sectors, it competes with natural gas. In transport sector, it competes with petrol, CNG and even diesel. Pricing and taxation policies have to take these linkages into account.

The stakeholders are demanding an integrated New LPG policy. GoP normally involves stakeholders in making such policies. It is hoped that with good policies and adequate implementation framework, progress can be made in this important energy sector.

The writer is former Member Energy, Planning Commission and author of several books on the energy sector. ■



PETROLEUM EXPLORATION



Govt executes PCAs, exploration licences for energy companies

The Government of Pakistan has executed Petroleum Concession Agreements (PCAs) and Exploration Licences (ELs) for Block No. 2966-2 (Chah Bali) with Joint Venture of Oil & Gas Development Company Limited (OGDCL) (operator) (70%) and Pakistan Oilfields Limited (POL) (30%), Block No. 2967-5 (Mach) and Block No. 2867-6 (Dadhar) with Joint Venture of Mari Petroleum Company Limited (MPCL) (operator) (40%), Pakistan Petroleum Limited (PPL) (30%) and United Energy Pakistan Limited (UEPL) (30%), Block No. 2866-5 (Kalat West) and Block No. 2869-15 (Sui North) with Joint Venture of PPL (operator) (50%) and MPCL (50%) and Block No. 2969-11 (Meeranpur) to UEPL (operator) (50%) and MPCL (50%).

The efforts in these blocks will bear fruit in the country in the form of additional hydrocarbon reserves during next few years and will not only enhance investment in the petroleum sector but will also contribute in bridging the energy demand and supply gap.

The ELs and PCAs were signed by Capt. (Retd.) Muhammad Mahmood, Additional Secretary (Incharge) Petroleum Division, Kashif Ali, Director General Petroleum Concessions, Muhammad Aslam Umrani, Provincial Director (Balochistan) and Tariq Rashid, Provincial Director (Punjab) on behalf of Government of Pakistan.

Blocks Chah Bali, Mach, Dadhar and Kalat West are located in the Province of Balochistan whereas Sui North Block and Meeranpur Block are located in Balochistan and Punjab Province. The total area of these Blocks is 9901.37 Sq Km. The minimum investment to be carried out by the companies in these Blocks

for prospecting will be USD 65 million for the period of three years. Companies are obligated to spend a minimum of US\$30,000 per year in each block on social welfare schemes.

OGDCL is a public limited company engaged in exploration & production activities in the country for the last five decades. It holds the largest share of oil 33% and gas 34% of the total reserves in the country. Its percentage share of total oil & gas production in Pakistan is 47% and 29%, respectively.

The pioneer of the natural gas industry in the country, Pakistan Petroleum Limited (PPL) has been a frontline player in the energy sector since the mid-1950s. As a major supplier of natural gas, PPL today contributes over 19 percent of the country's total natural gas supplies besides producing crude oil, NGL and LPG.

Mari Petroleum is one of the leading integrated E&P companies in Pakistan, with a net hydrocarbon production of 104,856 barrels of oil equivalent per day. With a 23% market share, we are the second-largest gas producer in Pakistan and have a strong reserve base of around 600 million BOE.

POL is an exploration and production company in the upstream segment of the petroleum industry. It is producing cumulative daily production of 4,057 barrels of oil equivalent. POL is the operator in nine development & production leases, four ELs and working Interest owners in six other exploration blocks operated by various E&P companies.

United Energy Pakistan Limited (UEP) is a subsidiary of United Energy Group (UEG), an international energy company. UEP is the largest foreign oil and gas E&P company operating in Pakistan. UEP contributes 14% of Pakistan's total gas production. ■



DANISH IQBAL

Chairman
GUL AHMED ENERGY

HYBRID PROJECTS WAY FORWARD TO ACHIEVE CLEAN ENERGY NEED



Hybrid energy projects should be launched in Jhimpir wind corridor of Sindh as a way forward for Pakistan to achieve desired progress in the renewable energy sector.

This was stated by Danish Iqbal, Chairman of Gul Ahmed Energy and Metro Power Group of Companies, in an exclusive interview with the Energy Update soon after two new wind power projects of his energy sector companies were launched by Federal Energy Minister Khurram Dastgir Khan in Jhimpir area on November 30, 2022. Following are important excerpts from his interview for our readers:

Energy Update: Tell us about your two newly inaugurated clean energy plants in the wind corridor of Sindh.

Danish Iqbal: After the inauguration of our earlier two 50MW projects, our team was ready to launch more such projects. It was at that time we obtained two LOIs from the Sindh government and then we started making progress on this front. We obtained the tariff for our new wind projects in 2018 while we achieved the stage of financial close in 2019.

Then we started constructing the new plants, which were timely completed. In 2022, we achieved COD for both plants. These two projects are among a total of 12 wind projects of the last batch that were able to obtain the tariff from the government. Around US\$74 million is the cost of the new 60MW wind project while around US\$ 63 million were spent on building the other new 50MW wind energy plant. The British International Investment (BII), a subsidiary of the UK government, has 35 per cent share in the Metro wind power project while 100 per cent shares of the other 50MW renewable energy project are with the Gul Ahmed. Up to six to seven years are required to recover the cost of building these two projects.

We haven't been able to recover half of our investment cost of building our previous two projects despite the passage of six to seven years. The circular debt of the energy sector and the devaluation of the rupee slowed down this recovery process.

EU: What is the current situation in the clean energy sector of our country?

Mr Iqbal: The competitive bidding regime was introduced in 2019 but the government has yet to issue the RFP to implement this system. The competitive bidding system will now be introduced keeping in view IGCEP for the next 10 years. The government isn't much serious about implementing its own RE policy. It is very likely that the new wind energy plants in the country in the next round will be built by 2025. The grid is available for new wind energy plants.

It is important to execute these renewable electricity projects as speedily as possible to utilize the available capacity of the grid. Up to 600 to 700MW capacity of the grid is not being utilized as the existing wind power plants are generating merely 500MW electricity.

This available capacity of the grid should be consumed as early as possible. This capacity could easily be consumed if we go for the option of hybrid renewable energy projects. For this purpose, my suggestion is that the option of solar power generation should be added to all new upcoming wind energy projects in the corridor.

EU: What should be the way forward for Pakistan to make desired progress in the renewable energy sector?

Mr Iqbal: The cost of establishing a wind energy plant and that of a solar power project in the country is almost the same. The best thing for Pakistan is that both wind and solar power projects are built simultaneously. Hybrid renewable power plants should also be established. This should be the way forward for us to make progress in the renewable energy sector in a gradual way.

EU: What are your future plans for the Pakistani renewable energy market?

Mr Iqbal: We have planned to partner with K-Electric for its drive to generate more clean electricity for its consumers. The K-Electric has achieved its target of base-load power generation on the basis of natural gas. Now they have planned for 1500 MW renewable electricity generation for their system. They have to add clean energy to their system for lowering the average basket price of electricity for their consumers.

So far, they are getting 300MW renewable power through two solar projects while they plan to establish more clean energy projects of 200MW generation capacity at Dhabeji grid station. We intend to join hands with K-Electric to help achieve its goal of generating more clean electricity for its consumers.

We are also a joint venture partner with BII for establishing wind energy projects of 500MW generation capacity. It is good that our grid has been strengthened to take intermittent electricity from new renewable energy projects. This strengthening of the grid will also enable us to establish more clean energy plants in the country. ■

NEWS STORIES

Soft launching 15th Annual Int'l CSR Summit held CSR activities providing relief to communities Nasir Shah

The National Forum for Environment and Health (NFEH) has announced that its upcoming event, the 15th Annual International Corporate Social Responsibility Summit-2023, will recognize the best relief and charitable efforts in the country to provide emergency humanitarian support to flood-hit communities in the country.

Sindh Local Government Minister, Syed Nasir Hussain Shah, recently performed soft launching of the 15th Annual International CSR Summit-2023 held at a hotel in Karachi.

The 15th Annual International CSR Summit will be held at a hotel in Islamabad in February 2023. Leading corporate leaders, CSR practitioner, NGO, leaders and government officials will address on this occasion.

The Local Government Minister appreciated that the NFEH for the past many years had been consistently organizing events to raise public awareness about issues related to public health, tree plantation, environmental protection, urban waste disposal, clean energy, corporate social responsibility, and philanthropy for a number of good causes in society.

He also commended that the upcoming edition of the CSR Summit in Islamabad would focus on the massive charitable and voluntary efforts in the country for the emergency relief and rehabilitation of the vulnerable communities devastated by floods earlier in the year.

He said that such events would go a long way to promote cooperation between the government and concerned civil society organizations and charities to work together for the cause of rehabilitation of the flood-hit communities in the country.

On this occasion President NFEH M.Naeem Qureshi, Secretary General Ruqiya Naeem, Vice President and Project Head of 15th Annual International CSR Summit-2023 Engr. Nadeem Ashraf and others were also addressed. More information of the event will be taken from www.nfeh.org.pk ■



Minister inaugurates 100MW solar project at Chaubara

Federal Minister for Energy Khurram Dastgir has said 100MW Zhenfa solar project reflects the government's resolve to provide cheap and environment-friendly electricity to the people. The minister said the 100MW project would produce electricity at the rate of Rs9



per unit and also help save precious foreign exchange being spent on imported fuel. The federal minister said that in order to check high power rates, the government was trying to find cheaper resources that can generate electricity at a rate of Rs7 to Rs8 per unit to reduce the burden on common man. In order to speed up development journey, local coal, water, wind and solar power generation projects are being promoted, he added. ■

Two new wind power plants inaugurated in Jhimpir

New plants are step towards achieving cheaper electricity, Khurram Dastgir tells inaugural ceremony



Federal Power Minister Khurram Dastgir Khan has formally inaugurated two new wind energy projects in Jhimpir area in district Thatta, a 60 MW plant of Metro Wind Power Ltd and a

50 MW renewable project of Gul Ahmed Electric Ltd.

Speaking at the inaugural ceremony, the federal minister said that every new wind power project launched in Gharo-Jhimpir Corridor of Sindh was a step towards achieving the national goal of producing cheaper and clean electricity

through indigenous energy sources.

Mr Dastgir said Gharo-Jhimpir Corridor being the site of several wind power plants represented the energy future of Pakistan that stood for maximum utilisation of indigenous power resources of clean electricity production.

The federal minister said the launching of new wind power plants in the country was fully in line with the energy policy of the present government having the compulsory provision that any new generation capacity to be installed in the country shouldn't consume imported fuels for the protection of the environment.

He appreciated that new wind power plants would also go a long way in slashing the electricity bills as their tariff was much less than the electricity tariff being charged from general consumers in the country. He assured the audience that the present government would do its best to facilitate the launching of new wind energy projects in the country by expanding the national transmission capacity as it required greater production of clean electricity for powering economic growth in Pakistan.

The minister said the power production on the basis of expensive imported fuels would gradually be phased out in Pakistan and instead, there would be greater reliance on wind, solar, nuclear, and hydro resources for clean electricity generation for every consumer in the country.

He said the present government stood fully committed to introducing the most advanced technology for consuming Thar coal for energy production so that there should be minimal harm to the environment.

Also speaking on the occasion, the chief of Alternative Energy Development Board (AEDB), Shah Jahan Mirza, assured the audience that AEDB had been doing its best to act as the one-window facility for prospective investors who wanted to launch clean energy projects in Pakistan.

He said the AEDB had been helping out the incoming energy projects to play its due part in achieving the vision of the government that stands for 60 per cent power production in the country through clean energy sources by the year 2030.





Sarah Mooney, British Deputy High Commissioner to Karachi, said that a transition towards clean energy was essential to Pakistan to build back better after the devastating floods that had affected 33 million people. The UK, in line with its COP27 commitments, was playing a leading role in providing investment and expertise to enable Pakistan to shift towards a greener and climate-resilient economy, she said.

This is exemplified by these power projects by Metro Wind Power Ltd and Gul Ahmed Electric Ltd in the Jhimpir wind power corridor. "The UK will continue to seek out new opportunities to facilitate similar energy projects moving forward," she added.

Danish Iqbal, Chairman Gul Ahmed Energy Group and Metro Group of Companies thanked federal, Sindh governments, National Transmission and Dispatch Company, National Electric Power Regulatory Authority, AEDB, British International Investment, and British Deputy High Commission, and all other stakeholders for their continued trust and faith in professional capabilities of his new clean electricity ventures.

"Most notably, the newly launched Metro Wind Power Limited is the only 60MW project, whereas all others are 50MW in this round of projects. Indeed, a major accomplishment," he said.

Habib Yousuf, Country Director, Pakistan at British International Investment (BII), said the BII was excited to join Gul Ahmed Metro Group in launching the Metro Wind Power Limited project which is a key milestone for the Metro-BII Renewables joint venture. "When we established the platform, we saw a promising opportunity to boost renewable energy generation and help scale up clean energy capacity and use across Pakistan," he added. ■

Power generation cost declines

— Tanveer Malik —

Cost of power generation in the country went down by three percent in the month of October this financial year, compared to the same month of last fiscal.

Tahir Abbas, head of research at Arif Habib Limited said, "The decline in the total power generation cost was mainly triggered by rise in the power generation from hydel, nuclear, wind and solar sources."

According to the data on the cost of power generation in the country, during October 2022, the fuel cost for power generation decreased by three percent to an average of Rs9.02/KWh compared with an average cost of Rs.9.30/KWh in the same month of last financial year. Whereas the cost of power generation also decreased by nine percent in October 2022 against September of this fiscal, when average cost of power generation was Rs9.91/KWh. During the first four months of this fiscal, however, the cost of power generation was up by 40.81 percent compared to the same period of last fiscal. In July-October of 2022-23 the cost of electricity stood at Rs9.99/KWh against Rs7.09/KWh in the corresponding months of last fiscal.

The breakup of cost of electricity showed that on a year-on-year basis, the decrease in fuel cost was witnessed mainly due to a rise in hydel, nuclear, wind, and solar based generation. While on month-on-month basis, the decline in fuel cost was triggered by a decline in coal, which was utilised two percent less on MoM basis, RFO three percent MoM, RLNG seven percent MoM, and gas down one percent MoM. On the other hand, power generation in the country went down by 5.2 percent YoY to 10,705 GWh (14,388MW) during the month of October of this fiscal compared to 11,296 GWh (15,183MW) during the same month of last fiscal. ■

Prime to buy 100pc of Eni's business

The Prime International Oil and Gas Company Limited (Prime) has made an agreement to acquire 100 percent of Eni's business in Pakistan to reduce the country's reliability on imported gas and oil.

In a statement to the bourse on Thursday, Hub Power Company Limited (Hubco) announced that Prime, a 50-50 joint venture between Hub Power Holdings Limited (a fully owned subsidiary of Hub Power Company Limited) and the Eni's Employee Buy-out Group, entered into four sale purchase agreement with Eni International BV, Eni Oil Holdings BV, Eni UK Limited and Eni ULX Limited for the purpose of acquiring Eni's business in Pakistan.

Eni, a global energy company, has been operating in Pakistan in the exploration and production sector for more than a couple of decades. Prime would buy 100 percent shareholdings of Eni Pakistan Limited, Eni AEP Limited, Eni Pakistan (M) Limited and Eni New Energy Pakistan (Private) Limited from the selling entities. ■

Future of hydroelectric power

Emergence of cheaper sources has diluted hydro's attractiveness

—♦— Syed Akhtar Ali —♦—

COP27 has ended in Sharm El-Sheikh, Egypt. It has reaffirmed its commitment to a maximum of 1.5-degree Celsius rise in temperature over pre-industrial global average. Some support to natural gas as a transition fuel has survived.

The most important and new feature of COP27 is the loss and damage fund. Not much is known as to what would be the source of fund and how would it be allocated to the loss and damage victims. Will it be governments or individuals?

Initial indications are also not very encouraging. EU has offered 60 million euros to Pakistan as against the estimated damage and loss of \$30 billion.

COP27 seems to have ignored hydroelectric power as a reliable renewable energy source worth promotion. However, they have spoken volumes about solar, wind, hydrogen and electric vehicles. Reason for ignoring hydro appears to be a lack of mountains in many parts of the world providing water head.

Hydropower has been one of the most pursued sources of energy and the only available renewable energy source before the era of wind and solar power began recently. Solar is the new hero of today and tomorrow. Solar PV would generate 38-50% of the world's electric power (10,000-14,000 gigawatts). Hydropower belonged to yesterday. It may never go beyond 1,500GW.

Hydropower has many advantageous features – it can start instantaneously providing black start functions in case of grid failure and

restart, provides energy storage by pumped storage and provides base load power in its availability period. It requires no fuel except water, which is its defect too; drought causes loss of production and decreased reliability. Continuous and successive droughts can be extremely dangerous for energy supply and the economy.

Existing installed hydropower capacity is 1,360GW (17% of the total global capacity), out of which China has 391GW, Brazil 109.4GW, Canada 82.3GW and USA 101.9GW.

However, new additions to hydro capacity in most countries remained below 1GW, while China added more than 20GW. In Norway, Brazil and Canada, hydropower accounts for 93.4%, 63.5% and 58.8% of electricity generation respectively. In Pakistan, installed hydropower generation capacity is around 10,000 megawatts, accounting for 15% of total hydro potential of 60,000MW. It has been a much sought-after source of electricity in our region including India, Pakistan and Nepal due to Himalayas.

IGCEP (power plan) provides for adding 12,000MW of hydro capacity by 2030. In Pakistan, Kalabagh Dam and Bhasha Dam attracted quite some political debate; Kalabagh appears to be buried in the debris of history and inter-provincial political opposition; Bhasha has been inaugurated several times and recently, its implementation dates have been advanced into future.

K-P earns significant royalty from hydro and would like to get even more than the present allocation. In the province, the recent oil and gas discoveries may dilute dependence on hydropower royalties.

Will hydropower remain as attractive and sought after in future? Probably not! The emer-

gence of cheaper and widely available sources like solar and wind has diluted the attractiveness of hydropower. Hydropower's capital intensity in an atmosphere of high interest rates has also become a negative factor. Current capital cost is \$2.5 million per MW and generation cost is 8-10 US cents per kilowatt-hour (kWh), as opposed to \$0.60 million per MW and 2-4 US cents per kWh of solar PV plants.

To deal with the intermittency problem of solar and wind and to provide for grid stability, a new role of hydropower is emerging. Hydro pump storage has been there for a long time now but its share has not been as high as can be expected in future laden by solar and wind power. A classic example of this new role is the installation of hydro pump storage in the UAE. There is no hydro pump storage installed yet in Pakistan.

With the planning and implementation of a large component of 10,000MW solar energy, IGCEP may have to add a significant amount of hydro pump storage. K-P govt may well be advised to lobby for such a capacity.

Pakistan has consistently ranked over the last 10 years among the 10 highest risk vulnerable countries due to climate change. After having been hit by scorching heat in April, the country had to face massive floods; 33 million people have been impacted, 325,000 homes destroyed, 735,000 livestock lost and 2 million acres of crop damaged.

Water dams have been swept away in Balochistan. Floods have destroyed 105 mini-hydropower plants in Malakand and Hazara. There were controversies about hydropower even in its heydays, the salient of which are land use, displacement of communities, biodiversity loss, dam failure risks, etc. ■



Power sharing

Why a change in net-metering tariff being resented

—◆— Munawar Hasan —◆—

Amid frequent power breakdowns and staggering electricity bills, the trend for installing solar panels saw a sharp rise this summer. This was largely an urban phenomenon limited mostly to posh localities. Related to this is the concept of net metering, which means that you can sell the surplus energy you're producing — at home or at a small-scale industrial or commercial unit — to the national grid.

Such on-site (decentralised) power generation can help support the delivery of clean, reliable energy to additional consumers and reduce losses along transmission and distribution lines. Early this year, the National Electric Power Regulatory Authority (NEPRA) proposed to reduce tariff on the solar net-metering sales. This was seen by many as a huge disincentive to renewable energy producers.

Grid-connected power generation, also known as a distributed energy resource (DER) can yield comparatively low-cost energy. The power regulators and managers must not forget that distributed generation systems are typically more reliable than centralised generation systems because multiple small units are less likely to fail simultaneously compared to a single large unit. Additionally, the consequences of failure are much less significant for a small unit than a large unit.

Apart from reliability, distributed generation may lower environmental impacts of emissions and improve energy security. DER may also help reduce the cost of power system augmentation, thereby reducing the overall cost of supply.

Under the proposed amendment, the tariff for solar net metering distributor generators would be revised downward to about Rs 9 per unit. It has recently hovered around Rs 19.32 per unit following the recent rebasing of the tariff.

In terms of dollars, power purchased through solar net metering will thus fetch around \$ 0.04. If the NEPRA lowers the tariff on sale of excess energy through net metering, the tariff would be reduced by half when the impact of fuel cost on basket prices is rationalised in the near future together with a gradual reduction in fuel prices.

On the other hand, the cost of setting up solar plants has risen owing to several factors. Thus, even if the capital cost of establishing

a solar net metering system has increased by around a fourth, the selling power tariff would be halved. This will clearly discourage investors.

The power regulators and managers must remember that distributed generation systems are far more reliable than centralised generation systems because multiple small units are less likely to fail simultaneously compared to a single large unit. Additionally, the consequences of failure are much less significant for a small unit compared to a large unit.

As per NEPRA's State of Industry Report, 2022, transmission and distribution losses for the power distribution companies (DISCOs) in Pakistan are hovering north of 17 percent. Such ballooning of losses together with low recovery rates makes end-consumer tariff costlier. A consumer has to pay additional cost on each unit they consume on account of transmission and distribution losses and low recovery.

The report says that electricity transmission losses at the National Transmission and Despatch Company (NTDC) in FY 2022 have been higher than permissible, putting an additional financial loss of Rs 72 billion. Apart from the transmission losses, the average distribution losses in FY 2022 were 17.13 percent as compared to the permissible 13.41 percent.

This resulted in a financial impact of Rs 113 billion. Additionally, NEPRA, in its determinations assumes 100 percent recoveries by DISCOs against the billed amount to consumers. But the recoveries are always lower. In FY 2022, DISCOs were able to recover 90.51 percent against the billed amount; thus, incurring a loss of Rs 230

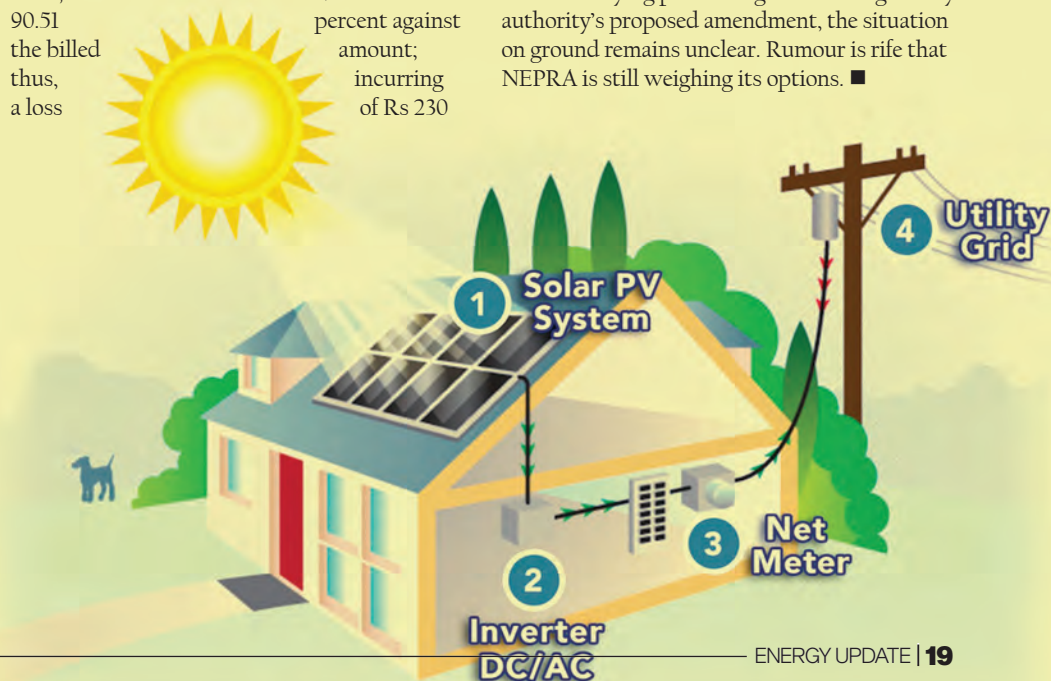
billion. These figures should suffice to highlight the importance of promoting distributed energy resources to reduce grid losses.

It must be pointed out that net-metering generation requires no new investment on the part of the government, as consumers raise the capital for setting up solar plants on their own land — mostly rooftops.

NEPRA has tried to calm the frayed nerves of the consumers with regard to the proposed amendment in Net-Metering Regulations, by stating that no such move had been made thus far, and that only feedback had been solicited from the general public. It further said, in a press statement, that the proposed changes only impact the 20,700 consumers across Pakistan who had been allowed net metering under the regulations approved by NEPRA.

At the distribution level, the LESCO is a pioneer in the country as it introduced solar net-metering, launching this vital distributed grid system as early as in 2016. Calling the utility a great success, Amin says that the installation of bidirectional solar meters had facilitated the purchase and sale of energy. "We're seeing an exponential growth of net metering in LESCO, with the installation of 11,478 connections till date, producing 176 MW of clean and cheap electricity. From processing only a few hundred connections a month, we're going to be seeing a monthly installation of over 5,000 connections very soon."

In the final analysis, despite NEPRA and LESCO denying proceeding with the regulatory authority's proposed amendment, the situation on ground remains unclear. Rumour is rife that NEPRA is still weighing its options. ■



Reducing climate costs

— Ali Tauqeer Sheikh —

Pakistan is among the countries most vulnerable to climate disaster but least prepared to cope with it. Other factors aside, the economic cost of climatic changes have begun to destabilise and shrink the economy, adversely affecting all major growth indicators — GDP, per capita income, rate of savings, tax and revenue collection, and sovereign credit ratings. It has added to our debt burden and to the urgency for additional borrowing. The trade-offs are horribly painful: ‘repurposing’ painstakingly negotiated development projects with lenders to extend emergency cash support to the victims of floods. Business as usual is no longer an option. How can policymakers re-think adaptation strategies and reflect on new avenues for financing climate resilience? What lessons can be drawn from the recent floods in order to reduce the cost of similar disasters in the future?

According to Pakistan Floods 2022: Post-Disaster Needs Assessment (PDNA), just released by the Planning Commission, Pakistan has incurred losses and damages of \$30.2 billion, or 4.8 per cent of this fiscal year’s GDP. The scale and severity of the flooding was unprecedented: a once-in-a-thousand-years heatwave, in some areas, made way for intense rains in many places that were 400pc to 800pc higher than previous averages. This calamity hit 94 districts, including 19 of the 25 poorest ones, pushing them further behind on SDG targets. It is estimated that these floods have increased the incidence of poverty by more than 3.7pc and pushed another 8.4 million

people below the poverty line.

This was not a one-off incident — only bigger and more destructive. In fact, the recently released Country Climate and Development Report by the World Bank has projected that climate disasters, environmental degradation and air pollution will result in a 7pc to 9pc fall in Pakistan’s GDP, and lead to the latter shrinking by 20pc by 2050. The CCDR has estimated that Pakistan will need \$348bn — 800pc more than the current annual budget — to stop climate-induced disasters. Merely \$48bn will be available through public and private financing; there will be a projected gap of \$300bn. On the ground, the PDNA urgently seeks \$16.2bn for immediate recovery and reconstruction. The CCDR has put these needs in a longer-term perspective. It has projected that between 2023 and 2030, Pakistan will need \$152bn for adaptation and \$196bn for decarbonisation, as committed. These are very large sums by all standards. Imagine \$86bn for disaster preparedness and response, \$55bn for water and sanitation, \$85bn for clean energy supply, and so on. Where would this money come from?

The ground realities are dismal, as the gap between possibly available finances and needs on the ground is widening. International financial mechanisms have no provision for this scale of financing. We have seen that there is no agreement on setting up a financial facility for loss & damage, otherwise happily added to the COP27 agenda. Likewise, the G20 discussions in Indonesia on a framework for debt rescheduling for low-middle-income developing countries like Pakistan have remained inconclusive. In the absence of any international pipeline, are there any efforts that Pakistan can make to reduce the direct costs of climate disasters?

It is estimated that these floods have increased the incidence of poverty by more than 3.7pc. A closer look at the PDNA reveals that the total losses incurred by individuals were several times higher than losses to public sector

infrastructure: i) individuals incurred losses of \$19,191m, which included \$6,222m in housing and \$12,969m in agricultural crops and livestock; and ii) losses to public-sector infrastructure were to the tune of \$9,599m. This includes \$779m in education, \$143m in health, \$669m in community infrastructure, \$711m in flood-protection infrastructure, \$3,545m in transportation and communication such as roads and railways, and \$113m in energy transmission and distribution lines — reflecting poor construction codes, standards, specifications, materials and site selections of public sector infrastructure, and often contributing to maladaptation.

State-owned insurance companies have enjoyed near monopoly and need to gear-up for action in partnership with the State Bank and the Securities Exchange Commission. They need to devise insurance mechanisms to protect the state infrastructure and such community assets as crops and livestock, as well as individual home-owners, including nominal owners in informal settlements in the katcha areas or katchi abadis where they do not always have land titles.

More importantly, the PDNA has revealed that poor construction standards have led to disproportionately higher economic losses compared to the direct impact of the 1.1 degrees Celsius change. Climate-resilient standards would have saved Pakistan’s public sector assets only if we had upgraded our construction codes to international standards and benchmarks. The Pakistan Engineering Council, together with major public sector contractors who have dominated infrastructural development — FWO, Nespak, NHA, NLC and Naya Pakistan — and their sub-contractors need to spearhead the revision of archaic construction specifications and by-laws by municipalities. The private sector has a role to play in building national resilience. Such enterprises need to make way for private sector innovation, competitiveness and finances. This can be Pakistan’s key to attracting and effectively utilising international climate finance, while reducing the costs of climate disasters. ■



Incentive Scheme for Renewable Energy Programs

Financing boost likely to cut circular debt, grid dependence: Study

— Shahid Shah —

Research by economists and academia has urged the State Bank of Pakistan (SBP) to provide more financing to individuals like housing societies, commercial buildings, and localities under the Incentive Scheme for Renewable Energy Programs (ISREP).

The 70-page study said it would have several benefits in terms of improving overall efficiency like reducing the burden on the national grid, lowering the risk of circular debt, and reducing the impact of dollar conversion as contracted with the IPP mode projects, etc.

Financing of over Rs83 billion was provided through banks during 2017-21 and Rs3 billion to DFIs during 2017-20 under the ISREP. The research on "In-Depth Analysis of the Green Banking Guidelines" of the SBP has been developed by NED University Karachi in collaboration with Indus Consortium. The study has been conducted by Professor Dr Raza Ali Khan, Chairman Economics and Management Sciences Department, Mirza Faizan Ahmed and Shabbir Ahmed, all teachers at the NED University.

Renewable energy in Pakistan shares merely 2.5 percent of total electricity generation. To increase this share, the SBP announced the promotion of renewable energy in the form of the ISREP in 2016, also amended later to improve further. The scheme comprises three categories, financing for a project (i) from 1MW to 50MW, (ii) below 1MW, and (iii) scheme for vendors/suppliers/energy sellers for the installation of wind and solar systems/solutions of up to 5MW.

The study aims to review and analyse the Green Banking Guidelines (GBG) and identify the key challenges faced by its stakeholder. It also takes into consideration the ISREP.

The study has focused on Habib Bank Limited (HBL) as a case study to analyse its portfolio and views on the implementation of the GBG and the ISREP.

Pakistan has been facing severe environmental issues even though its per capita CO₂ emissions are lower than global per capita CO₂ emissions. In the wake of increasing environmental degradation, the government of Pakistan has decided to restrain environmentally expensive projects, especially in the energy sector. The SBP issued the GBG in 2017 intending to transform the country's economy

and acknowledged the role of the financial sector towards a low-carbon and climate-resilient economy. It helps bring awareness among investors, and the banking industry to make its infrastructure, operations, investments, and products sustainable.

Guidelines provide details about the responsibilities, management, and organisation for the GBG implementation and construct three themes to work upon. These include environmental risk management, green business facilitation, and own impact reduction. The key stakeholders of the guidelines are the SBP, banks / DFIs, and customers / RE developers.

Under the guidelines, the banks have taken some initiatives like the establishment of green banking offices, appointing the required staff, preparing a checklist for environmental risk identification, advisory services for green business facilitation, etc. Some of them have also initiated the environmental as well as the social management system.

HBL is one of the largest banks in Pakistan and a major financier of energy projects and has taken several initiatives in favour of the GBG. The bank has also closed the issuance of the Green Euro Bond for WAPDA, as co-manager, amounting to \$500 million in 2021. It has disbursed Rs5.5 billion in 2021 under ISREP and cumulatively Rs9.5 billion during the last five years. Besides, financing renewable energy projects, the bank has also invested in two coal-related companies ie Sindh Engro Coal Mining Company and Engro Power Generation Thar Private Company Limited which the bank was committed to reducing gradually in the wake of the 'no new coal policy 2020'.

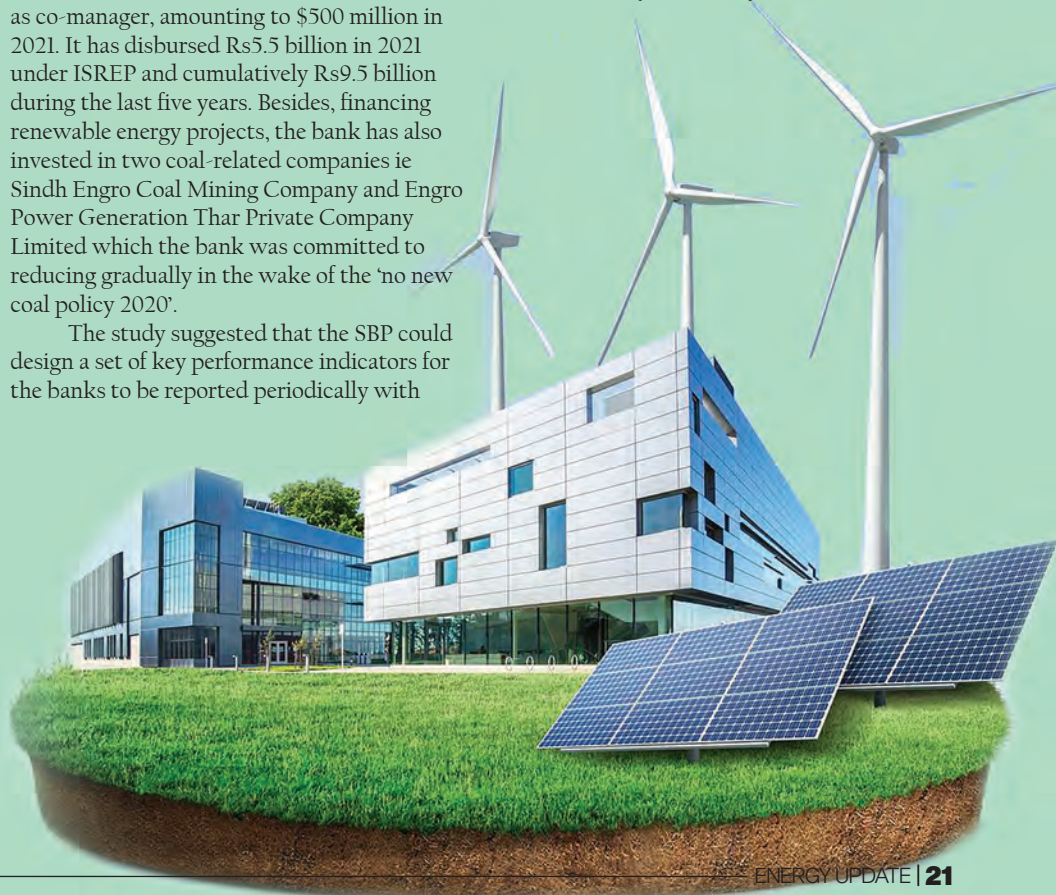
The study suggested that the SBP could design a set of key performance indicators for the banks to be reported periodically with

the consultation of relevant stakeholders and environmental experts. Besides the KPIs, the bank could also set yearly objective(s) related to green practices to help reduce the adverse environmental impact of the overall banking industry.

The SBP should encourage banks to collaborate with the industry to develop green products as they have more industry insight and access to information. There should be a need to provide long-duration training/workshops for risk identification, assessment, and evaluation for the effective implementation of the GBG for uniformity in green practices across the banking industry.

The SBP should extend the financing window under the ISREP for five years or more only for individuals and groups of individuals like housing societies, commercial buildings, localities, etc. The extension of the financing scheme for RE developers should continue as per existing practices, the study suggested.

"The policy recommendations in favour of the ISREP and the GBG will also help the economy to achieve the targets of Renewable Energy Policy 2020 and improve sustainability in the economy," the study said. ■





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Why rooftop solar panels easiest to cut emissions

Installing rooftop panels will reduce expensive transmission costs

— Ahmad Faruqi —

The message that came through the United Nations' climate change conference (COP27) in Egypt's Sharm el-Sheikh is loud and clear: nations need to do more to slow down climate change or the consequences will be catastrophic.

For Pakistan, the deadly effects of climate change are already here. This year's monsoon floods have caused devastation on a scale never seen before. At COP27, Pakistan iterated that while it was responsible for less than one per cent of global carbon emissions, these emissions triggered the floods, submerging a third of the country, killing over 1,700 people and leaving millions homeless, impoverished and ill. Damages are estimated at a whopping \$40 billion.

Developing countries such as Pakistan wanted to create a 'loss and damage' financial mechanism that would make it mandatory for developed countries to offset the impact of climate change on developing countries and assist energy-poor countries in making the transition to net zero emissions — a balance between man-made greenhouse gas emissions and their removal from the atmosphere. While the recently concluded COP27 reached a 'breakthrough' agreement to set up such a fund, a 'transitional committee' will deliberate how to operationalise it at COP28 next year.

While wind and solar can be used on a large scale by electricity companies, they require the construction of long and expensive transmission lines. Unlike wind projects, solar panels are deployable on a small scale on consumers' properties, thereby avoiding expensive transmission expenditures. Excluding massive solar projects by electricity companies, this does not need large tracts of empty land because

solar panels can be mounted on the roofs of homes and businesses. When paired with batteries, they can continue to provide electricity during power outages.

According to many experts, solar energy has the highest potential for contributing to meeting the net zero emissions goals because falling costs for solar panels and storage batteries have made solar cost-competitive compared to fossil fuels and other renewable energy solutions.

Several international organisations have stated that solar needs to become the largest single global energy source by 2050 for the world to meet the net zero emissions goal. In order for that to happen, they have estimated that the average annual solar investment needs to be doubled through 2030.

Pakistan had installed only 305 megawatt (MW) of rooftop solar panels as of December 2021. However, other sources suggest that Pakistan imported 1,000MW of solar panels in 2021 alone so the figure might be higher. Even then, the total installed capacity of solar panels in Pakistan pales in comparison to what it would be if Jordan's number was prorated upwards for Pakistan's population, yielding 22GW. Hence, there is a lot of room for growth.

Solar's potential in Pakistan

Pakistan receives a lot of sunlight, yet it relies heavily on fossil fuels to generate electricity. Fossil fuels lead to emissions, are expensive, and since they are often imported, place a burden on the balance of payments. In addition, electricity generated using fossil fuels is often unreliable. Power outages are common. All of this makes a compelling case for installing solar panels on customers' premises. Pakistan should

make it a priority to reduce the share of fossil fuels in electricity generation and increase the share of renewable energy sources, such as wind and solar. Oddly enough, despite being located in a region severely affected by climate change, Pakistan continues to invest in environmentally unfriendly methods of power production. For example, the government is planning to add up to 6,600MW of Chinese-funded coal power plants in the coming years.

Solar power can provide a lot of the electricity that Pakistan needs. For the better part of the year, much of the land is dry and hot. Today, Pakistan only generates around one per cent of electricity through solar power. If fully utilised, solar and wind power could generate more than a third of the electricity required in Pakistan.

A recent case study is worth pondering. In Sindh, rooftop solar panels of 20MW were installed on some 30 hospitals under a World Bank-financed project. The project demonstrated that rooftop solar panels can be installed in Pakistan in less than a year and at a relatively low cost while avoiding the need for additional transmission and distribution infrastructure.

A major driver of solar's potential success in Pakistan is high electricity rates. Another factor that can make solar more beneficial in developing countries such as Pakistan is the low cost of labour. Labour costs come into play in two ways — the cost of installing the panels and the cost of manufacturing panels. There is no doubt that Pakistan's labour installation costs are far lower than in Australia and the US. To address the concern that only the rich can afford to install solar panels, additional incentives should be provided to low-income customers such as higher rebates and low-interest financing. For instance, India is providing a subsidy of 40pc for small solar systems (under 3kW) and 20pc for medium-sized solar systems (under 10kW). Additionally, Pakistan should take steps to encourage installing batteries that are paired with solar panels. ■



CONDITIONS MOST FEASIBLE FOR GREEN HYDROGEN PRODUCTION

**NIPPON ENERGY COUNTRY
MANAGER PAKISTAN**

MUBARAK HUSSAIN MIR

**SAYS PAKISTAN DOESN'T
HAVE ANY REGULATORY
SYSTEM FOR USING GREEN
HYDROGEN EQUIPMENT**

—♦— Mustafa Tahir —♦—

Pakistan is among countries where geographical conditions, especially in its hilly upcountry areas of Khyber Pakhtunkhwa and Gilgit-Baltistan, are most feasible for green hydrogen production as an alternative energy option.

This was stated by Mubarak Hussain Mir, the Country Manager of Nippon Energy in Pakistan, in an exclusive interview with the Energy Update in which he talked about how his company intends to revolutionize the Pakistani energy market by introducing the alternative energy option of green hydrogen. Following are the important excerpts from his interview for our readers:

Energy Update: Tell our readers about Nippon Energy.

Mubarak Hussain Mir: Nippon Energy is a multinational renewable energy technology provider, having its head office in Japan. It has been working in the MENA region. We have

based ourselves in Dubai for the past some years to cover the entire MENA region. For the Pakistani market, we opened our office in 2022.

In addition to solar energy, our focus has been on the green hydrogen transition and economy whose value chain we have introduced in Pakistan. The world is fast moving towards green hydrogen to meet its decarbon-

ization targets.

Nippon is the pioneer to introduce this industry in Pakistan. In this regard, we have a huge international R&D support. Our focus is on the solar sector as well on the MENA region. We have undertaken a few renewable energy projects in Pakistan, besides intending to focus on other means of renewable energy whose projects we would like to carry out in



the form of IPPs.

EU: What aspects of the Pakistani energy market drove you to start a business in our country?

Mr Mir: Pakistani market as per our initial plan has a lot to offer in terms of energy transition development. The country has a great alternative energy potential. The energy mix of Pakistan shows that we have to rely on fossil fuels to fulfill up to 60 to 65 per cent of our energy requirements. Renewable forms of energy have a very low contribution to our energy mix. The industrial sector whose energy demand has constantly been increasing drove us to move to Pakistan. Our focus is to promote the options of solar power and green hydrogen for the growing energy needs of Pakistan.

EU: How much situation in Pakistan is feasible for green hydrogen production?

Mr Mir: Pakistan has the most feasibility for hydrogen production. From power generation point, we frequently face issues related to the availability and prices of natural gas. With proper planning, we have the potential of becoming one of the leading hydrogen economies in the world in near future.

We have been facing problems in Pakistan due to the current economic slowdown and underdeveloped policies of the relevant authorities, but we are still sustaining in the market. There is a demand and supply gap for energy in the market, but prospective investors have become disappointed due to issues concerning political instability, inadequate policies and other discouraging factors related to the energy sector.

Many prospective foreign energy sector investors from Japan and other countries have been considering entering the Pakistani market

after its stabilization, so as to invest in the solar and green hydrogen sectors.

EU: What is the current energy sector situation all over the world regarding the option of green hydrogen?

Mr Mir: The entire world has been actively exploring the option of alternative forms of energy to overcome the climate change crisis. The situation developed in the aftermath of the Russia-Ukraine war has also become a driving force to explore the option of renewable energy. This is because European industries mostly rely on Russian fuels. They have also realized that they should decrease their reliance on imported fuels for fulfilling their energy requirements.

Toyota is planning to introduce hydrogen cell-based vehicles in the market. For Pakistan, hydrogen fuel option could also be used in our fertilizer plants. Khyber Pakhtunkhwa and Gilgit-Baltistan, have the vast potential of producing green hydrogen, with their naturally running water streams. The electrolyzer must utilize the renewable electricity either wind, solar, or hydropower in order to produce green hydrogen. Many micro hydropower stations in KPK that produce run-of-the-river renewable electricity would prove very useful to produce green hydrogen in the country.

EU: What issues you have been facing in Pakistan given that our country doesn't have any regulations for hydrogen use as an energy option?

Mr Mir: The boiler sector of Pakistan is very much interested in using the option of green hydrogen. We have a joint venture with Mitsubishi Japan for the production of industrial-scale boilers that use hydrogen. But the Japanese companies don't sell their equipment

to buyers in countries that don't have hydrogen safety regulations as is also the case of Pakistan.

The main hindrance is that Pakistan doesn't have any regulatory system in place for using green hydrogen equipment. The Alternative Energy Development Board AEDB in place has more focus on the solar and wind energy and hasn't been much interested in promoting this alternative energy option. Resultantly, we are very far behind in this regard as compared to the rest of the world which is moving very fast towards the option of green hydrogen.

EU: What would likely be the effect of green hydrogen production on water availability in Pakistan?

Mr Mir: No doubt, hydrogen production requires a lot of water availability amid ongoing water crisis in some regions, but at the same time, we have the serious issue of water wastage. We could use the option of rainwater that straight goes into the sea without any utilization.

It is a fact that water requirements would massively increase whenever we go for scaling up hydrogen production in the country. But the byproduct produced because of the process of electrolysis for hydrogen production is air which is environment friendly. The green hydrogen production generates minimum carbon emissions. Hydrogen has a large value chain that can strengthen Pakistan's economic viability as well. There is no shortage of availability of resources for hydrogen market to be developed in Pakistan as in fact we only lack planning and regional policies for this option.

The industries in Pakistan have been facing serious issue of energy shortfall for decades now. The government must focus on this option once industrial sector and private equity holders in Pakistan decide to get involved in the green hydrogen sector. ■

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Coping with climate change devastations

COP27 establishes fund to help countries including Pakistan

— EU Report —

Conference of the Parties 27 (COP27), held under the banner of United Nations in Egypt's city of Sharm el-Sheikh this month, has established a Fund to help vulnerable countries, including Pakistan, cope with devastating impacts of climate change.

The UN summit reached this landmark deal after two-week-long brainstorming sessions. The fund will cover climate loss and damage.

A final COP27 statement covering the broad array of efforts to grapple with a warming

planet held the line on the aspirational goal of limiting global warming to 1.5 degrees Celsius from pre-industrial levels.

It also included language on renewable energy for the first time, while reiterating previous calls to accelerate "efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies". But that failed to go much further than a similar decision from last year's COP26 meeting in Glasgow on key issues around cutting planet-heating pollution.

With around 1.2C of warming so far, the world has seen a cascade of climate-driven extremes, shining a spotlight on the plight of developing countries faced with escalating disasters, as well as an energy and food price crisis and ballooning debt.

The fund will be geared towards developing nations "that are particularly vulnerable to the adverse effects of climate change" -- language that had been requested by the EU. As many as 134 countries of the world will get benefit from the fund.

The final loss and damage text left many of the thornier questions to be dealt with by a transitional committee, which will

report to next year's climate meeting in Dubai to get the funding operational.

The fund will focus on what can be done now to support loss and damage resources but the agreement does not provide for liability or compensation, said a US State Department spokesperson.

Scientists say limiting warming to 1.5C is a far safer guardrail against catastrophic climate impacts, with the world currently way off track and heading for around 2.5C under current commitments and plans. "The historic outcome on loss and damage at COP27 shows international cooperation is possible," said Mary Robinson, former president of Ireland and Chair of The Elders.

"Equally, the renewed commitment on the 1.5C global warming limit was a source of relief. However, none of this changes the fact that the world remains on the brink of climate catastrophe."

Billed as the "African COP," the summit in Egypt had promised to highlight the plight of poor countries facing the most severe consequences from global warming caused mainly by wealthy, industrialised nations.

The "loss and damage" inflicted by climate-induced disasters was not even officially up for discussion when UN talks in Egypt began.

But a concerted effort among developing countries to make it the defining issue of the conference melted the resistance of wealthy polluters long fearful of open-ended liability and gathered unstoppable momentum as the talks progressed.

"At the beginning of these talks loss and damage was not even on the agenda and now we are making history," said Mohamed Adow, executive director of Power Shift Africa.

"It just shows that this UN process can achieve results and that the world can recognise the plight of the vulnerable must not be treated



as a political football.”

Loss and damage covers a broad sweep of climate impacts, from bridges and homes washed away in flash flooding, to the threatened disappearance of cultures and whole islands to the creeping rise of sea levels.

This year an onslaught of climate-induced disasters — from catastrophic floods in Pakistan to severe drought-threatening famine in Somalia — sharpened the focus on disaster-hit countries, which were already struggling with soaring inflation and mounting debts. The Fund would lead to the provision of assistance to the countries impacted by climate change.

It will also support Pakistan in the rehabilitation of flood-affected people and reconstruction of the damaged infrastructure.

Meanwhile, Prime Minister Shehbaz Sharif, while appreciating the establishment of the Loss and Damage Fund at the UN climate summit, said it was the first pivotal step towards the goal of climate justice.

“I appreciate (Minister for Climate Change) Sherry Rehman and her team for their contribution and hard work,” the prime minister remarked.

The prime minister, along with his cabinet members, including Foreign Minister Bilawal Bhutto Zardari and Climate Change Minister Senator Sherry Rehman, had raised the voice for climate justice at the According to a PM Office statement, COP27 made history by taking a practical step comparing the Paris Accord and Green Marshal Plan. The COP27 summit was recently held on November 7-8 also participated by the prime minister at the invitation of Egyptian president.

He had also co-chaired a round-table conference on loss and damage and his address to the session also mainly focused on climate change-induced disaster and the measures to mitigate the losses. The prime minister emphasised the establishment of Loss and Damage Fund to provide climate justice to the affected countries.

Following the agreement on the establishment of the Fund, Sherry Rehman said, “It has been a long 30-year journey from demand to the formation of the Loss & Damage Fund for 134 countries” and called it an important first step in reaffirming the core principles of climate justice.

“This is not about accepting charity,” she said.

“This is a down payment on investment in our futures, and in climate justice,” she remarked.

In a series of tweets, Federal Minister for Climate Change Sherry Rehman said it’s been a long 30-year journey from demand to the formation of the loss and damage Fund for 134 countries.

“We welcome today’s announcement and joint text hammered out thru many nights. It’s an important first step in reaffirming the

core principles of climate justice,” the minister said.

Pakistan and other climate-vulnerable countries — at the COP27 — had demanded the international community to take steps to mobilise “loss and damage” funds for disaster-hit nations, and some say rich nations must pay these costs because their historical emissions are mostly responsible for global warming.

Rehman noted now that the fund has been established, Pakistan looks forward to it being operationalised and becoming a robust body that can answer with agility to the needs of vulnerable, the fragile and those on the frontline of climate disasters.

The minister said the announcement offers hope to vulnerable communities all over the world, which are fighting for their survival from climate stress.

It also, she noted, gives some credibility to the COP process, and now it’s up to the transitional committee to move it forward by December 2023 as decided.

Pakistan — the world’s fifth largest population — is responsible for only 0.8 percent of global greenhouse emissions but is one of the countries most vulnerable to extreme weather caused by global warming.

According to a statement issued by Foreign Office Spokesperson Mumtaz Zahra Baloch on Twitter, Foreign Minister Bilawal Bhutto Zardari championed the cause of loss and damage for developing countries vulnerable to climate change which was endorsed by G77 China meeting of FMs in NY chaired by Foreign Minister Bilawal Bhutto Zardari.

This is a major win for Pakistan and all of the developing world, FM Bilawal Bhutto Zardari, on agreement to establish Loss and Damage Fund at COP27, said. ■



Suki Kanari project to start power production in 2024

— EU Report —

Federal Water and Energy Minister Khurram Dastgir Khan laid the foundation stone of the main transmission line for the Suki Kanari hydropower project in Malkandi area of Balakot tehsil. “The Suki Kanari Hydropower Project to be completed at the cost of over \$2 billion under the China-Pakistan Economic Corridor initiative will start power production by Nov 2024,” the minister told the transmission lines inaugural ceremony. He said it was the first mega energy project being carried out in Khyber Pakhtunkhwa. Mr Khan said the main transmission line being laid to link 884 megawatts Suki Kanari Dam with the national grid would cost over Rs10.8 billion and help address electricity shortfall in the country. The minister said the project would produce 3.129 billion kilowatts of electricity every year and thus, contributing to the prosperity and development of the country. Special adviser to the prime minister Sardar Shahjehan Yusuf, former MNA retired Captain Mohammad Safdar and Chinese officials were also present on the occasion. ■



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12TH FIRE SAFETY, SECURITY CONVENTION AND AWARDS

20
22

Experts stress need to install fire safety systems in buildings



— Engr Nadeem Ashraf —

Fire incidents, which endanger human lives and their properties, frequently take place in large cities like Karachi which should have modern and efficient firefighting systems. Every fire incident in our surroundings highlights the sorry state of affairs that we don't have sufficient fire safety systems in place at our homes and workplace buildings be it the offices, commercial centres, markets, and industries. The fact is that the city's fire brigade is the last line of defence against fire incidents as the inbuilt fire safety mechanisms should be present to safeguard the lives of occupants of any building.

These issues were highlighted by the relevant experts and industry representatives while speaking at the 12th Fire Safety & Security Convention 2022 jointly organised by the National Forum for Environment and Health (NFEH) and the Fire Protection Industry of Pakistan (FPIP).

The speakers demanded that a strict punishment regime should be adopted against the owners of high-rise and commercial buildings who deliberately ignored the cause of fire safety and gravely endangered the lives of occupants and visitors to those places.

Addressing the convention as chief guest, Sindh Governor, Kamran Khan Tessori, said that every owner of a residential and workplace building has to fulfill the civic responsibility of ensuring fire safety measures at the premises where people live or work.

The governor praised the NFEH and other concerned civil society organizations, which had been regularly holding programmes to raise mass awareness about the fire safety issues in urban areas. "This fire safety convention has been organized for the past 12 years to make people aware of the issues related to fire safety. Such events definitely spread awareness but at the same time fire incidents continue to take place unabated, endangering the lives and belongings of people," he said.

Mr Tessori said that the adoption of fire safety measures at every building by its owner

had become more important as the state was unable to fulfill its obligations regarding the protection of the lives and properties of people.

Tessori told the audience that he had recently met the concerned scrap dealers of Shershah Mmarket in Karachi who recently suffered massive losses due to a fire incident. "I asked them whether they had put in place any fire safety measures at their shops, but their response was negative meaning that they opted for saving a few thousand rupees by not installing any fire protection equipment, as a result, they had to face losses of millions of rupees due to the fire tragedy," he added.

Speaking as the guest of honour at the convention, Sindh Local Government Minister Syed Nasir Hussain Shah said that such events had an important role in making people aware of the steps they should adopt at their homes and offices to prevent the fire emergency.

He said that all commercial and industrial establishments should have fire protection systems in place to minimize human and material losses due to fire incidents. Shah said the Sindh government had adopted the necessary



12TH FIRE SAFETY, SECURITY CONVENTION AND AWARDS

2022



legislation for the compulsory adoption of fire safety measures.

Karachi Commissioner, Muhammad Iqbal Memon, said that people were generally not ready to install fire protection systems in their offices, markets, and factories that showed the state of overall moral degeneration in the society.

He said the city's administration had been left with no option but to adopt punitive measures against the markets, shops, and industries which didn't adopt fire safety measures despite several warnings. He gave the example of a major fire incident in the basement of a high-rise residential building on Shaheed-e-Millat Road in Karachi in the recent past as the fire kept on ranging for three days because there was an illegal warehouse in the basement stuffed with cooking oil and other such highly inflammable material.

Mohsin Sheikhani, the patron of the Association of Builders and Developers Pakistan, said the representative unions of markets and multi-storied residential buildings in Karachi should include experts who could advise the adoption of necessary fire protection measures.

Muhammad Hussain Moosani, Vice President of the SITE Association of Industry, said the industries in Karachi had the willingness to join hands with the Sindh government to make sure that all industrial buildings do have fire protection systems.

FPIP President Imran Taj called for the implementation of the fire safety provisions contained in the building code of Pakistan while constructing high-rise residential and commercial buildings in the country.

NFEH President Muhammad Naeem Qureshi said that his non-governmental organization in collaboration with the relevant

agencies would organize more such events to spread mass awareness about the fire safety.

Also on the occasion, the Sindh Governor and Nasir Hussain Shah gave away awards and shields to some 50 different organizations for showing excellence in the field of fire safety.

Ruqiya Naeem, Secretary General, National Forum for Environment and Health, Engr. Nadeem Ashraf, Project Head AFSSC and VP, National Forum for Environment and Health, Rashid Mehboob, EHS Manager, Quaid-e-Azam Thermal Power, Zulekha Soorma, HSE Lead Auditor, Naveed Anjum, International Advance Member NFPA (USA), Khalid Latif, HSE Trainer and Consultant, Saeed Jadoon, fire expert, Mobeen Ahmed, ex-fire chief, Karachi Metropolitan Corporation (KMC), Naeem Yusuf, disaster management expert also addressed the event. ■





12TH

FIRE SAFETY, SECURITY CONVENTION AND AWARDS

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LONGi

unveils latest technological innovation



— Mustafa Tahir —

LONGi recently held an event to formally launch its new generation of module products for the promotion of clean solar energy in Pakistan.

The event was attended by a large number of partners and prospective clients of LONGi in Pakistan who were informed about the latest technological developments for maximizing the use of clean solar technology for a very large potential customer base in the country.

In his introductory speech, the Country Manager of the leading clean energy company in Pakistan, Ali Majid, told the audience that LONGi was committed to being the world's leading solar technology company, focusing on customer-driven value creation for full scenario energy transformation.

He said that LONGi had dedicated itself to technological innovation and established five business sectors, covering mono silicon wafers cells and modules, commercial and industrial distributed solar solutions, green energy solutions, and hydrogen equipment. The company has honed its capabilities to provide green energy and has more recently, also embraced green hydrogen products and solutions to support global zero-carbon development, Majid added.

Osman Mohammad, Product and Solutions Manager of LONGi in Central Asia, unveiled to the audience the latest technological innovation of the company in green energy.

He said that LONGi had introduced Hi-MO 6, its first module designed exclusively for the global distributed consumer market. Using LONGi's high-efficiency HPBC cell technology, Hi-MO 6 achieves a maximum efficiency of 22.8% in mass production, he said. Mohammad said the Hi-MO 6 offered superior efficiency, safety, and aesthetics designed to meet the needs of diverse clients.

Also on the occasion, awards were given to recognize the hard work by the best partners of LONGi in Pakistan. The first award was given to Aman Sons and Sabri Group for being the best distributor in the northern region. Mesol (Pvt) Limited and Energy for You received the second award for being the best distributor in the southern region in 2022. Premier Energy, Greenage (Pvt) Limited, and Salman Enterprises were the recipients of the third award for being the best distributors in the central region in 2022. ■





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Reko Diq saga — economic implications

—◆— Maryam Nawaz —◆—

The US\$ 9 billion Reko Diq Deal is the biggest-ever investment in Pakistan's history. The country is going to get 50 percent profit of the total project by investing accordingly. Out of Pakistan's 50 percent share, there are further classifications. The government of Pakistan is not a direct investor, as the state-owned enterprises including OGDCL, Pakistan Petroleum Company, and Government Private Holding Company Limited are investing in the project. Balochistan will receive half of the profit of Pakistan's share.

Apart from the foreign direct investment (FDI), the investor company will also generate 7,000 employment opportunities as well as spend 0.4 percent of project's outcome on social development of the province, stated Barrick Gold Company's counsel Makhdoom Ali Khan while arguing before the apex court hearing the Presidential Reference. The company will also develop the local infrastructure in province. The additional attorney general told the Supreme Court (SC), "Non fulfillment of Reko Diq Agreement requirements will lead Pakistan's Economy to default as \$10 billion fine is due to be paid while country's foreign exchange reserves are far less than this. The International Investor Company Barrick Gold agreed to enter into the Reko Diq Agreement on certain conditions. Condition involves the validation of agreement from court plus the proper legislation in National as well as the provincial assemblies regarding foreign investment and the protection of exemptions provided to foreign investor"

The Presidential Reference

The SC is hearing the Presidential Reference on Reko Diq Project in which the President of Pakistan sought the opinion under article 186 of constitution of Pakistan. The President asked two legal questions in reference sent on October 15, 2022 to SC — (1) wheth-

er the Government of Baluchistan or Government of Pakistan can enter into international agreement as per Supreme Court's Judgment, in Molvi Abdul Haq vs Federation of Pakistan 2013 Case, and (2) if the proposed Foreign Investment (Protection and Promotion) Act 2022 would accord to the constitution?

Reko Diq is Pakistan's Biggest Gold and Copper reserve:

In the early 90's, Pakistan's biggest gold and copper reserve was discovered at Reko Diq in Chaghai District of Balochistan. Two international world class mining companies — Barrick Gold Company and Antofagasta — entered into the joint venture agreement with the governments of Balochistan and Pakistan in July, 1993. The international companies spent US\$240 million in mineral exploration and feasibility studies till 2011. Feasibility studies found commercial level gold and copper reserves in Reko Diq.

What is Molvi Abdul Haq vs Federation of Pakistan Verdict of Apex Court?

Today's Reko Diq Project Agreement was earlier called as Chaghai Hill Exploration Joint Venture Agreement CHEJVA. Barrick Gold and Antofagasta Company sought mining lease extension from Mines and Mineral Development Department of Balochistan for their exploration in 2011. The department rejected their request following which the two companies entered into the litigation against the governments of Pakistan and Balochistan at two separate International Forums, on the basis \$240 million spent by them on exploration. The government of Pakistan faced a suit for specific performance in the extension of lease in International Center for Settlement of Investment Disputes (ICSID) while the Balochistan government had to face a case in the International Court of Arbitration (ICC). The ICSID decided the matter against Pakistan, fulfilling all demands of the investors companies.

The SC on January 7, 2013 declared the CHEJVA as illegal, null and void. The SC held that there were severe violations of basic legal requirements and lack

WAPDA executing projects worth Rs2500bn

of due diligence in the Reko Diq Project. The investor companies again filed a law suit against Pakistan with the ICSID whose tribunal, in 2019, announced \$6.927 billion award against Pakistan for violation of the agreement. ICC also ruled against Pakistan but award is yet to be announced. Legal Experts are of the view that ICC award against Pakistan will be around \$3 billion.

New Reko Diq Deal and liability on Pakistan:

Pakistan successfully negotiated the new deal with Barrick Gold Company in March, 2022 on Reko Diq Project but the final agreement will be signed after the due diligence. Pakistan got stay till December 15. On signing the Reko Diq Deal, \$10 billion liability will be waived off. The foreign company, Antofagasta, earlier involved in deal, left after settling \$900 million that Pakistan has to pay. Under the new deal, Pakistan will be having 50 percent share by investing \$4.5bn Dollars of total \$9bn Project. On non-fulfillment of the said deal on December 15, Pakistan will be liable to pay US\$10bn.

Foreign Investment (Protection and Promotion) Act 2022:

Federal Government is yet to pass a legislation namely Foreign Investment (Protection and Promotion) Act 2022, that will be a one-window operation for all foreign investment in the country, as per the government's counsel statement in the SC. The said act will be passed after the Supreme Court gives its opinion regarding its constitutionality.

Additional Attorney General Aamir Rehman told Court that this act will be applicable to the investment of \$500 million and above after prior approval by federal government.

The SC has had 16 hearings of the presidential reference as of November 28. A five-member larger bench headed by Chief Justice Pakistan Justice Umar Ata Bandial is hearing the matter. "We want to conclude the hearing of reference till December 1, and will be able to announce the short opinion in second week of December," said the CJP in 15th hearing of the reference. In the light of SC Opinion, the national and the provincial assemblies will legislate the Foreign Investment Act and the Reko Diq Deal will be signed on due date. ■

The writer is a reporter covering Supreme Court for Geo News

A delegation of PAF Air War College Karachi, visited WAPDA House recently. Headed by Air Vice Marshal Hussain Ahmed Siddiqui, the delegation comprised Pakistani and allied officers from Bahrain, Bangladesh, Egypt, Indonesia, Iran, Iraq, Jordan, Malaysia, Nigeria, Sri Lanka, South Africa, Saudi Arabia and Zimbabwe. A briefing was arranged for the delegation about water and hydropower sectors in Pakistan. Chairman WAPDA Lt Gen Sajjad Ghani (Retd) also participated in the briefing. Following the briefing, the Chairman while responding to the questions, said that water situation in Pakistan can only be improved by constructing more dams, conserving water, adopting modern irrigation techniques and minimizing water evaporation losses. The delegation was apprised that WAPDA is executing biggest-ever portfolio of development projects in water and hydropower sectors worth Rs2500 billion for water, food and energy security of Pakistan. Diamer Basha Dam, Mohmand Dam, Kurram Tangi Dam, Nai Gaj Dam, Dasu and Tarbela 5th Extension Hydropower Project are to name a few. The under-construction projects are scheduled to be completed from 2023 to 2029 in a phased manner. On completion of these projects, gross water storage capacity in the country will increase by 9.7 MAF, sufficient to irrigate 3.5 million acres of land. In addition, hydel power generation capacity of WAPDA will also be doubled with an increase of 9043 MW. ■



Sindh Culture Day was commemorated at Governor House, where Sindh Governor Kamran Khan Tessori, Sindh Minister Saeed Ghani, Editor-in-Chief Pakistan Observer Faisal Zahid Malik, Oman's CG Sami Abdullah, Qatar's CG Mishal Mohammed A.A. Al-Ansari, Deputy High Commission Bangladesh M. Mahbulul Alam were present.



Global Industry Suppliers and LONGi Solar signed MoU for Supply of Solar equipment for Pakistan. With LONGi Solar Pakistan Q1FY23 an agreed supply of 25MW is executed, whereas Global Industry Suppliers aiming for more than 200MW in Year 2023 addition to the national grid of Pakistan.

—◆ Imran ul Haque —◆

Pakistan's natural gas supplies have reduced from 4271 mmscfd in 2012 to 3390 mmscfd in October 2022 and will be 2538 mmscfd in 2020-26. The demand deficit is estimated at 1479 mmscfd and expected to increase to 2329 mmscfd in 2025-26 provided we obtain 1800 mmscfd of LNG shipments versus the current arrangements of having 1000 mmscfd pushed into the delivery network. Under this scenario of supply in relation to demand, every winter is going to be worse than the previous one.

The current government has been able to secure one additional cargo from Qatar for December 2022 and January 2023 and another expected delivery of commitments is made by ENI, which means that LNG will be provided

Gas but to no avail and is being prosecuted along with others despite an estimated saving of \$4 billion over the last six months. Pakistan lost precious time and the PTI government squandered opportunity afforded by COVID.

A lack of vision and foresight has dominated the last four years including politicizing the Qatar Gas deal by reopening the “closed” inquiry with Sheikh Rashid becoming the complainant against those who evolved a solution through an out-of-the-box LNG import structure. GOP should have further built on the goodwill created via the government-to-government contracts and exploited the successfully positioned Pakistan as a reliable buyer instead of indicting the largest and most reliable supplier of LNG in the world next to our shores into our “corruption mantra”; Pakistan's gas supply position would have

and water.

Additionally, the logistical challenges at the port and transporting the supplementary LPG cargoes procured by SNGPL, SSGC, PSO, PARCO Pearl Gas (Pvt) Ltd and others for the winter needs immediate streamlining.

At this point in time, when Petroleum Division is raising alarm bells on imminent shortages, it is imperative that we take a closer look at the gas allocation and management policy and consider allocating gas to the power sector to produce cheaper electricity thereby by allowing additional power plants to operate at their full and efficient capacity.

Furthermore, behavioral changes through conservation PSAs to encourage use of electricity for heating and cooking will possibly absorb this increase in supply while also fulfilling the energy needs of residential consumers.

As far as pricing concerns go, a proposal for a Weighted Average Cost of Gas (WACOG) has already been approved by the Senate as early as February 2022. Under this, weighted average price of RLNG and natural gas would be used to create a single

Pakistan's natural gas supplies decline

at 900 mmscfd in December 2022 and 800 mmscfd in January 2023; this leaves a shortage ranging between 579-679 mmscfd. Due to the non-availability of LNG within the spot market at affordable prices, the silver lining is that our imported gas rates have reduced for the month of October to \$14.78-15.83 from \$22-24 in May 2022.

The world's top LNG exporters have already warned that the energy crisis could extend to the middle of the decade while Europe will be fine this winter, but it will have shortages through 2025 if Russian gas “does not start flowing back once again.

Former PM Shahid Khaqan explained the benefit of long-term contracts with Qatar

been manageable and we would have been less vulnerable to events beyond our borders.

These decisions have caused a significant crisis as the supply situation has worsened in 2022 combined with delays in increasing the gas tariff and that has resulted in a ballooning of the circular debt in the gas sector and negatively impacting the financial health of SSGC, SNGPL, OGDCL, PSO, PLL and PPL.

Plans are in place for a series of steps to manage the tight supply. Some of these include shutting down CNG stations, expanding and updating the gas load management schedules, switching to LPG including distributing 100,000 LPG cylinders to assist deployment and utilizing of electricity for heating homes

rate applicable across the country. Power sector will be more than willing to bear this cost as it would objectively be cheaper than the absolute cost of RLNG.

Due to the shortage of gas within Pakistan's power sector, the International Energy Agency's gas outlook report for the fourth quarter has already made note that the price per unit of oil in the generation cost has increased fivefold in the last fiscal to date. Our energy mix change provides opportunity to optimize procurement and usage to reduce the costs of electricity and yet planners have sought HSD supplies to operate Bahadur Shah Havelian power plant at a time when HSD supplies are restricted. ■





Pakistan's energy transition

—◆ Engineer Khurram Dastgir —◆

Pakistan in 2022 became the canary in the mine of climate change. The flood that ravaged one-third of the country this year came from the sky, not from overflowing rivers. An area larger than many European countries became a flood-lake many feet deep. The calamity was an undeniable consequence of global warming.

"Pakistan has [been] flooded before but it has never flooded at this scale," wrote one observer, "and never in so many ways at once: cloudbursts and glacial outbursts in the north, prolonged spells of rain in Sindh and Balochistan, flash floods in the foothills west of the Indus, and urban flooding in cities like Karachi – a mélange of meteorological disasters."

There was no spring this year in Pakistan. The weather turned from cold to hot seemingly overnight in April, and then became hotter still. Electricity demand soared first to an unprecedented seasonal level, and then to the historical record high of over 30,000MW.

Monsoon rains came in mid-July and burst the clouds in late August, as if on steroids. Sindh and Balochistan received rainfall manifold above average. The rainfall was the flood. It caused \$30 billion in loss and damage, destroyed nearly two million dwellings, displaced 8 million people, and affected 33 million citizens.

The irony is stark. Pakistan contributes a negligible 0.8 per cent of the global carbon footprint, but we are among the 10 most climate-stressed countries on the planet – a tragedy writ large. Pakistan is a victim of pollution emitted by others. Even if we reduced our climate impact to zero, we would still be vulnerable against melting glaciers, errant and severe rainfall, agricultural failure, and extreme prolonged heat.

The pluralist government of PM Shehbaz Sharif has, however, begun to build resilience by addressing mitigation of and adaptation to climate change. The transition towards renewable, clean, and indigenous energy is the highest priority because it combines equally urgent imperatives: reducing cost of energy, energy sovereignty, and protecting the environment.

The new energy landscape after the Ukraine war has necessitated that all new power generation in Pakistan shall henceforth be based upon indigenous resources, of which major ones are: solar, Thar coal, hydel, nuclear, and wind. These might be supplemented by other domestic sources such as wave, geo-thermal, ad waste, as they become

feasible economically.

On September 1, PM Sharif announced a 10,000MW solar initiative, of which the bidding for the first 600MW will be held in a few weeks. Part of the solar initiative is the proposal for thousands of 1-4MW rural-grid based micro-solar plants that will be put for bidding soon, and conversion of all federal government-owned buildings to solar.

New 10,000MW solar will be supplemented in the next few years by 12,500MW from two large-scale hydel-power project at Dasu and Diamer-Basha as well as many medium-scale hydel projects already installed or due to come into operation such as Neelum-Jhelum, Karot, Sukhi-Kinari, Azad Pattan, and Kohala.

The wind corridor in Sindh continues to provide reliable electricity and a renewed push for wind will be announced in the coming weeks. The solar-hydel-wind projects currently under construction and some nearing completion will help fulfill Pakistan's pledge of 60 per cent renewables in our energy mix by 2030.


Renewable energy projects will perform indispensable pro-poor and pro-growth functions: reduce the price of electricity; reduce the strain on our balance-of-payment by decreasing imports of expensive fossil fuels; and reduce carbon emissions – the three pillars of sustainable development.

We have also begun a serious push towards conservation. The public's behavioural change towards conservation is slow, but we will nudge it through technological innovations such as Advanced Metering Infrastructure and, particularly, through conversion of all motorcycles and three-wheelers to electronic vehicles (EV). Our EV initiative will cut emissions as well as Pakistan's fuel consumption by half – a boon not only to the environment but also to the public exchequer.

PM Sharif's government is also moving speedily towards changing specifications of electrical appliances and accessories towards energy conservation, encouraging car-pooling, installing conical baffles in gas geysers to conserve gas, and to persuade traders to change working hours towards international norms.

Pakistan's geography makes it extremely vulnerable to climate change. We cannot change our geography. We alone cannot address global carbon emissions and the consequent warming of the globe. As PM Sharif said at COP27 this week, "the international community must come together to create a common charter for the survival of the planet. And we should vow to succeed at all costs." We will provide Pakistan's future generations with clean, economical energy to power our coming economic growth. ■

World's population reaches eight billion



People in richest countries can expect to live up to 30 years longer than those in poorest; Floods, storms and droughts devastating countries that contributed almost nothing to global warming; Rice, most widely consumed staple in world, will suffer most

— António Guterres —

The world's population reached eight billion in November — a testament to scientific breakthroughs and improvements in nutrition, public health and sanitation. But as our human family grows larger, it is also growing more divided.

Billions of people are struggling; hundreds of millions are facing hunger and even famine. Record numbers are on the move seeking opportunities and relief from debt and hardship, wars and climate disasters. Unless we bridge the yawning chasm between the global haves and have-nots, we are setting ourselves up for an eight-billion-strong world filled with tensions and mistrust, crisis and conflict.

The facts speak for themselves. A handful of billionaires control as much wealth as the poorest half of the world. People in the richest countries can expect to live up to 30 years longer than those in the

poorest. As the world has grown richer and healthier in recent decades, these inequalities have grown too.

On top of these long-term trends, the accelerating climate crisis and the unequal recovery from the Covid-19 pandemic are turbocharging inequalities. We are heading straight for climate catastrophe, while emissions and temperatures continue to rise. Floods, storms and droughts are devastating countries that contributed almost nothing to global heating.

The war in Ukraine is adding to ongoing food, energy and finance crises, hitting developing economies hardest. These inequalities take their greatest toll on women and girls, and on marginalised groups that already suffer discrimination.

Many countries in the Global South face huge debts, increasing poverty and hunger, and the growing impacts of the climate crisis. They have little chance of investing in a sustainable recovery from the pandemic, the transition to renewable energy, or education and

training for the digital age.

I hope COP27 will see a historic Climate Solidarity Pact under which developed and emerging economies unite around a common strategy and combine their capacities and resources for the benefit of humankind. Wealthier countries must provide key emerging economies with financial and technical support to transition away from fossil fuels. That is our only hope of meeting our climate goals.

I also urge leaders at COP27 to agree on a roadmap and institutional framework to compensate countries in the Global South for climate-related loss and damage that is already causing enormous suffering. I have urged G20 economies to adopt a stimulus package that will provide governments of the Global South with investments and liquidity, and address debt relief and restructuring.

As we push for action on these medium-term measures, we are working non-stop with all stakeholders to ease the global food crisis. The Black Sea Grain Initiative is an essential part of those efforts. It has helped to stabilise markets and bring food prices down. Every fraction of a percent has the potential to ease hunger and save lives.

We are also working to ensure Russian fertilizers can flow into global markets, which have been severely disrupted by the war. Fertilizer prices are up to three times higher than before the pandemic. Rice, the most widely consumed staple in the world, is the crop that will suffer most.

Removing the remaining obstacles to the exports of Russian fertilizers is an essential step towards global food security. But among all these serious challenges, there is some good news. Our eight-billion-strong world could yield enormous opportunities for some of the poorest countries, where population growth is highest.

Relatively small investments in health-care, education, gender equality and sustainable economic development could create a virtuous circle of development and growth, transforming economies and lives.

Within a few decades, today's poorest countries could become engines of sustainable, green growth and prosperity across entire regions.

I have enormous faith in human solidarity. In these difficult times, we would do well to remember the words of one of humanity's wisest observers, Mahatma Gandhi: "The world has enough for everyone's need - but not everyone's greed." ■

Courtesy The Express Tribune

POWER PROJECTS

China-aided hydropower project bolsters Pakistan's energy structure, transforms lives

by Raheela Nazir

Life has taken an incredible turn for 24-year-old Qais Qadeer when he, as a scholarship student a few years ago, joined China Three Gorges Corporation, a Chinese company constructing a hydropower plant on Pakistan's river Jhelum.

Now working as an operation engineer at the Karot hydropower project in the country's eastern Punjab province, Qadeer told Xinhua that he is living a successful and fulfilling life that a person like him could never dream of.

The project is one of the China-aided power projects being built in the country under the framework of the China-Pakistan Economic Corridor. Since the groundbreaking of the project in April 2015, the Chinese and Pakistani engineers and workers at the project have jointly overcome different challenges including the COVID-19 pandemic.

Cherishing his unbelievable journey, he said he gets to learn a lot from Chinese instructors and supervisors, both during his studies in China and at the hydropower station in Pakistan.

"I was a fresh graduate when I joined this project after completing my studies in China, but the environment here was so conducive that I adopted all the techniques in a very quick manner ... I am proud to be part of the project which will immensely benefit the people of Pakistan in economic and social ways besides alleviating energy shortage," he said.

The Karot hydropower project would facilitate Pakistan to achieve renewable energy goals by producing clean and cheap energy, Noorul Arifeen Zuberi, a senior advisor of the China Three Gorges South Asia Investment, said.

The 720-megawatt hydropower project is expected to annually generate some 3.2 billion kilowatt-hours of clean electricity once put into full commercial operations in June this year, reducing 3.5 million tons of carbon dioxide emissions per year.

Based on the Chinese standards and

technologies, the project is of tremendous importance as it will not only help Pakistan improve its energy structure but will also promote the sustainable development of the local economy and society while contributing to the global goal of carbon neutrality, he said.

Zuberi said over 4,000 jobs, directly or indirectly, were provided to local people every year and students were awarded fully-funded scholarships, adding that billions of rupees were paid by the company in taxes to the Pakistani government during the construction phase.

Under its community investment programs, the Chinese company also built a number of public welfare projects including schools, hospitals, bridges and roads, bringing a lot of convenience to local communities.

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Gas crisis and industry

Alternatives will have to be explored

Winter has come and gas crisis has started. Earlier, households used to do hue and cry. But now, industry is doing the same. Everybody knows, and more so, the industrialists should know better, that the local gas production has been going down and LNG is not available. No supplier is bidding even at higher prices.

Even laymen predicted that there would be gas shortages. Government or anybody else does not have a magic wand to solve such problems in immediate terms. All that can be done is rationing in which people's cooking requirements obviously get priority. Industry, however important, gets lesser priority.

It is here in Pakistan that government has taken unto itself to supply gas and electricity. In most countries, it is the private sector which manages these supply systems. Large industries do their own thinking acquiring various sources and alternatives.

A number of gas alternatives are available to the industries if they do some advanced thinking and go into action. But the usual tactics are to make hue and cry at the eleventh hour and somehow force the government to augment supplies. This time, it may not succeed as the supply problem is much deeper and graver. Fortunately, there is no electricity crisis yet, although as winter deepens, almost 10,000MW of hydropower may be reduced to several thousand initially and in January it may be reduced to even less than one thousand.

Fortunately, electricity demand is much lower in winters due to the shutoff of ACs and fans. Instead, heating is turned on, which predominantly consumes gas, hence, the gas crisis. There are all kinds of controversial positions taken by opinion leaders and stakeholders. Some say gas should be for exclusive use by the industry. It is too precious to be burnt at homes. Successive governments have rejected this minority point of view and continue to prefer gas supplies to the domestic sector. Although it is true that gas prices are too low for the poor and lower consumption slabs, perhaps not much can be done about it. If the labour is paid Rs15,000 per month, how can one legitimately expect them to pay high price for gas or electricity. In any case, most of the rural population is not using gas. It relies on biomass, charcoal, kerosene and to some extent LPG. Current or usual industrial energy problem is of thermal energy, firing their furnaces and boilers. Next door in India, the industry uses a variety of energy resources, varying from black and brown coal (lignite) biomass, oil and electricity, in firing their boilers. Refineries are crying hoarse that their storages are full of furnace oil and that if the oil is not lifted, they may have to shut down or reduce their production level. Industries should consider shifting to oil. Normally, boilers are dual-fuel capable or can be converted easily.

In Gujarat, the centre of textile industries in India, lignite is used heavily. We have lignite now. Why can't our industry start shifting to lignite, although major conversion efforts may be required or altogether new boilers may have to be installed. It would be cheaper and available throughout, if supply chain arrangements are made. There is shortage of lignite in India, we could even consider exporting it to India.

Textile industry (processing part) requires low temperature heat varying from 60 to 120-degree Celsius. Electrical boilers can provide this kind of temperature. Electrical boilers are cleaner, safer and even cheaper. Solar PV can be used to fire the electrical boilers. If companies have rooftops, they may be able to have their own cheaper solar electricity at a cost of Rs10-12 per unit. If space is not there, they can get together in a cooperative style or otherwise install their own solar. Nepra has made wheeling available. Transmit it through the existing DISCO system and run electric boilers. Biogas can be produced similarly and transmitted through the existing gas network. Gas companies are reportedly encouraging biogas, which is much cheaper than LNG. ■



TECHNOLOGIES



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ECONOMIC REFORMS

if not now, then when?

Pakistan's financial health worsened after floods; debt and capital markets sending alarming signals; stock market remains jittery; country seeking foreign loans

— Sarfaraz A. Khan —

The incumbent government claims it saved Pakistan from imminent bankruptcy and successfully resumed the International Monetary Fund programme. However, Pakistan's financial health worsened after the floods and now, the debt and capital markets are sending alarming signals that depict nervousness among investors and creditors.

The stock market remains jittery and the continued weakness in the value of sovereign bonds shows high levels of credit default risk. The country is seeking assistance from international lenders, including through rescheduling of debt and additional funds. Although this greatly reduces bankruptcy risk, it can't put the economy on a strong foundation.

For decades, the country has remained stuck in a vicious short-lived boom and painful bust cycles. To break free, policymakers must implement economic reforms that can put the economy on a sustainable path to recovery.

First and foremost, energy sector reforms should be introduced, focusing on policies that seek to increase Pakistan's production of energy products. The high cost of energy imports has deteriorated Pakistan's trade balance and driven the current account deficit to perilous heights.

In the first three months of the current fiscal year, Pakistan spent a whopping \$4.86 billion on importing energy products, of which 50 per cent was related to purchases

of petroleum products like petrol and diesel, as per data released by the Pakistan Bureau of Statistics.

The 'petroleum group,' which includes crude oil, LNG, and LPG, is responsible for more dollar outflows than any other commodity. The tax system shows blatant inequality in which the salaried class and formal firms experience predatory tax enforcement while the informal sections of the economy pay little

Note that fuel consumption has fallen in the recent past and the volume of petroleum product imports dropped by 30pc during the quarter to 2.95 million metric tonnes (MT) from more than 4.2m MT a year earlier. But thanks to high prices, the petroleum group's import bill still went up by around 6pc.

This isn't the first time high energy prices have damaged Pakistan's finances and it likely won't be the last. It is about time the government realises that it needs to cut down its dependence on imports and do everything in its power to raise domestic energy production by bringing reforms in the oil refining and the oil and gas exploration and production (E&P) industries.

If domestic oil refineries expand their plants and fully utilise their facilities, then Pakistan can become self-sufficient in petrol and diesel production. In this case, there would be no need to import fuels since the refineries will consume crude oil, which is cheaper, to produce all of the high-value petrol and diesel at home.

The significant forex savings will be the difference between the prices of crude oil and

refined products multiplied by the millions of tonnes of fuel consumed.

To achieve this, the government must bring forward the oil refinery policy, which reportedly was finalised last year but hasn't been approved yet. Currently, no policy framework would encourage refiners to invest in plant upgradation and expansion.

Besides, the fact that the ex-refinery and pump prices are controlled by the government, as opposed to market forces of demand and supply, also makes this an unattractive avenue for investors.

The government needs to show political will by addressing the concerns of the refining industry and, in return, get commitments from the industry to expand capacity. The oil refinery policy should be introduced and fuel prices should get fully deregulated. This will lure investment, jobs and make the entire downstream sector (including oil marketing) more competitive.

The E&P industry, which is dominated by state-owned enterprises, has also struggled with inefficient and unnecessary regulations. The performance of the state-owned enterprises, which have failed to even maintain oil and gas production, let alone register growth, has been disappointing.

This space not only needs better policies but also better management of existing companies and greater participation of the private sector which will bring efficiency into this bureaucratic corner of the economy.

The private-sector investment-to-GDP ratio in Pakistan was just 10pc, while the

savings-to-GDP ratio in the previous fiscal year was also weak at 11pc. With the persistently low rate of investments and savings, the country could not achieve inclusive and sustainable economic growth. Energy, as well as all other sectors of the economy, need favourable policies as well as macroeconomic stability. The growth of mobile manufacturing and telecom industries are two recent examples that exhibit the far-reaching impact of business-friendly policies.

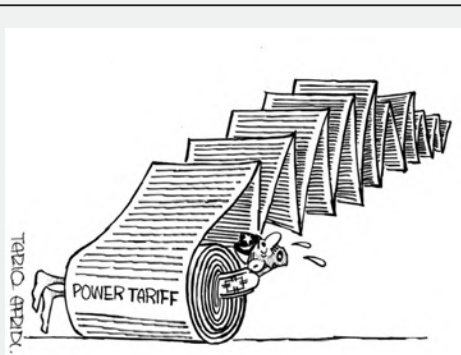
As things currently stand, the tax system shows blatant inequality in which the salaried class and formal firms experience predatory tax enforcement. At the same time, the informal sections of the economy, such as wholesale, retail, real estate, and services industries, pay little.

Recently, for instance, the government levied additional taxes worth Rs33bn on the salaried class and imposed a one-time super tax on companies operating in several sectors. At the same time, it failed to bring the independent traders into the tax net after the policy-makers rolled back their plan to impose a fixed monthly tax of Rs3,000 to Rs10,000. As a result, the wholesalers and retailers who represent one-fifth of the nation's economy will contribute little to the national kitty.

The inequalities in tax policies discourage savings and investment. Moreover, they prevent the government from expanding the tax net, growing revenues, and increasing spending on the Public Sector Development Programme (PSDP) — the engine of economic growth. Therefore, the inconsistencies in tax policies must be eliminated and for this purpose, the fiscal policy should set the right priorities.

This, of course, is not an exhaustive list. In addition to the above-mentioned reforms, the government will have to take other measures as well, such as ending untargeted subsidies to the export sector to put the economy in the right direction.

But the reform agenda must start from somewhere, and the energy sector reforms and remodelling of tax policies give the authorities a good starting point. For sustainable recovery, Pakistan must put its house in order, and it should be done without any delay. ■



RENEWABLE REVOLUTION

France approves legislation Car parks to be covered by solar panels



France has approved legislation that will require all car parks with more than 80 spaces to be covered over by solar panels. This is part of a wider program that will see solar panels occupy derelict lots, vacant land alongside roads and railways, as well as some farmland.

This is expected to add 11 gigawatts to the French electricity grid equal to ten nuclear reactors.

Do the numbers add up? And should other countries do the same?

Several countries, most notably Germany, have already mandated developers of new buildings to incorporate renewables into their designs, like roof-mounted solar panels, biomass boilers, heat pumps, and wind turbines. The French policy would apply to new and existing car parks.

The average car parking space is about 4.8m by 2.4m, or 11.52m sq. Assuming an output of 120 watts per m sq that works out at roughly 1.4 kilowatts of power per bay. There would be further space over walkways and traffic lanes within the car park, but the solar panels would need to be kept far enough apart to stop them shading each other.

For an output of 11 gigawatts, you'd need to cover about 7.7 million car parking spaces. Are there that many in France that would qualify? The UK has between 3 and 4 million spaces and 40 million vehicles. France has a similar sized fleet of 38 million. So, 7.7 million spaces seems unlikely.

But the legislation covers a lot of urban

land, not just car parks. In theory, 92km sq of French urban land (defined as any built-up area with more than 5,000 people) could provide 11 gigawatts of solar power.

That might sound like a lot, but it's only 0.106 per cent of France's total urban land area of 86,500 km sq. Accounting for the difference in capacity factors (how much energy each source generates a year compared with its maximum theoretical output) between French nuclear (70 per cent) and French solar (15 per cent), 430 km sq of solar would supply the same amount of power each year in gigawatt-hours as those ten nuclear plants.

These panels need only cover 0.5 per cent of French urban land, or about 0.07 per cent of France's total area. So it's possible, though car parks will make up a tiny portion of the overall program.

The UK and countries further north receive less sunlight per m sq and the sun sits lower on their horizon, which makes the issue of shading on panels bigger, although the longer days in summer do compensate for this to some extent.

Also, while a lot of car parks in southern Europe already have sun shades over them (which allow solar panels to be mounted onto existing structures), this is rare in cooler countries. As a result, it would probably be a lot easier to mount panels on the roofs of buildings than over the surrounding car park in some countries. Where solar panels aren't practical, other options, like wind turbines, might well be viable alternatives. ■

Coal to renewables

China's shifting energy investments to Pakistan

—◆— Shahzeb Jillani —◆—

Until about a decade ago, the Jhimpir region in Pakistan's southern province of Sindh was a dry, barren stretch of land, inhabited by nomadic tribes. Today, it is home to hundreds of mammoth rotating blades in about two dozen wind farms.

Around 90 kilometres from Karachi, Jhimpir is the heartland of Pakistan's largest 'wind corridor', which has the potential to produce 11,000 megawatts (MW) of clean energy. Among early investors was the China Three Gorges Corporation, a Chinese state-owned power company, operating under an investment holding company, China Three Gorges South Asia Investment Limited.

The company has funded and built three wind projects with a combined capacity of nearly 150 MW. The first of these began construction in 2012. The latter two projects, completed in 2018, were funded under the China Pakistan Economic Corridor (CPEC), an integral part of Beijing's flagship multibillion-dollar Belt and Road Initiative (BRI). In an official statement following Pakistan's prime minister Shehbaz Sharif's visit to China on 1-2 November 2022, Sharif reaffirmed the importance of CPEC to Pakistan's development.

For the time being, renewables represent only a small portion of Pakistan's power generation mix. Of a total of 43,775 MW, installed capacity for wind and solar represent around 4.2% (1,831 MW) and 1.4% (630 MW) respectively, according to the National Electric Power Regulatory Authority's State of Industry 2022

report. In terms of CPEC, the November 2022 joint statement from China and Pakistan listed oil and gas as among the "priority areas of CPEC cooperation".

In the years before the launch of CPEC in 2015, Pakistan was desperate to end its long, crippling power shortages. The country was keen to develop its untapped indigenous coal in Thar desert, but multilateral financial institutions were not interested. Along came China in 2013, with an offer to lend massive amounts for infrastructure development and coal mining.

Details of the financing deals are a closely guarded secret, but multiple Chinese-funded coal projects followed. Eight completed or under-construction coal projects are listed as part of CPEC, totalling 6,900 MW, which include four on Thar coal. A power plant set up in the Tharparkar desert by Engro Powergen Thar Private Limited, Image Sindh Engro Coal Mining Company

In December 2020, Pakistan announced that it would not build any new power projects that depend on imported coal, and pledged that by 2030 60% of its energy will come from clean and renewable sources. The government has since scrapped a number of potential coal projects, including a 300 MW plant at the Chinese-controlled Gwadar sea port in Balochistan. Reportedly, it is to be replaced by a solar plant.

As Beijing tries to rebrand the BRI as an eco-friendly initiative, Chinese officials have promoted the idea of a 'green' CPEC. But Hina Aslam, research fellow at the Sustainable Development Policy Institute (SDPI), a think tank in Islamabad, points out that "in the energy sector, it has meant a greater focus on hydro rather than wind and solar".

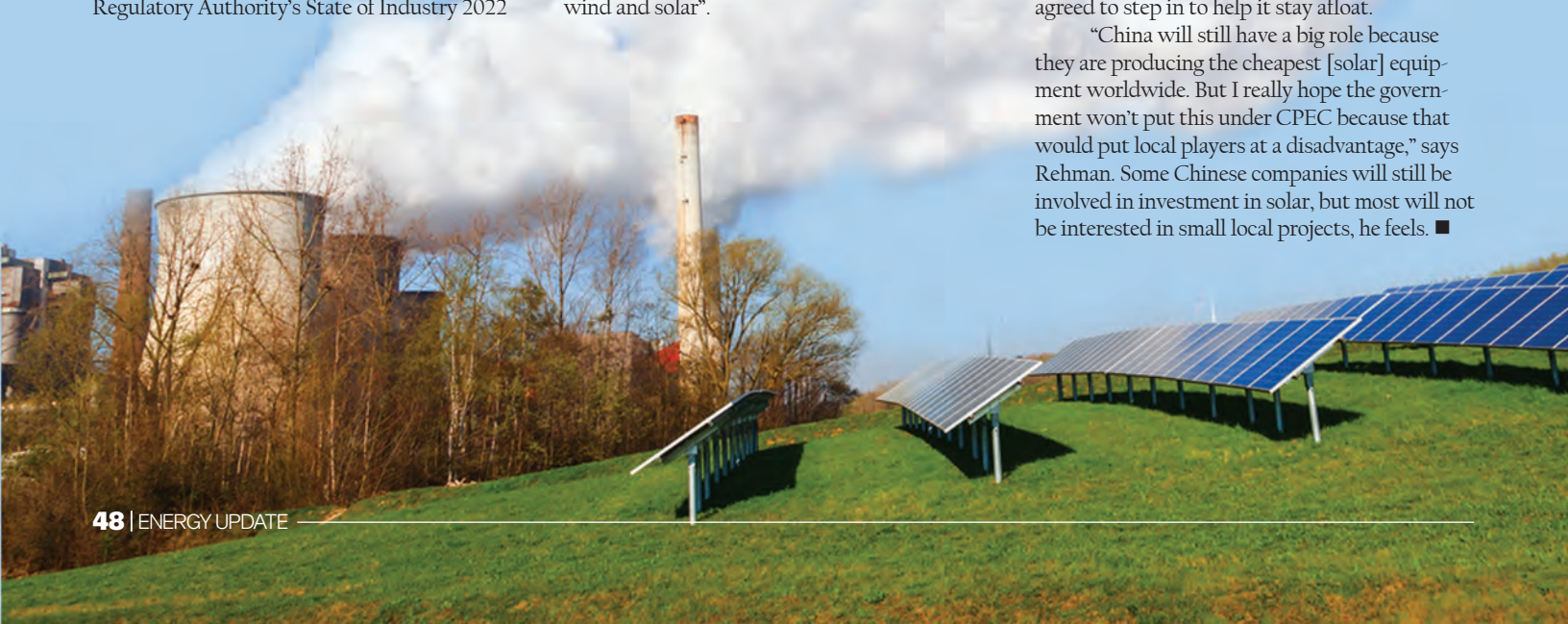
Besides wind energy in Jhimpir, China Three Gorges Corporation is investing heavily in what it is globally known for: hydropower (the company is behind the Three Gorges Dam in China, the world's biggest power station). In June 2022, it completed a 720 MW project in Karot in northern Pakistan. Work is advancing on a 1,124 MW hydropower plant near Muzaffarabad, and a third 640 MW project has recently been approved in Mahl. The same company is behind both projects.

Hina Three Gorges aims to produce 2,500 MW of renewable energy in Pakistan, mostly through hydro. The Pakistan government – like many others – includes hydropower under the umbrella of renewable energy, but this is disputed by many environmentalists due to the often high environmental, social and financial costs of hydropower, including disruption of important riverine ecosystems.

There is one form of renewable energy in particular that presents immense potential for Pakistan, but which has seen little investment to date: solar. A World Bank study in 2020 urged Pakistan to urgently expand solar and wind "to at least 30% of electricity generation capacity by 2030, equivalent to around 24,000 MW". As of 2022, the proportion is 5.6% according to the National Electric Power Regulatory Authority's State of Industry 2022 report.

Costly fuel imports have already had a crippling effect on Pakistan's economy. This year, the volatility of global energy prices, exacerbated by Russia's invasion of Ukraine, took a damaging toll on Pakistan's foreign exchange reserves. The country was on the verge of a default before the International Monetary Fund agreed to step in to help it stay afloat.

"China will still have a big role because they are producing the cheapest [solar] equipment worldwide. But I really hope the government won't put this under CPEC because that would put local players at a disadvantage," says Rehman. Some Chinese companies will still be involved in investment in solar, but most will not be interested in small local projects, he feels. ■



Neelum Jhelum Hydropower project

Tunnel collapse causes total damage of Rs22.5bn

— EU Report —

The 969 MW Neelum-Jhelum hydropower project, which is non-operational since July 6, 2022 in the wake of blockage that appeared in the 3.5 kms Tail Race Tunnel (TRT), has seen an estimated damage of Rs22.50 billion (Rs2.50 bn construction cost and Rs20 billion as business loss).

“The project will now come on stream by the end of February 2023. Till February 2023, the project would have a business loss of Rs20 billion,” a senior official of the Neelum-Jhelum Hydropower Company Limited (NJHPCL) told The News.

When asked as to who will bear the loss, either the government or NICL (National Insurance Company Limited), the official said that both the heads, TRT and business loss, are covered under the insurance agreement, so Wapda will not bear the loss. “NICL has a 7 percent share and a group of Chinese companies 93 percent in the insurance amount. And they will share the cost to be incurred on making the project operational.”

To a question, the official said that since the CoD of the project i.e. April 2018, the insurance company is getting Rs1 billion from NJHPCL and so far Rs4 billion have been received by the insurance company. Now they will pay the damage cost of Rs2.5 billion and business loss of Rs20 billion.

To a question, the official said the Neelum-Jhelum hydropower project generates business of Rs48-50 billion. “In three months of the summer season, four units (turbines) of the project become operational, in 6 months, three units and in three months of winter only one unit runs depending on flows of water.”

The official said that authorities have decided to purchase the maintenance vehicle for the inspection of tunnel and complete the construction of the tunnel as soon as possible.

The initial report about the tunnel debacle suggests that on July 04, 2022, when the plant was running at its full capacity (969MW), an abnormal increase in water leakage was observed in the powerhouse which was controlled through continuous drainage pumps. Upon investigation, high water pressure in the Tail Race Tunnel (TRT) was observed.

Accordingly, on July 05, 2022, it was

concluded by the project consultants that abnormal increase in TRT pressure and water leakages/seepage in power house are due to blockage in TRT. Considering safety of the

power structure and all other equipment/machinery, units were shut down gradually. As a result, the powerhouse was shut down on July 06, 2022. ■

Pakistan may face fuel shortage

Pakistan could be teetering on the brink of yet another fuel crisis. It is about time the policymakers take decisive actions that can eliminate such threats for good.

A few days ago, the Oil Companies Advisory Council (OCAC), the representative body for the downstream petroleum industry, warned that a fuel shortage might occur in some regions of the country in the near future since some oil companies experienced higher-than-expected sales last month while imports had been limited.

The increase in sales can be attributed to the rise in demand from the agriculture sector and the uptick in rehabilitation work for the flood victims.

The Oil and Gas Regulatory Authority (Ogra) swiftly refuted the oil industry's claims, saying that there were ample inventories of petrol and diesel, and more cargoes will arrive soon. Although the clarification should give relief to the citizens, it doesn't entirely eliminate the risk of a fuel crisis due to three reasons.

Firstly, the regulator neither clarified whether the industry experienced a surge in demand in October nor provided any outlook for November. So far, the strong sales trend seen last month has rolled over into November, which might push pressure on fuel inventories.

Secondly, it remains unclear whether the fuel cargoes booked by OMCs (besides PSO) can arrive on time, particularly in the aftermath of the ongoing tightness in the global diesel market.

Thirdly, the domestic production of petrol and diesel might also decline. At least two oil refiners have recently warned that

they could be forced to shut down operations due to slow upliftment of furnace oil.

This includes the leading fuel producer and the only refinery in the north that has confirmed it is running at 70% of capacity. This might adversely affect the domestic petrol and diesel production.

International markets are experiencing a shortage of diesel, which has pushed up the commodity's prices. Diesel is a key component of the world's economy and plays a critical role in maintaining the global supply chain.

Pakistan may have to import large quantities of this expensive fuel in case of a shortfall. The only sustainable solution is for the policymakers to pursue a strategy of raising domestic production of fuels. For this, the refining sector, which is responsible for producing petrol and diesel, needs to be strengthened.

The local oil refining plants have been meeting around 60-70% of diesel and 30% of petrol demand. But usually 40% of the nation's oil refining capacity does not get utilised due to numerous issues, including a scarcity of financing options and the above-mentioned furnace oil problem.





Gas tariff – the ticking bomb

—◆— EU Report —◆—

From being applauded for taking the “difficult” decisions to taking none at all – life has come full circle for the government. The inability to rationalize gas prices was (rightly) dubbed as one of the key reasons why the energy sector is in such a mess. The blame was put on the previous government, which failed to act upon the regulator’s approved determinations and kept the consumer end prices unchanged for over two years.

All of this was supposed to change after April 2022, as electricity tariffs were significantly revised, and petroleum taxations made a comeback. The agreement with the IMF made clear that gas price revision is next in line, although with a slight delay. The delay is costing tens of billions with every month that passes by, and there are no signs yet, that the gas price rationalization, if any, would be anywhere close to what has been prescribed by Ogra.

Latest in the saga are revised estimated revenue requirements by the two distribution companies, seeking review of the petitions for FY23 revenue requirement submitted earlier in March 2022. What was Rs902/mmmbtu, has now become Rs1034/mmmbtu as average gas price. This is 21 percent higher than the determined

rate of Rs854/mmmbtu, as new realities have been accounted for, such as USD/PKR parity, crude oil price, HSFO price, and more importantly a higher required rate of return on average assets. The RRR has gone up from 16.6 percent to 20 percent, from the previous petition and determination.

When one makes room for the previous years’ shortfall starting from FY18 – the average prescribed price in the case of SNGPL goes as high as Rs1,840/mmmbtu. Of this, Rs805/mmmbtu pertains to previous years shortfalls. From the current average rate of Rs545/mmmbtu – this is 237 percent higher. Needless to say this won’t see the light of the day, as Ogra would go on to disallow on a number of accounts. That said, the determined price would still be higher than previous determination on account of higher shortfall relating to the previous period, and revised return rates and commodity prices.

So much for the latest version of Ogra regulations that allow for tariff petitions to be decided swiftly and implemented without delay. The gas circular debt is believed to have crossed Rs1.2 trillion, which includes tax adjustments, refunds, amounts stuck in courts, and receivables from the power sector (also part of the power sector circular debt). Not all of it gets entertained in the final determinations, and the previous years’ shortfall keeps accumulating year after year. ■

On energy innovation

Engro Powergen Qadirpur (EPQL) is an example of innovation in Pakistan’s energy sector. This plant was built to use permeable gas (low BTU and high Sulphur) which was flared gas (disposed of) from the Qadirpur gas field. This project came with an out of box solution of capturing this gas to produce power. It is used to generate 217 MW of power. But Qadirpur gas is depleting and so is the permeable gas. Currently, 100 MW worth gas is used, and the rest of the plant is run on HSD.

Recently, EPQL modified its generation license to use another low BTU gas in the neighborhood. It will get this gas from Petroleum Exploration Limited (PEL) at Ghotki. The initial gas availability will be 8-13 mmcf and that would be enough to produce 20MW. This low BTU gas does not have pipeline quality and was not in use. Every indigenous MW is important in days of high LNG prices and Pakistan’s external financial crunch.

Such transactions should be encouraged. This is B to B in play, on a ‘take and pay’ basis. This kind of low BTU gas has no other use and is not of pipeline quality. What is required by the government is to liberalize the market. That is what happened in the case. Pricing is done by market forces benchmarked to RLNG contract pricing adjusting to the heating value discount.

The government needs to pull out of the market and let business-to-business deals become the norm. Indigenization motivation is imperative. There is more potential in the permeable gas in the region. It is estimated that 400-500MW worth of power can be generated through these distressed fields. EPQL can absorb 100MW in its plant. New investment is warranted in the sector.

Pakistan is increasingly relying on imported energy – especially gas. The country doesn’t earn enough dollars to provide for the required gas import bill. The indigenous and innovative projects should be welcomed and encouraged. Using the low BTU gas from distressed fields is saving without incurring high initial costs. These are low hanging fruits. Small steps like ECQL should be highlighted and encouraged. ■

KP CM opens 10MW Jabori Hydel power project

— EU Report —

Chief Minister Khyber Pakhtunkhwa Mahmood Khan has formally inaugurated the 10 MW Jabori Hydel Power Project completed at an estimated cost of Rs3.7 billion along with laying the foundation stone for the construction of the 300 MW Balakot Hydropower Project in Manshera, which will be completed in seven years at an estimated cost of Rs95 billion.

The Chief Minister also announced the establishment of Tehsil Tanawal in Manhera district. The newly completed Jabori Hydel power project is expected to generate Rs380 million in revenue each year whereas the Balakot Hydel power project, once completed, will generate Rs15 billion in revenue every year.

The Chief Minister also held the ground-breaking ceremony for multiple developmental projects worth billions of rupees in Abbottabad which include the remodelling and rehabilitation of the 24.37 km long Thandiani road.



The project will be initiated under the Khyber Pakhtunkhwa Integrated Tourism Project at an estimated cost of Rs3 billion and will include a rest area of over 10 kanals of land that will have a mosque, dispensary and other facilities.

The Chief Minister also held the ground-

breaking for the upgradation of the District Headquarter Hospital in Abbottabad which will be completed at an estimated cost of Rs 900 million and will include 215 beds, six dialysis units, six dispensary units and other allied facilities. ■

Banks can help curtail pollution: moot told

— EU Report —

Speakers at a research study launch recently said banks could help curtail pollution and improve the environment with prioritised funding to renewable energy (RE) projects, as fossil-fuel-based projects badly affect the atmosphere.

The study 'In-depth analysis of Green Banking Guidelines of the State Bank of Pakistan' was launched at the NED University premises. Department of Economics and Management Sciences, NED University conducted the study in collaboration with Indus Consortium.

Addressing the ceremony, head of the study group and chairman of Department of Economics and Management Sciences, NED University, Dr. Raza Ali Khan, said the purpose of green banking guidelines was to create environment-friendly banking and give importance to quality of life and society.

"Banking has an effective impact on the environment, as they are providing loans for the energy projects' development. They can play a significant role to curtail pollution and improve the environment by limiting their funding to renewable energy projects."

CEO of Indus Consortium Hussain Jarwar said Indus Consortium was collaborating with

30 major universities in the country including NED for development of research studies.

Mirza Faizan Ahmed, a research associate and assistant professor at the Department of Economics and Management Sciences, said the State Bank of Pakistan (SBP) had issued green banking guidelines in 2016-17 with the SBP, commercial banks, and renewable energy developers as its stakeholders.

"We need to motivate industry to implement these guidelines," he said. The study's research associate and teacher Shabbir Ahmed Baqai presented findings of the study, saying out of 32 commercial banks in the country, 18 banks had taken some initiative towards the implementation of the guidelines. The analysis focused on Habib Bank Limited as a model, which was disbursing more than 40 percent of funds out of total energy project development funding. The SBP issued the Green Banking Guidelines (GBG) in 2017 intending to transform the country's economy and acknowledged the role of the financial sector towards a low-carbon and climate-resilient economy. It helps bring awareness among investors, and the banking industry to make its

infrastructure, operations, investments, and products sustainable.

The guidelines provide details about the responsibilities, management, and organisation for the GBG implementation and construct three themes to work upon, which include environmental risk management, green business facilitation, and own impact reduction. The key stakeholders of the guidelines are the SBP, banks/development finance institutions, and customers/RE developers.

Fiza Qureshi, manager programs at Indus Consortium, said according to the guidelines, Pakistan's energy transition should be 25 percent on renewable energy resources by 2025 and 30 percent by 2030. A large number of teachers, research fellows, and students were present at the launching ceremony. ■



SOCIAL ROUND UP



Minister Food Baluchistan visited 2nd CAPSTON held at BUIEMS. Convenor PPDC of PEC Mir Masood Rashid also seen in picture.



A Delegation of Pakistan Engineering Council visited NUST Quetta. A picture of Director NUST, Mir Masood Rashid and others.



Vice Chancellor BUIEMS distributing cash award to winning team at CAPSTONE



MOU Signed between NFEH, Energy Update & Odyssey to promote renewable energy and tourism



Chinese CG Presenting an appreciating certificate to Sr. Journalist and Anchor Hussain Thebo.



M. Zakir Ali CEO Inverex presenting gift to renowned actor Faisal Qureshi

Standard solar care now available in Pakistan

Pakistan's focus and progress into solar energy have been expeditious in recent times due to the high oil import bill. Pakistan has tremendous potential to generate solar energy due to nine and a half hours of sunlight daily. According to the World Bank, Pakistan can generate enough electricity to meet its current electricity demand just by utilizing only 0.071% of the country's area.

Multiple new commercial projects are in progress in industries like the textile industry where many textile factories have installed their own solar generation units as electricity cost is almost 35%-40% of conversion cost related to basic textile processes i.e. weaving and spinning.

Many early adopters in the industry, however, suffer from a low yield of Solar PV systems. Studies suggest that 6 of 10 solar projects in Pakistan are under-performing. Surprisingly, one of the top reasons is that their solar panels are not clean.

Companies tend to underestimate the effect of soiling or dirt accumulation on solar panels, in fact by practice, the soiling effect may cause up to a 40% loss in the panel capacity. Further, different process plants have different types of soiling like cement dust, oil deposit, metal dust, etc. which cannot be cleaned congenitally and can even lead to irreversible damage and costly repairs.

Therefore, professional cleaning and maintenance is important for any solar power plant to produce the maximum amount of energy throughout its operational life. PV360 is one of the first companies to provide state-of-the-art operations and maintenance services in Pakistan under the name of PVCare. Mr Nabil Bari, founder and CEO of PV360 has joined hands with two leading international solar maintenance companies: KSOLARA and ChemiTek to serve the solar plant users in the country with O&M services matching the global standard and help them achieve maximum efficiency in power generation by keeping the panels 100% clean and operational.

KSOLARA is a Lithuanian company offering the world's best mechanical solar panel cleaning equipment made to last and clean efficiently. PVCare, is now the exclusive official



distributor of professional cleaning machines FK1, FK2, FK3, and FK4 by K-SOLARA in Pakistan. These machines are tailor-made for specific solar installations that ensure effective and quick cleaning with less water consumption.

ChemiTek is a Portuguese company dedicated to the development, production and trading of efficient, easy-to-apply, innovative and environmentally friendly chemical products for industrial maintenance. Through this collaboration, tried and tested special contaminants removal agents and soiling mitigation and efficiency enhancement products will now be available in Pakistan, exclusively via PVCare.

About PV360

PV360 is an end-to-end Solar Energy Solution Service Provider specializing in designing and planning, managing, and ensuring deliveries of renewable resources including solar and wind energy production and storage for large-scale industrial and commercial projects. Our specialization covers monitoring the entire value chain, ranging from project design, sourcing, construction, and commissioning to operations and maintenance of solar projects. With the launch of PVCare, the company now offers international standard services for the operations and maintenance of solar plants. ■

South Korea to gift Pakistan solar power plant

—◆ EU Report —◆

The Korean Government is to gift a modern solar power plant to Pakistan to mark forty years of friendly and prosperous diplomatic relations. The project would be established by the Economic Development Cooperation Fund (EDCF) of South Korea. In preparation of this event, the Korean embassy in Islamabad has planned to organize an interactive seminar on November 17, 2022 (today) with the theme of "Development Corporation Role of EDCF for promoting renewable energy".

In Pakistan, around 10.57 per cent of the country's total installed power generation capacity (in 2020) comes from renewable sources (wind, solar, and biogas) out of which the majority share is from hydroelectricity. As per the vision of the Prime Minister, the aim is to add 20 per cent of renewable energy by the year 2025 and 30 per cent of RE by the year 2030.

EPCL signs gas supply deal with SSGC

—◆ EU Report —◆

Engro Polymer & Chemicals Limited (EPCL) has entered into an interim agreement with Sui Southern Gas Company Limited (SSGC) for supply of gas till February 28, 2023, a statement said on Tuesday. The price would be charged to EPCL at a rate on industrial/commercial pricing notified by the Oil and Gas Regulatory Authority (OGRA), EPCL informed the Pakistan Stock Exchange in a notice.

Currently, EPCL is being charged Rs1,087/mmbtu while the current (Nov'22) rate of RLNG notified by OGRA is \$14.81/mmbu (Rs3,318/mmbtu). Rao Amir Ali at Arif Habib Limited said in a note that the company had already planned an annual turnaround during Dec'22 for 30 days to manage expected gas shortages in the winter season. Normally, the company holds one month's inventory (15-20K tons), he added. On the basis of the development, calculated potential financial impact on EPCL indicated that it would have to increase PVC prices by \$285/tonne to fully pass on the impact of higher gas prices. ■



PM inaugurates refurbishment project of Mangla Dam

Prime Minister Shehbaz Sharif has inaugurated the refurbishment project of Units 5 and 6 of Mangla Dam aimed at enhancing its electricity generation capacity.

Speaking on the occasion, the Prime Minister termed the project a wonderful example of cooperation between Pakistan and the United States. He said the total cost of this up-gradation project is 483 million dollars, of which 150 million dollars were provided by the US as a grant.

He emphasized the need for further enhancing bilateral cooperation between Pakistan and the United States in the field of trade and investment. Alluding to the contributions made by Mangla Dam to the country's economy, the Prime Minister said Pakistan cannot afford expensive energy on which annually twenty seven billion rupees are currently being spent. He underlined the need for exploiting the indigenous resources including hydel, solar, air and coal to produce cheap electricity. ■

OGDCL-sponsored students graduated from IBA Karachi MD/CEO OGDCL congratulates the students on successful completion of studies

Under the Oil & Gas Development Company's National Talent Hunt Program another batch of students have completed their graduate studies at the Institute of Business Administration (IBA) Karachi. Studies of these students were sponsored by the Oil & Gas Development Company Limited (OGDCL). The batch which consisted of 15 students were awarded degrees in the disciplines of Business Administration, Accounting & Finance, Mathematics, Economics, Computer Science, Economics, and Mathematics. MD/CEO OGDCL Mr. Khalid Siraj Subhani along with Executive Director Services OGDCL met the OGDCL-sponsored graduating students ahead of the graduation ceremony and congratulated them for their hard work and success at IBA. ■

Trina strives to achieve mission of solar energy

Company has shipped more than 120 GW of modules to more than 100 countries and regions; generated about 162 TWh of electricity from clean energy each year: Report

—◆ EU Report —◆

China is redefining the word modernization, and as it does so the new-energy industry will play an important role, says Helena Li, president of global solar product business at Trina Solar.

As the world as a whole is striving to build a net-zero future, it is imperative that everyone work together, she says. Li made the remarks in a speech by using four words as a reference point at the BloombergNEF Shanghai Summit held from November 29 to 30.

"The world is undergoing tremendous changes, and new energy is an important part of the energy mix," Li said. "The first is consensus. The Intergovernmental Panel on Climate Change of the United Nations says that up to 3.6 billion people worldwide live in environments highly vulnerable to climate change. From the Kyoto Protocol signed in 1997 to the Paris Agreement signed in 2016, to China's achieving peak CO2 emis-

sions before 2030 and carbon neutrality before 2060, proposed two years ago, the world has come to agree that addressing climate change and achieving carbon neutrality are a common cause for all humanity".

"The second key word is responsibility. In a way Trina Solar owes its very existence to the Kyoto Protocol. For it was this document that inspired the company's founder, giving us one of the world's first PV companies. Since Trina Solar was founded 25 years ago it has been firmly committed to its mission of "Solar Energy For All". For evidence of that we have shipped more than 120 GW of modules to more than 100 countries and regions, generating about 162 TWh of electricity from clean energy each year. From low-carbon products

to green production and operation to the full implementation of an ESG strategy, Trina Solar shoulders its social responsibility by deeply respecting the ethos of sustainable development.

"Third, technology. We believe achieving carbon neutrality consists of four critical elements: PV power generation, energy storage technology, energy digitization, ultra-high voltage network. Trina Solar is resolute in its mission to promote the industry's entry into the 600W+ era and the all-round application of PV modules meeting the LCOE-oriented principle. The new-generation n-type modules based on the 210mm technology platform and n-type i-TOPCon cell technology, further reduce LCOE for continuous growth of renewable energy.

"And fourth, vision. We believe the new-energy and PV industries have incredibly good prospects. Although local carbon neutrality is a way off, Trina Solar is immensely proud of the role in making it happen and it has played over the past 25 years in offering smart solar energy solutions to the world. We are excited about the next 25 years, including the prospect of building a user-oriented PV ecosystem. At the same time, we are sober-minded as we face the responsibility with others in the industry of creating a net-zero future for all." ■

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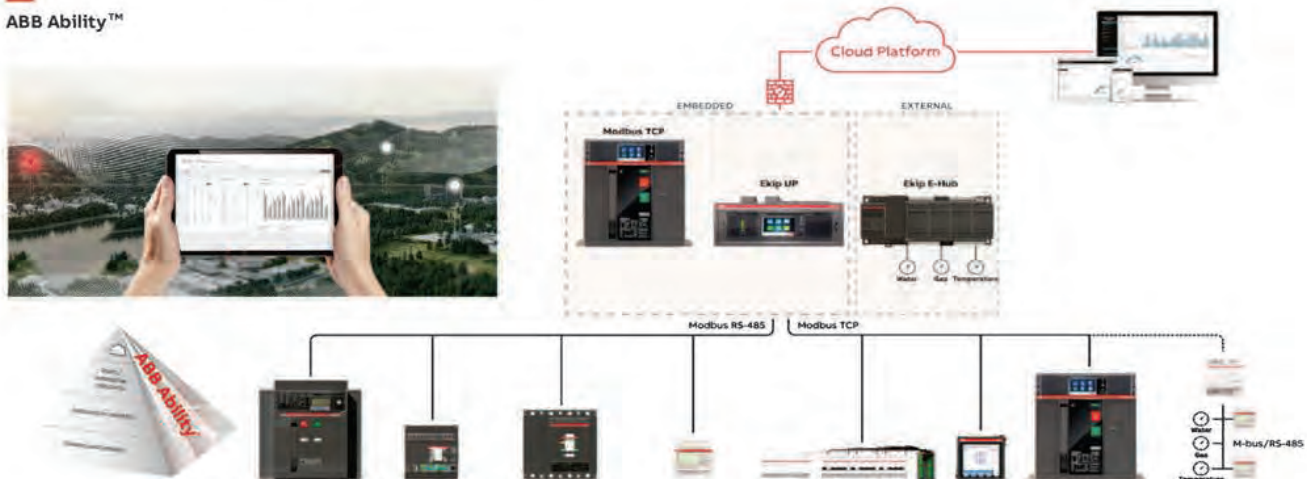


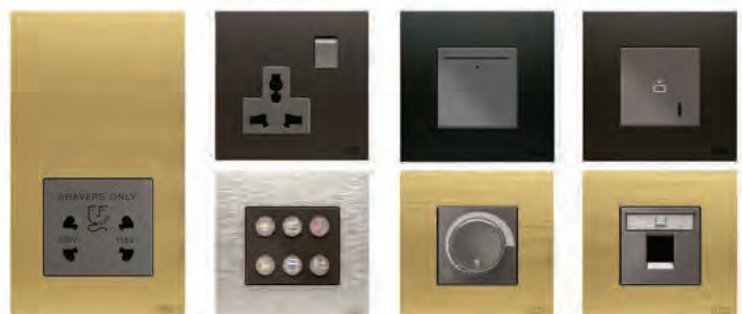
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