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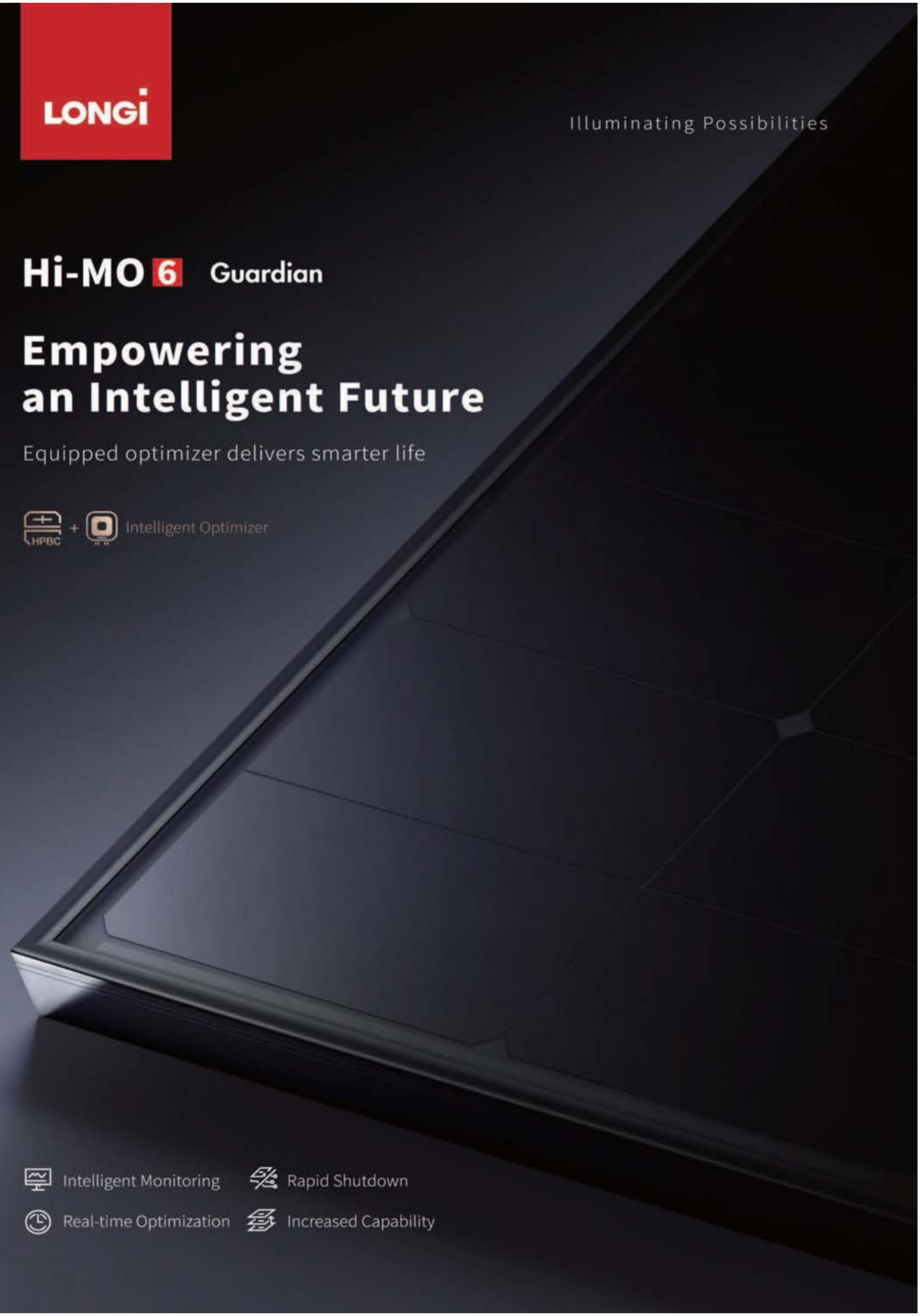

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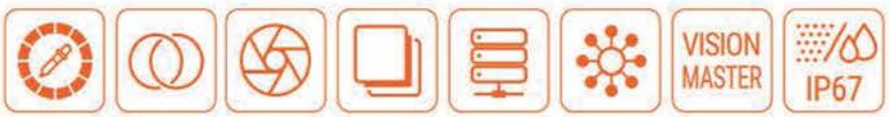

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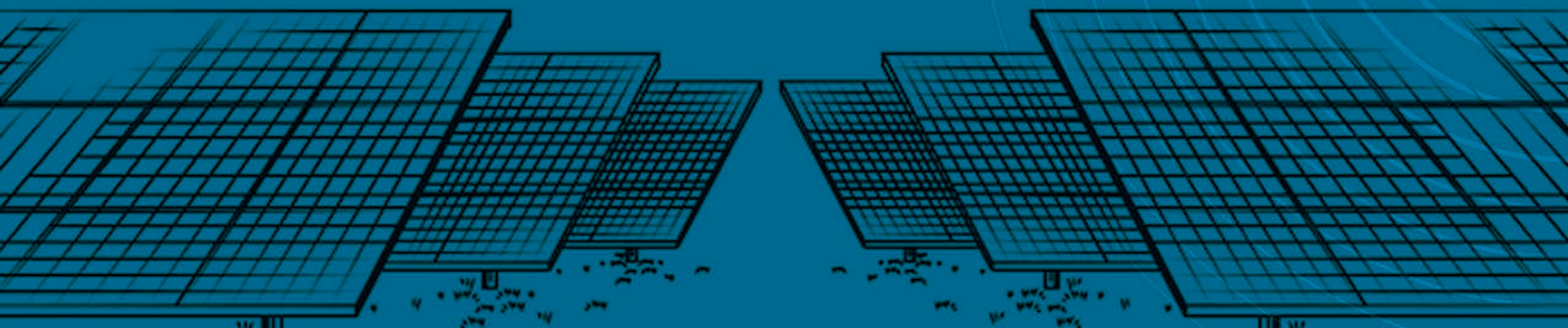

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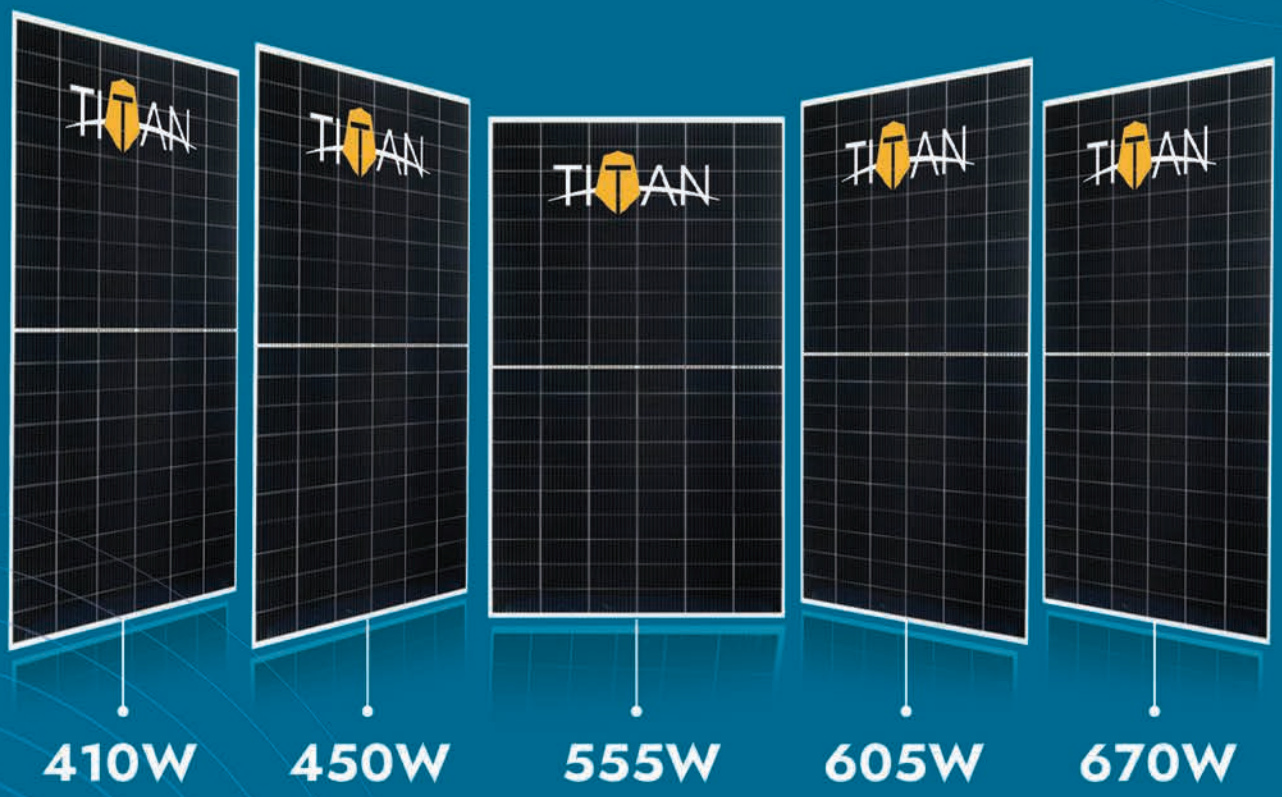

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FROM THE EDITOR'S DESK...

Tough time ahead!

As the country has entered into the new calendar year 2023, tough socio-economic challenges are ahead not only for the government but also for the people. The grim challenges are low foreign reserves, ever-skyrocketing inflation, rising dollar, high circular debt, and last but not the least, the energy crisis. The country is expected to face default situation if new loans or new incomes are not arranged within two months.

What happens, it is yet to be seen, but fact is that ultimate sufferers will be masses who are already undergoing shocks of high inflation. The government, however, have tactics to arrange for its economic growth by either raising oil prices or taking foreign loans as usual, but the question is how people of middle and poor classes will save themselves from skyrocketing inflation.

The government looks puzzled to steer the country out of the persisting economic slowdown as the country's foreign exchange reserves have struck a record low of $5.82 billion by Dec 23, 2022, which is very alarming financial situation. The talks with the IMF on the bailout package also seem to be on hold. The energy supply shortages and rising dollar have pushed commodity prices higher, making the life of people miserable across the country.

Sensitive Price Indicator (SPI), which is computed to assess the price movement of essential commodities, has showed a grim situation of high inflation as of Dec 29, 2022.

The SPI's year on year trend depicted an increase of 29.30% in the overall commodity prices , as onions rose by 498.08%, tea Lipton 65.41%, diesel 65.05%, chicken 64.20%, petrol 52.19%, eggs 49.11%, pulse moong 46.94%, pulse gram 44.42% and mustard oil 41.64%.

Among all these commodities, the increase in energy prices is taking a heavy toll on all sectors of socio-economic life. The cost of business has almost double within four years. The businessmen are facing tough challenges in saving their businesses while people of poor and middle classes are passing life in trouble. The worst sufferers are salaried and labor class whose wages are not being raised due to high inflation and cost of doing business.

The clear solution to the economic problem lies in the fact that the government should stamp out all its luxuries, stop paying high salaries to certain bureaucrats, eradicate corruption, reduce strength of advisors and aides, raise exports, cut imports, use Thar coal for power generation instead of costly foreign coal, repair sections of faulty power plants and end tax pilferage.

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Energy planning is mostly carried out on ad-hoc basis

Holistic power planning approach needs to be adopted: energy sector's swelling circular debt crossing over Rs2.5 trillion

Shaheera Tahir

Energy planning in Pakistan is mostly carried out on an ad-hoc basis as a reaction to an urgent crisis. This hasty and short-sighted approach has not only caused irreversible damage to our environment and local communities but also exposed our national exchequer to external energy supply chain shocks.

Lack of attention to address the structural causes of growing illiquidity in the energy sector has further hampered its financial position. As a result, what we see today is a rather dysfunctional energy sector compromised on both environmental and economic grounds. Our expensive energy mix, heavily reliant on imported fossil fuels, and lower contribution by cheaper renewable energy resources such as wind and solar bear testament to such shortcomings.

The energy sector's swelling circular debt crossing over Rs2.5 trillion highlights the magnitude of the prevalent inefficiencies. In such circumstances, a long-term system-oriented planning centred at sustainable energy resources such as solar and wind is direly needed. The adoption of a systems approach is particularly important to unleash the true potential of solar and wind energy resources to address issues of energy affordability, energy security and energy sustainability.

Solar and wind energy resources are inherently intermittent energy sources, and for this reason they are also known as variable renewable energy (VRE) resources. In Pakistan their potential has remained neglectfully unexplored, misled by the deep-rooted belief of power planning institutions that their variability would cause additional costs for the system.

A mere six per cent share of VRE in the current installed generation capacity, and over 150 pending wind and solar power projects worth more than 8 GW reflect institutional reluctance towards VRE. Their feasibility is objected by unduly burdening them with system costs of the energy sector.

The 2021 State of Industry Report, issued by the National Electric Power Regulatory Authority (Nepra), says, "while analyzing the financial viability of renewable energy resources, the intermittency cost arising out of the need for keeping back-up generation capacity as well as the affiliated transmission and construction costs must be accounted for to induct the appropriate share of RE in the generation mix." It further states: "the requirement of back-up arrangement for complementing the intermittent power generation capacity ... increases CPP [capacity purchase price] on account of non-utilization of available capacity of base-load thermal power plants".

It is important to understand our power system elements, their relevant characteristics and interconnections to ascertain the validity of such cost attributions towards VRE. The key components of our power system are: power producers, central power purchasing agency (CPPA-G), power distribution companies (DISCOs) and power consumers.

According to the Nepra report, if VRE share increases, the existing thermal power plants will be underutilized, resulting in increased capacity payments to the thermal fleet. However, the 'take or pay' nature of power purchase agreements between thermal power producers and the central power purchasing agency (CPPA-G), necessitates capacity payments irrespective of their utilization.

Moreover, the clauses of minimum offtake guarantee baked into power purchase agreements, such as seen in recent coal-fired generators, translate into additional penalties. So, the portrayal that capacity payments to the existing thermal fleet will increase as a result of increased VRE share is misleading.

Analyzing the cost impact of the increased VRE share on a power system can be further ascertained through assessment of its flexibility. According to the International Energy Agency, the flexibility of a power system is defined by "the extent to which a power system can modify electricity production or consumption in response to variability, expected or otherwise."

On the end of power production, in Pakistan's energy mix, the thermal fleet is producing energy on a 'take or pay' basis as baseload power plants. But in the presence of higher VRE, only the residual demand will need to be met by the thermal fleet.

While the balancing and evacuation needs of the system may increase with more VRE share, the costs arising from under or non-utilization of conventional power plants would more suitably be a part of the overall system cost. The studies conducted in the European region on increasing renewable energy shares in the power systems reveal that the costs related to forecasting errors, grid upgrades or extension costs are usually negligible at lower VRE penetration levels, which will be true for Pakistan as well. Though the impact at higher levels remains to be seen, it will not be surprising to see renewables come out as the victor, especially given the prohibitively high prices of coal, oil and LNG.

A more holistic power planning approach needs to be adopted if Pakistan sincerely intends to amend its course towards sustainable and affordable means of power generation. Variable renewable energy presents a unique opportunity for much-needed system flexibility and long-term sustainability.

A total system cost approach can provide the necessary impetus to propel these technologies forward by giving system planners a true idea of the economic advantage they bring forth by reducing electricity prices, reducing the power sector's carbon footprint and providing energy security to the country.

The writer is a renewable energy researcher at the Policy Research Institute for Equitable Development.

HOW TO CONSERVE ENERGY

Syed Akhtar Ali

Oil imports have decreased by 26 per cent in the first five months of the current fiscal year (July-Nov). Crude oil imports have fallen by 16 per cent, diesel imports by 44 per cent, and gasoline by 20 per cent. While there may be some inventory effect as well, this is a clear demand-reduction signal. The reasons appear to be obvious: economic slowdown and pricing and foreign exchange issues.

Whenever there are financial issues in energy supplies, there are immediate calls for closing the markets by 8pm. A research study by 'Business Recorder' concludes that the commercial sector's share in electricity consumption is only 10 per cent and that electricity saving in this area may not be significant. The market closure proposal has not been accepted by the commercial sector and remains largely unimplemented.

Similar attempts were made in the past. However previously the country faced an electricity-capacity crisis; this time there is a fuel-price crisis. On the contrary, tariff incentives have been given to incentivize high electricity consumption so that unit capacity charges could be reduced due to high capacity utilization.

Surprisingly, there is apparently no move to conserve and reduce unnecessary oil consumption although high prices are discouraging oil consumption. Reduction in energy/oil consumption can be a double-edged sword; it can affect economic output. It is wasteful consumption that should be discouraged, while also introducing efficiency measures.

The country's elite who drive posh vehicles consume gasoline irresponsibly. There is a case for increasing gasoline prices only for the rich and the elite. But the problem is that this commodity is consumed by both the rich and the poor. In my previous articles, I presented a mechanism for introducing a low-octane cheaper variety of gasoline for the poor.

It is time to promote public transport across the country – be it transport for goods or passengers. Public transport consumes diesel, and there is a case for reducing diesel prices vis-a-vis gasoline so that public transport can become affordable and attractive. Low diesel prices incentivize economic output as well. It can be done easily by high taxes on gasoline and lower on diesel. Many advanced countries have adopted this practice.

The Covid-19 pandemic has also introduced several fuel-saving options like Zoom meetings or the work-from-home model. Authorities should promote ride-sharing in the country, regularize and expand it. The corporate sector should be asked to introduce fuel-saving programmes and targets.

The oil imports of $20-25 billion as opposed to the $36 billion total exports are clearly unsustainable. This situation will continue for some time unless conservation measures are taken. It is similar to the 1973 oil crisis, which forced several Western countries to promote oil conservation and efficiency. We have a similar situation, and it will continue unless exports increase without incurring high energy costs.

The International Energy Agency (IEA) has advised its OECD member countries to adopt conservation measures. They have developed a ten-point agenda, which may be partly relevant and useful for us. Can Pakistan develop a 10-point agenda of its own?

Pakistan needs to refine and better coordinate its oil import process. The power sector requires furnace oil mostly in winter. There is enough furnace oil production by local refineries. Its import ban was lifted in 2020-21 due to the LNG crisis. As a result, excessive furnace oil imports were made, leading to a surplus, which created a disposal problem.

The demand for furnace oil is high in winter, except for occasional demand in other seasons. Oil refineries should be encouraged to build sufficient storage units for furnace

oil. There are other areas where procurement and internal oil logistics can be improved, resulting in oil savings. Oil is mostly consumed in the transport sector. Some 80 per cent of the total oil consumption is by passengers and freight transport. Conservation and efficiency efforts in this sector may save up to $2 billion of oil imports, depending on the prevailing oil prices.

It is important to raise awareness about fuel-efficient driving among vehicle users and drivers. Though people know some techniques to be more fuel-efficient, they are not sensitive about it. Awareness campaigns may help sensitization.

Today, vehicle fuel efficiency has doubled or even quadrupled as compared to that in the 1970s-80s.The movement spread to Europe, Japan and Korea. Developing countries recently introduced such schemes and initiatives. India introduced emission standards in 2015, and is now introducing the VFES, which will be enforced by April 2023. Perhaps, time has come to take similar initiatives in Pakistan. In Pakistan, there are used imported vehicles which are usually more fuel efficient – the fuel consumption of 20km per litre – than the locally produced ones. Import and taxation policies can encourage fuel efficiency through varying tariff rates.

Currently, except for engine capacity, there is no other tariff differentiation. Import policy can place an upper or lower limit on fuel consumption. Imported vehicles should be type-certified in the manufacturing country, specifying fuel consumption rating. Similarly, local producers may be encouraged to increase fuel efficiency of the vehicles they assemble or produce by making adjustments. Tariff incentives may work.

Older vehicles are generally less fuel-efficient either through wear and tear or through fuel efficiency improvement in new vehicles. There are other possible rules and regulations that can be introduced to convince vehicle owners to change to new or less old vehicles. Tax or credit term incentives may work. Since Pakistan is a poor country, it cannot introduce the policy on mandatory retiring of vehicles.

There should be some initiatives to promote the spare-parts industry to reduce the prices of spare parts. There are other approaches as well, such as introducing electric vehicles (EVs). But these plans are mid- to long-term. The combined effect of small changes in several sectors can be quite big. We should not look towards revolutions; history tells us that they do not deliver much. ■

ECONOMIC OUTLOOK

State of economy in 2022

Dr Abid Qaiyum Suleri

If Covid-19 in 2020 was a nightmare, then we have been continuously transitioning from one nightmare to another. Generous fiscal stimulus in the rich world, accommodative monetary policies the world over, and a faster-than-expected recovery from Covid gave rise to global commodity demand, resultant commodity shortage, and a rise in their prices in 2021. At the beginning of 2022, experts believed inflation and commodity supercycles were short-lived, and prices would become moderate as the demand and supply chains settled.

However, Russia's invasion of Ukraine in February 2022 upended all outlooks. The sanctions on Russian energy and food supplies and the disruption in wheat/sunflower supplies from Ukraine led not only to a commodity shortage but also to a decade-high increase in energy prices, triggering a cost of living crisis.

Global economic activity in 2022 experienced a broad-based and sharper-than-expected slowdown, with inflation higher than seen in several decades (stagflation). The cost-of-living crisis, tightening financial conditions in most regions, and China's zero covid policy throughout 2022 (till mid-December 2022) all weigh heavily on the analysis of economic pundits.

While we are ready to enter 2023, the IMF has forecast global growth to slow from 6.0 per cent in 2021 to 3.2 per cent in 2022 and 2.7 per cent in 2023. This is the weakest growth profile since 2001, except for the global financial crisis and the acute phase of the Covid-19 pandemic. Global inflation has risen from 4.7 per cent in 2021 to 8.8 per cent in 2022.

After sticking to the reduced interest rates for two years during Covid, central banks in the developed world, in an attempt to contain inflation, increased their interest rates in 2022. Interest rate hikes in the US resulted in an exodus of foreign investment from emerging and developing economies. This also led the local currencies in those countries to lose value against the US dollar.

The floods of 2022 affected 33 million people and have undone much of the piecemeal progress on the Sustainable Development Goals. They have potentially pushed up to 9.1 million more people below the poverty line. United Nations Satellite Centre (UNOSAT) imagery indicates an estimated eight million people are still potentially exposed to flood waters or living close to flooded areas. Besides this, loss in the gross domestic product (GDP) as a direct impact of floods is projected to be around 2.2 per cent of FY22's GDP.

The only positive development has been reduction in the year-on-year current account deficit by half (for the first five months of the fiscal year). Decade-high inflation, decade-low foreign exchange reserves, unbridled increase in energy circular debt, historic depreciation of the value of the rupee against the dollar, and consistent downward revision of Pakistan's credit rating are the major features of Pakistan's economy during the outgoing year.

Maintaining relations with the IMF and smooth sailing of the current Extended Fund Facility programme also remained major challenges for Pakistan's economy in 2022. The EFF structural reform programme focuses on energy sector reforms, fiscal measures, and corrective actions in the financial sector.

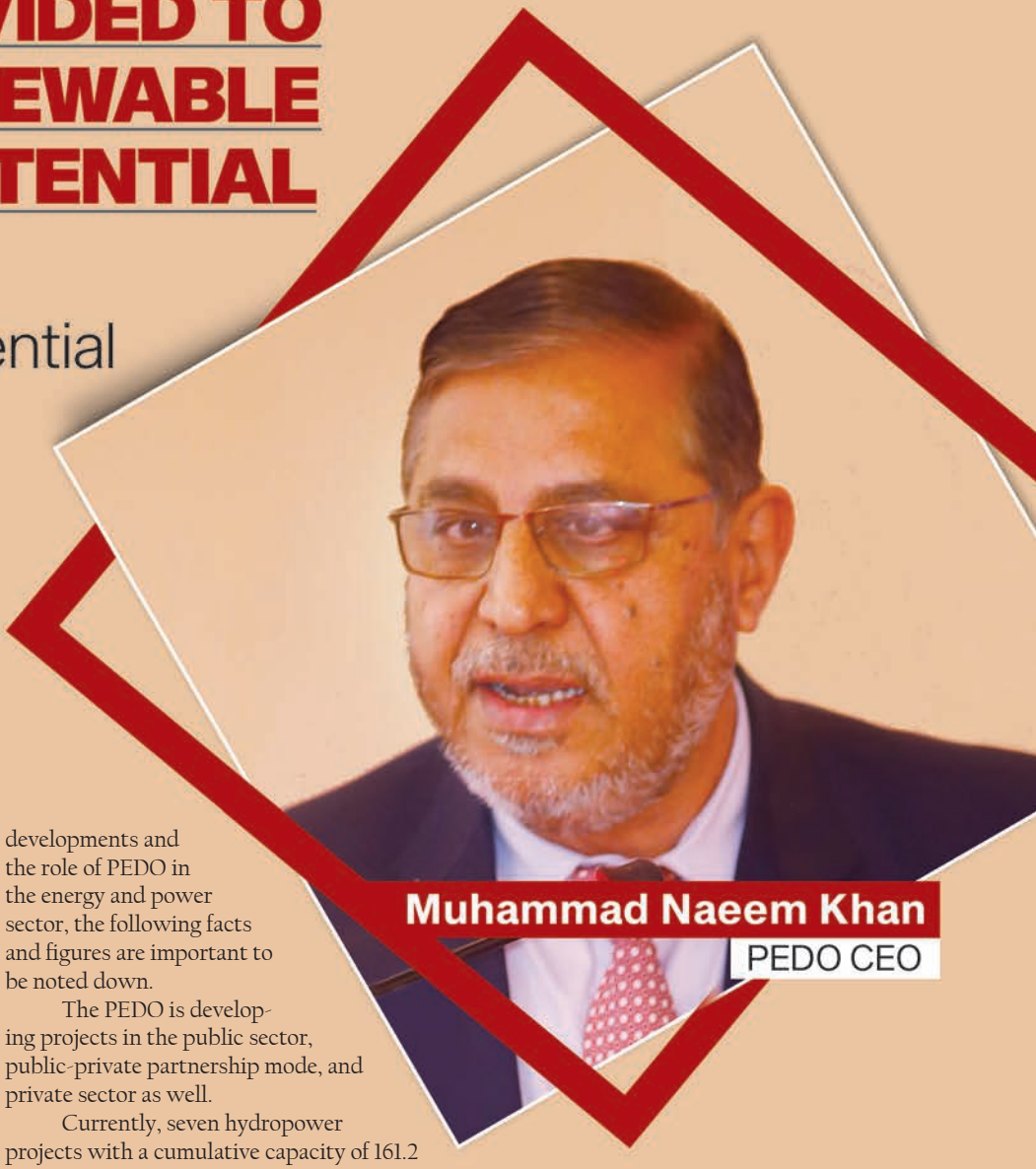
In the outgoing year, both the PTI and PDM governments remained reluctant to carry out energy sector reforms or take fiscal measures to avoid political backlash. Political uncertainty is another factor that haunted Pakistan's economy throughout 2022. Pakistan's mainstream political parties remained more focused on settling scores against each other than on how to anchor (if not sail) the economy during turbulent times.

The good news of 2022 is that, despite its inherent economic vulnerabilities, Pakistan did not default on its external debts. The bad news is that we avoided a default not because of the strength of our economy but due to our debt structure.

The point to ponder for 2023 is that maintaining a subtle balance in our relationships with China (to whom we owe 30 per cent of our debts), Saudi Arabia (to whom we owe nearly 20 per cent of our debt), and the US (who can help soften the tone and tenor of the IMF) will become a daunting task. Emerging geo-economic and geo-strategic developments post-Ukraine invasion will increasingly make it difficult for us to maintain this balance in months to come. ■

ONE-WINDOW FACILITY BEING PROVIDED TO TAP KP RENEWABLE ENERGY POTENTIAL

Country's 70% hydropower potential is located in KP province, says PEDO CEO



Engr. Nadeem Ashraf

Pakhtunkhwa Energy Development Organization (PEDO) has been providing a one-window facility to prospective private sector companies that aim to launch projects to tap the massive clean energy generation potential of Khyber Pakhtunkhwa (KP).

This was stated by PEDO CEO Engr Muhammad Naeem Khan in an exclusive interview with Energy Update. In the interview, he talked about the massive power potential of KP and the ongoing efforts to tap it to make Pakistan self-sufficient in the energy sector. Following are the important excerpts from his interview for our readers:

Energy Update: How many megawatts of electricity have been added to the national grid so far and how many more MWs will be generated in the near future owing to PEDO efforts?

Engineer Muhammad Naeem Khan: I am very much thankful to you for inviting me for an interview and allowing me to answer your pertinent questions related to the energy and power potential of the Khyber Pakhtunkhwa and the role PEDO is playing in developing the energy projects.

KP is blessed with enormous potential of hydropower. Approximately, 70 per cent of the country's hydropower potential is located in the KP province.

Just to give you a snapshot of the recent developments and the role of PEDO in the energy and power sector, the following facts and figures are important to be noted down.

The PEDO is developing projects in the public sector, public-private partnership mode, and private sector as well.

Currently, seven hydropower projects with a cumulative capacity of 161.2 MW, developed by PEDO in the public sector, are operational and feeding electricity to the national grid.

Similarly, seven hydropower projects of a cumulative capacity of 233.31MW are under construction by PEDO in the public sector wherein three projects will be completed in the year 2023, and the remaining four will be operational in the years 2024 and 2025.

The PEDO is developing three projects having a cumulative capacity of 545MW, and these are being developed in the public sector through the financial support of the World Bank and the Asian Development Bank. As per the draft IGCEP 2022-31, these projects will be operational by the year 2027.

The PEDO is also providing a one-window facility to private sponsors for the development of renewable energy projects in Khyber Pakhtunkhwa under the KP Hydropower Policy 2016 (amended in 2017).

The total capacity of the projects to be developed in the private sector is 2395MW, out of these 754MW of hydropower will be developed in PPP mode, 1392MW of hydropower will be developed in IPP mode, 250MW of solar projects will also be developed in IPP mode. Approximately 908MW capacity of seven IPP hydropower projects have been included in the draft IGCEP 2022-31, which will be getting operational by the year 2030.

EU: What other efforts have been made by the PEDO so far to generate hydroelectricity in the province through bigger projects?

Engineer Naeem Khan: As I said earlier, KP province is blessed with enormous hydropower potential, but unfortunately out of the 30,000MW identified potential in KP, only 5762MW is operational (located in KP) which is merely 18-19%.

As hydropower is a base-load, reliable clean, and green source of energy, which has a longer life and whose generation curve fits the demand curve of the country: therefore, policymakers should treat this source of energy fairly by declaring it strategic in nature. That's how the remaining potential will be tapped into large public interest.

Coming to PEDO, to align with the current market trends and to look for available avenues like the CTBCM, wheeling, and PPP mode of development and to catch up with the target of the renewable energy mix, the PEDO has taken initiatives of wheeling/CTBCM;

We are also developing the first-ever 470MW hydropower project in PPP mode. The PEDO is developing three projects of 545MW with the support of WB and ADB. The PEDO has taken the initiative of "social uplift" of the community by utilizing the mini-micro hydropower potential of the province by giving electricity to off-grid areas of the province. By the year 2030, the national grid will be receiving approximately 1860MW electricity from PEDO's hydropower projects (Public & IPPs) which is clean and green electricity.

EU: What are the plans being executed by the PEDO for tapping other renewable energy resources available in the province?

Engineer Naeem Khan: The PEDO initiated the province's first-ever IPP solar projects back in 2017-18. Permits were given to the five solar IPPs for the 250MW solar projects. The developers have got feasibility studies approved by PoE and received the tariffs and generation license from the NEPRA, but unfortunately, the abruptly changing policies have delayed the whole process of development.

We are hopeful that the government will consider developing the said projects under its RE policy 2006 to avoid further delays of CCoE's defined category-III bidding.

The PEDO has not only initiated the large IPP solar projects but is also aggressively working on solarization and microgrids projects.

To let you know about the completed solarization and MMHP (mini micro hydro projects) projects, the PEDO has solarized 6,595 mosques with having capacity of 11.5MW, 7286 schools with a capacity of 9.46MW, 134 health centers with capacity of 0.7MW, 09 offices having capacity of 0.95MW, 6643 houses having capacity of 1.7MW.

The PEDO has also completed 316 mini-micro hydro projects having a capacity of 28.9 MW in 11 districts of KP.

To give you info about under-construction projects, the PEDO is working on the solarizing of 7000 mosques having a capacity of 15.1MW, 1100 schools of having a capacity of 3.54MW, and nine solar mini-grids having a capacity of 1.58MW and 291 MMHPs of 47.46MW in 23 districts of KP.

These off-grid social sector projects are operational and provide 53.21MW power to the local community. Similarly, projects having 67.68MW cumulative capacity are under construction, which will provide clean and green energy to the local off-grid community and will help in their social uplift and livelihood.

EU: What is the planning of the PK government to overcome the acute shortfall of natural gas for domestic and industrial consumers in the province?

Engineer Naeem Khan: As I remained Secretary of Energy & Power of the KP government, hence, I know about details of oil and gas production in our southern districts. Just a few years back, the province was producing about 450 MMCFD gas and 50,000 BPD of oil from the wells located in southern districts, with a very rich kitchen for future exploration. The province is not only surplus in gas but is also providing 50% of the oil demand of the entire country. We need to have proactive exploration in the province.

EU: Is there any plan that KP establishes its own grid and transmission and dispatch companies for facilitating electricity consumers in the province?

Engineer Naeem Khan: The Khyber Pakhtunkhwa Transmission and Grid System Company was incorporated with SCEP on 4th September 2020 and the company got its transmission license from National Electrical Power Regulating Authority (NEPRA) on 26th February 2021, and since then, it has been operating a full-fledged transmission and grid system company. ■

SolaX Signed a 100MW Strategic Cooperation Agreement with Fronus

SolaX signed a 100MW strategic cooperation agreement with Fronus Solar Energy, a leading renewable energy company in Pakistan, to provide advanced inverter solutions in the Pakistan market in the following year.

In addition, SolaX and BTA Technologies inked a partnership agreement, under which BTA Technologies would eventually take over the duties of SolaX's Pakistani after-sales service center. This cooperation is another vital step for SolaX in promoting localization in Pakistan, which will give local clients more timely and targeted after-sales service.

Fronus Solar Energy is a leading renewable energy company in Pakistan, committed to providing the most innovative clean energy solutions to its customers. And BTA Technologies, which has 23 service centers in Pakistan and an extensive experience in inverter maintenance, is the official after-sales partner of Fronus Solar Energy.

As one of the world's most famous residential energy storage system suppliers, SolaX has researched PV technology for many years. With branches in 6 countries, SolaX has around 2,500 global employees and sells products to more than 80 countries. Additionally, in many countries, including Pakistan, SolaX has been named the top brand of PV inverter by EuPD Research, a famous research institute in the energy markets.

This cooperation between SolaX and Fronus was highly expected by both sides. SolaX truly believes that this partnership will enable it to better serve Pakistani clients by offering them high-quality PV solutions and reliable local services. By working together, SolaX anticipates accelerating the energy transition of Pakistan toward a zero-carbon future as soon as possible. ■

ENERGY SECTOR REFORMS

NEED TO CUT INEFFICIENCIES, ENSURE CONSERVATION

Imranul Haq

My previous op-ed, summed up Pakistan's gas supply position vis-à-vis the current demand, prevailing geo-political context, international spot-market under which Pakistan functioned over the last 4 years and the much criticized "Qatar LNG gas deal" which if not signed, the economy today would have potentially grind to a halt due to severe gas shortage, extensive rolling blackouts, contraction and shutdown of industry to make up the 600 mmscfd contracted in 2016/17. Warm winter is ending.

Additionally, there are factors likely to persist among which, a finite set of molecules in the global fuel-supply chain is likely to dominate energy markets. The implications of a price cap of USD 60 on Russian oil are yet to be understood, Japan Korea Method (JKM) of over USD 38.6 for February contracts means continued underutilization of Port Qasim terminals. The long-term deals of Sinopec for 27 years and Germany for 15 years starting 2025/26 with Qatar point towards action pending from Pakistan and possible discounted purchase of crude and refined products from Russia.

The silver lining and the savior continues to be LNG with RLNG costing SSGC $14.85/SNGPL $14.47 per mmbtu at Brent of $91.62 in Nov 2022 vs Nov 2021 of SSGCL $15.43/SNGPL $15.68 per mmbtu at Brent of $76.34. (OGRA). And as per Minister of State, Musaddiq Malik, Iran would donate liquefied petroleum gas (LPG) worth £2 million to Pakistan on humanitarian basis. How long can we continue with such dole outs including living on expectation of increased deferred payment for oil?

Current, past, and future scenarios call for us to improve our energy management, reduce inefficiencies, implement strong energy conservation measures, and align long-term policies for sustainability and affordability as well as economic security – which cannot be seen outside the lens of energy security. Driving these policies require that we fix the head for the body to follow as the future will always be unpredictable. And to fix the head, hard realities require acknowledgement with approved policies that have a strict commitment to transition the sector to stability with agile operations and decision taking.

On the fiscal front, Pakistan should build its revenue base and not reduce fuel retail prices (Brent $82.02 up from $77.1). PDL increase on HOBC is useful and 17% GST needs to be imposed on fuels. Some immediate measures to tame the burgeoning circular debt within the gas sector requires releasing PSO's receivables from the gas utilities to restore the balance sheets of SOEs. Receivables have crossed PKR 1 trillion with experts suggesting it will soon match levels with the power sector. This requires a prudent but necessary call to action to reduce the burden on the exchequer including deploying strict energy conservation measures.

Currently, rationing of gas for 16 hours

a day is in place; SSGC and SNGPL seek a tariff hike of Rs 1,360/Rs 1,840 per mmbtu from Rs 693/Rs 294 with local gas priced at $4.4-5.5 per mmbtu. The gas sector circular debt has increased to Rs 1,900 billion and yet GOP continues to offer export and processing firms $10 per mmbtu. For RLNG diverted to domestic sector, MoE requires Rs 105 billion in next 4 months in addition to Rs 174bn overdue for last 4 winter seasons. (Newspapers, Twitter).

Fiscal slippages are resulting in calls to mobilise an additional Rs 800 billion (1% of GDP) revenue as per news reports. APTMA's Rs 100 billion fuel subsidy would actually consume Rs 200 billion as per the IMF, the impact of the Kissan Package on the budget at around Rs 180 billion and doling out Rs 536 billion for export-oriented industry when in return there was hardly $2 billion increase in exports — due to price increases, not due to quantity.

The message is clear: We cannot afford unfunded subsidies in the short term. We need to charge the cost of fuel, increase tariff and fund targeted subsidies that can be delivered directly to consumers. A wiser decision is to throttle down on wholesale subsidies and divert such funding to low-income consumers to weather the economic stagnation while streamlining efficiency standards. We are at that stage where gas supply rates will have to be raised, stepwise, as was done for the power sector at the tail end of the last fiscal year and strengthen the legal framework surrounding the recovery of gas bills.

Already, households use 2.5 times more gas than electricity possibly due to the unfunded gas subsidy. This is fiscally unsustainable given our current gas shortfall which hovers between 700-800 mmscfd (equivalent LPG of 15-17,000 tpd) and at current trends, imported gas to meet todays' demand in 2032 will be approximately 50 LNG cargoes a month or 5,000 mmscfd thru IP, TAPI and coal gasification (whose earlier studies have not resulted in conclusive cost effective approach) to only meet current and not future requirements which requires a percentage increase, double of GDP growth.

It's a staggering forecast accounting for indigenous gas reserves running out in 10 years, energy demands for 270 million citizens (presently 230 million) and given we produce 14.6% of our crude, 70% of our gas, 41.5% of our LPG, 34% of our coal and 47% of finished products while the balance is part of our import bill according to Petroleum Institute of Pakistan and Petroleum Club of Pakistan (PIP and PCP).

Subsidies also do not justify digital warriors who think of renewables (RE), hydrogen, EV or battery storage without improving our current way of operations and charging actual fuel cost. Thus, a medium-term priority and mass production of batteries, EVs and PVs requires ease of business supported by EDB and Ministry of Science & Technology. Sanctity of commercial contracts and judiciary intervention in executive functions needs to end.

Renewable Energy (RE) sources are cheaper than thermal power in terms of fuel inputs and their technologies are increasing efficiency and reducing cost (solar and wind); however, their intermittent nature can be complemented with hydel and thermal. Thus, available opportunities must be exploited over the next 10 years and the energy sector be forced to step out of its protected comfort zone through deregulation as we are running out of options despite the availability of an improved energy mix.

Pakistan will always be in a catching up mode to meet its energy demands despite best efforts to reduce the power sector circular debt down by 250bn to Rs 2217 bn. This means significantly reducing Transmission and Distribution (T&D) and Unaccounted For Gas (UFG) losses, improving DISCO collections while driving up system efficiencies and energy conservation standards.

In the power sector these losses stand at 17.13%. For 4 bscf consumption in Pakistan, distribution losses are 13.86% and 14.14% for SNGPL and SSGC, respectively: Collectively, the two represent 560 mmscfd as lost units. This repeatedly justifies capex to reduce T&D and UFG thru investment by the utilities limited due cash shortfall.

Loss reduction in the gas and power sector is a no brainer given losses of 600 mmscfd (USD 3-7 billion pa at USD 30/mmbtu LNG) and up to 14,000 MWs (approx. USD 14 billion investment in generation capacity excluding yearly OPEX and capacity charges based on the 2031 IGCEP Installed Capacity planning). Balance sheet of Discos and SSGC/SNGPL is limiting despite economics strongly justifying investment needed to reduce T&D and UFG urgently for which regulator's enforcement needs effectiveness.

Pakistan has had the benefit of gas and electricity but now needs to create strong and reliable pathways for energy to move quickly and efficiently to where it is needed. Should we not have one on grid and off grid electricity network for consumers? In the short term, the circular debt will stay but needs to be at a manageable level. Without any measures, higher the tariff, the more the debt expands and has been proven and backed by data. Now is time for serious structural changes and reform and more on that in next article. ■

OGGCL discovers new gas reserve

Oil and Gas Development Company Ltd (OGDCL) has informed investors that it had discovered oil and gas in an exploratory well named Chak-5 Dim South-3 in Sindh's Sanghar district. In a regulatory filing, the company said drilling operations at the exploratory well had begun on June 26 using the OGDCL's in-house expertise. The well was drilled down to a depth of 3,400 metres, it added. "Based on the results of wireline logs interpretation, Drill Stem Test-1 in the massive sand has tested 2000 barrels of oil per day (bpd) & 1.30 million standard cubic feet per day (mmscfd) gas through choke size 32/64 inches at wellhead flowing pressure (whfp) of 994 pounds per square inch (Psi)," it stated in the filing. The OGDCL has 100 per cent stake in the well as operator, according to the filing. The company said the discovery had opened a new avenue and will positively contribute to mitigating energy demand and supply gaps from indigenous resources besides adding to the hydrocarbon reserves base of OGDCL and the country.

President Alvi seeks energy conservation plan

President Dr Arif Alvi has called for launching a consensus-based nationwide, comprehensive and all-encompassing electricity, gas and water conservation strategies to conserve precious national resources and divert them for the welfare and prosperity of the people.

The president, during a meeting on energy conservation at Aiwan-e-Sadr, underscored that a comprehensive policy and programme should be prepared after consulting all stakeholders, including the provinces, besides launching an awareness campaign across the country to conserve electricity, gas, and water. The president said that there is a need to generate out-of-the-box ideas, absorb creative ideas, benchmark best practices around the world, develop policies and strategies around them and ensure their implementation on a timeline basis to achieve the desired objectives in the shortest possible timeframe.

"Pakistan can make rapid and accelerated progress in all sectors provided it enhanced and accelerated the implementation speed on initiatives of national importance, following a strict timeline while maintaining quality and ensuring desired outputs and outcomes", he observed.

President Alvi maintained that the Islamic teachings stressed the conservation of resources even if there was an abundance of them. He said the teachings of Quran and Hadith stressed the conservation of water even if one was performing ablution on the riverside.

Pakistan's foray into renewable energy

Renewable energy holds a promising future for the energy sector

Salman Siddiqui

Climate-induced calamities are one of the biggest driving forces behind the move towards alternative sources of energy. For a developing country like Pakistan, costs associated with climate change can be unbearable.

The recent floods that swept through the country inflicted more destruction than was ever imagined. They also contributed significantly to the economic downfall with the estimated cost of damages going up to nearly $40 billion; a frightening number for a country already struggling to survive economically.

Moving towards green energy, however, isn't just a healthier option – it is also a cost-effective one. Hydel, wind and solar-powered projects, considered renewable, clean and green sources of energy, carry no fuel costs in power tariffs with significantly lower cost of power production than that of dirty fuel-based power plants.

Independent Energy Expert, Ammar Khan believes that these solutions can also help Pakistan carve a path leading out of circular debt. "Since renewable energy projects don't use any fuel, an increase in the number of green projects will help the country gradually take control of the burgeoning circular debt and capacity payments as well," he said.

"Our circular debt (standing at Rs2.47 trillion in March 2022) is mostly recorded on part of fuel payments. This can be minimised. However, capacity payment (fixed maintenance cost and guaranteed rate of return) issues will remain in place until older projects reach retirement age or demand for power goes up in the country," said Khan.

According to the National Electric Power Regulatory Authority (Nepra), "During FY 2021, net foreign direct investment (FDI) in the power sector rose to $911.7 million from $765.6 million in the previous year. However, more than half of these investments (56%) were in the coal sector (SBP FDI, 2022).

As of June 2021, the total cumulative investment in renewables (including foreign and domestic) amount to $4,796 million, of which $786 million was in solar, $3,752 million in wind, and $258 million in bagasse. The expected investments for upcoming renewable energy power plants (solar, wind, and bagasse) over the next two years stand at $866 million.

The estimated investment to expedite the hydropower potential for the next 10 years stands at $12.98 billion." While the shift to renewables has been gradual and ongoing for many years now – the impact of these shifts can be seen now, exhibiting incentives like long-term monetary gains and climate impact prevention.

Data released by Nepra shows power produced via fuel-based plants in October 2022 carried a fuel cost in the range of minimum Rs1.07 per unit to Rs33.70 per unit – depending on the kind of fuel being used – coal, gas or furnace oil.

The fuel cost in power production hovered around Rs5 per unit before the global fuel crisis emerged in the wake of the Russia-Ukraine conflict. Luckily, between the 1960s-70s, Pakistan set up giant hydroelectric power plants, Tarbela and Mangla, that helped shield the country from paying an even higher cost for energy.

Another hydroelectric power plant from which the country is now reaping benefits is the Neelum-Jhelum plant set up in 2018.

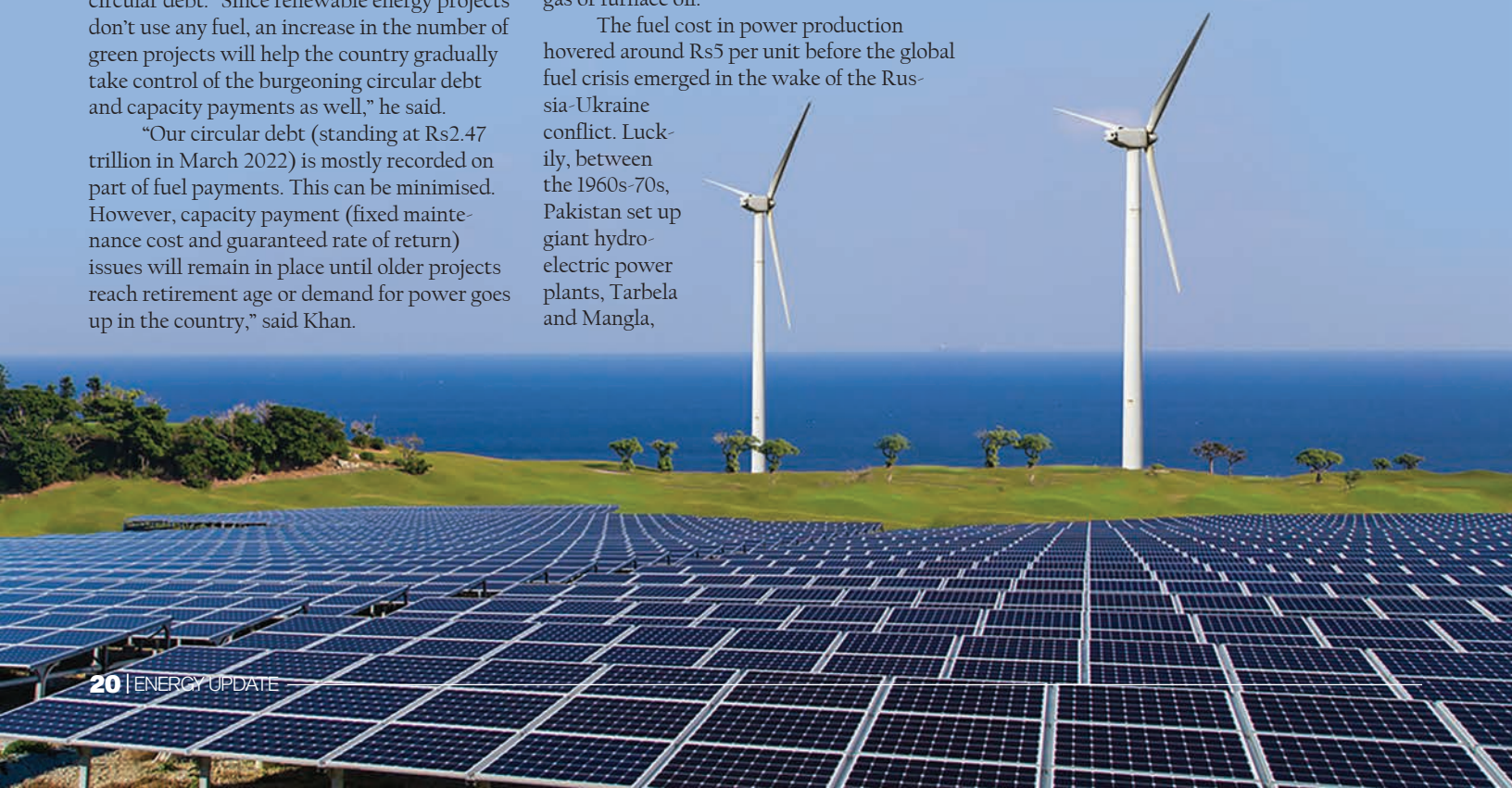
HYDROELECTRIC

Pakistan's history of a boom and subsequent bust in the energy sector, however, is almost cyclical – and has prevailed even when the installed capacity is in surplus. Most of these projects came into being when their investors were offered friendly energy policies and incentives.

So, even though they provided surplus capacity – their incentives added to the financial crisis. The government of former prime minister Imran Khan, however, seemingly broke this curse by raising the required capital from the international market. In 2021, to construct the $14 billion Diamer-Bhasha Dam, for example, Khan raised $500 million.

The construction of the dam was first proposed in 1998 – by then prime minister Nawaz Sharif – but continued to face delays due to the non-availability of the required funding. President Pervez Musharraf also attempted to raise funds for the project during his eight-year regime. At present, the dam is in its preliminary construction phase and is expected to be complete by 2028.

The dam will add 4,500MW of hydroelectric power to the system. Similarly, the construction of the Mohmand Dam started in 2019, during the first year of the PTI government being in power. This project aims to add 800MW of hydroelectric power to the grid and is scheduled for completion in 2024. ■



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SSGC LPG WORKING HARD TO PROVIDE SAFE, EFFICIENT FUEL

Our company imported two largest vessels in history to tackle gas crisis, says Amir Mahmud, MD & CEO, SSGC LPG

M. Naeem Qureshi

Amir Mahmud, Managing Director & CEO, SSGC LPG says in an interview with Energy Update that we are proud to announce to our customers and the public that SSGC LPG has been working hard to provide you with the best alternative fuel that is safe and efficient. The year 2022, by the grace of Allah, has been a fantastic as we achieved many milestones in this period.

You'd know that winters have always been a testing time for Pakistan in terms of gas load shedding and that's why SSGC LPG imported its two largest vessels in history to tackle this crisis. One vessel with 8,500 MT and the other having 9,375 MT capacity were imported in November 2022.

We also opened SLL's first-ever Customer Facilitation Center in the vicinity of DHA, Karachi. We joined hands with SNGPL in distributing 100,000 LPG cylinders in the central and northern parts of the country to aid even more customers facing energy crisis and made a record-breaking sale of 20,000 MT LPG per month. We also opened two new warehouses in Karachi that will serve around 500 households at a time. To expand our reach and facilitate more customers, we have recently opened up an agency in Quetta in December 2022 to penetrate in the 4th province as well.

Energy Update: What circumstances led SSGC to enter LPG business?

Amir Mahmud: SSGC felt that the customers should have an alternate fuel to manage their energy needs both domestically and commercially due to the depletion of natural gas reserves which ultimately led to the creation of SSGC LPG. Besides, LPG being costly but abundantly available and easy to transport through cylinders and bowsers was a way out for SSGC. Therefore, they acquired Progas Ltd which has state of the art 6500 MT terminal.

EU. How many customers in the southern region of the country have so far benefited from SSGC LPG operations?

Amir Mahmud: As we are operating in both the northern and southern parts of the country, there are different categories of customers. The category breakdown is given below:

1. Household segment eight million
2. Commercial industrial segment 30 companies
3. Home delivery 3,000 customers

Sales breakdown

1. Sales in 2021-2023 were 43,000 MT
2. In 2022-23, we sold 48,000 MT to date
3. Our target for rest of 2022-23 is 60,000 MT

Furthermore, a vast distribution network has been set up in the region to provide high-quality LPG to its customers under the name of SSGC LPG. We are also recording everyday increase in the number of our customers through both our online portal and applications- indicating that customers are shifting to choose our brand as their first choice.

EU. What are the safety and quality standards generally followed by SSGC LPG to ensure that only the best service is available to its customers without compromising on their protection?

Amir Mahmud: There's nothing more that SLL values than safety. And keep-

AMIR MAHMUD
MD & CEO, SSGC LPG

ing the sensitive nature of LPG in mind, we have designed various campaigns and ads on social media for the safety awareness of its customers. We aim to change customer perception and habits through campaigns that acutely project the dangers of carelessness when handling LPG so that our customers can be deeply educated and instilled with habits to care for safety first as well.

Another domain where we deliver our 'safety first' motto is our cylinders that are tested and certified as per the International Safety Standards for safety of our customers. Furthermore, a 10kg fiber cylinder was first introduced by SLL which is blast-proof, lightweight, and easy to handle. Customers can easily see the level of gas in the fiber cylinder and know when it's time to refill, which means they will be less likely to run out of gas abruptly.

Fiber cylinders do not rust - eliminating the risk of gas leaks caused by corrosion and they are also stain-proof- preserving kitchen cabinets and vehicles. This means that SLL is equally considerate of your possessions as we are of your life.

Our customers also trust us to care for their needs and that's why the fiber cylinder is the most selling product for domestic customers where not a single incident has been reported yet.

We have also developed the QHSE Department to ensure the safety of people, assets, and customers. We are also ensuring that all safety standards are implemented through the HSE management system at the terminal, jetty, and bottling plants. Health, safety, and environment are the utmost priorities of how we do business in SLL.

EU. What safety protocols are followed by SSGC LPG to ensure the protection of its operational staff?

Amir Mahmud: As I said earlier, safety is our utmost priority and that includes our staff foremost. After all, they are our most valuable asset. The QHSE department is headed by a Deputy General Manager to ensure that HSE policies and procedures are strictly implemented at every level. The HSE is the line management's responsibility, and it is quintessential for our operations. Our terminals and jetty are built as per the LPG industry's international standards and all the HSE guidelines have been followed to keep it safe for all the stakeholders involved.

Alongside, the bowser safety checklist provided by the OGRA LPG SOPs to avoid any unfortunate incident, our drivers are fully trained to overcome any unseen- unpleasant circumstances. We also arrange regular training sessions for management and non-management staff to coach and educate them about safety guidelines in operations and product handling. Various other initiatives are also being implemented to improve overall process of personnel and customer safety, health, and the environment. We at SLL always receive products that are as per the OGRA standard specifications. Our aim is to provide a quality product to our industrial, commercial, and domestic customers.

EU. What methods are used by SSGC LPG to minimize the carbon footprint of its operations?

Amir Mahmud: SLL is not only committed to provide high quality products to its customers, but it also cares for the environment. That's why we only import LPG that is propane rich and low in sulphur product from different parts of the world, especially the Middle East to cater to the energy needs of our country and minimize carbon footprint in our operations. And not just this, but SLL is also working on various projects, including solar energy, to improve and conserve the environment.

EU: Are there any plans to expand the services of SSGC LPG in the country to benefit a greater number of customers?

Amir Mahmud: SLL is already operational in three of our provinces, except Baluchistan. However, recently an agency has been set up in Quetta in December 2022 to increase our footprints in the 4th province as well. We are excited to tell you that our hospitality plant in Balochistan is in the tendering process which will soon be functional and more agencies will be set up there.

EU: Is there any plan to train the staff of other LPG companies in the country to ensure improvement in their safety and service standards?

Amir Mahmud: Being a market leader and most experienced, SLL realizes its responsibilities well. That's why we already have plans in place to provide support to other LPG companies in improving their safety standards. We are already providing training to bowser drivers reporting at terminal and bottling plants through orientation program.

SLL has safety evaluation checklist to improve safety of LPG hospitalities and distributors before start of operation in partnership with SLL. In addition to this, SLL ensures that all LPG companies provide required PPEs to their bowser drivers reporting to SLL facilities. ■

DISCOs: Constant source of worries for govts

Syed Akhtar Ali

DISCOs (distribution companies) in the power sector have been a constant source of worries for successive governments in Pakistan. Losses, leakages, receivables, supply quality and discontinuities, and now the rising circular debt for which DISCOs are only partly responsible.

Many options have been examined and pursued, of which two are the most common and widely debated; privatisation and provincialisation. Provincialisation and privatisation need not be mutually exclusive as we will discuss later. And there is electricity market (CTBCM), which may result in partial privatisation by way of taking away electricity marketing and selling. We will examine the issues and prospects involved in each option.

In the electricity sector, power DISCOs are the remaining entities, which are the subject of policy discussion for some kind of offloading from the federal government. There is a circular debt of around Rs3 trillion, which belongs to the power sector and mostly lodged in the accounts of DISCOs.

High generation cost and unpaid subsidies may not be exactly ascribed to DISCOs. High fuel cost has been a recent phenomenon wherein gas and coal prices tripled, causing uncollected receivables, close-outs and increased theft; and then macroeconomic problems like current account deficit (CAD), currency depreciation and general inflation. Finally, Covid followed by floods. This is coupled with IMF and other IFIs dementia, which fail to recognise these issues and insist on increase in tariff, a subject that merits discussion some time later.

Privatisation background

here has been a long experience of privatisation. Public sector industries have been mostly privatised; some are running successfully and some have closed down for a variety of reasons.

Financing the annual losses and deficits has been a major issue of the SOE, which was largely reduced. Some still remain like PIA and Pakistan Steel, which have to be financed from government kitty almost yearly with no end in sight. In energy sector, privatisation has not happened, although government shares have been reduced in some companies. The problem with energy sector is that these are mostly monopolies or near-monopolies and are typically large companies.

Some companies have been and continue to be profitable and have been financing energy sector deficit like circular debt. OGDCL, PPL and PSO are successful examples. Although OGDCL and PPL are profitable, there are performance issues and their falling oil and gas resources have made their prospects of survival questionable. Gas DISCOs have almost the same problems as power DISCOs have.

Component of private sector has become significant due to the introduction of IPPs. Hydro and nuclear remain in public sector, while most of the other power generation is under private sector IPPs. There are some power generation companies in public sector (GENCOs), which are slated to close down eventually, one after the other. Private sector (IPPs) has an installed base of 18,750MW.

Privatisation issues

Why hasn't privatisation succeeded or even implemented in the power sector? There are many possible reasons for it.

Firstly, DISCOs are a monopoly involving complex financial transactions. Electricity prices are not determined by the market. Prices have to be subsidised for the low-income group and even for export subsidies.

Accounting for these subsidies and losses in transferring and continuing with these is indeed complicated and makes both government (the seller) and private sector (the buyer) unsure of the viability and the risks involved.

KE was privatised in a highly fluid framework, when almost nobody was prepared to take it over. IFIs pushed the privatisation process. Secondly, DISCOs are large companies, financially and geographically. There aren't many parties in Pakistan which have the financial and organisational capacity and capability to buy and run these organisations.

If there are a few, one would be diverting them from doing much useful work in other sectors. Look at PTCL. It was taken over by UAE government-owned Etisalat. Some of the large banks have been taken over by NGOs or foundations. Thirdly, there are risks in selling DISCOs to foreign enterprises due to special problems involved in DISCO business. There is widespread theft in which rich and powerful are involved.

A foreign company in loss may resort to international courts due to these issues. What has happened in

the case of Karkey and Reko Diq.

Local partners may also indulge in some questionable and unacceptable practices, which are not unthinkable for the private sector in this country. Money laundering and double book-keeping is rampant, which can create complications of international dimensions. Many internationally reputed companies are not interested to come to Pakistan. Thus, there are risks on both sides.

Fourthly, stability and sustainability of government policy is yet another risk and unknown. Pakistan is a poor and developing country where political and ideological issues haven't yet been sorted out with a broad consensus. This creates differences and disagreement in business transactions. Chinese have recently demanded withdrawal of Mohammad Ali Report; the latter report pointed out some accounting inadequacies in CPEC power projects.

Power generation is much simpler business than DISCOs. The opportunities of contract disputes are many as indicated earlier. This may cause cracks with major international friends.

Fifthly, a new policy issue and complication has emerged, that is of CTBCM. DISCOs are to be reduced to wire-only business. Under CTBCM, there is an open access wheeling policy under which the current DISCO management argues cost allocation has not been done properly. They have gone to court. CTBCM is in limbo but has to be implemented under Nepra law.

Sixthly, public is not satisfied with the privatisation of KE, which is the only example of DISCO privatisation. This is not the place here to go into the controversial issue of KE performance.

Seventhly, there are financial issues of payables and receivables and accumulated losses. Valuation issues are not simple; there are risks and uncertainties of all kind. Some propose selling DISCOs in one rupee.

Eighthly, there is a labour union issue. Pakistan's private sector employers do not have very good standing with labour and employees. Their scepticism is not misplaced either. Unions oppose privatisation. No practical formula has yet been available to deal with the labour union's opposition.

Household energy transition

Decision-makers need to decide what the future cooking fuel will be

Dr Khalid Waleed

Scarcity is what makes this planet the world we are familiar with and efficient management of limited resources is what makes us the people we are. Otherwise, there would be greater chaos, more crises and unresolved shortages.

Economics combines scarcity and efficient management of limited resources. According to one definition, "Economics is the science that studies human behaviour as a relationship between unlimited desires and efficient management of scarce means which have alternative uses." There are tradeoffs and opportunity costs associated with what we do and what we do not do.

The world in general and Pakistan in particular are facing an energy shortage. According to the International Energy Agency, the total demand for Pakistan is 88.4 million tonnes of oil equivalent (TOE).

Forty one percent of this energy comes from bio-fuels (firewood and animal/ agriculture-residuals) and 21 percent comes from natural gas. The share of oil is 19 percent, electricity (hydel, nuclear, wind, solar) 11 percent and coal 8 percent. In this mix of energy, 33 percent of total primary energy is imported.

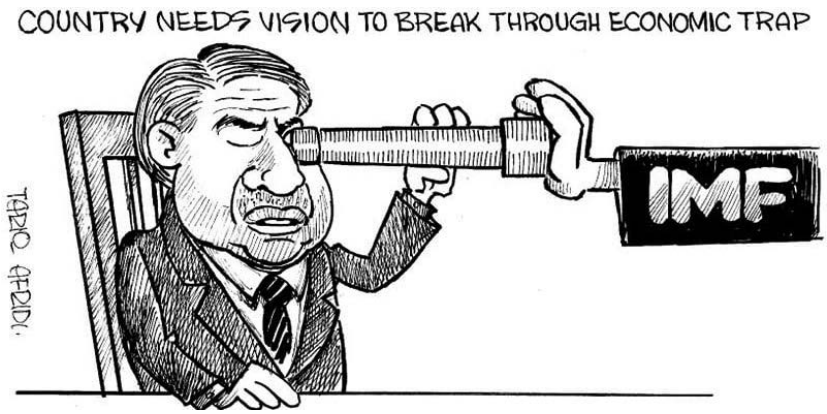
The importance of the energy mix for sustainability is evident. Sustainable development goal 7 (SDG 7) requires ensuring access to affordable, reliable, sustainable and modern energy for all. The future projections indicate that our total energy demand will cross 100 million TOE in the backdrop of the growing population, industry and commercial activities. In this context, Pakistan is facing a two-pronged problem: first, the access problem. We need to arrange for additional energy supplies. Second, the energy we arrange for should be affordable, reliable, sustainable, modern and inclusive. Thus, our energy problem goes beyond access and includes distributional issues.

In rural areas, 60 percent of the households consume traditional solid fuels for cooking. The consumption of solid traditional fuels in Balochistan's urban localities is higher than in rural areas of the Punjab. The share of traditional fuels in the fuel mix in the urban centres is also rising.

On top of that, the natural gas reserves are fast depleting. Our domestic gas reserves currently contribute 20 percent of our total energy demand. The Asian Development Bank estimates show that 70 percent of the reserves will be depleted by 2030.

The second alternative is the use of firewood and animal/ agri-residuals. In Pakistan, a majority of the population is already consuming solid fuels (60 percent of rural households, 12 percent of urban households). This will adversely impact our SDG progress. Moreover, it will increase the incidence of respiratory diseases induced by indoor pollution.

In urban settings, most of the building structures are not suitable for use of firewood as cooking fuel. This could also trigger/ accelerate dangerous deforestation.



Short-sighted policies
Pakistan has not run out of gas overnight

Muhammad Ali

Pakistan has not run out of gas overnight. At the turn of the 21st century, sufficient gas supplies and sources were available in Pakistan. As per a study by Hagler Bailey, there were limitations on the gas transmission system to lift gas from all the sources, but there was no gas shortage for any segment of the consumers.

The said study, however, had a limited scope of finding a market for the newly discovered Miano gas field of Australian multinational OMV. To determine the overall demand and supply situation for the short or long term, a detailed and comprehensive study should have been done rather than relying on such a limited-purpose study.

It seems that the federal government has wrongly taken the findings of such a study. It came up with the regressive Petroleum Policy 2001 in terms of fiscal terms offered to the riskiest exploration business in Pakistan regarding hydrocarbon prospects and cost of operations in remote areas with high-risk law and order situations.

The reduced gas price than previously paid to the gas producers in Pakistan has caused the most damage to oil and gas exploration efforts. In total disregard of previous binding contractual obligations, the government forced owners of the already discovered but not producing gas fields to accept the unilaterally reduced gas price or let their investments remain stranded.

Inappropriate and regressive policy provisions have accelerated gas supply reduction and depleted indigenous natural resources

A typical exploration and production (E&P) cycle spans over seven to 10 years, from the initiation of geophysical data acquisition to the discovery and production of petroleum. This 2001 policy breached investors' confidence and broke the E&P cycle for over 13 years until the new Petroleum Policy 2012 was notified on 1st September 2012. Petroleum Policies of 2007 and 2009 could not induce the required level of investment interest in E&P, as evidenced by the fact that even most of the then-existing foreign oil and gas companies operating in Pakistan had left the country one by one.

After observing the negative impact of the 2001 policy, instead of taking effective measures to restore and increase the pace of exploration in the country, the government introduced the damaging Natural Gas Allocation and Management (NGAM) Policy 2005. Effectively, this policy seeded the gas crisis in the country, which has kept growing with every passing day.

As the title of NGAM policy dictates, it is based on the inherent premise that Pakistan was to switch gas supplies from one set of consumers to the other out of whatever is left. However, it did not take concrete measures to augment gas supplies through domestic and international resources. This has resulted in the reduction in gas supplies even to the priority consumers.

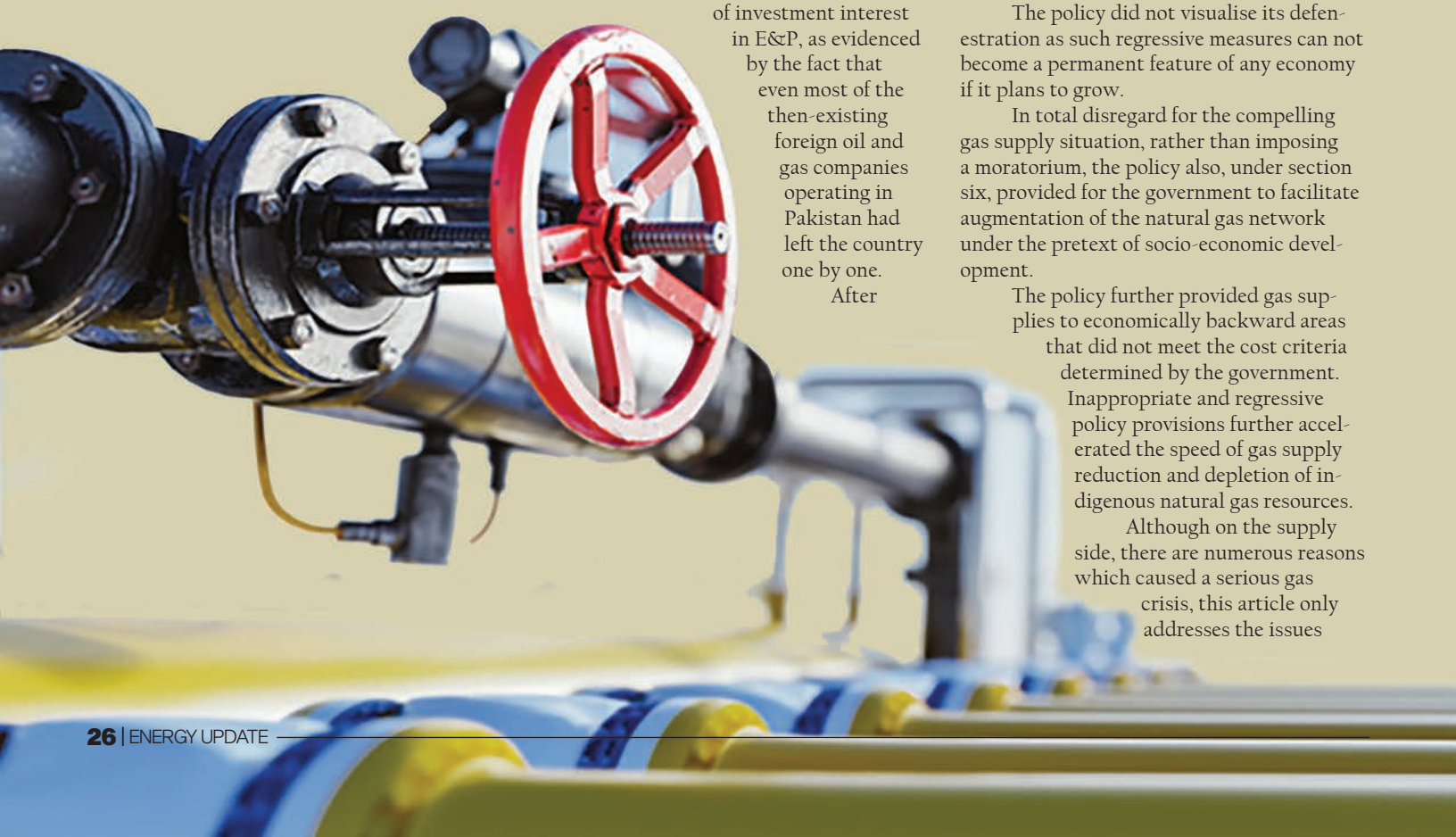
The planners, executors and deliverers all have used the said policy as a pretext to justify their failure in service delivery. As if the non-stipulation of any guidelines for improving the gas supply situation was not enough, the said so-called policy did not even have any estimate of the time when sufficient gas supplies were expected to be available.

The policy did not visualise its defenestration as such regressive measures can not become a permanent feature of any economy if it plans to grow.

In total disregard for the compelling gas supply situation, rather than imposing a moratorium, the policy also, under section six, provided for the government to facilitate augmentation of the natural gas network under the pretext of socio-economic development.

The policy further provided gas supplies to economically backward areas that did not meet the cost criteria determined by the government. Inappropriate and regressive policy provisions further accelerated the speed of gas supply reduction and depletion of indigenous natural gas resources.

Although on the supply side, there are numerous reasons which caused a serious gas crisis, this article only addresses the issues



related to the consumer side, which consist of mismanagement of the gas utilisation, the huge percentage of Unaccounted For Gas (UFG) and irrational extension of the gas distribution networks.

The extension of networks was irrespective of the restrictions imposed by the regulator under the terms of their respective licenses, whereby their exclusivity to undertake gas transmission and distribution business in their respective areas of operations ended in 2010.

Not only did 2001 petroleum and NGAM policies hugely contribute to worsening the gas supply situation in the country, but the government also did not provide appropriate policy guidelines for the extension of the transmission and distribution network, although a large number of private parties have been granted licenses by the regulator for sale of gas.

As a result, the two Sui companies continued to extend their transmission and distribution networks purely on political grounds rather than on commercial considerations. This has not only overburdened the most productive segment of gas consumers, i.e. the industrial sector, but has also caused the recovery of unjustified costs from consumers and the reduction of gas supplies. Over 18 years have passed and the situation has worsened, but the policy is still being used as a sacred revelation.

It is acknowledged with pleasure and a sense of gratitude that the gas supply situation would have been worst than it is today if Shahid Khaqan Abbasi, the then prime minister of Pakistan, had not single-handedly taken the lead and got the two LNG Terminals up and running within a shortest possible time and secured sustainable LNG supplies from Qatar.

The most unfortunate state of affairs is that petroleum policies are originated and formalised by the Petroleum Division, which is run by civil service officers with no practical knowledge or experience of the oil and gas industry. Until policy formulation is done with strategic vision by sufficiently qualified experts, Pakistan is bound to remain in a crisis of all sorts. ■

Courtesy Dawn

Pakistan needs $155bn energy investment until 2030

Mehtab Haider

Pakistan's energy investment needs range from $62 billion to $155 billion until 2030 based on three different scenarios.

According to ADB's Central Asia Regional Economic Cooperation (CAREC) Energy Outlook for 2030 report, energy investment needs until 2030 vary significantly across the three scenarios, with estimates ranging from $62 billion to $155 billion.

The most significant investments are required in the power generation and energy efficiency sectors because of the rapidly growing demand and low baseline efficiency. In all three scenarios, the largest investments are needed for the development of country's hydropower capacity, ranging from $11 billion to $26 billion.

Investment needs for wind and solar energy are expected to reach nearly $12 billion in the business-as-usual scenario, $36 billion in the government commitments scenario, and $57 billion in the green growth scenario, which illustrates the country's ambitious plans for harnessing its large renewable energy potential.

Furthermore, according to the country's nuclear power generation targets, investments for nuclear facility expansion and rehabilitation total nearly $12 billion in the business-as-usual scenario, $21 billion in the government commitments scenario, and $31 billion in the green growth scenario. Generational rehabilitation and expansion are the investment categories estimated to require the largest share of the total — ranging from 60pc to 75pc, or $38 billion to $115 billion, varying across scenarios. The second biggest category is energy efficiency measures on the consumption side, requiring $12 billion in the business-as-usual scenario, almost $21 billion in the government commitment scenario, and over $26 billion in the green growth scenario.

The modernisation and expansion of the power and gas grids and the introduction of advanced metering equipment require investments of approximately $13 billion to $14 billion.

To further unlock Pakistan's energy market for private companies, several challenges must be addressed. One of the key challenges is the lack of clarity regarding the categorisation of resources.

For example, although hydropower is generally considered a renewable energy resource across the world, the Alternative and Renewable Energy Policy has categorised hydropower sources as nonrenewables (Government of Pakistan 2019).

Considering the 30pc renewable energy target in 2030, it would be hardly possible to reach this level only via wind and solar PV sources. If hydropower were to be included in the definition of renewable energy sources, it would make reaching the stated target and introducing stronger competition more realistic.

Another challenge is the lack of a detailed energy plan for the energy sector. Although, the National Energy Policy has been approved, the corresponding division of roles among policymakers who would assign policy areas to all relevant stakeholders has not been completed yet.

With a strong focus on generation over the last several decades, the T&D sectors suffered greatly from underinvestment. As a result, transmission losses in Pakistan are one of the highest in the region, with some distribution companies reaching losses of 38pc.

Another challenge stems from the country's electrification rate, with more than 25pc of the population having no access to electricity. With an increase in rural electrification, demand will increase significantly, putting more strain on distribution companies and generation. Finally, challenges in the T&D sector are reinforced by the issue of circular debt.

With growing power generation from thermal plants, higher costs were inflicted via the import of high-priced fuels and currency devaluation. At the same time, distribution utilities tasked with energy supply face financial hurdles due to the low collection rate of tariffs and their inability to meet regulatory targets for T&D losses. ■

Global warming and promise of nuclear fusion

Fusion energy could be a carbon-free source of power, but would take decades of work before commercial benefits

Shahid Javed Burki

The developed world is prepared to put a large amount of money at the disposal of the developing world to help fight the consequences of global warming. Most of the damage poor nations are now confronting was caused by centuries of fossil fuel burning by today's developed world. Global warming has caused faster melting of mountain ice which is causing floods in countries downstream. Warmer air also carries more water which brings heavy rains. Pakistan saw both consequences of global warming in the summer 2022 which caused loss of some $30 to $40 billion to the economy. This is equivalent to about a tenth of the current GDP. While the past cannot be fixed, the future can be handled. One way of doing this is to use fusion to generate power. There is good news from the scientific community in the US about the possibility of going on this route.

As some commentators wrote for an American newspaper, "Fusion energy is the ultimate clean-energy dream. It's what powers the sun. Researchers have been trying for decades to mimic that process. But creating what amounts to a mini star that can be hooked up to the electrical grid has been an expensive, grindingly slow, often frustrating process, with electricity from fusion always seemingly at least couple of decades ago." That notwithstanding the news that a laboratory had brought the Sun to the Earth was exciting enough for politicians to take note of it. Senator Charles Schumer of New York, a Democrat, declared the scientists' and engineers' work propitious enough to make a statement full of excitement. "This astonishing scientific advance puts us on the precipice of a future no longer reliant on fossil fuels but instead powered by new clean fusion energy," said the senator.

What excited the majority leader in the US Senate was the news that came on December 5, 2022 from the National Ignition Facility at the Lawrence Livermore National Laboratory in California that used lasers to fire a synchronised shot at a golden cylinder about the size of a jelly bean. The bean had hydrogen which was bombarded with exquisite precision on a capsule containing the frozen grain of the gas.

What made this an exciting news was that for a fraction of a second, the temperature in the hydrogen capsule exceeded that in the core of the sun, bringing about a merger of hydrogen atoms into atoms of helium. This is the process that keeps the sun incredibly hot with inexhaustible supply of heat. The amount of heat that was used was less than what was generated. This was the first time this deed had been achieved in a controlled experiment. There was a net gain when 2.05 megajoules of energy fired by a team of lasers produced 3.15 megajoules. However, it required a facility the size of a sports stadium to operate one of the most powerful laser arrays in the world.

This could become a carbon-free source of power, but it would take decades of work before the commercial benefits are fully realized. Lasers for the moment are very inefficient. Those used in the California laboratory required about 300 megajoules — enough to power an average home for three days. For the technology to become commercially viable, the reaction involving the fusion of hydrogen atoms would have to be repeated at rapid sequence and targets will need to be manufactured at low cost in large numbers.

As Sabine Hossenfelder, a physicist, put it in a newspaper article, "The decision to ramp up investment into fusion in the wake of the breakthrough is ultimately a question of how much we value the lives of future generations. Wind and solar energy often require large installations that take up huge swathes of land (with exception of offshore wind). Moreover, solar and wind work better in some parts of the world than in others. Much of Europe is farther north than the United States and gets less

sunlight during the winter. Most of Europeans don't live on islands that can be surround with wind farms." Various parts of Britain are close to the sea and massive investments are being made by several cities that are on the coast to develop wind farms. Nuclear power — eventually sourced from fusion operations at the moment at the experimental stage — is a way to generate huge amount of power from a small space. If space is scarce as is the case in many countries — in particular in the crowded parts of Africa and Asia — nuclear is the way to go. This breakthrough may bring about a revolutionary change in the way energy is produced in the developed world but it won't matter much for poor nations such as Pakistan.

With billions of dollars of additional development funds on their way to the developing world through institutions such as the IMF and the development banks such as the World Bank Group, Pakistan should set up a mechanism to determine how this money can be put to use to deal with the consequences of global warming. Here the country has a precedence it can use to solve a problem of water availability when the flows in the rivers that had sources in the ice-covered mountains declines. This will happen when the ice cover in the mountains loses thickness. The precedence is the Indus Water Replacement Works that were based on the Indus Water Treat signed in Karachi in 1960 by President Ayub Khan of Pakistan and the Indian Prime Minister Jawaharlal Nehru.

The anticipated change in the amount of water into the Indus River system — first a lot and then little as the ice melts — would need to be dealt with by constructing massive storage dams in the rivers on the Indus as well as on its tributaries that came to Pakistan's share as a result of the 1960 Water Treaty. In a study done by the World Bank's engineering department some years ago, 12 sites on the Indus and its system of rivers were suggested that could create large water storage facilities that would provide water in the rivers when the flows begin to decline. This scheme was termed the 'Indus Cascade' and would need billions of dollars to construct. The under-construction Dasu dam is one such operation.

Some such work has been done in Pakistan under what is called the 'Water Vision 2025' which will be undertaken by WAPDA in three phases. Pakistan should set up a working group that would give operational meaning to the 'cascade' idea. This was done in the case of the Indus Water Replacement Works and could be done again. While fusion may eventually provide countries such as the US with carbon-free energy, Pakistan has different needs. These too would need large amounts of financial resources as was the case with the Indus works in the 1960s and 1970. Large amounts of new money may become available once the promise made by the rich nations at Sharm el-Sheikh is fulfilled. Pakistan should prepare itself to use this capital resource. ■

330MW Thar coal-fired power plant synchronized with National Grid

Project is a joint venture among Hubco, Thal Engineering, Novatex, China corp; Thar coal production rises 3,000MW; CM says Thar coal reserves could generate 100,000MW power

Mansoor

A 330 MW Thar coal-fired power plant has successfully been synchronized with the National Grid from Islamkot area, lifting the total power production from Thar coal to around 3,000MW.

The project is a joint venture among Hub Power Company Ltd (Hubco), Thal Engineering Ltd, Novatex Limited, and China Machinery Engineering Corporation (CMEC) which is also the EPC contractor.

ThalNova Thar Power Limited is a 330 MW Coal Fired Power Project based on Thar coal. It is part of China Pakistan Economic Corridor (CPEC).

Minister for State Dr Mahesh Malani, on behalf of Sindh Chief Minister Syed Murad Ali Shah whose private flight was canceled due to bad weather in Thar, inaugurated the synchronization of 330MW of ThalNova with the national grid by switching the button in the control room of the project.

Hubco Group CEO Kamran Kamal and CEO ThalNova Saleemullah Memon gave a detailed briefing to Mr Malani about the project and lauded the efforts of Sindh Chief Minister Syed Murad Ali Shah for his support and encouragement to the investors for generating electricity from Thar coal.

The Chief Minister in his message to the inauguration ceremony said that the addition of power plants like ThalNova that utilized local fuel would significantly support Pakistan in reducing its dependency on imported fuel. He added that ThalNova has also created hundreds of direct employment opportunities for locals.

Mr Shah said that the Thar coal reserves could be used to generate 100,000MW electricity for over 200 years. "The utilization of Thar coal would immensely impact Pakistan's development, allowing the government to save up to $6 billion on fuel imports," he said..

The project started in March 2019 to ensure the earliest utilization of indigenous Thar coal. The project experienced delays due to COVID-19 pandemic. However, it has now been synchronized with the national grid. The chief said that ThalNova would utilize indigenous coal from Phase 2 of Sindh Engro Coal Mining at Thar Block 2, and it would bring the cost of energy from Thar Coal Block 2 to Rs 9/kw-hr versus the imported coal plants which cost around Rs 20-30/kw-hr.

GoodWe Pakistan's event titled Solar Power Day

Sindh to fully facilitate for harnessing clean energy potential: secy

GoodWe has emerged as a leading multinational solar power company: Mohiuddin

Khalid Iqbal

The Sindh government is fully committed to facilitating the private sector companies that stand for exploiting the renewable energy resources abundantly available in the province so that there should be lesser reliance on imported fossil fuels for the protection of the national economy.

This was stated by Sindh Energy Secretary, Abu Bakar Ahmed Madani, while speaking as the chief guest at an event entitled "Solar Power Day" organised by GoodWe Pakistan.

The energy secretary said the Sindh government had fully facilitated investment by the private sector in the alternative energy sector so that Pakistan could meet its target of producing 30 per cent of electricity in the country through renewable power resources by 2030.

He said the Sindh government was also fully committed to the cause of producing solar energy for electrifying public sector buildings. He informed the audience that solar energy system had already been installed at 225 primary health facilities in 13 districts of the province.

The energy secretary said the Sindh government had proposed the inclusion of 22 IPP-based on-grid solar PV projects with a cumulative capacity of 1550MW in the Indicative Generation Capacity Expansion Plan-2021.

He told the audience that the Sindh government had been working with the World Bank to fully harness the solar energy potential of the province. He said the World Bank had been assisting the Sindh government to establish solar PV grid-connected power projects of cumulative 400 MWs generation capacity.

He said that another component of the assistance programme was utilization of rooftops of government buildings for generating up to 20 MW of distributed solar power. The third component, which has recently been launched is the provision of 200,000 solar home systems in faraway off-grid areas of ten districts.

GoodWe Pakistan Country Manager, Syed Salman Mohiuddin, said that all the major stakeholders of Pakistan's renewable energy market had fully realised in the last few years that GoodWe had emerged as a leading multinational solar power company. He said that GoodWe proved its worth as a leading global clean energy company having a very vibrant presence in the markets of the US, European countries, and Australia.

He told the audience that the world's leading energy company, General Electric, had partnered with GoodWe in 2018. This partnership proved that GoodWe stands out among the tier-one solar power companies in the global market, he states. With a very humble beginning in 2008 GoodWe emerged as a public listed company in China in 2018, he added.

He said that GoodWe had the range of the latest products, which would be required by any investor launching clean energy projects in a market like Pakistan. Mohiuddin held out the assurance that GoodWe would fully support the drive of the federal and Sindh governments to produce maximum clean electricity in the country through alternative energy means.

Ahmad Raafay Asad, Technical Services Head of GoodWe Pakistan, said that GoodWe had unveiled its new ET and ES series of inverters for solar hybrid power systems for the maximum economic and energy benefits of the consumers in Pakistan.

He said that GoodWe with its range of the latest inverters was in the best position to serve both the domestic and commercial electricity consumers in Pakistan to their utmost satisfaction. He said the range of inverters produced by GoodWe were the best products for solar hybrid systems in the country. ■

GROWATT | TRISUN ENERGIES sign 100MW MoU to forge new strategic partnership

Growatt, a global leading distributed energy solution provider, signed a Memorandum of Understanding (MoU) with Trisun Energies, a Karachi-based renewable energy company, to deepen their cooperation in the Pakistan solar market earlier this month. According to the agreement, Growatt will supply Trisun Energies with up to 100MW of string inverters in 2023. And the MoU was signed in the context of Pakistan's revised RE policy, which aims to accelerate the clean energy transition and derive 60 percent of energy from renewable sources by 2030. "The newly revised RE policy reinforces the urgency of the energy transition that Pakistan is making to achieve the major goal of carbon neutrality, and we are honored to make our own efforts in this process together with Growatt," said Mr. Qayyum Bawani, CEO of Trisun Energies.

Growatt Country Head Mr. Mian Fahad said, "Growatt highly values the Pakistan market and hopes to contribute to the country's clean energy transition through our advanced technologies, high-quality products, and services. Trisun Energies enjoys a good reputation in Pakistan and we are glad to have them aboard to be our long-term partner. We look forward to further cooperation with Trisun Energies.

" "This time we mainly supply Trisun Energies with three-phase inverters MOD 10-15KTL3-X for residential applications as well as MID 20-25KTL3-X and MAX 100-125KTL3-X series for the C&I sector. These new generation X series inverters feature sleek and compact designs as well as smart, safe, and reliable functionalities. Additionally, we have developed our Online Smart Service (OSS) platform to enable installers, integrators, and distributors to manage and maintain solar plants remotely and intelligently for improved service efficiency and reduced O&M costs," Mr. Mian added.

"This is a win-win cooperation. Growatt has set up a stronger local team in Pakistan to deliver tailor-made energy solutions and one-stop services including professional product training, marketing support as well as warehousing service. Trisun Energies, with its strong customer base in the Pakistan market, has abundant project experience. With the solar market booming, we will make full use of our advantages respectively to contribute to the goal of carbon neutrality," commented Jimmy Xia, Senior Country Director Shenzhen Growatt. ■

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India today produces all sorts of renewable energy equipment due to consistent policies

Abdul Sattar Jumani
CEO - Lucky Renewables

M. Naeem Qureshi

India has started indigenous production of all sorts of renewable energy equipment as it has consistently implemented a policy aimed at promoting clean electricity generation in the country. Whereas in Pakistan, consistency has never been shown in implementing the renewable energy sector policies, discouraging such indigenous manufacturing in our country. This was stated by Abdul Sattar Jumani, CEO of Yunus Energy Ltd and Lucky Renewables (pvt) Ltd, in an exclusive interview with the Energy Update in which he talked in detail about the clean energy market of Pakistan. Following are the important excerpts from his interview for our readers:

Energy Update: What is the current situation of the clean energy sector of Pakistan?

Abdul Sattar Jumani: The government earlier announced going for the option of competitive bidding for upcoming wind energy projects but this tariff regime has yet to be implemented despite the passage of three to four years. The prospective investors raised objections to a number of contents of the draft policy for this system while deeming that installing clean energy plants in the country under the proposed new system isn't a bankable business proposition. Therefore, no further progress has taken place on this option. The government should explore a tariff option for new wind energy plants which contains reasonable conditions, to be followed by the investors, keeping in view very high inflation and record devaluation of the rupee these days. Such a tariff system should be evolved, which creates a win-win situation for both the government and concerned investors.

EU: What are the barriers in the way of fully exploring the renewable energy potential of Pakistan?

Mr Jumani: The entire world has been witnessing that we are yet to fully explore the options of renewable energy resources easily accessible in the country in the form of our vast wind corridor and sunlight abundantly available in the country for up to nine months. A good, investor-friendly and rationalized tariff should be introduced for the upcoming clean energy projects in the country. The clean energy power plants so far established in the country fully conformed to the policy of the government at that time on the renewable energy sector. The investors behind these clean power projects duly availed the federal government's offer to invest in the renewable energy sector.

The prospective investors are no more investing to launch new clean energy projects in the country. Such a low tariff has been awarded to some wind power projects very recently which rendered these projects unviable and not bankable. They wouldn't invest till the policies of the government on this sector became investor-friendly.

New investment wouldn't come into the country till these barriers were not removed by the government. The senior officials of the relevant agencies like the NEPRA and AEDB are very much aware of these issues as the people from RE sector work in close coordination with them.

In my opinion, the tariff is kept deliberately at the lower side, so that no new

project will be developed and there should be no pressure of issuance of government guarantees and guaranteed off-take from power purchaser, in these days of capacity trap. Presently, the installed capacity has exceeded 40,000 MWs and the system can only evacuate / supply to the extent of 26,000 MWs. Also demand in winters are touching as low as 10,000 MWs which is causing huge capacity payments to the IPPs.

Only solution is to develop load centers at various parts of the country by establishing industrial zones, technology zones and extending the T & D infrastructures to rural areas, where electricity is needed for socio-economic development of underprivileged areas. By establishing industrial and technology parks, the consistency in the consumption pattern will be achieved throughout the year, which is a possible solution to solve the huge variation in the demand, causing Circular Debt due to capacity payments.

EU: What is the state of the renewable energy market in India?

Mr Jumani: Look at the situation in the country in your neighborhood as India has exceptionally progressed in this sector. India has crossed 160,000 MWs as its cumulative capacity to generate clean electricity as projects of thousands of megawatts of wind and solar energy have been established in our neighboring country as against roughly 2,200 MW in Pakistan. India has followed a consistent policy on the tariff issue for the renewable energy sector.

They offered to the prospective investors whatever suitable tariff was required at every stage of the development of this sector. They offered a favourable tariff when the EPC cost of setting up new wind and solar energy was relatively higher. In addition, they have also facilitated investors in regulatory affairs, availing concession packages and in the process of development, implementation and construction phase in obtaining approvals from various governmental departments & functionaries.

Owing to such favourable policies & quantum of targeted/approved renewable projects, indigenization was made possible in the renewable energy sector of India. Indigenous manufacturing started in India promoting the concept of Made in India products in the clean energy market. They started indigenous development of every technology required for developing the renewable sector. They have now been producing equipment and products like towers, transformers, alternators, blades, gearboxes, and many such things required to build new clean power plants. Most of the wind turbine manufacturers have set up their manufacturing plants in India due to potential volume of the business. They introduced a policy and then consistently followed it that makes it possible to start indigenous production of clean energy equipment in India.

EU: What are the chances that indigenous production of renewable energy equipment get started in Pakistan?

Mr Jumani: In Pakistan, no one would invest to start indigenous production in Pakistan given that wind energy projects of not more than 500 MWs cumulative capacity were established in the country in a single phase. Whereas in India they showed intention of developing bigger chunks of RE projects each time, to attract RE equipment manufacturers, to make it in India. This policy saves India from the transportation cost of these products. Whereas Pakistan has to rely mostly on the imported china equipment, which also involves a lot of shipment charges. Logistic charges are roughly ranging from 6 to 12 per cent of the total cost of these equipment, as most of the items are imported by using special carriers like Blades, Towers, Nacelle, etc. Furthermore, a pool of qualified engineers has also evolved in India due to the policy of promoting indigenous production which we are lacking to manufacture these equipment locally. Thousands of qualified engineers have been working in India who are well versed in the affairs of the renewable energy sector. Indian investors don't need to rely on foreign companies for the operations and maintenance requirements of their clean energy plants. Whereas we are fully dependent on the original equipment manufacturers for the O&M of our clean energy projects, as for this purpose we have signed long-term contracts with foreign companies. We have to spend our precious foreign exchange to get all these equipment and services whereas India has been doing all these tasks on its own. Owing to our adhoc policies, we haven't come outside this vicious circle.

EU: What mistakes we committed while developing the energy sector of Pakistan?

Mr Jumani: We have always been an energy-deficient country during the course of our history. Firstly, we went for the option of setting up HFO and natural gas based power production plants, heavily dependent on imported fuel and consuming unnecessarily available indigenous natural gas reserves. A little was done to exploit the potential of RE projects but again shifted to coal-based and RLNG based power production plants when the rest of the world was moving towards the prospect of clean energy production. We didn't explore the wind energy potential of the areas nearby the coastal belt of Sindh that is capable of generating 30,000 to 40,000 MWs of clean electricity. We instead opted for conventional power production in the country based on imported coal & RLNG. Keeping in view the government's energy sector policy at that time, people obtained LOIs for setting up new electricity plants in the country based on imported coal but due to intervention from the government at a later stage the new power generation capacity was shifted to local coal, except for few projects that were at an advanced stage of implementation. We kept on exploring all these options based on imported fuels, when we have an abundance of local energy production sources in the form of wind, solar, and hydropower. We have never formulated a broad / long term policy to exploit fully these indigenous resources and to take capacity building measures for indigenization of the technologies. We should have promoted the prospects of electricity generation in the country based on these indigenous energy sources. Investors in Pakistan face immense difficulties at every stage of the project development of renewable energy plants be it the feasibility approvals, licensing, EPC contracts, financing, acquisition of land, approvals from various departments, etc.

EU: So what should be the way forward for companies like yours to invest more in the renewable energy sector of Pakistan keeping in view all these problems?

Mr Jumani: The concept of Competitive Trading Bilateral Contracts Market (CTBCM) recently introduced by the NEPRA seems to us a better option that is worth exploring. We have to appreciate the hard work put in by the incumbent chairman of NEPRA and his entire team, CPPA Team and the ministry's officials to develop the option of CTBCM in Pakistan. It seems a better option both for the government and prospective investors. The government under this regime is not required to offer off-take and guaranteed returns to the incoming investors. The government is also not required to deal with the issues related to implementation agreements of the new energy projects. The option of CTBCM would be explored in Pakistan after the introduction of an open market system in the energy sector and the end of the monopolies of the DISCOs in their respective franchise areas. Pakistan could go for this option when the rest of the world is very well practicing this system. The new energy sector projects would be built in the country under the CTBCM regime. We have with us LoIs to set up new renewable energy projects in the country as we would build these plants to explore the B2B option in the energy sector of Pakistan. Although the regulators and the System Operators have worked hard to bring this proposal / policy but still lot more has to be done to materialize the concept and turn it into reality by finding solutions of the impediments, already been identified. Still, we can say that there is light at the end of the tunnel. ■

2ND INTERNATIONAL HYDROPOWER CONFERENCE - PAKISTAN 2022

Need stressed to generate more hydel, solar, other clean energies

Energy Update magazine organised 2nd International Hydropower Conference in collaboration with Private Power Infrastructure Board (PPIB) and International Hydropower Association (IHA) in Islamabad at such a critical time when the government has been desperately trying to minimize power production in the country based on imported fuels. It was organized

Stringent measures like early closures of markets, wedding venues, and restaurants are being proposed to conserve energy for the survival of the national economy. Massive hydropower resource available in Pakistan is one of the effective indigenous means to make Pakistan self-sufficient in the energy sector in the least possible time. It is also the most effective way to generate electricity based on a clean energy resource for the improvement of environmental conditions.

The recent floods in the country also highlighted the importance of hydro resources in the country. The federal and provincial governments, and all the relevant stakeholders should support each other and work together to develop the hydropower sector in the country.

Speakers at the International Hydropower Conference stressed the need to harness hydropower potential in the country in order to add more clean and green electricity to the national grid system for sustainable economic growth.

They were of the view that Pakistan was blessed with huge hydel and renewable energy (RE) generating resources and it was a dire need to exploit all those resources for generating clean and green energy.

The conference was organized to discuss more opportunities to produce cheap and clean energy from the hydro sector and to foster renewable energy resources in mitigating climate change.

Appreciating the efforts of the organizers of the conference, Minister of State for Power Division Hashim Notezai said under the vision of Prime Minister Shehbaz Sharif, the incumbent government had a special focus to produce energy from indigenous resources, especially hydel, wind, and solar in order to minimize reliance of imported fuel.

Assuring full government support, he invited the investors to come forward and invest in clean and green energy. There were greater opportunities in the energy sector of Pakistan and the investors should take benefits from it, he said.

Managing Director PPIB Dr Shahjahan Mirza said that his organization had successfully added over 18,000 Megawatts (MW) of electricity to the national grid so far through Independent Power Producers (IPPs) which was around 50 per cent of the total installed capacity. PPIB was providing one-window facilities to the investors and lenders in this regard, he added.

According to him, currently, the hydel share in energy mix is 25 per cent, followed

by six per cent solar and 69 per cent thermal. The government has now set a target of 62 per cent energy through renewable energy and hydel resources, he added.

Dr Mirza said the government also intended to increase the reliance on indigenous resources and wanted to induce more green energy in the system in the next 10 years. He said the private sector role in the hydropower sector at the global level was very limited.

"China's private sector has made a huge investment in the hydropower sector of Pakistan and the recent 720MW Karot hydropower project has been commissioned on June 29, 2022, with a cost of $1.2 billion under China Pakistan Economic Corridor (CPEC). Work was also being carried out on the 1100MW Kohala hydropower project under CPEC," he added.

Shahjahan said that Pakistan had identified hydropower potential at 65,000 MW besides an additional 21,000 MW from Gilgit-Baltistan. However, he said GB has not yet connected through the national grid system of the National Transmission and Despatch Company (NTDC) and it would take around 5-6 years. He said PPIB had attracted huge foreign investment from the UK, Korea, and other countries in energy generating projects.

CEO Pakhtunkhwa Energy Development Organization (PEDO) Engineer Muhammad Naeem said Pakistan was blessed with surplus water and energy resources. However, he said we could not plan to exploit the hydropower potential in the country in the last 75 years. No doubt, climate change has some effect but we could mitigate its effects through proper planning, he added.

Naeem said that PEDO under a public-private partnership had planned various small hydropower projects in remote areas having around 2,500MW capacity which would start power supply in the next 10 years. He said PEDO had completed the solarization of many mosques, schools, basic health units, and over 6,000 households so far in KPK.

Aamir Bashir, CEO of Diamer Basha Dam project said that WAPDA had tapped around 9,400 MW hydel generation so far and work on more mega projects was being carried out to store 11 million acre feet (MAF) water besides generating 16,000 MW electricity.

Chairman of National Electric Power Regulatory Authority (NEPRA) Tauseef H Farooq while speaking on the occasion said that he was a big fan of hydropower projects in the country, adding that NEPRA was fully committed to promoting indigenous resource-based affordable electricity to the consumers. He said currently the country's total installed power generation capacity stood at 43,000 MW, but it was mostly based on imported fuel.

Minister for Energy and Water Azad

Jammu and Kashmir Chaudhary Arshad said that the energy crisis could be overpowered by tapping more hydel potential in various parts of Pakistan and AJK. He said AJK had also huge hydropower energy potential which needed to be exploited for economic and agricultural growth.

CEO International Hydropower Association Mr. Eddie Rich said hydropower was growing but not at a fast pace globally. Hydropower was a clean and green energy that needed to be promoted at fast track, he said.

Earlier in his welcome address, chairman organizing committee of the conference, Muhammad Naeem Qureshi, said the conference was being organized to discuss the progress Pakistan and the adjoining region had achieved in the hydropower sector. He said the conference would prove to be a milestone in the promotion of hydropower not only in the country but also in the region.

The conference was informed that Sir Ganga Ram Hydropower Station of 1.1MW generation capacity at Renala built in 1925 and 9.6 MW Malakand Hydropower Station at Jabban built in 1937 were the two earliest hydro energy projects in the areas comprising Pakistan in the pre-independence era. In the pre-Wapda era from 1947 to 1958 three more projects were built that were 22MW Rasul Hydro Power Station, 20 MW Dargai Hydro Power Station, and 10MW addition at Malakand. All three projects were completed in 1952.

After the Wapda was established, 17 more hydropower stations were built in Pakistan. The total present installed capacity of 21 hydropower stations stands at 8,420MW. The total average annual power generation of Tarbela hydropower project stands at 16.7 billion kWh with revenue earning of Rs 547 billion.

The audience was also informed that 720MW Karot Hydropower project built

under the CPEC regime has a life span of more than 100 years. After 30 years of operations, the project will be transferred to the Punjab government.

Dr Munawar Iqbal, DG Hydro PPIB, Mohd Fauzi Bin Shafie, CEO, TNB Remaco Pakistan Pvt Ltd, Senior Advisor CSAIL NA Zuberi, Dr Tahir Masood, Managing Director, NESPAK, Imran Halim, Chief Engineer, PEDO, Khattar Abdul Khalek, Head of Business Development and acting GM for Aerodyne KSA, Muhammad Asad Imran, Country Manager, DOLSAR Engineering Pakistan, Fahd Bin Zafar, MM Pakistan (MMP), Sohail Butt, former DMD, PSO, and others also spoke on the occasion and highlighted the importance of hydropower sector for sustainable development. ■

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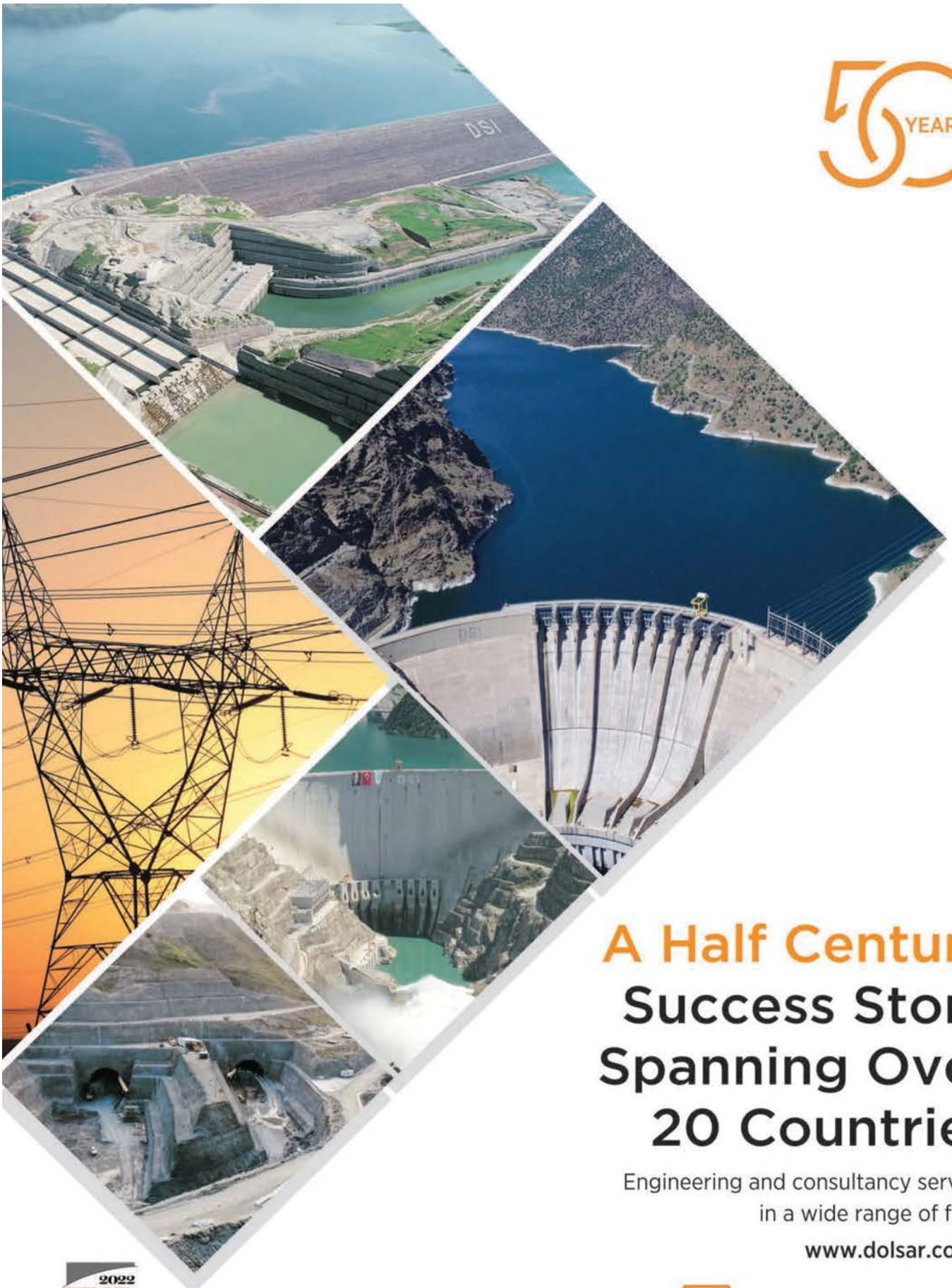

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DOLSAR ENGINEERING

bel opens new corporate office in Islamabad

Beacon Energy Limited (BEL), a company of the Beaconhouse group, has inaugurated its new state-of-the-art corporate office at DHA Phase 2 in Islamabad. Nassir Kasuri, Chief Executive Officer of BEL, cut the ribbon at the inaugural ceremony. The event was attended by Beaconhouse management, employees, and customers. Speaking on the occasion, Mr Kasuri, said: "I am pleased and happy to open our fourth office in Islamabad in just two years of operations. At Beacon Energy Limited, we are helping to make Pakistan a more sustainable nation by offering smart solar solutions and alternatives for all industrial, commercial and residential sectors."

"I invite you to join us on this journey because together, we can make Pakistan cleaner than ever. The new office will house various departments including sales, marketing, human resource, finance, R&D, and administration that will be working towards benefiting and helping the customers," he added. "Beacon Energy would be entering the Dubai market next year with its office and dedicated teams to cater to the global

requirements of the energy sector. Thus, it would become one of the few companies that have gone global in less than three years and become a multinational company backed by strong growth and teamwork."

BELPARTNER Launch - An ultimate Referral App

BEL unveiled its new app, BEL PARTNER. The application offers incentives to anyone who refers a new B2C client to the firm.

Haidri Beverages - Pepsi

Haidri Beverages has decided to invest in solar energy with Beacon Energy to reduce its carbon footprint.

INTRIX (Hybrid Solar Solution) Launch

INTRIX – A hybrid solar solution provides a consistent power backup during long hours of load shedding in this hot and humid weather. Get your Solar for a continuous power supply.

We are proud to be part of the renewable energy movement in Pakistan and hope that everyone will join us by using green energy

Power market's cancerous disease

Khaleeq Kiani

The cancerous disease of Pakistan's power market is becoming terminal with each passing day despite overdoses of price shocks to consumers. At the start of the fiscal year in July, the PDM government came with a capital blow to increase electricity tariff by a massive 47 per cent (Rs7.91 per unit) to "clear the backlog" left behind by the previous PTI government in "violation of international agreements" with the International Monetary Fund. The circular debt, as of June 30, 2022, stood at Rs2.253 trillion.

The tariff increase was aimed to generate additional revenue and bridge a financial gap of Rs893 billion in 2022-23 in meeting annual revenue requirements of about Rs2.52tr of the power companies, excluding K-Electriic, besides providing a general sales tax of more than Rs425bn to the government. It was promised that such a massive increase would take care of the delayed tariff notifications in the past and prices would begin to go down in October.

On completion of first quarter financials, it became clear that despite those back-breaking cost increases, the financial gap would conservatively remain on the higher side of Rs706bn — almost 1pc of Gross Domestic Product — during the current fiscal year. With little 'realistic' estimate, the gap is set to go beyond 803bn.

In fact, about Rs393bn gap has already occurred in the first quarter (July-September 2022). And all this is because of bad governance, concedes an official presentation made first to the finance minister and then to the prime minister.

While explaining various heads for this surge and sharing blame among the power and finance divisions, the presenters had the guts to suggest an amendment in the law to impose a 'special surcharge' at proposed rates of Rs12.60 to Rs31.60 per unit, to avoid an Rs706bn additional charge on the federal budget as 'subsidy'.

Further electricity tariff hikes, put on hold due to political considerations, are being discussed to generate additional revenue

The cost of bad governance was defined as low bill recovery, higher losses and theft, pending generation cost, the markup on debt, cost of zero-rated incentives, Kissan package, delayed notifications, lower demand and K-Electric subsidy. The relevant divisions presented four options to pass on the cost to the general industry, commercial, bulk and other customers at an average rate of Rs31.60 per unit to bridge the Rs706bn gap through surcharges.

The presentation clearly showed that the end tariff, including taxes for commercial consumers, would cross Rs94 per unit from the existing rate of Rs49.31 per unit. For bulk consumers, the end rate was proposed at Rs78 instead of Rs40.70 per unit, and for industrial consumers, it was suggested at Rs81 per unit from Rs40.15 per unit.

The end rates for 'other and general services consumers' was proposed at Rs77.30 per unit from about Rs40 per unit a present without any change in the existing rate of Rs27.3 and Rs20.36 per unit for domestic and agricultural consumers at present, respectively.

Under the second option, a Rs12.59 per unit increase was proposed for all consumer categories. In that case, the commercial rate was proposed at Rs67 per unit, for bulk and industrial at Rs56 per unit, for others and general services at Rs55 per unit, Rs42 per unit for domestic and Rs35 for private agriculture. In both these cases, the required Rs706bn subsidy stood recovered.

The third option envisaged Rs2.27 per unit surcharge for all consumers along with an additional budget subsidy of Rs579bn, while the last and 4th options suggested Rs706bn additional subsidy and no increase in consumer rates.

The proposal did not get through at this stage because of political factors, but it puts bare the critical fault lines in the foundations of an economy already facing stagflation and has repercussions for the troubled International Monetary Fund (IMF) programme.

The power division conceded that the scenario shared with the IMF for completion of the 8th review was massively flawed and was

bound to fail, but discounted power rates offered to zero-rated industry, farmers, and staggering fuel costs have added fuel to the fire. The full-year impact of zero-rated relief is well over Rs118bn and unbudgeted.

The bill recovery target was set at 93.58pc with the IMF, but it actually stood at 83pc in the first quarter (July-September) with a financial impact of Rs104bn. This included a Rs25bn Kissan package, Rs20bn court stays, and Rs54bn spillover. Recovery has been claimed to have improved to 91pc by the end of November, but such numbers in the power sector have always been murky until these are consolidated or audited at the end of the quarter.

System losses were committed at 15.83pc but actualised at 17.42pc. A 1pc loss translates into Rs28bn in revenue loss per annum at current rates. The tariff rebasing of Rs7.91 was assumed on July 1, 2022, but Rs7 per unit was actualised by July 25, and the remaining 91 paisa per unit was kept pending.

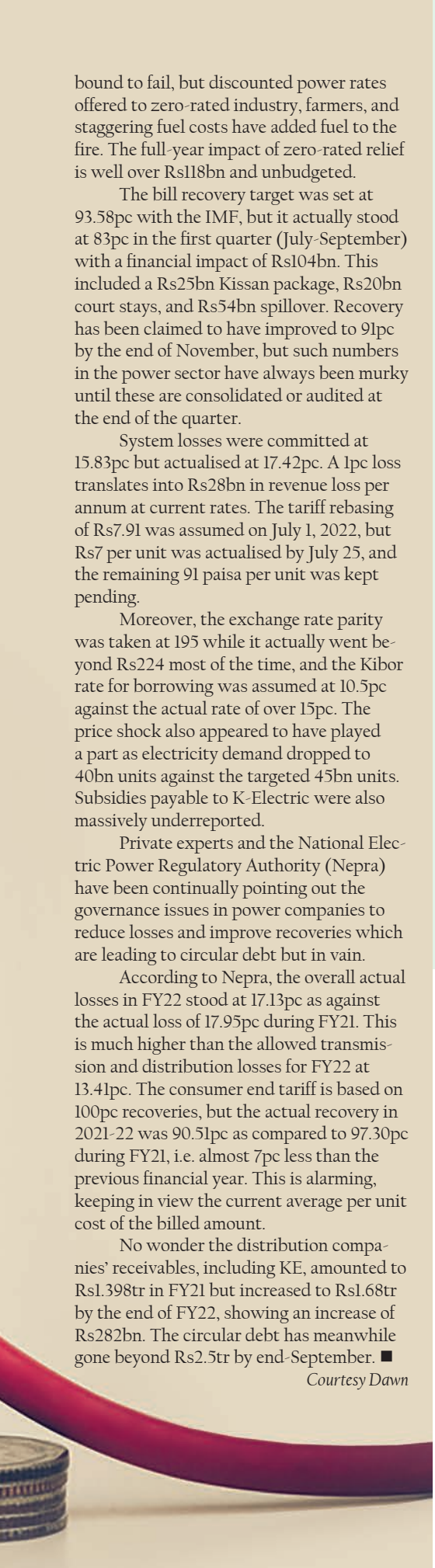
Moreover, the exchange rate parity was taken at 195 while it actually went beyond Rs224 most of the time, and the Kibor rate for borrowing was assumed at 10.5pc against the actual rate of over 15pc. The price shock also appeared to have played a part as electricity demand dropped to 40bn units against the targeted 45bn units. Subsidies payable to K-Electric were also massively underreported.

Private experts and the National Electric Power Regulatory Authority (Nepra) have been continually pointing out the governance issues in power companies to reduce losses and improve recoveries which are leading to circular debt but in vain.

According to Nepra, the overall actual losses in FY22 stood at 17.13pc as against the actual loss of 17.95pc during FY21. This is much higher than the allowed transmission and distribution losses for FY22 at 13.41pc. The consumer end tariff is based on 100pc recoveries, but the actual recovery in 2021-22 was 90.51pc as compared to 97.30pc during FY21, i.e. almost 7pc less than the previous financial year. This is alarming, keeping in view the current average per unit cost of the billed amount.

No wonder the distribution companies' receivables, including KE, amounted to Rs1.398tr in FY21 but increased to Rs1.68tr by the end of FY22, showing an increase of Rs282bn. The circular debt has meanwhile gone beyond Rs2.5tr by end-September. ■

Courtesy Dawn



INVESTMENT PLAN

Rs370bn proposed for national grid expansion

EU Report

The National Transmission and Despatch Company (NTDC) that runs the country's national grid has sought approval for a Rs370 billion investment plan for system expansion and loss reduction over the next three years (2023-25).

In a petition to the National Electric Power Regulatory Authority (Nepra), the transmission system operator stated that the proposed investment was required to meet the needs of an expanding transmission network with the induction of new power plants and technologies to various parts of the country, rehabilitation of existing system and need for new technologies to contain losses.

It said about 45pc (Rs167bn) of its investment would be utilised over the three years for power evacuation projects as new power plants achieve commercial operations while another 43pc (Rs158bn) investment would be used in removing system constraints through rehabilitation, upgradation and expansion of the national grid. The remaining 12pc investment would be used equally (6pc each) for new special industrial zones of Dhabeji, Haripur, Swabi, Lahore and Faisalabad under the China-Pakistan Economic Corridor (Rs24bn) and protection upgradation and use of the latest equipment for system conversions like from 220kV to 500kV and so on (Rs21bn).

The company that evacuates power generation from all power plants and delivers to distribution companies across the country said it would spend a total of Rs114bn in FY23, Rs145bn in FY24 and about Rs110bn in FY25.

Of the total Rs370bn, about Rs165bn would be utilised in Punjab, followed by Rs135bn in Khyber Pakhtunkhwa, Rs23.5bn in Sindh and Rs12bn in Balochistan besides Rs34bn in other areas and sectors.

It said the Rs266bn investment over the previous investment period (2018-19 to 202-22) helped reduce its transmission and transformational losses from 2.9pc to 2.6pc the country was now better placed when compared to regional peers like India and Bangladesh and very close to 2.5pc in Sweden and Ukraine etc.

The performance of loss reduction in the national grid, it said, was improving consistently over the last three years and hence required additional investments to build upon the progress and to sustain.

The NTDC is required under the law to produce the transmission investment plan based on a 25-year load forecast, Indicative Generation Capacity Expansion Plan (IGCEP) and the Transmission System Expansion Plan (TSEP) along with annual system reliability assessment and improvement reports. ■

The country is the fourth-largest debtor of the IMF

Dr Jamil Khan

Since the creation of Pakistan, its policy makers, politicians, and the rulers, all have been struggling to manage its balance of payments, but with the few exceptions, Pakistan had no choice but to ask the global lenders for the financial aids. This practice has been going on since the first borrowing request was made in 1958, just a few years after joining the IMF in 1950. And this was the beginning of the practice that has never stopped!

Diving deeper into Pakistan's economy one finds out that in its entire history there have been only just two occasions when Pakistan produced account surpluses (more exports than imports) and thus did not have any need to go to the IMF, World Bank (WB), Asian Development Bank (ADB), etc., for financial assistance. Incidentally, however, in both these periods, the country was ruled by military strongmen but under the guidance of highly qualified, respected, and experienced economic teams.

Currently, Pakistan is the fourth-largest debtor of the IMF, with a total outstanding debt of $7.85 billion. To address the economic contraction and global inflation in the aftermath of the Covid and further fuelled by the Ukraine-Russia war, the IMF has recently approved 1.1 billion to address these devastations and to avert yet another imminent default.

As of 2021, Pakistan is servicing its debt by borrowing the funds at a rate of 8.7%, which is much higher than of other nations in the same socio-economic group. For example, Bangladesh is financing its debt at 7.3% rate, which is about 16% lower than Pakistan's.

This clearly shows that Pakistan is paying millions of dollars just to service its debt even before making any payments to reduce its borrowed principals. For this persistent parasitic ailment cause, everyone points finger to others, but no one seems to have courage and political will to correct it by charting out sound economic, investment and industrial policies.

The lender agencies provide free of charge unbiased advice after carrying out their own due diligence every so often that even if the recommendations have been implemented in every tenth year, Pakistan would have been out of its economic miseries, like Bangladesh, Vietnam, Malaysia, Indonesia, and other countries have successfully demonstrated!

Fast forward, during the Covid pandemic, Pakistan along with every country regardless of their social and economic status, they all have suffered through the economic contractions due to the lockdowns of their entire economies.

On the other hand, middle and the lower middle-income countries like Pakistan were devastated much deeply compared to the others due to the onslaught of the Covid virus on its population due to lack of sustainable national healthcare system.

Additionally, the lack of healthcare infrastructure to monitor and control Covid spread, having no clear vaccines' commitments and its availability (in terms of quantity and timings) and experience in vaccination of the population on a massive scale made the things worst. These factors made it impossible to maintain any level of economic activity, particularly for the daily wage earners who make up majority of Pakistan's population.

In the aftermath of the Covid and its depredation, Pakistan has been working closely with the IMF and other lender agencies to get more funding to sustain its economic activities and provide means for its population of over 220 million people for their daily lives' needs.

However, to get any additional fundings, Pakistan has experienced very strong headwinds. To get the promised loan amounts from the IMF, like any other donors, the IMF had put very stringent certain conditions before releasing any next tranche of money.

However, it is fair to say that Pakistan has always come short to satisfy all the IMF conditions in order to secure the promised funds. In addition to the tax reforms and subsidies to the energy and power sectors, corruption, money laundering and tax collections have been the major shortcomings and roadblocks for getting the IMF fundings.

And these situations, like prior to the Covid and its post pandemic, have been creating a balance of payment crisis and in turn creating liquidity problems for the country. But with the timely financial assistance from China and brotherly countries like Saudi Arabia and the UAE, Pakistan has been able to dodge liquidity crises time and time again.

Miraculously, the current coalition government under the prime minister Shehbaz Sharif has been able to secure the eighth tranche of the funding from the IMF and this could have been sufficient enough to take care of the balance of payments at some reasonable level.

For the additional fundings, the IMF has asked Pakistan to provide a blueprint to show how it will handle the floodings in the future to reduce the level of the devastation it has experienced during the recent floods! This situation has created an unprecedented impasse between the IMF and Pakistan and if it persists for long time, there will be additional frictions between Pakistan and multilateral agencies, including the IMF. This means the "lifeline" will continue to get weaker with more stringent conditions, much higher interest rates than those for others and reduced amounts of fundings, resulting in balance of payments and liquidity crises more frequently! ■

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Another energy-tough year in the wings

People unlikely to see any noticeable relief

Khaleeq Kiani

Concluding a tough year (2022) in terms of record energy prices, the people of Pakistan are unlikely to see any noticeable relief over the next 12 months, except maybe some election-related tinkering with pricing that would, at best, be short-lived.

Unfortunately, the fundamentals for affordable energy on a sustainable basis are not yet right. The gas regulator — Oil & Gas Regulatory Authority (Ogra)— increased the prescribed price of natural gas by 45 per cent for two gas utilities — Sui Southern Gas Company Limited and Sui Northern Gas Pipelines Limited (SNGPL) — in the first week of June. The resultant increase in consumer-end prices has still not been issued despite a mandatory 40-day deadline. This was on top of a price freeze maintained by the former PTI government.

The double-dose backlog had to come back with a vengeance. Five months later, the two gas utilities demanded up to 237pc increase in natural gas rates to generate about Rs660 billion in additional funds in 2022-23.

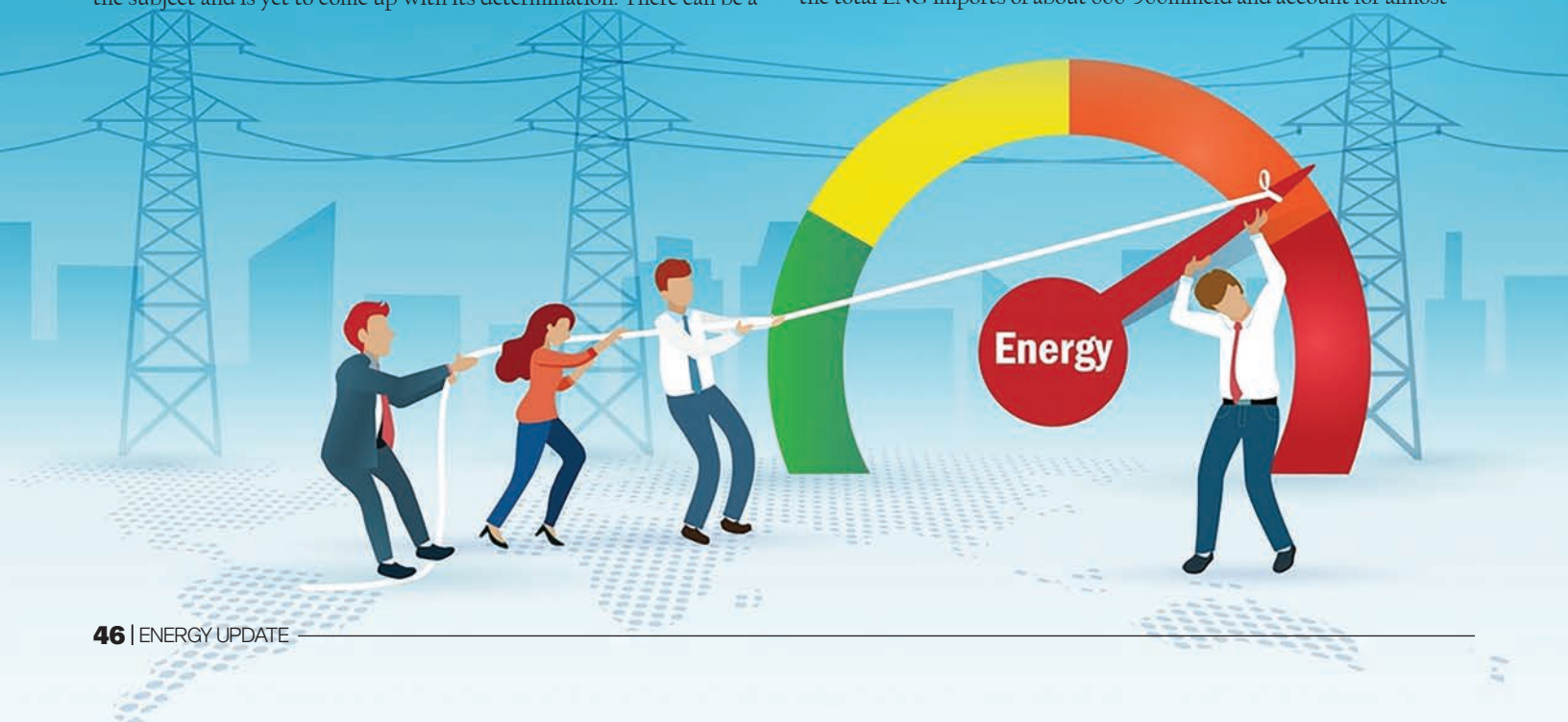
To be precise, the Lahore-based SNGPL has sought an increase of Rs1,294 per million British thermal units (mmBtu) or 237pc while Karachi-based SSGCL has demanded an increase of Rs668 per unit or 96pc to meet their revenue requirements for 2022-23. On top of that, SNGPL has also sought another Rs1,016 per unit as cost of services for RLNG, including Rs762 per mmBtu on account of the differential impact of diversion of RLNG to the residential consumers at cheap rates in winters.

Both companies have claimed that the major reason for the higher revenue requirement was linked to the international price of crude oil and furnace oil in line with agreements signed by the government with gas producers. The regulator has already conducted public hearings on the subject and is yet to come up with its determination. There can be a delay but no escape.

The gas circular debt is already hovering higher than Rs1.5 trillion and needs to be settled. SNGPL alone has to clear almost Rs300bn by March 2023 to Pakistan State Oil (PSO) on account of LNG payables. PSO's total receivables including those from other entities, including the power sector, are now close to Rs650bn. The situation is such that PSO is pushing to take over SNGPL's share on prevailing subdued share prices in the stock market. Ironically, despite this unprecedented price in international oil and gas prices and the resultant increase in the import bill of two essential commodities, the two gas utilities have failed to control their unsustainable system losses against regulatory targets approved by the government.

Over the last three years (2019-22), both the gas utilities have not been able to achieve loss — commonly described as unaccounted for gas (UFG) — reduction targets set by the Ogra and approved by the federal cabinet, according to a 3-year performance report released by the petroleum division.

Simply put, the two companies' UFG account for almost 600-650 million acre feet per day (mmcfd) that could easily produce more than 1,200MW of cheap electricity at Rs8-9 per unit and is more than half of the total LNG imports of about 800-900mmcfd and account for almost



one-third of the total domestic gas production.

Paradoxically, the cheaper LNG options are not available to Pakistan, at least not during the current calendar year, except for those already contracted from Qatar. Therefore, a substantial chunk of power supplies would be dependent on furnace oil and coal — both local and imported.

The induction of about 2,600MW of Thar coal-based power generation is a valuable contribution but net addition during the current year would be about 1,300MW in addition to another mega 1,200MW plus LNG-based 4th project at Trimmu for which LNG availability would remain a challenge. The existing three such projects — contracted as must-run — are hardly functioning at full capacity due to fuel challenges.

Likewise, there will be an almost negligible additional contribution from fresh renewable energy (RE) plants. Their contribution to a reduction in electricity prices will be minimal given the continuously rising impact of capacity payments that, on average, cost about Rs10 per unit (ranging between Rs6 to Rs20 per unit for various plants).

Most power purchase agreements with base load thermal power plants are capacity based under 'Take or Pay' contracts. Capacity payments must be paid against available generation capacity irrespective of whether it is utilised or not.

The financial impact of capacity payments increased from about Rs600bn in 2020-21 to more than Rs720bn. It will gain pace as new China-Pakistan Economic Corridor based plants come into the system. Thar coal-based plants are no exception, although their fuel cost would be significantly lower.

As a pointer towards how the electricity prices will behave during 2023, it will suffice to recall that the finance and power divisions came up with recommendations in December 2022. These were to impose a special surcharge on consumers ranging between Rs12 to 40 per unit to cover a Rs706-800bn gap arising out of unbudgeted subsidies, system losses of around 17-18pc and 10-17pc less recoveries against billing. The financial gap will only keep growing unless drastic governance steps are introduced — an unlikely event, at least during the year ahead. The US Energy Information Administration (EIA), Goldman Sachs and JP Morgan have forecast international crude prices between $90 to 110 per barrel in most of the first half of the year, almost 8-9pc higher than less than $80 per barrel at present.

Yet there are many uncertainties about the global oil and LNG prices, including those related to Russian supplies and US-EU sanctions against Russia. That means oil-importing countries like Pakistan are unlikely to get any major relief from abroad.

Islamabad's efforts to arrange energy imports from Moscow also remain uncertain. The two sides have re-engaged for energy cooperation, and a Russian delegation led by the energy minister is expected to be in Islamabad by the third week of January for cheaper oil supplies to Pakistan.

How quickly negotiations progress towards reality will have to be seen, more importantly in the context of the latest ban imposed by President Putin on oil supplies to countries and entities that abide by the 30pc lower price cap imposed by US-EU allies on Russian supplies. While President Putin can exempt such bans under special cases — as maybe the case of Pakistan — the end situation is still very murky.

But that is not all. Irrespective of the international price trend, Pakistanis still have to brave additional taxes on petroleum products under the International Monetary Fund programme that has to expire in the third quarter of the year. While about a Rs20 per litre increase in petroleum development levy on high-speed diesel before March is a foregone conclusion, the introduction of GST on all major oil products will soon be another bitter reality.

The sad part is that political leadership in the government and the opposition appears poles apart on addressing governance challenges in the energy sector and, by extension, towards reform that help contain energy costs and improve the energy mix. ■

300MW coal power plant okayed for Gwadar

EU Report

Federal Planning, Development, and Special Initiatives Minister Ahsan Iqbal approved a 300MW coal power project on Tuesday, directing the Ministry of Maritime Affairs, Power Division, Gwadar Port Authority and China Overseas Ports Holding Company Ltd to ensure 100pc power consumption for this project to avoid any financial loss to the exchequer.

The minister made these directions while chairing a meeting to review the project. The meeting was attended by the COPHCL chairman, Gwadar Port Authority (GPA) chairman and other stakeholders. The project was conceived under the China-Pakistan Economic Corridor (CEPC) in 2016.

Previously, the minister had directed COPHECL to provide the exact electricity demand for the Gwadar Free Zone and share a 10-year plan for electricity consumption by the Gwadar Free Zone Company to establish the exact electricity utilisation of 300 MW coal-fired power project at Gwadar. ■

Rising inflation, unemployment ruled 2022

There was no reprieve for ordinary Pakistanis: Report

Mansoor Ahmad

The year 2022 was perhaps the worst economic year in Pakistan's history. Nothing went right; we experienced the highest ever inflation and interest rates. The stability is still elusive. Governments have been shy of policy measures that may cause short term distress for consumers but are good for the economy in the long run. In fact, governments expecting to lose power appear to be taking popular measures in their last days to aggravate the challenge for the next government.

The national economy at the start of the year 2022 was not in a good shape; but as the year ends it's in an even worse state. If an addiction to foreign loans was a hallmark of the last year, this year the dependence is even stronger. In the past, we had sought foreign loans mostly for development but during the past four years the foreign loans have been used for consumption and to plug our fiscal deficit. The consumer loans are a burden on the state as successor governments have to repay those with heavy interest.The difficulty to obtain new loans has been increasing. Now, instead of long-term project loans, we are constrained to seek short-term high-interest loans that have been serviced in a year. Having consumed those loans we are in hectic efforts to either rollover the loans or seek new high-interest loans to return the earlier loans.

Long-term loans carry nominal interest rates (1-2 percent) but short -term loans carry an interest rate of 4-5 percent. Our failure is that we convert the short-term high-interest loans into long-term ones through regular rollovers but without the benefit of lower interest rates.

We accelerate economic growth using consumer loans (as we did during the last fiscal). The accelerated growth in Pakistan in recent years has been import-led. High imports then create a balance of payments crisis (as it happened this year). The government was then forced to curtail imports through administrative measures. This resulted in a slowdown in manufacturing. Because of the import curtailment by the regime most of the industries, including auto, engineering and home appliances are operating at 50-60 percent below their capacity.

The energy crisis has reduced the demand for textiles and apparel - our main export sector. As a result, exports are declining. In the open market, rupee is being traded at Rs 10 per dollar higher than its interbank rate. This difference is a lucrative incentive for overseas Pakistanis who are now sending home remittances through hundi or hawala with the result that workers' remittances through formal channels have declined appreciably. The Indian workers' remittances have increased by 5 percent during this year.

The low rupee value, high interest rates and inflation hurt businesses but they impact the consumers even more. The rupee had traded at Rs 178 against the dollar in the last week of December 2021. Its current rate against the dollar is 225 and rising. The inflation at the start of the year ranged 13-14 percent, it has been above 22 percent in the recent months.

The growth in Pakistan in recent years has been import-led. High imports create a balance of payments crisis like this year. The government was forced in the end to curtail imports through administrative measures. This resulted in a slowdown in manufacturing.

The State Bank policy rate was in double digit at the start of the year, it has now crossed 16 percent. The losses of public sector enterprises continued to increase but the governments failed to privatise any loss-making entity in 2022. The power rates have increased sharply this year. But the line losses have also jumped from 15.8 percent to 17.4 percent. The bill recoveries by distribution companies declined from 93 percent to 83 percent this year. The circular debt is increasing despite the price hike.

The net result of these three factors was that the businesses shrank during 2022. Unemployment increased and there were no new jobs. Many companies curtailed production and shed jobs. The income of the common man remained stagnant or increased at less than the prevailing inflation rate. The poverty increased.

The New Year is traditionally a time for hope but most Pakistanis would start the year 2023 in despair. Even globally, more people are pessimistic about 2023, according to a survey by a US firm. In Pakistan, a recent survey has revealed that more than 60 percent Pakistanis would prefer to live abroad. This is a measure of the difficulties they are having in their own country. The disappointment has increased in 2022 and even many businessmen are thinking of ways to transfer their resources away.

The agriculture sector is in a greater disarray than the industry. We harvested our worst cotton crop in years in 2022. We are importing wheat in large quantities. The floods have devastated a third of the country. We do not have the resources to rehabilitate the affected people. Flood water has not receded from many areas in Balochistan and Sindh. Inputs for agriculture are costlier and out of reach for many farmers.

The year under review was also the worst year as far as the writ of the government is concerned. Both the federal and provincial governments succumbed to public pressure. Public roads and highways throughout Pakistan were blocked for hours by small gatherings of 20-40 protestors. The law and order situation impacted the business sentiment.

There was no reprieve for ordinary Pakistanis. Their incomes remained stagnated while the rates of essential daily use commodities went through the roof. The minimum wage of Rs 25,000 is not enough to even provide adequate food to an average family of 6.5 people. Still, a majority of workers were denied even this minimum wage; most got half the officially set minimum wage, some even less. ■

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Rethinking economic growth amid social-environment needs

Natural disasters, social unrest can damage long-term prosperity; companies need to align their organization with SDGs and can make them their business

Erum Khan

Schumacher argued back in 1973 that the modern economy is unsustainable. He proposed a philosophical approach that appreciates both human needs and an appropriate use of technology by accepting natural limitations as we depend on nature but nature does not depend on us.

Economic growth, measured through the omnipresent and increasingly criticized indicator of GDP, is mainly an economic dogma of the late twentieth century that shaped the construction of society after the World War II. It was about rebuilding the economy and providing welfare for people. However, the idea became not only sclerotic, but even dangerous and counter-productive to providing a decent life for each human being. A growing number of economists, ecologists, civil society organizations and local initiatives are criticizing the unlimited growth ideology of the GDP, and are delivering evidence that due to limited natural resources and the limited capacity of natural systems to recover, it will simply be impossible to realize growth over the long term.

The UN Agenda 2030 for Sustainable Development goals, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health, education & wellbeing, reduce inequality, and speed up the economic growth – all while tackling climate change and working to preserve our forests and oceans.

Today's business landscape is characterized by an unprecedented, accelerating and complex mix of risks and opportunities. The entire market can be disrupted in a short time by innumerable factors, be it a new technology or a sudden lack of natural resources. New markets are emerging rapidly due to megatrends such as population growth, resource scarcity or global health risks. Meanwhile, consumers and investors are better informed than ever before – and they want businesses to take responsibility for the pressure our planet and its population are under.

There is growing understanding – especially by business leaders and investors ahead of the curve – that it is not enough for companies to concern themselves only with short-term profits because natural disasters, social unrest or economic disparity can damage long-term prosperity. The businesses that understand this challenge and take action will be a step ahead.

From a business perspective, it is important to understand the implications of the SDGs across four key pillars: As escalating environmental and social burdens begin to restrain future growth prospects, failure to take action on the SDGs represents a mounting business cost. Furthermore, neglecting to integrate the SDGs strategically also poses a long-term regulatory risk and a reputational risk as governments move to reflect the SDGs in national policy and stakeholders look to business to engage meaningfully in this agenda.

There is a massive market incentive for companies which are able to offer SDG-relevant technologies and solutions through sustainable and inclusive business models. Furthermore, companies that align themselves with the SDGs will also be able to consolidate a strong license to operate, differentiating themselves from competitors and building trust among governments, shareholders and customers.

There are a number of actions that companies can

take to align their organization with the SDGs and plot a course towards unlocking the value they represent. Companies can make the SDGs their business. They can keep up with the sustainable development agenda to ensure that their organization is well placed to capitalize upon opportunities and pre-empt disruptive risks. Engage your network of peers on this agenda to create a tipping point for business engagement.

Companies can develop a thorough understanding of how their business activities translate into economic, environmental and social impacts in the context of the SDGs. They can apply an SDG lens at the strategic level to harness their organization's potential to engineer business solutions that make their company more successful and sustainable. They can consider regular and transparent communication of SDG performance and progress.

Companies can collaborate with peers and other stakeholders to frame the SDGs in the context of their sector. Set a collective vision for your industry and collaborate on initiatives to realize sector transformation. They can call for all companies in the sector to align, collaborate and report on their progress.

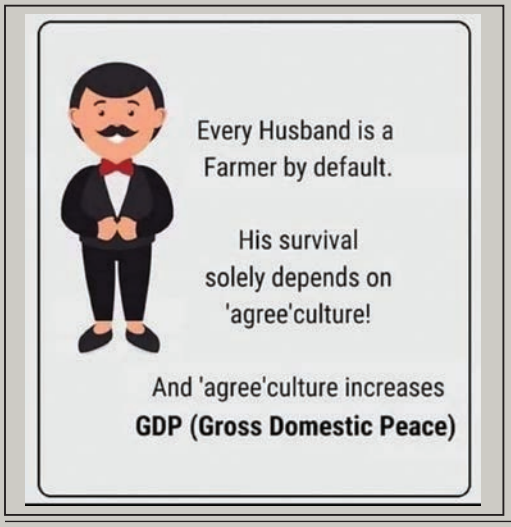
They can openly advocate for the introduction of key policy and finance enablers that will help to achieve a tipping point.

Our Vision

In these goals and targets, we are setting out a supremely ambitious and transformational vision. We envisage a world free of poverty, hunger, disease and want, where all life can thrive. We envisage a world free of fear and violence. A world with universal literacy. A world with equitable and universal access to quality education at all levels, to health care and social protection, where physical, mental and social well-being are assured.

A world where we reaffirm our commitments regarding the human right to safe drinking water and sanitation and where there is improved hygiene; and where food is sufficient, safe, affordable and nutritious. A world where human habitats are safe, resilient and sustainable and where there is universal access to affordable, reliable and sustainable energy. ■

The writer is the Director of Odyssey, the first sustainable tourism company in Pakistan, and Chairperson of Travel and Tourism Committee, Gwadar Chamber of Commerce & Industry (GCCI)



NUCLEAR ENERGY

Going nuclear daunting challenge

Ramana

On December 13, the US Department of Energy (DOE) announced that the National Ignition Facility (NIF) at the Lawrence Livermore National Laboratory had reached a "milestone": the achievement of "ignition" in nuclear fusion earlier in the month. That announcement was hailed by many as a step into a fossil fuel-free energy future. US Senate majority leader Charles Schumer, for example, claimed that we were "on the precipice of a future no longer reliant on fossil fuels but instead powered by new clean fusion energy".

But in truth, generating electrical power from fusion commercially or at an industrial scale is likely unattainable in any realistic sense, at least within the lifetimes of most readers of this article. At the same time, this experiment will contribute far more to US efforts to further develop its terrifyingly destructive nuclear weapons arsenal.

Over the last decade or so, there have been many similar announcements featuring breathless language about breakthroughs, milestones, and advances. These statements have come with unfailing regularity from NIF (for example, in 2013) and the larger set of laboratories and commercial firms pursuing the idea of nuclear fusion. Apart from the United States, similar announcements have come from Germany, China and the United Kingdom. France is expected to take its turn once the International Thermonuclear Experimental Reactor (ITER) starts operating. The reactor is currently being built in Cadarache, France, at an estimated cost of somewhere between $25 billion to as high as $65 billion, much higher than the original estimate of $5.6 billion.

These incredibly high costs also explain why such announcements are made in the first place: without the excitement created by these hyped-up statements, it would be impossible to get funded for the decades it takes to plan and build these facilities. Conceptual design work on ITER began in 1988.

Of course, that timescale pales in comparison to the time period of the first major announcement about fusion-generated electricity. That took place in 1955 when Homi Bhabha, the architect of India's nuclear programme, told the first International Conference on Peaceful Uses of Atomic Energy in Geneva:

"I venture to predict that a method will be found for liberating fusion energy in a controlled manner within the next two decades. When that happens the energy problems of the world will have been solved forever." That would not be the last prediction about the imminence of fusion power that would be wrong.

Three challenges for nuclear fusion: The recent "breakthrough" that NIF announced pertains to what I would term "physics challenges". One can identify three stages of physics challenges.

The first challenge is to have enough fusion reactions in the pellet that is blasted by lasers to produce more energy than is put into the target. That was what seems to have been seen at NIF: the reports say that the lasers pumped in 2.05 megajoules of energy and about 3.15 megajoules came out. All of this over a time period of a few nanoseconds (a nanosecond is one billionth of a second). The figure of 3.15 megajoules might seem like a lot but it is only 0.875 kilowatt-hours, that too of heat, which would produce perhaps 0.3 kilowatt-hours of electricity if it was used to boil water and drive a turbine. (For comparison, a rooftop solar panel that costs under Rs 30,000 in Delhi could generate around 5,000 times more electrical energy in a year.

The second physics challenge is to produce more energy than is used by the facility as a whole. NIF is far from meeting this challenge. It admitted that just the 192 lasers consumed around 400 megajoules in the process of blasting the pellet. To this, we have to add all the energy that goes into running the other equipment and the facility as a whole.

The final physics challenge is to produce more energy than what is required to construct the facility and all the equipment. In the case of the ITER experiment, for example, it has been estimated that "the tokamak itself will weigh as much as three Eiffel towers [and the] total weight of the central ITER facility is around 400,000 tons". As Daniel Jassby, a retired physicist from the Princeton Plasma Physics Lab, put it, all this "must appear on the negative side of the energy accounting ledger". ■

Climate Change implications in Pakistan

Challenges to food security will intensify; wheat yield likely to drop in future; Country lost 0.5% of GDP from 2000 to 2019; irrigation water releases remained lower

Special Report by Mansoor

As the world grapples with rising global temperature, changing rainfall patterns and extreme weather events, the spillover of climate change to food security in regions such as Pakistan is becoming a source of concern for various reasons, according to a new report released by State Bank of Pakistan.

While the policymakers have traditionally relied on price intervention and input subsidies to ensure Pakistan is food-secure, the challenges to food security will intensify under climate change from floods, low productivity, poor infrastructure, among other factors. Pakistan is the 8th most affected country by climate change due to rising global temperatures – losing around 0.5 percent of GDP in 173 climate-related catastrophes from 2000-2019.

In the worst-case scenario, United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) estimates average annual losses in Pakistan can be up to 9.1 percent of GDP, which would be the highest in South-Asia.

Due to these vulnerabilities, the impact of climate change on food security needs to be evaluated in Pakistan, which would facilitate the policymakers to adapt, or mitigate these risks. Ensuring food security in Pakistan is primarily linked to wheat – the staple food. Availability and stability in prices of the wheat crop is of critical importance due to its wide-ranging impact, especially on the most vulnerable segment of the society.

Increasing temperatures will significantly increase the risks to Pakistan's food security since 77.5 percent of the agricultural production takes place in arid regions where temperatures are likely to increase more than in other climatic zones.

There are multiple channels through which food security will come under stress in Pakistan: (1) Little room to expand area under cultivation (in particular for wheat) in the short to medium term under the prevailing technological constraints. 2. Availability of water in the Rabi season acting as a constraint in the canal-irrigated areas of Pakistan. (3) Land degradation due to imbalanced used of fertilizer and also water-logging. (4) Despite improving wheat yield in Pakistan over the years, climate change is likely to slow down the progress in the future – for instance global wheat yields are likely to drop by 17 percent due to changing weather patterns. (5) Incessant population growth rate is posing resource availability challenges (6) Increased threat of locusts, especially in the rice-wheat farm systems.

Climate change poses additional risks to these estimates that would increase the demand-supply gap. There are several policy options that can be considered to counter the threat of climate change to food security. There is a need to increase policy focus on introducing high-yielding varieties of wheat through research and development.

Reducing some inefficient subsidies for input, such as water and gas, may help increase fiscal space. Imposition of carbon tax with border carbon adjustment will increase public revenues to fight climate change adversities. Food security in Pakistan has mostly focused on the availability of critical food items.

Concentrating on other aspects of food security such as accessibility, utilization and stability may be more beneficial in the long run. This may lead to decreased reliance on wheat and shifting to more balanced diet that may, in turn, also reduce rate of malnourishment and stunted growth. In terms of water input, surface water availability for this year was 4 percent lower than last year and 10 percent lower than the average system usage. During the initial months of FY22, water availability for Kharif season remained low, but the situation improved towards the end of the season.

The surface water availability remained challenging during Rabi FY22. The country witnessed inflows of 27.4 million acre feet (MAF) during FY22, showing a decline of 12.3 percent compared to the previous year. In addition, overall rim-station inflows during current Rabi season remained 7 percent below Indus River System Authority's (IRSA) estimates. Furthermore, the irrigation water releases were also lower than the long-term average.

Amid the growing challenges of climate change, the inadequate food security situation in Pakistan is a source of alarm. The increasing pace of climate change may lead to variation in rainfall pattern and recurrent flooding or droughts in the coming years. The unpredictability of weather pattern has serious repercussions for agriculture sector of Pakistan.

In this background, there is an urgent need to formulate a well-thought-out strategy to meet the rising challenge of climate change. In particular, priority should be given to Research & Development in the seed development sector to produce new varieties of seeds that are suitable to varying weather conditions and to devise a policy framework that emphasizes water management strategies to increase agricultural productivity.

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Torments of power bills

—◆— Andaleeb Rizvi —◆—

There was a long queue at the K-Electric office in North Nazimabad. The gatekeeper, a woman with a register, takes the CNIC and billing information for entry, while the guard decides who enters and when.

A majority of those standing in the queue have been to the centre multiple times over the last few months. Some want to pay their high power bills in instalments, some want to get a new connection, while others dispute sanctioned load discrepancies and billed amounts.

Those who dispute the billed amounts are only offered one solution – a bill broken up in instalments that they have to pay over the next few months, failing which, the privatised utility company has the power to disconnect them from the grid.

These consumers would be in for another shock soon once the government decides to collect the Rs65 billion that the International Monetary Fund (IMF) has asked Pakistan to pass on to consumers of electricity. During peak summer, the government had deferred the amount in the shape of fuel price adjustments (FPA).

Tahir Abbas, head of research at Arif Habib Limited, said that the FPA was deferred by the government due to a variety of reasons, the biggest being the devastating floods. "The relief was given to consumers who use up to 300 units/month, based on an understanding that their capacity to pay was compromised after the floods," he said, adding that the Rs65 billion in the shape of FPA had to be paid sooner or later.

On a query how this would impact consumers and inflation, Abbas said, "We generate around 137 billion GWh with 18 percent T&D losses; 45 percent is used by domestic consumers, and of these 80 percent are those who use less than 300 units per month. So a one-time adjustment would likely be around Rs6.5/unit. On inflation, this impact would be 0.7 percent."

Currently, the average electricity tariff as per the Pakistan Bureau of Statistics stands at Rs6.57/unit.

Syed Muzaffar, a retired pharmacist, said he was sick of the constantly changing tariff. Showing his bills, he said in August, K-Electric charged Rs25.53/unit, in September Rs29.30/unit, in October Rs33.83/unit, in November Rs25.53/unit and in December Rs22.14/unit. This was apart from charges like uniform quarterly and fuel adjustment, electricity duty, sales tax, income tax, TVL fee, and a one-time KMC fee, he pointed out.

Power bills have increased exponentially for consumers. Compromised affordability has forced the consumers to slash the use of air conditioners, refrigerators, irons and microwaves.

Some, living in joint family systems, like Farrukh*, a resident of Hyderi, have installed multiple connections at home, which take months to install.

He went to the K-Electric office to get a fourth meter for the one horsepower each donkey pump and worm pump, but was rejected. "For the other meters, we had to divide our kitchen and add a partition wall. K-Electric has become a reason for 'batwaras' (partition or creating barriers between families)," he said sarcastically. "I was told that to have a meter, one needed a separate kitchen and a partition/separate entrance, motors cannot be put on a separate meter."

Several consumers complained that they had to wait for months to get a new connection as the K-Electric officials kept sending them away to fetch one document or another. "These are just delaying tactics," said an agent, who works on documentation for new connections.

Access to electricity is a universal human right, and falls under the United Nations Sustainable Development Goal 7. National Electric Power Regulatory Authority (NEPRA) in its state of industry report 2021 says, "Access to affordable electricity is a necessary condition to raise living standards of people and accelerate the economic progress of the country." But at the same time, the report, without citing the exact numbers, adds that "millions of people living in the remote areas of the country still do not have access to electricity".

Lack of access and poor reliability could be costing Pakistan at least $4.5 billion (1.7 percent of gross domestic product) a year as per a 2018 policy research paper of the World Bank Group. It also estimated that 50 million

people in Pakistan could be living without a connection to the electric grid.

Being aware of these issues, NEPRA admits that the biggest challenge currently faced by the power sector was the high cost of electricity. "The unutilised 'take or pay' power generation capacity, impact of 'must run' power plants, old in-efficient power plants, increasing capacity payments, whopping circular debt, weak transmission and distribution system, lack of coordination among relevant power sector stakeholders, improper planning, poor governance, use of primitive technology, taxes, fees and levies in electricity bills etc are amongst the factors making the price of electricity unaffordable for consumers," it says.

Such reports and recognition of issues however hold no value in real terms, especially when power sector issues, instead of getting resolved, keep multiplying.

Mahrukh*, a housewife said the power bill was a constant issue at her home. "We live in a joint family. And though my husband and I do not have an air conditioner, my dewrani (sister-in-law) brought one in her dowry, and we had to bear the brunt too, because all household expenses, including the bills are divided equally between my husband and his younger brother," she lamented. "With two school going children amid sky-high prices, we are in extreme financial stress now. Even our December bill is Rs5,500 when last year it was way less."

Another consumer, wishing to remain anonymous, said that his unaffordable bill had forced him to think of getting a kunda connection. Experts have pointed out already that an increase in tariff also increases theft in the power sector.

Tahir Abbas agreed with the opinion. "As tariffs go up, theft increases and recovery goes down." However, he admitted that the sheer scale of the power sector had made things far more complicated and last year's commodity super-cycle, when rates of coal, LNG, furnace oil etc shot up, just added to the fuel cost burden. ■

SOCIO-ECONOMIC ISSUES

Pakistan and year 2023

By planning and implementing policies effectively, multiple threats can be curbed

Muhammad Wajahat Sultan

In the outgoing year, Pakistan remained engulfed in socio-political and socio-economic turmoil resulting from political transitions, natural disasters and bad economic management. The coming year is the year of hopes and hurdles. By planning and implementing policies effectively, multiple threats can be curbed.

In 2023, the ecological crisis will have a major impact on the country. Harsh weather conditions and inconsistent rainfall patterns could destabilise the social and political situation in the Republic. In order to control climate change, countries are working on a green economy and producing pink hydrogen through electrolysis.

India, for instance, has initiated a project to install eco-friendly solar panels on rooftops for renewable energy consumption. To prevent climate change and sustain economic and political growth in the state, it is essential to invest in the shift from oil-led energy sources to renewable energy resources. In 2023, our climate preference should shift to ecological preservation.

Pakistan is a country with a population that could easily believe in propaganda theories. Technology and social media have shifted the order, which sometimes puts institutional harmony at risk. A state's social and political anomalies have been exacerbated by deep fakes and social boots. The use of technology to distort democratic and constitutional struggle is one of the major threats to consolidation of the societal fabric in the state. Propaganda has the potential to divide the population into different groups.

The polarisation of society has already created inertia in the institutional efficiency of democracy. Because 2023 is the year of the general election in the Republic, policymakers must consider strategies to integrate the community. In 2023, digital political strategies and social networking platform factors should be incorporated into the design of governance policies.

Covid-19 has dealt a major blow to the education sector in Pakistan which was already struggling with educational disparities. The crisis in the classroom will be a significant factor to be considered in 2023. Our educational policy should be designed so that future generations can create and innovate in new dimensions.

Overpopulation has worsened the various challenges like unemployment, food crisis, urban sprawl, etc. Depopulation should be at the core of policymaking in 2023. This depopulation could integrate gender participation and gender empowerment. The birth rate can be controlled through women's empowerment. Literate women understand the complexities of post-fetus issues and the economic investment in raising children, so women's inclusivity, education and empowerment for depopulation could be integrated. Last but not least, a lack of governance can halt administrative tasks. ■

$3.5m raised to produce solar panels

Eyeing multifield growth in demand for renewable energy in Pakistan, a family-owned power firm says it has successfully raised advanced level 'Series-A' investment to kick-start local production of solar panels from the second half (July-December) of 2023. The firm is setting up the plant through the transfer of technology from Turkiye at an initial investment of $3.5 million in phase one of the project. The company said it will formally announce the size of the privately raised investment in the presence of the local financier in the next couple of weeks. Intermarket Securities has evaluated the firm's value at $4.5 million. The country imported solar energy equipment for 2,380 MW at an estimated cost of over $2.5 billion in 2021, it was learnt. The government has targeted increasing the share of renewable energy (mainly solar and wind power) to 20% by 2025 and 30% by 2030, as compared to around 5% at present. ■

SOCIAL ROUND UP

Managing Editor Energy Update M. Naeem Qureshi presenting a bouquet to Mian Fahad Country Head Growatt after MOU Signing ceremony. Qayyum Bawani, CEO Trisun Energies and Marketing & Promotions Manager EU Mustafa Tahir also presents

Vice President NFEH Engr. Nadeem Ashraf hosted a lunch in honor of Team NFEH & Energy Update at Cafe Imran Gharo

Scholar & Tv host Aniq Ahmed hosted a dinner in honor of Rahila Firdous at local Hotel

M. Naeem Qureshi met with Livoltek team to discuss upcoming partnership with Energy Udpate and Livoltek

Team NFEH met with Manager CSR Mari Petroluem Huma Zafar to discuss CSR Activites

Team NFEH Met with Irshad Amir Director Bestway Cement to discuss CSR Activities and Solar Energy

Team NFEH met with Executive Director OGDCL Zia Salahuddin on CSR Activities.

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Dasu power project construction work continues

Critical diversion system will be completed this May: Power generation to start by end 2026

EU Report

Construction work of of the Dasu Hydropower Project continues on 12 different sites simultaneously. The critical diversion system will be completed in May this year, while electricity generation from the project will commence by the end of 2026.

This was briefed to Chairman WAPDA Lt Gen Sajjad Ghani (Retd) by the project management during his visit to Dasu Hydropower Project, which is being constructed by WAPDA on River Indus upstream of Dasu town in the Upper Kohistan district of Khyber Pakhtunkhwa province. The Chairman visited various sites of the project including diversion tunnels, the dam area and the project colony. He was accompanied by the Commissioner Hazara Division. GM and PD Dasu Hydropower Project, representatives of the Consultants and the Contractors were also present on occasion.

During his visit to the project colony, the Chairman inaugurated the newly constructed office building. He also had a meeting with the grand jirga, comprising elders and notables of the Kohistan region. Interacting with the jirga members, the Chairman said that the agreement, signed among the United Kohistan Jirga, civil administration and WAPDA last month, will prove beneficial for both locals of the area and the project.

It is worth mentioning that the 4320 MW-Dasu Hydropower Project is planned to be completed in two stages. At present, WAPDA is constructing stage-I with an installed generation capacity of 2160MW and an annual energy generation of 12 billion units of low-cost and environment-friendly electricity. The stage-II, when implemented, will also provide 9 billion units to the National Grid.

On completion of both Stages, Dasu will become the project with the highest annual energy generation in Pakistan i.e., 21 billion units on average. WAPDA is spending Rs17.34 billion on schemes relating to resettlement, environmental management and social development in the project area. About 3722 jobs, including 1945 for locals, have so far been created, which will increase to the 8000 mark during the peak construction period of the project.

Innovative book titled Mitho Darya launched at Arts Council

Sindh Education and Welfare Association (SEWA) organized the fascinating launching ceremony of a book entitled Mitho Darya (Lovely River) at Arts Council Karachi, which was attended by a large number of literary personalities, poets, dignitaries, and people belonging to all parts of Sindh province.

The book was written by a famous poet and writer Sadiqullah Shah who has written 11 books on poetry, literature and other topics so far. This book highlighted the culture, history, and beautifies of Indus River and Sindh region.

Speaking at the launching ceremony of the book, SEWA Chairman Syed Mehbood Ali Shah said that Sindh is one of the important territories of the world which is rich with beautiful culture, and literature. He said that they were thankful to poet Sadiqullah Shah for writing a great book on Sindh's culture and its values.

Dr Zaid Ahmed Pirzado, a PhD scholar, urged the young generation to get higher education with educational and technical skills so as to achieve good jobs as unemployment had become a big problem in the present era.

The competition in education and job market had risen many folds, he added. He said that Graduation and Masters degrees had become common now, so it was the need ofthe hour to raise your education level upto PhD level.

He said: "It is irony that majority of our youth do not pay attention towards studies and skills and that is why they face difficulties in getting jobs. Only higher education with good marks and skills could lead to achieving good job," he observed.

Baakh Pirzado, a literary personality, paid rich tribute to the writer bringing out a great book about lovely river and culture of Indus Valley. She said that SEWA had been striving for boosting education, literature and culture of Sindh, adding it had completed several projects about education training, skill development, women empowerment and sanitation improvement.

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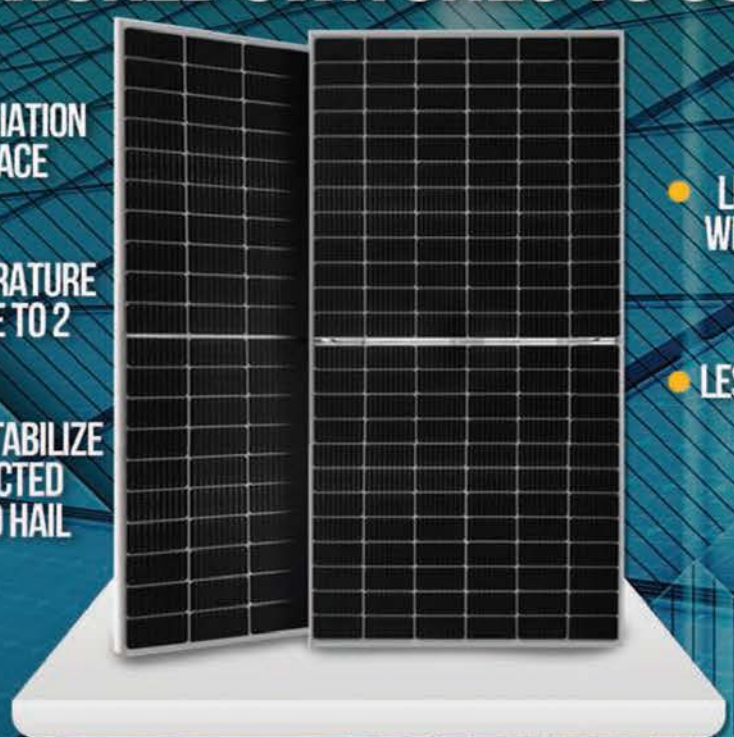

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