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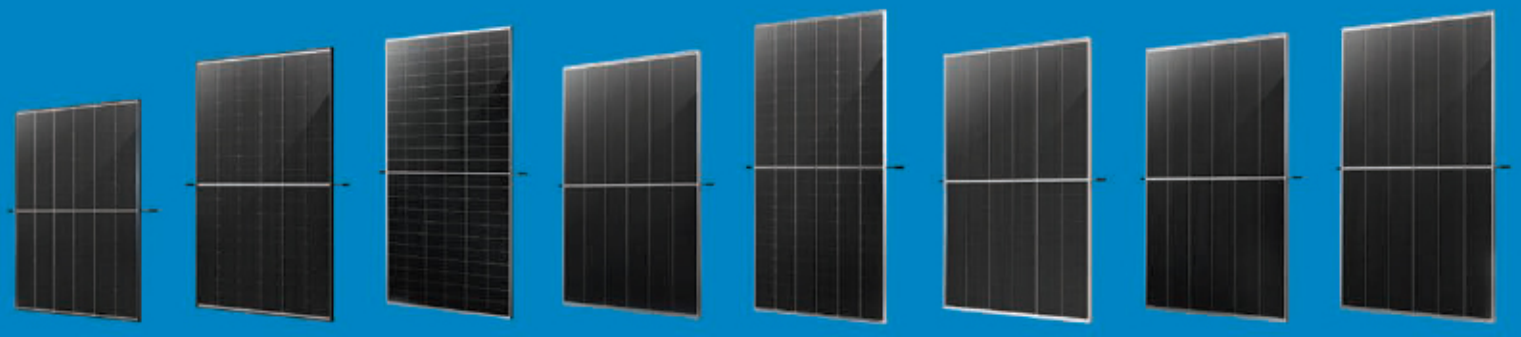

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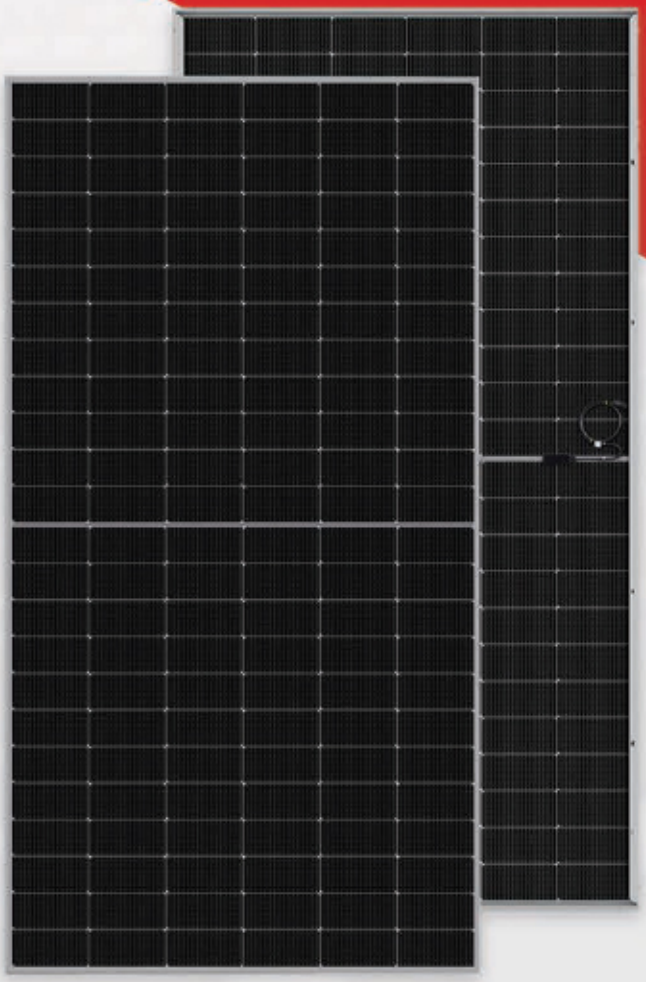

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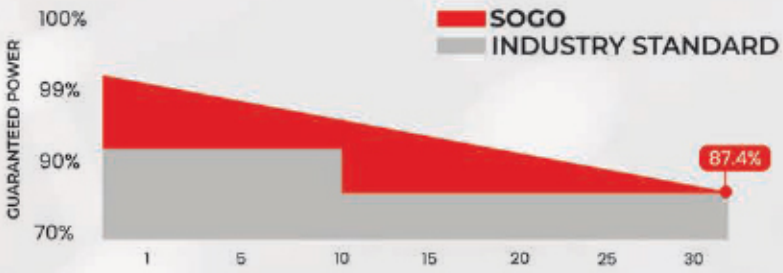

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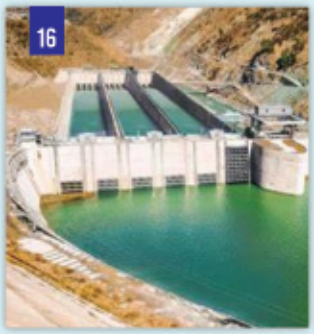

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FROM THE

Editor's desk...

Countering gas crisis in Winter

The winter season is all set to hit Pakistan in November, with December and January being the coldest month. In this season, the gas crisis further deepens in Pakistan, driven by a combination of factors including rising demand, supply constraints, economic crisis, and geopolitical challenges.

Pakistan's natural gas demand has outpaced supply since several years due to population growth, transportation and industrial expansion. The country relies heavily on imported liquefied natural gas (LNG), making it vulnerable to global market fluctuations. The governments in the past has failed to meet gas supply demand. It is irony and shameful thing that gas load shedding is being carried out in Karachi in summer and winter.

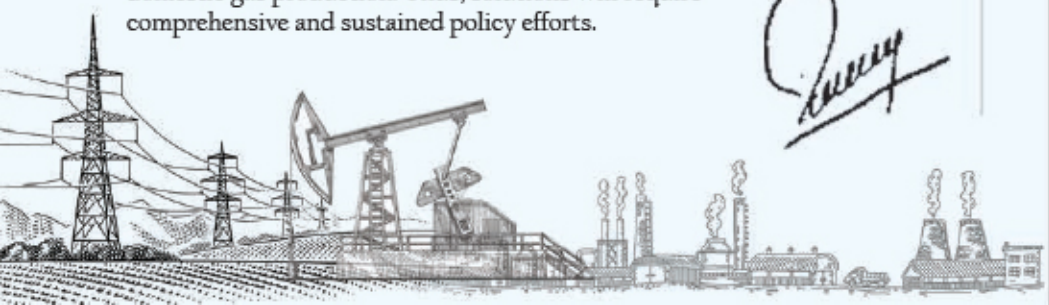
The economic challenges facing Pakistan, including inflation and fiscal deficits, have impacted the government's ability to invest in energy infrastructure and import sufficient LNG. As a result, frequent gas shortages affects households, businesses, and industries. This has raised concerns about energy security and economic stability. Inconsistent energy policies and regulatory challenges have hindered the development of domestic gas production and the efficient management of resources.

Ending gas crisis in winter in Pakistan requires a multifaceted approach. There is a need to invest in solar, wind, and hydropower to reduce reliance on gas. This can help meet demand during peak times. The government should encourage the use of alternative fuels, such as biogas or coal, for industrial and residential heating. Hectic efforts should be made to promote exploration of new gas fields and enhance production from existing fields.

It will be good to create favorable conditions for private and foreign investment in gas exploration and production. Improve Infrastructure besides investing in modernizing and expanding gas pipeline networks to reduce leaks and improve efficiency. It is also a dire need to develop LNG storage facilities to manage supply better and respond to fluctuations in demand. The government should adopt a positive approach to secure long-term contracts for LNG imports to stabilize supply and pricing, explore contracts with multiple suppliers to reduce dependence on a single source and mitigate risks.

The government lacks interest in implementing policies to manage demand, especially during peak winter months, such as prioritizing supply for essential services. The government needs to simplify regulatory processes to facilitate faster approvals for energy projects besides improving transparency and accountability in energy management to enhance efficiency.

There is also a dire need to develop a comprehensive energy policy that aligns with economic goals and environmental sustainability. It will be good to involve all stakeholders, including provincial governments, industry representatives, and civil society, in energy planning and decision-making. Efforts to address the crisis include seeking new energy partnerships, investing in renewable energy sources, and improving domestic gas production. Thus, solutions will require comprehensive and sustained policy efforts.



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Net Metering's Unseen Consequences

Seeking equity in renewable energy transition

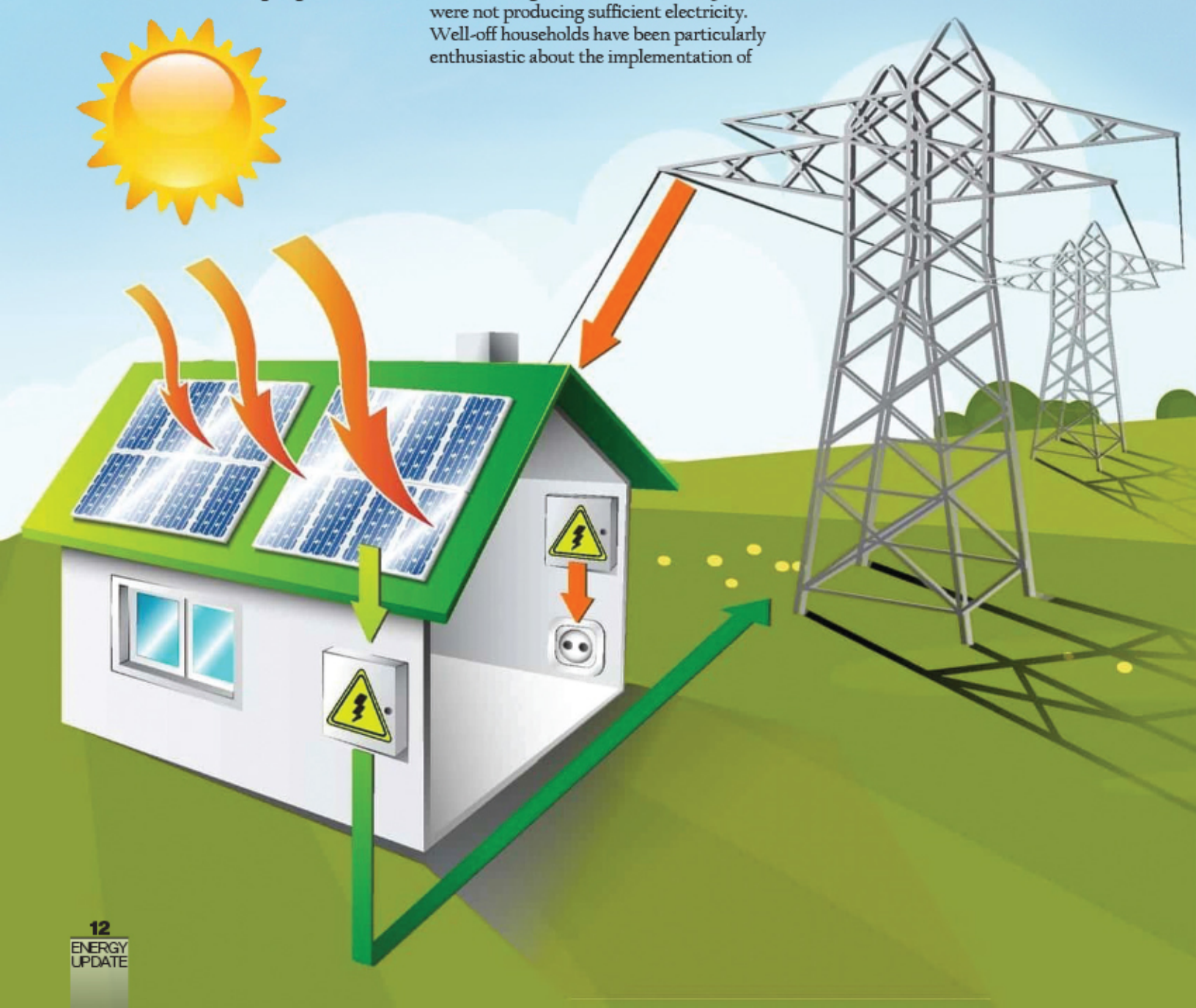
Asim Javed

Writer is Renewable Energy Expert

The National Electric Power Regulatory Authority (NEPRA) implemented Distributed Generation and Net Metering Regulations in September 2015, which enable consumers to connect photovoltaic systems to the grid. The objective of these regulations was to encourage the use of renewable solar energy and to allow consumers to lower their electricity bills by utilising the grid as a virtual battery.

Solar households can transfer surplus energy to the grid during the day and retrieve it at night or when their solar panels were not producing sufficient electricity. Well-off households have been particularly enthusiastic about the implementation of net metering, as it provides them with a means to manage their increasing energy expenses while simultaneously contributing to the national power supply.

Net-metered capacity increased from 630 MW in June 2023 to 2.2 GW by mid-2024. The rapid adoption is driven by the consistent decrease in the cost of solar panels and the rise in electricity prices.



Solar systems can significantly reduce electricity bills and offer energy independence, which is why consumers are motivated by financial benefits. For instance, the payback period for modest systems (5–10 kW) ranges between 2.5 to 4 years, depending on internal consumption.

While it may appear advantageous to increase renewable energy capacity through net metering, there are concealed costs. The unequal distribution of grid maintenance costs between solar and non-solar consumers is a significant concern. Solar consumers pay substantially reduced charges due to their lower net energy consumption, which results in non-solar users bearing the brunt of grid maintenance costs. The objective of this article is to emphasise the inequity in energy pricing that results from these concealed costs, which disproportionately impacts individuals who are unable to invest in solar systems. Failure to resolve these concerns shall result in an increasing financial burden for non-solar consumers.

To comprehend the impact of rooftop solar installations and net metering, it is imperative to breakdown the components that comprise consumers' electricity bills. Each charge included in the electricity bill serves a specific purpose and most of these charges are directly proportional to actual net consumption during the billing period. Detailed descriptions of each are provided below:

Capacity charges are paid to power plants to guarantee their continued operation and the ability to produce electricity at any time, irrespective of the actual generation of electricity. This fee encompasses the fixed expenses associated with infrastructure, maintenance, and readiness, including debt servicing. This charge guarantees the power supply's dependability; however, it makes a substantial contribution to the overall tariff.

Energy Charge covers the variable cost associated with electricity generation, primarily tied to the type and price of fuel used (e.g., gas, coal, RLNG, or oil). The fuel component of the bill fluctuates due to variations in international markets. Discos pass these variations directly to consumers on monthly basis.

Fuel Adjustment Costs are monthly adjustments reflecting changes in fuel prices used for electricity generation. If fuel prices increase compared to the baseline rates, utilities recover this difference through the FCA.

Quarterly Adjustment Costs are determined by NEPRA at the end of each quarter to account for economic and operational variations that impact the cost of electricity for Discos. These variations include interest rates, exchange rates, inflation, or fuel price fluctuations not captured fully in monthly FCAs.

Finance Cost Surcharge is a fixed charge applied per unit of electricity consumed, intended to recover financing costs related to the utility's loans and investments in infrastructure. It helps cover the interest and other financial costs incurred by power companies in maintaining and expanding the grid.

Distribution Margin covers the costs of operating and maintaining the distribution network, including transmission lines, transformers, and substations. It ensures that the infrastructure required to deliver electricity from power plants to consumers is kept in good condition and functions efficiently.

General Sales Tax is calculated as a percentage (currently 18%) of the total bill amount, excluding certain surcharges.

Electricity Duty is a federal government charge calculated as a percentage (e.g., 1.5%) of the utility bill before the inclusion of other surcharges. It is intended to generate revenue for the government and is applied uniformly across consumers based on their net consumption from the grid. It functions as an additional levy alongside the GST.

Market Operator Fee covers the administrative costs of CPPA-G, which include managing the buying, selling, and distribution of electricity across the grid. The CPPA-G acts as an agent of Discos to purchase electricity from power generation companies and therefore all costs associated with this task are charges as Market Operator Fee.

Transmission and Distribution Charges include the costs associated with transmitting electricity from generation plants to the distribution network and then to consumers. Nepra determines these charges annually with adjustments where required.

Most of the aforementioned charges are determined by monthly net consumption, which implies that they will rise in tandem with the level of energy consumption and vice versa. The majority of solar users achieve zero or negative net consumption during the month by transferring surplus power to the grid. As a result, they are frequently exempt from most of these fees. The contribution of these consumers to grid maintenance costs is negligible, as they rarely draw a substantial quantity of energy from the grid.

In contrast, non-solar consumers have nothing to export during the month and therefore their net consumption is total withdrawals from the grid. Therefore, they are responsible for the full cost of grid operations and associated fees. The per-unit price for non-solar consumers increases as a result of the reduced number of individuals who are responsible for splitting the fixed costs of grid maintenance. This means that you are required to bear more burden if you can not afford solar infrastructure. If we look carefully, non-solar consumers are subsidising the benefits that solar users receive..

This arrangement is both unjust and unsustainable. The government and policymakers must act promptly to resolve the crisis as the disparity between solar and non-solar consumers continues to widen. The financial burden on non-solar consumers shall become unmanageable with more and more rooftop installations. Without any immediate intervention from the government, this may result in undermining public trust and support for renewable energy policies. In order to maintain the grid's viability and encourage the adoption of solar energy, a balanced approach is ess

To establish a fair and sustainable framework, several solutions are practical. One is modifying the net metering setup to include a small grid usage fee. The grid usage fee may be fixed per installed KW or as a variable rate based on actual imports during the month. This arrangement shall ensure that solar consumers contribute to maintenance costs without discouraging solar investments in future. Another approach is multiple Time-of-Use (ToU) billing. In ToU different rates are set for multiple peak and off-peak times, encouraging consumers to shift usage during daytime and reduce grid strain in evening.

Similarly, the gradual transition of new solar installations to gross metering while permitting existing users to retain modified net metering benefits could help maintain consumer confidence and ensure fairness. The integration of hydropower projects with intermittent solar generation would be more efficient and reliable. The next era of development should emphasise the use of smart grids to better manage the micro trends in the sector. It is imperative to establish long-term planning and policy stability, which will guarantee that energy sector reforms are predictable and will attract investment, thereby facilitating a transition to a sustainable and balanced energy future. ■

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Hammad Aarora says his company is set to introduce two groundbreaking services that promise to revolutionise customer experience, tells as electricity tariffs continue to rise, solar energy is the essential solution to sustainability

M. Naeem Qureshi

Energy Update conducted an interview with Ziewnic General Manager Hammad Arora, in which he said Ziewnic Solar Energy is making waves in Pakistan's clean energy sector. Following the launch of its first mega service center in Karachi, the company is set to introduce two groundbreaking services that promise to revolutionise customer experience: a doorstep after-sales service and real-time video call assistance for diagnosing issues in solar power systems. He elaborated on the company's rapid growth and its commitment to customer satisfaction through innovative solutions. Here are key high-

lights from our conversation:

Energy Update: Can you tell our readers about the history and achievements of Ziewnic Solar?
Hammad Aarora: Ziewnic Solar was established in 2014 with tireless efforts from our CEO Muhammad Asim and Sales Director Amar Qazi. It later quickly became a household name for electricity consumers in Pakistan looking to transition to solar energy. We pride ourselves on offering an exceptional range of inverters, particularly our IP-21 series, which was the best-selling inverter in the market in 2023. Additionally, we recently launched the IP-65 inverters from the Lenox series, renowned for their outstanding quality and competitive pricing. This new series truly sets itself apart from other products on the market.

EU: How is Ziewnic Solar contributing to the battery market in Pakistan?
Aarora: We've introduced a lithium battery featuring an impressive 8,000 life cycles and a 10-year warranty. This battery offers an outstanding lifespan of 18 to 20 years. We're also preparing to launch a robust 14.5 KW battery. Interestingly, many customers overlook the cell grading when purchasing lithium batteries, but our products consist entirely of A-grade cells. Engineers from various companies have validated our batteries through rigorous testing, giving us their stamp of approval. Our batteries are not just more economical; they also offer more life cycles compared to competitors'.

EU: Can you discuss the after-sales service provided by Ziewnic Solar?
Aarora: We recently opened our mega service center in PECHS Block-2, Karachi—our first of its kind. This facility complements our existing service centers in major cities across Pakistan and aims to provide customers with all the support they need under one roof. We're looking to establish more mega service centers in all large cities across the country soon.

EU: What innovative measures are you introducing to enhance customer service?
Aarora: We're excited to launch a unique after-sales service in February or March 2025, designed to provide customers with hassle-free support from the comfort of their homes. Our representatives will visit clients at a mutually convenient time to pick up faulty inverters for repair and will return to reinstall them once the issue is fixed. Additionally, we'll offer a video call-based service, allowing customers to receive real-time technical assistance for any faults in their solar systems, no matter where they occur.

EU: What is the typical ratio of complaints you receive post-purchase?
Aarora: We're proud to say that complaints from our inverter users are very minimal. When we do receive a concern, we strive to resolve it within 24 hours, ensuring our customers are satisfied with our service. Our call center provides follow-up feedback to guarantee their issues have been completely addressed. Our technical department, comprised of fifty-six dedicated personnel, plays a crucial role in delivering these exemplary services.

EU: What is Ziewnic Solar's ultimate mission in Pakistan?
Aarora: Our mission is straightforward. We want every power consumer in the country, regardless of socio-economic status or background, to be able to install a solar power system in their home using our inverters. As electricity tariffs continue to rise, solar energy is the essential solution, allowing every household in Pakistan to tap into the abundant clean energy surrounding us. ■

ENERGY NEWS

KP CM inaugurates solarisation project for colleges

EU Report

Chief Minister Ali Amin Khan Gandapur on Thursday inaugurated the solarisation project for government colleges in the province. The chief minister formally launched the project in a ceremony at the Government College, Peshawar. The project includes the installation of a 10 KVA solar system in each college, with a total cost of Rs2.41 million per college. The solar system is expected to reduce electricity consumption by 1,100 to 1,200 units per month per college, saving around Rs55,000 in monthly electricity bill for each college. The installation costs of the solar systems is also expected to be recouped within approximately three years. Similarly, each solar installation is expected to reduce the national grid load by 120 KW of electricity per month per college. If the system is installed in 290 colleges in the province, the national grid would save a total of up to 34.8 MW of electricity per month. Initially, under the project, installation of a 10 KVA solar system has been initiated in 80 government colleges, with 10 of them already completed, said a handout. Speaking on the occasion, the chief minister hinted at revival of student unions. "We are planning to restore student unions in Khyber Pakhtunkhwa and we will soon announce it. Once the student unions are restored, you can then raise all your problems through those unions," he said. ■

Wafi becomes majority shareholder in Shell

EU Report

Wafi Energy Holding Limited (Wafi Energy) has become the majority shareholder of Shell Pakistan Limited (SPL) after the Shell Petroleum Company Limited, a subsidiary of Shell plc (Shell), completed the sale of its 77.42 per cent interest in SPL. Wafi Energy, an established Saudi company and affiliate of the Asyad Group, now holds approximately 87.78 per cent of the total issued share capital of SPL, according to a statement released on Thursday. The Shell brand will continue in Pakistan through retail and brand licencing agreements, with SPL acting as the exclusive brand licensee. "Wafi Energy is excited to announce its entry into Pakistan by acquiring majority ownership of Shell Pakistan Limited. This marks a significant milestone in the Asyad Group's commitment to expanding its presence in Pakistan and the region," said Ghassan Amoudi, CEO of Asyad Holding Group and the incoming chairperson of SPL ■

Pakistan's SDGs ranking slides to 137th place

Govt urged to evolve mechanism to uplift sustainable development

While Pakistan's worrisome downward slide on the global SDGs implementation index continues, a concerned standing committee of the FPCCI has called upon the federal government to evolve a mechanism to properly document and synchronise the efforts of the concerned charities, NGOs, and philanthropists to promote sustainable development and uplift of downtrodden communities in the country.

The FPCCI's Central Standing Committee on Sustainable Development Goals made this demand in its meeting held at the head office of the Federation of Pakistan Chambers of Commerce & Industry in Karachi. Concerned development experts and representatives of concerned NGOs and non-profits attended the meeting in person and via video link.

The speakers noted that reliable data on SDG implementation had been missing in Pakistan, and the relevant state and government authorities didn't generally share such vital information with the NGOs striving hard to implement the sustainable development agenda.

Convener of the Standing Committee, Naeem Qureshi, expressed serious concern that Pakistan stood at 137th position out of 166 countries in the global ranking of the SDGs implementation index. In the earlier years, Pakistan stood at the 129th position.

He also expressed dismay that Pakistan's overall score of 57.02 was 7.8 points less than the regional average of 67.2 per cent. "It is high time that the government, private sector, NGOs, and philanthropists should combine their efforts to address this issue on a war footing; otherwise, Pakistan could never be able to achieve the agenda of sustainable development," he said.

Engineer Abu Bakar Ismail, Deputy Convener of the Standing Committee, endorsed the idea of developing a centralised reporting and documentation mechanism at the federal level for the SDGs implementation drive.

Halima Khan, another Standing Committee Deputy Convener, stressed the need for ready availability of reliable data on progress in securing SDGs in Pakistan for all the concerned stakeholders.

In his concluding remarks, FPCCI Vice-President, Aman Paracha, said the industries, government, business sector, NGOs, and philanthropists should be on one page to ensure sustainable development in Pakistan for the benefit of the people who live below the poverty line. ■

Neelum-Jhelum Shutdown Costs Millions, Deepens Pakistan's Energy Crisis

Israr Khan

The 969-MW Neelum-Jhelum Hydropower Project has been offline since May due to a severe rock burst, draining millions from the national treasury and worsening Pakistan's energy shortage, according to experts. The prolonged shutdown has exacerbated the shortfall in hydroelectric power, adding to the country's energy challenges. During a recent public hearing, NEPRA's chairman expressed dissatisfaction with the Central Power Purchasing Agency (CPPA) for not providing repair cost estimates, noting that an inquiry committee is investigating the issue. NEPRA emphasized that decisions on repair funding will be based on the inquiry's findings. The hearing also covered a potential Rs0.71 per unit tariff reduction for consumers under a September 2024 fuel cost adjustment, which could yield overall savings of Rs8.5 billion if approved. The CPPA proposed the reduction due to lower generation costs from hydropower and nuclear energy sources, although lifeline and prepaid consumers, as well as EV charging stations, would be exempt. Despite potential consumer relief, CPPA sought Rs7.5 billion in prior adjustments, while NEPRA questioned the efficiency of certain coal-fired plants, which reported reduced generation from some resources.

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Can waste-to-energy projects help Pakistan meet its climate goals?

Engr Hussain Ahmad Siddiqui

The writer is a retired chairman of the State Engineering Corporation, and former member (PT) of the Pakistan Nuclear Regulatory Authority

Pakistan ranked one of the world's most polluted countries; main contributors include industrial emissions, vehicular exhaust, and uncontrolled burning of waste

Pakistan ranks as one of the world's most polluted countries, with air pollution levels placing it second globally in 2023. This heavy pollution burden significantly affects public health, reducing the average Pakistani's life expectancy by approximately four years. The main contributors include industrial emissions, vehicular exhaust, and the uncontrolled burning of waste, particularly in urban centres such as Karachi, Lahore, and Peshawar. Over time, this pollution trend has worsened, prompting the need for urgent environmental reforms.

Can waste-to-energy projects help Pakistan meet its climate goals?

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The energy sector is a key contributor to greenhouse gas (GHG) emissions, responsible for nearly 46 per cent of the country's total emissions, according to Pakistan's updated Nationally Determined Contributions (NDCs) in 2021. Emissions stem from various sources, including electricity generation, transportation, and industrial energy use. Most of these emissions arise from fossil fuel combustion, with coal, natural gas, and oil dominating the country's energy supply.

While Pakistan aims to transition to 60 per

cent renewable energy by 2030, the journey has been fraught with challenges. Hydropower projects, a focus of the country's renewable energy efforts, require long construction periods, delaying their contributions to the national grid. Solar and wind energy projects, particularly in Sindh and Balochistan, have expanded, but limitations in transmission infrastructure hinder their full potential. As of now, 36 wind power plants contribute a total installed capacity of 1,838MW, but these plants often operate below their full capacity due to grid constraints.

The Gharo-Keti Bandar wind corridor, with an estimated wind energy potential of 50,000MW, holds great promise. However, 27 additional wind power projects with a cumulative capacity of 1,875MW are still awaiting approval due to grid limitations. On the solar energy front, net metering has gained popularity among households and businesses, reducing reliance on the national grid while promoting clean energy. Despite these efforts, the country faces significant hurdles in achieving its energy transition targets by 2030.

Waste-to-Energy (WtE) projects are emerging as a natural extension of Pakistan's climate action strategy. These projects address two critical needs: energy generation and waste management. WtE initiatives reduce emissions, enhance resource efficiency, and directly contribute to clean energy goals while improving urban sustainability.

One of the key successes in Pakistan's WtE strategy has been bagasse-based energy. As one of the world's largest producers of sugarcane, Pakistan generates large quantities of bagasse, the fibrous residue left after sugar extraction. This biomass is used in cogeneration plants at sugar mills, producing both heat and electricity. The bagasse is primarily used during the sugarcane crushing season, and the electricity generated is fed back into the national grid. Currently, the total installed capacity for bagasse-based energy production is estimated to exceed 2,000 MW though only a part of it is supplied to the grid. However, since this energy source is seasonal, more consistent year-round WtE solutions are necessary.

Pakistan's agricultural sector generates other forms of biomass waste that can also be converted into energy. Pakistan's urban population produces around 49.6 million tons of municipal solid waste (MSW) annually, a figure that is growing by 2.4 per cent per year. Most of this waste ends up in landfills or open dumps, creating severe environmental and health risks. Major cities like Karachi, Lahore, and Peshawar are the largest contributors to this waste, with Karachi alone generating 16,500 tons of MSW daily, followed by Lahore with 7,690 tons daily.

Under the Clean Green Pakistan initiative, the government of Punjab launched the country's first large-scale WtE project in Lahore. This 40MW plant, designed to process 2,000 tons of municipal solid waste daily, is being developed by a Chinese consortium. Initially planned for completion within two years, the project has faced delays, with commercial operations now rescheduled for 2026. Following this, the provincial government has invited proposals for a second WtE project of similar size in Lahore. The energy thus generated will be supplied to the Lahore region through the national grid.

In Karachi, WtE projects were launched in August 2022 under a public-private partnership model. These projects aim to process between 6,000 and 8,000 tons of waste daily, generating up to 250MW of electricity for supply to K-Electric. Engro Energy, Green Waste Energy, and Khan Renewable Energy are some of the companies leading these efforts, but the projects are still in the feasibility study phase, and challenges persist.

While Pakistan has made significant progress toward its climate goals, particularly in renewable energy and waste management, further efforts are necessary to meet its 2030 climate targets. Setting up WtE projects aligns closely with Pakistan's broader climate strategy, addressing multiple goals outlined in the country's climate policies and international commitments, including the Paris Agreement. However, scaling up these initiatives and overcoming challenges related to waste management, urban expansion, and industrial emissions are critical to achieving Pakistan's climate ambitions.

So, waste-to-energy projects are not just a solution for energy generation; they are integral to improving waste management, reducing emissions, and meeting the country's broader environmental and climate objectives. Expanding these initiatives will be essential as Pakistan continues its efforts toward a cleaner and more sustainable future.

Waste-to-energy projects are not just a solution for energy generation; they are integral to improving waste management, reducing emissions, and meeting the country's broader environmental and climate objectives. Expanding these initiatives will be essential as Pakistan continues its efforts towards a more sustainable future. ■

ENVIRONMENT DEGRADATION

New research raises concerns on growing air pollution crisis in Karachi

EU Report

Air pollution in Karachi is causing serious respiratory health problems for its residents, specifically men, the elderly and patients with pre-existing pulmonary diseases. This is according to recent study by the Aga Khan University.

Published in the journal Atmospheric Pollution Research , this study focused on the urban population of Pakistan and revealed alarmingly high levels of harmful particles in Karachi's air. The research found dangerous amounts of fine particulate matter (PM2.5), which are tiny particles that can be easily inhaled and affect health.

The air also contained high levels of sulfate, ammonium, nitrate, and black carbon, which are widespread across the city and contribute to poor air quality. The study measured levels of PM2.5 constituents at Karachi's two busy sites; Korangi and Tibet Center on M.A. Jinnah Road. During the same time period, data was obtained from Karachi's three leading hospitals: the National Institute of Cardiovascular Diseases (NICVD), the Jinnah Postgraduate Medical Centre (JPMC), and the Aga Khan University Hospital (AKUH) for hospital visits for respiratory health issues. Researchers found out that the average PM2.5 levels in Karachi are among the highest compared to other cities in both developed and developing countries and its concentration exceeded guideline values set by the World Health Organization (WHO).

While discussing these findings, Professor Zafar Fatmi, Section Head of Environmental, Occupational Health & Climate Change, Department of Community Health Sciences at Aga Khan University said, "PM2.5, known to pose the highest risk to human respiratory systems, is emitted in large quantities from anthropogenic activities, and has been proven to contribute to cases of chronic bronchitis, lung infections, and the worsening of pre-existing respiratory diseases across the study sites. It is high time we treat air pollution as a crisis and adopt measures to curb the increasing levels of PM2.5 in our environment." ■

ISMO: A game-changer for Pakistan's electricity market?

Abubakar Ismail

The writer has expertise in the energy sector

In a significant step toward reforming Pakistan's power sector, the Cabinet Committee on Energy (CCoE) recently approved the formation of the Independent System and Market Operator (ISMO). This move is seen as crucial for addressing longstanding inefficiencies in the power sector and advancing the country's Competitive Trading Bilateral Contract Market (CTBCM).

The creation of ISMO will bring a new era of market liberalization, potentially transforming how electricity is traded, distributed, and consumed across the nation.

At its core, the ISMO will serve as an independent body responsible for overseeing both the system operations and the electricity market, ensuring a level playing field for all participants.

Essentially, it merges the current functions of the Market Operator (MO) of Central Power Purchasing Agency (CPPA-G) and the National Power Control Center (NPCC) of National Transmission and Dispatch Company (NTDC) under one roof. ISMO will have the critical role of managing and balancing supply and demand in the electricity grid while also facilitating transparent, market-based electricity trading between generators, distributors, and consumers.

By introducing competition into what has traditionally been a highly centralized and monopolistic system, ISMO will allow various market players to engage directly with one another, much like other wholesale electricity markets around the world.One of the most pressing challenges Pakistan's power sector has faced over the years is the issue of circular debt.

At present, the power sector functions through a single-buyer model, where all electricity is purchased by CPPA-G from various generation companies and then sold to distribution companies. The lack of direct competition and inefficiency in this system has contributed significantly to the build-up of circular debt. The establishment of an independent market operator opens up the possibility for multiple buyers and sellers in the electricity market.

By moving to a more decentralized and competitive framework, ISMO aims to increase efficiency by allowing generators to sell electricity directly to distribution companies or even large industrial consumers, thereby encouraging competitive pricing. This will encourage innovation as with competition comes the generation companies may find new ways to reduce costs and improve services to stay competitive in the market.

It will also improve transparency by establishing a transparent trading platform that can minimize corruption and inefficiencies, as all transactions would be recorded and made public.

Pakistan has been gradually moving toward the implementation of the Competitive Trading Bilateral Contract Market (CTBCM), a framework that allows electricity to be traded bilaterally between buyers and sellers based on negotiated contracts.

This represents a major shift from the current model, where the central agency (CPPA-G) is responsible for all electricity procurement and distribution.

ISMO's role in CTBCM is pivotal. In this new model, ISMO will act as the regulator of trade and transactions, ensuring that all market participants, from power producers to large-scale consumers, have a level playing field. In addition to establishing ISMO, the government should also restructure other key power sector entities. The Power Planning and Monitoring Company (PPMC) should also be merged into ISMO, as monitoring is inherently a sub-function of market control and operations.

Similarly, the Special Purpose Agent role of CPPA-G that handles legacy Independent Power Producer (IPP) contracts should transition to the Private Power & Infrastructure Board (PPIB), which will eventually dissolve as procurement shifts to individual Distribution Companies (DISCOs), similar to current K-Electric's model.

The National Transmission and Dispatch Company (NTDC), which manages Pakistan's national grid, should remain intact rather than being bifurcated, as ISMO will now ensure oversight over planning and performance across all entities.

This consolidation will streamline processes, reduce inefficiencies, and ensure comprehensive control over market operations, grid reliability, and procurement, paving the way for a more sustainable and well-regulated energy market. While the formation of ISMO and the shift to CTBCM represent positive developments, they are not without challenges.

The success of ISMO will depend on various factors like 1. Regulatory oversight: Ensuring that the market operates fairly and transparently will require strong oversight from NEPRA (National Electric Power Regulatory Authority) and other relevant bodies. 2. Infrastructure improvements: Pakistan's transmission and distribution networks will need to be upgraded to handle the complexities of a competitive market. 3. Capacity building: Both public and private sector stakeholders will require training and resources to navigate this new market environment. 4. Right human resource placement: It is essential to bring in the right talent from the market, particularly experts with knowledge of wholesale electricity markets, modern grid technologies, and efficient market operations. Proper leadership and experienced professionals will play a pivotal role in making ISMO functional and achieving its goals of efficiency and transparency.

The approval of ISMO marks a monumental step in Pakistan's journey toward a more efficient, transparent and competitive electricity market. While the road ahead may be challenging, the long-term benefits of market liberalization, reduced circular debt, and improved energy security are well worth the effort.

If implemented effectively, ISMO and CTBCM could usher in a new era for Pakistan's power sector, empowering consumers and driving economic growth through a more sustainable and reliable electricity supply. ■

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NFEH's SEMINAR ON BREAST Cancer PREVENTION & WELLNESS

Former First Lady urges community awakening to combat breast cancer in Pakistan

Ruqiya Naeem

In connection with Breast Cancer Awareness Month, the National Forum for Environment and Health (NFEH) hosted an impactful seminar titled "Breast Cancer Prevention and Wellness" in Karachi, gathering an audience eager to learn about the pressing health issue that affects countless Pakistani women each year. With a growing incidence rate of breast cancer in Pakistan—reported as the highest in Asia—this annual event underscores the crucial importance of awareness, prevention, and support for women battling this disease.

As the chief guest, former First Lady of Pakistan, Begum Samina Alvi, took the stage to advocate for a mass-level awareness campaign that emphasizes early detection and self-examination among women. Her commitment to raising awareness about breast cancer has remained steadfast throughout her tenure. She noted, "A mass-level collective effort is required against the alarming spread of breast cancer given that up to 100,000 new cases of the deadly disease are detected in Pakistan in a single year."

The NFEH has been instrumental in organizing this annual seminar every October, aiming not only to empower

women with knowledge but also to encourage male members of society to play a proactive role in safeguarding the health of their families. Didactic sessions delivered by health professionals highlighted that men must understand breast cancer's implications and be supportive allies in promoting early diagnosis and prevention.

Emphasizing the significance of self-examination, Begum Alvi pointed out that affordability and accessibility of mammogram screenings present barriers for many women, especially those from low- and middle-income households. With a severe lack of specialized public healthcare facilities providing such essential services, the need for self-examination becomes paramount. "It is critical that we make this practice a routine part of women's health care," she stressed, reiterating that the education around breast cancer should be a year-round effort and not confined merely to the month of October.

The seminar included perspectives from various experts in the healthcare sector, such as Dr. Bushra Maham from Shaukat Khanum Cancer Hospital and Research Centre, who presented sobering statistics illustrating the urgent need for enhanced early detection and treatment options. She acknowledged that developed nations tend to experience lower rates of breast cancer due to better medical infrastructure and education about the disease. Dr. Maham urged women over 40 to have annual mammogram screenings, referring to breast cancer as a prevalent issue that should not be dismissed.

Further discussions by Dr. Zubala Yasir Lufti of the University of Karachi's Food Science & Technology Department addressed lifestyle adjustments that can lower cancer risk. She advocated for a balanced diet and the elimination of sugar to prevent the regrowth of cancer cells. Exercise, as highlighted by Ruth Zia, a nursing lecturer, was also emphasized as an essential factor in maintaining overall health and well-being.

In a poignant moment, Afia Salam, a senior journalist and breast cancer survivor, shared her experience and called for complete autonomy for women in making health decisions. Her message was clear, urging women, especially those with a family history of cancer, to seek genetic testing and not rely solely on male authority for making critical health choices.

As NFEH Secretary General Ruqiya Naeem eloquently stated the government must step up efforts to expand breast cancer diagnosis and treatment facilities, particularly in public hospitals, to address this public health crisis.

The event also served as a platform for recognizing outstanding contributions in the battle against breast cancer. A special memento was presented to Begum Samina Alvi in acknowledgment of her tireless campaign in spreading awareness about breast cancer, mental health issues, and the need for better rehabilitation services for marginalized groups.

The overwhelming attendance at this event, comprising both men and women, illustrated a collective commitment to confront breast cancer head-on, spotlighting the necessity for continuous education and activism within Pakistani communities.

As October culminates, the mission to protect the health of Pakistani women persists. The NFEH's annual awareness event serves as a pivotal reminder that breast cancer is not just a women's issue; it demands the collective consciousness and involvement of all members of society. The impactful words from Begum Alvi resonate as a call to action: "This should not be just a month of awareness; it should lead to sustainable change in how we approach healthcare for women in Pakistan."

In conclusion, the onus is now on society as a whole to advocate for the health and well-being of women, actively working toward reducing the stigma surrounding breast cancer, enhancing preventative measures, and ensuring equitable access to healthcare resources. This collective effort is essential for safeguarding the future of countless women who are currently vulnerable to this devastating disease. ■

Prioritizing Electricity for Domestic Heating, Cooking

A Necessary Shift for Pakistan's Winters

Naeem Qureshi

The Writer is Managing Editor of Energy Update and Environment Activist

As the chilly winds of winter sweep across Pakistan, a troubling crisis unfolds the acute shortage of natural gas. This issue has become increasingly evident in recent years, particularly affecting domestic consumers who rely on natural gas for essential daily tasks such as cooking, domestic heating, and hot water supply via geysers. The changing climate and severe cold in the hilly north and Balochistan make the shortage even more unbearable. With dwindling reserves and an increasing demand for natural gas, it's high time that Pakistan re-evaluates its approach and prioritizes the use of electricity for these domestic needs.

Decline of Natural Gas Production: Natural gas production in Pakistan has been on a decline since 2012, unable to exceed 4 billion cubic feet per day (bcfd). Meanwhile, the nation's demand for gas surges to around 8 bcfd during the winter months. This stark disparity presents a significant challenge for the government and the everyday households that depend on natural gas. With the current trajectory showing no signs of improvement, it is evident that there is little hope for a substantial increase in domestic gas production in the foreseeable future.

Given this reality, domestic consumers have found themselves facing painful shortages. The acute deficit exacerbates the discomfort of the winter season, particularly in areas where the climate is harsher, rendering many homes cold and unwelcoming. The current strategy of relying on imports of Liquified Natural Gas (LNG) also poses economic challenges. LNG is prohibitively expensive for most domestic consumers, thus failing to adequately address the sharp increase in demand during the peak winter months.

Surplus Electricity and Underutilization: While the nation grapples with these energy challenges, an ironic situation exists: Pakistan boasts a surplus installed electricity generation capacity of over 42,000 megawatts (MW). In stark contrast, electricity demand in winter plummets to approximately 14,000 MW. This surplus presents an opportunity that is currently underutilized. Unlike in developed nations where electricity serves as a common resource for cooking and heating, Pakistani households mostly rely on natural gas, which is both inefficient and increasingly unavailable.

Encouragingly, during the winter of 2021-2022, the government initiated a temporary reduction in electricity tariffs, nearly halving costs for consumers. This experiment served as a step in the right direction, showcasing the potential benefits of using electricity for winter needs. Observing the success of that initiative, it would appear prudent for the government to make this adjustment a permanent

feature each winter season, thus transforming how households meet their energy needs.

A Call for Policy Shift: Given the ongoing natural gas shortages, it becomes crucial for the government to reallocate resources effectively and implement policies that encourage electricity use for domestic heating and cooking. By doing so, it can make optimal use of the country's excess electricity and mitigate the adverse effects of gas shortages.

For instance, the industrial sector has continuously voiced the need for a steady gas supply, and making natural gas available for industries could also facilitate increased exports—an essential step for the Pakistani economy. Ensuring that the industrial sector faces minimal gas shortages should be a priority, as this not only supports business owners and employers but also contributes to national economic stability.

Moreover, provinces like Sindh, where Chief Minister Syed Murad Ali Shah has repeatedly called for the supply of surplus electricity at reduced tariffs, must be heeded. By supplying nighttime power for additional shifts in industry, the government can bolster productivity and economic output.

Furthermore, the National Electric Power Regulatory Authority (NEPRA) should set clear standards and promote guidelines that enhance the use of electricity for heating and cooking purposes. An established framework would facilitate household consumers transitioning from gas dependence to more sustainable and efficient electricity use.

Environmental Benefits: Switching to electricity for heating and cooking offers several environmental advantages, largely due to the increasing share of renewable sources in Pakistan's energy mix. By promoting greener energy solutions, Pakistan can not only alleviate its energy crisis but also contribute positively to global climate efforts.

In this context, governmental authorities, along with NEPRA and the Oil and Gas Regulatory Authority, should also engage in mass awareness campaigns. This initiative will educate consumers about the benefits of using electricity for their winter heating and cooking needs, coupled with the larger goal of supporting sustainable energy practices.

Embracing Alternative Energy Sources: In an era where energy dynamics are continuously evolving, Pakistan must shift its focus from an over-reliance on natural gas to a diversified energy portfolio that incorporates alternative energy sources. The days of depending on a single energy source—particularly one that is becoming increasingly inefficient and unsustainable—are long gone. As the country grapples with the harsh realities of depleting hydrocarbon reserves, exploring alternative energy solutions has never been more critical.

The dwindling availability of natural gas, combined with fluctuating international prices driven by geopolitical tensions such as the Russia-Ukraine conflict and the ongoing unrest in the Middle East, underscores the urgent need for Pakistan to rethink its energy strategy. Hydrocarbon resources are becoming not only expensive but also unpredictable. The exposure to such global challenges emphasizes the importance of a multifaceted approach in securing energy supply for all sectors—residential, commercial, and industrial.

Transitioning to alternative energy sources, such as solar, wind, and biomass, presents Pakistan with an opportunity to innovate and modernize its energy landscape. Given the country's abundant solar potential, integrating solar energy into the domestic heating and cooking equation could significantly alleviate the pressure on gas supplies during winter. Furthermore, harnessing renewable energy sources will not only provide greater energy security but also help address the ongoing circular debt crisis in the energy sector, which has plagued Pakistan for years.

Investing in alternative energy sources is not merely a necessity; it is an opportunity for sustainable growth. By diversifying its energy mix, Pakistan can enhance energy accessibility, lower costs, and foster economic resilience, all while protecting its environment. This proactive approach could ultimately lead to a more stable and prosperous energy future for the nation, allowing households and industries alike to thrive without the constraints posed by an over-reliance on natural gas.

Conclusions

In conclusion, the ongoing natural gas crisis in Pakistan poses a formidable challenge, especially for domestic consumers during the winter months. The mismatch between declining gas production and growing demand highlights the urgency for a strategic shift toward electricity utilization for domestic purposes. ■

Power circular debt rose to Rs2.393tr in last fiscal

Asim Yasin

The Power Division has presented a report in the National Assembly on the power sector circular debt for the last four financial years — 2019-20 to 2023-24.

According to details, the circular debt in the power sector in FY 2023-24 was Rs2,393 billion against the circular debt of Rs2,130 billion in 2022-23. The Power Division informed the National Assembly that in the financial year 2021-22, the circular debt was Rs2,253 billion, while in FY 2020-21 it was Rs2,280 billion, and in 2019-20 was Rs2,150 billion.

While consumers are worried due to expensive electricity, the employees of electricity distribution companies are using free electricity facility worth billions of rupees. According to a report presented in the National Assembly, there are two categories of employees, 100 units per month for grades BPS-1 to BPS-4 in non-generation category, 150 units BPS-5 to BPS-10 , 200 units BPS-11 to BPS-15, 300 BPS-16, 450 units BPS-17, 600 units BS-18 officers, 880 units to BS-19, 1100 BS-20, and 1300 units for BS-21 and BS-22.

In generation category, 300 units for BS-1 to, BS-4 , 600 for BS-5 to BS-10, 600 on BS-11 to BS-15, 600 on BS-16, 650 to BS-17, 700 BS-18, 1,000 BS-19, and 1,100 for BS-20.

As many as 35,852 employees of Lahore Electric Supply Company gets 65,94,070 units free, Gujranwala company has 19984 employees whose monthly free units are 32,11,275, Faisalabad company has 28,506 employees whose free units are 45,22,158, the number of employees of Islamabad Electric Supply Company company is 20,371 and their monthly units are 39,58,398. The number of employees of Multan company is 26,386 while the free units are 4,318,540, the number of employees of Peshawar Electric Company is 32,788 while free units are 6,591,175, Hyderabad company has 10,340 employees while free units are 2,432,990. Sukkur company has 8,313 employees while free units are 14,91,483, Quetta company has 5,604 while the units are 1,077,775, Tesco has seven employees with 825 units. The total number of employees of all Discos is 188,151 while monthly free units are 34,298,013. ■

Grid-based battery energy storage solutions

Farrukh Mahmood Mian

The author was formerly the Director of Energy at the Islamic Development Bank and presently on critical energy issues and strategies

The rise in demand for electric vehicles (EVs) worldwide, driven by governments' rebates to curb carbon emissions, has spurred advancements in battery technology.

Significant research funding has gone into the EV battery to achieve the objectives of a high number of charge cycles, distance, and low weight and volume, with Chinese companies, CATL and BYD are leading the way. These developments and the economies of scale have resulted in a constant decline in the cost of storage batteries. Lately, falling international prices of raw materials have pushed the small battery manufacturers out, leaving a few major players, mainly from China. Once dominant, Nickel Manganese Cadmium batteries are being replaced by Lithium Iron Phosphate technology, which now holds nearly half the market share.

Benefiting from the rapid improvements in storage technology, battery-based energy storage systems (BESS) are gaining acceptance at the grid-scale level to address the intermittent nature of variable renewable energy (VRE) sources like wind and solar. With the large-scale induction of VRE in the grid, concerns about their irregular output are rising.

Initially, with fewer installed gigawatts (GWs), backup energy storage systems were not a priority. Still, the supply-demand mismatch and other system stability concerns are becoming more pronounced with the large-scale induction of VRE in the grids. Pakistan's installed solar capacity has reached 14GW, although only 3GW is connected to the grid. As more grid-connected solar power comes online, the need to integrate storage batteries into the grid will gain importance.

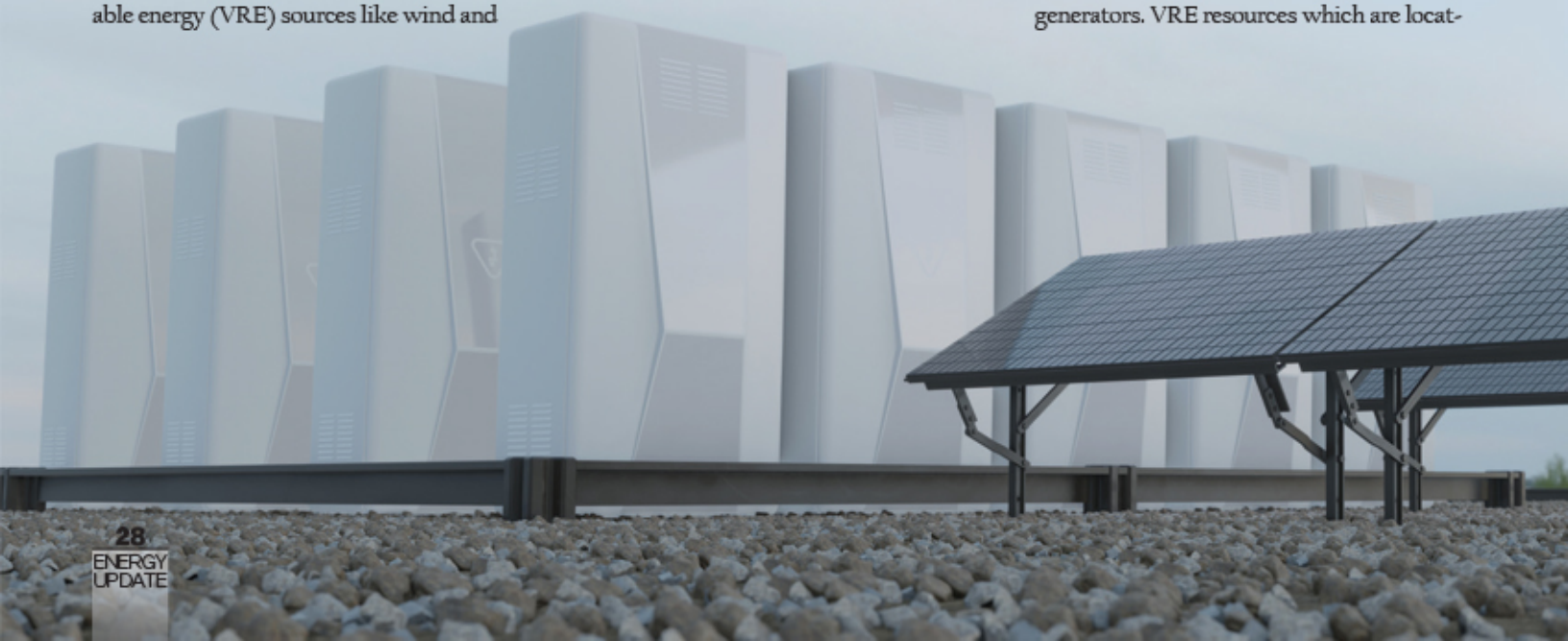
As the world doubles down on sustainability research, interest in battery-based energy storage systems rises

Battery storage offers numerous benefits, including short-term energy shifting, ancillary services, grid congestion alleviation, and expanded electricity access. An important factor to consider before installing large-scale grid-based storage batteries is the added complexity due to the large number of components housed in the battery module. EVs typically require 50-100kWh battery capacity, while grid storage systems range from tens to hundreds of MWh. A 1GW BESS can have up to 1.5 million parts, posing operability, maintenance, and continuous operation challenges.

Critical BESS components depend on complex supply chains that are vulnerable to disruptions from raw material shortages and regulatory changes. Integrating storage technologies with the existing grid requires careful planning, as cost and benefit projections can be difficult to quantify. Unlike EVs, where lithium iron phosphate technology is widely accepted, the best technology for stationary applications like grid storage is still being debated. The international demand for BESS projects, after rising slowly in recent years, is projected to grow exponentially in the coming years. EV batteries and grid-based battery energy storage systems have distinctly different requirements. EV batteries should have a high energy density and lightweight and fast charging capabilities, making lithium-ion batteries ideal due to their performance across these parameters and cost balance.

On the other hand, BESS batteries prioritise scalability, long cycle life, and cost-effectiveness, with vanadium redox flow and sodium-sulfur batteries being popular choices for their large energy capacity and long-term storage capabilities. At this time, lithium-ion batteries, due to their technical prowess, are the most commercially successful technology and have become virtually the norm in both EV and BESS applications.

Pakistan's electricity sector has several technical options as it proceeds with the deployment of BESS projects: in the transmission network, in the distribution network near load centres, or co-located with VRE generators. VRE resources which are locat-



ed far from load centres require transmission investments to deliver power efficiently.

Due to the intermittent nature of VRE resources, transmission capacity may be underutilised for much of the year, making it less advisable to co-locate BESS near VRE facilities or in the high-voltage transmission system. Conversely, locating BESS modules near the load centres can reduce transmission and distribution losses, relieve congestion, and defer upgrades in the electricity distribution companies' networks. Distribution-level BESS can also enhance local power quality and resilience during extreme weather events. Due to these factors, the optimum choice for the National Transmission & Despatch Company (NTDC) would be to install BESS projects near load centres.

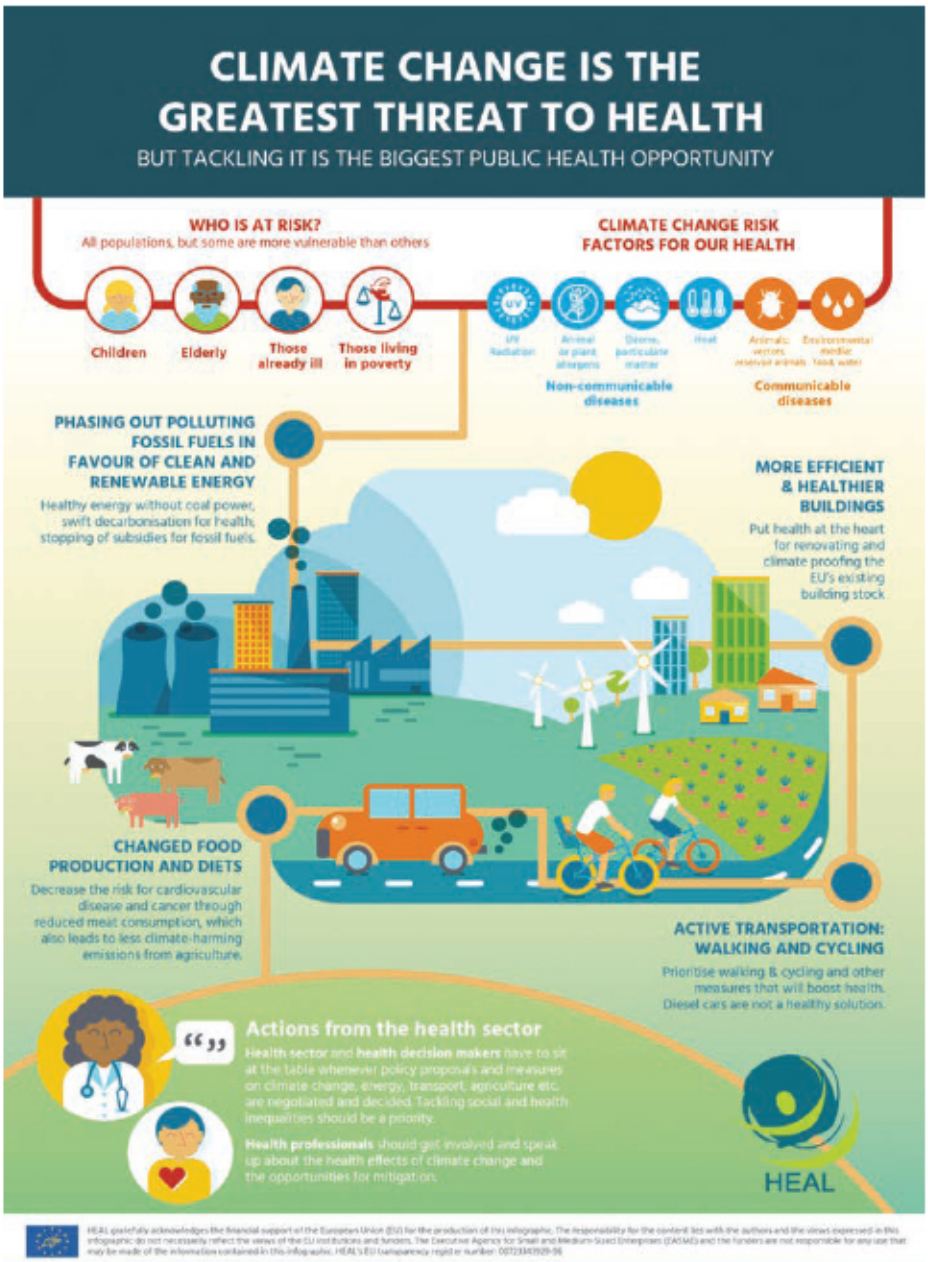
That said, the ideal approach would be to install BESS modules on the sites of the generation companies' (Gencos) thermal generation plants that are being retired. They are close to the load centres and distribution networks managed by power distribution companies. The sites of the retired Genco plants have ample physical space as well as power interconnection arrangements and will thus enable storage systems to be brought into service relatively quickly. The integration of grid storage systems offers technical challenges that NTDC must be mindful of. Installing BESS modules without fully understanding their complexities can put the entire grid system's reliability at risk.

It is proposed that efforts be intensified so that power entities remain abreast of the latest research and developments in grid-based energy-storage systems and adopt the most appropriate solutions for the country. Battery energy storage systems are not a source of clean energy in themselves, but they are a new scheme that increases the operational efficiency of the national power system by optimally utilising the outputs from solar and wind generation facilities. The author was formerly the Director of Energy at the Islamic Development Bank and presently on critical energy issues and strategies. ■

CORPORATE CORRIDOR

PSO's 48th Annual General Meeting held

Pakistan State Oil (PSO), the nation's leading energy company, successfully convened its 48th Annual General Meeting (AGM) in Karachi, chaired by Chairman, Board of Management, PSO, Asif Baigmohamed. Managing Director & CEO, PSO, Syed Taha, other board members, and senior management were also present. PSO reinforced its market leadership, achieving impressive financial results for FY24. The company posted a gross revenue of PKR 3.8 trillion, with a profit after tax of PKR 15.9 billion, translating to earnings per share of PKR 33.79. A dividend of PKR 10 per share, equivalent to 100% for FY23-24, was declared. The management briefed shareholders on vertical expansion initiatives through CERISMA (Private) Limited and PSO Renewable Energy. CERISMA, PSO's fintech arm, drives nationwide financial inclusion through accessible digital services, expanding its reach to e-commerce and international payments. Meanwhile, PSO Renewable Energy focuses on solar capacity expansion, bolstering profitability, creating new revenue streams, and contributing to Pakistan's renewable energy growth. Shareholders praised PSO's consistent performance, strategic focus on innovation through vertical expansion, financial empowerment, and reinforced leadership in Pakistan's energy landscape. ■



Why do citizens must engage in SOE reform?

Zumer Zia

The writer is a public policy professional based in Lahore with a keen interest in SOE reform. She holds a LUMS degree in politics and economics

State owned enterprises are a crucial part of Pakistan's economy. The 204 SOEs operating in strategic sectors of economy, including energy and transportation, they can be both valuable assets and significant liabilities.

Over the years, the SOEs have racked up massive financial losses. The worst offenders include Pakistan International Airlines, Pakistan Steel Mills and Pakistan Railways. By 2020, the combined losses of these enterprises exceeded 2 percent of the country's GDP. This made change inevitable.

Efforts to restructure the SOEs have been highlighted since 2019. Several legislative and policy changes have been proposed to create a more efficient and transparent system. However, the path to reform is still riddled with challenges.

It is vital for the general public to understand the importance of SOE reform. The performance of these enterprises directly affects essential services like energy supply, transport and infrastructure — the services people rely on every day. When SOEs are mismanaged, it leads to unreliable electricity, crumbling railway systems and poor public utilities.

These failures increase the operating costs and waste public money that could be better spent on healthcare, education or infrastructure. Reforming SOEs can make public services more reliable and affordable and improve the quality of life for everyone. There can be fewer blackouts, better public transport and a more assured access to essential services.

Reforming SOEs isn't just a technical issue; it's a national cause. The inefficiencies of these enterprises directly affect the average citizen. When SOEs lose money, it's the public who foot the bill. It is the money that could have been used to build schools, hospitals or roads. This is why citizens need to understand SOE reform and why it matters. By calling for greater accountability, better governance and more transparency, the public can drive real, meaningful change.

A turning point in the reform process came in January 2020, with a diagnostic review of the SOE landscape. The review highlighted several inefficiencies. It was found that many of these enterprises had conflicting mandates — both commercial and non-commercial — that affected their performance. Political interference and weak accountability made things worse.

Adding to the problem, there was no centralised system to monitor some of these SOEs, with ownership scattered across 20 ministries. The lack of a comprehensive legal framework further complicated the governance of these enterprises. One key issue was the absence of a formal framework for public service obligations (PSOs). Many SOEs were tasked with providing public services but weren't compensated for those. This weakened their financial health. Unfunded mandates, combined with poor governance, made it clear that a thorough reform agenda was necessary.

There was no centralised system to monitor these SOEs. The ownership was scattered across 20 ministries. The lack of a comprehensive legal framework further complicated the governance of these enterprises.

The SOE (Governance and Operations) Act, 2023, and the accompanying SOE Policy, mark a major step in this reform effort. These provide a strong framework for improving the governance and efficiency of SOEs, nudging them towards greater transparency and alignment with the country's economic goals.

These strengthen oversight, set clear performance benchmarks, and promote competitive neutrality, reshaping how SOEs are managed. Key entities like the National Highway Authority and the Pakistan National Shipping Corporation have also seen amendments to their legal frameworks to align them with the SOE Act, ensuring consistency in governance.

One of the most significant changes has been the creation of the Central Monitoring Unit. Previously, oversight of the SOEs was fragmented across line ministries, leading to conflicts of interest and weak governance. The CMU is a central body for collecting data, analysing SOE performance and implementing the SOE Act.

Looking forward, the government plans to continue its reform agenda with support from its development partners, focusing on improving compliance with the SOE Act, operationalising the CMU, and accelerating the transformation of key SOEs. The NHA, Pakistan Railways and two power distribution companies (HESCO, PESCO) have been identified for restructuring. The NHA requires the most urgent attention due to its fiscal impact.

Public awareness and support will be key to making these reforms stick. Citizens who understand the stakes can demand better performance and accountability, ensuring that the benefits of reform translate into real improvements in governance and service delivery. A more efficient SOE sector means better public services for everyone and less of a financial burden on the government. ■

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Pakistan's power costs among highest in South Asia for industry, commerce

Household rates are 42% of business rates, and small businesses pay 98.8% of what large businesses pay

Israr Khan

Pakistan's residential power tariff ranks closely to, or slightly higher than, those of neighboring countries in the region, yet the country's industries and businesses face some of the steepest electricity costs in South Asia.

According to recent data, Pakistan's industrial and commercial sectors pay significantly more per kilowatt-hour (kWh) than counterparts in India and Bangladesh, placing considerable financial strain on businesses and impacting economic competitiveness.

Pakistan's household electricity rates amount to 45.1 per cent of the global average and are 84.5 per cent of the Asian average, while business rates are 110.1 percent of the global average and reach 154.3 per cent of the Asian average.

Household rates are 42 per cent of business rates, and small businesses pay 98.8 per cent of what large businesses pay. Low-consumption households pay 32.3 per cent of what high-consumption households do. This imbalance puts additional pressure on households and limits foreign investment potential, as energy costs directly impact the competitiveness of Pakistan's manufacturing and service sectors. Global electricity price data from March 2024 by GlobalPetrolPrices.com places Pakistan's electricity rates above both regional and global averages, further burdening households and industries alike.

Notably, the global average electricity price stands at 15.4 cents in US dollar per kWh for residential users and 14.9 cents per kWh for businesses. Europe has the highest residential electricity prices at 22.8 cents per kWh, while Asia records the lowest at 8.2 cents. Other averages include Africa at 11.9 cents, Australia at 23.6 cents, North America at 14.2 cents, and South America at 18.5 cents.

Industry and business electricity rates are also highest in Europe at 19.5 cents per kWh. Africa and Asia report the lowest business rates, both at 10.8 cents and 8.2 cents, respectively. On other continents, average prices are 20.5 cents in Australia, 16.1 cents in North America, and 18.9 cents in South America, as per data from GlobalPetrolPrices.com. Notably, the prices were collected in March 2024

Pakistani households pay over 7 cents, and rates can soar even higher for commercial and industrial consumers hitting 16.6 cents per kWh. This comparison is based on the prices of March 2024, but following a tariff hike from July 1, 2024, where the government increased the base rate by up to Rs7.12/kWh, Pakistan's electricity costs now starkly exceed those in regional counterparts, despite its economic challenges.

Compared to other South Asian nations, the electricity price gap is stark. India and Bangladesh benefit from more affordable rates due to robust coal reserves, diversified energy sources, and superior grid infrastructures. India's prices hover around 7.7 cents for residential and 12.1 cents for industries, and Bangladesh maintains 5.4 cents

for residential and 8.7 cents per kWh for industries, enabled by energy subsidies and an energy mix of natural gas, hydroelectric, and coal power.

Globally, the lowest residential electricity rate is in Iran, at just 0.2 cents per kWh, while Bermuda reports the highest at 45.8 cents. Industrial users see similar disparities: Libya has the lowest rates at 0.9 cents per kWh, while businesses in the United Kingdom pay up to 52.7 cents per kWh, underscoring global variations driven by national policies, subsidies, and infrastructure capabilities.

In the U.S., businesses pay an average of 14.5 cents per kilowatt-hour for electricity, with residential rates slightly higher at 18.4 cents. The country benefits from a balanced energy mix — including coal, natural gas, nuclear, hydroelectric, and renewable — that helps keep electricity prices stable despite global market fluctuations.

Business rates vary globally, with China at 8.9 cents per kWh, Germany at 24.5 cents, Japan at 18.3 cents, Saudi Arabia at 6.8 cents, Indonesia at 7.2 cents, Vietnam at 7.5 cents, Russia at 7.9 cents, Bangladesh at 8.7 cents, the UAE at 11 cents, India at 12.1 cents, Turkey at 12.7 cents, and the U.K. at 52.7 cents.

Residential tariffs are similarly diverse: 7.7 cents per kWh in China, 35.5 cents in Germany, 21.1 cents in Japan, 5.3 cents in Saudi Arabia, 9.3 cents in Indonesia, 7.4 cents in Vietnam, 8 cents in the UAE, 7.7 cents in India, 4.8 cents in Turkey, and 35.7 cents in the UK.

The disparities highlight differing national energy policies, with China and the US focusing on lower costs, while Germany maintains higher prices to support clean energy transition. In the Gulf region, where nations like Saudi Arabia, the United Arab Emirates (UAE), and Qatar possess vast oil and gas resources, electricity rates are among the lowest globally. The UAE and Saudi Arabia, for instance, report rates well below 5 cents per kWh, benefiting from heavy government subsidies funded by petroleum revenues. This policy keeps costs low for both citizens and businesses, fostering a competitive industrial environment and supporting residents with affordable electricity during peak summer months when consumption spikes due to air conditioning demand.

It is to be noted that Pakistan's energy challenges stem largely from a reliance on imported fossil fuels, high transmission losses, and a struggling infrastructure. Imported oil and liquefied natural gas (LNG) are vital for Pakistan's energy needs, yet expose the nation to international price volatility, which is compounded by a weak rupee and fluctuating global energy markets. Furthermore, Pakistan's power grid suffers from transmission and distribution losses.

In contrast, several Gulf nations, including Saudi Arabia, the UAE, and Qatar, keep electricity prices low, supported by substantial subsidies funded by oil and gas revenues. These policies have enabled Gulf countries to foster competitive industrial environments, benefiting residents and businesses alike. The UAE, for instance, reports rates below 5 cents per kWh due to government subsidies.

Experts advocate for Pakistan to diversify its energy mix, expanding renewable projects such as wind and solar to mitigate reliance on imported fuels. Additionally, modernizing infrastructure to reduce transmission losses and restructuring the sector's financial model could alleviate the energy debt burden. Pakistan's circular debt now exceeds $10 billion, adding a significant load to the national budget.

Regional cooperation could provide cost-saving solutions. Pakistan's neighbours, such as India, have benefited from energy trade agreements with Bhutan and Nepal, stabilising prices. By exploring energy trade options with nearby nations like Iran and Afghanistan, Pakistan might be able to offset some of its costs. ■

ENERGY NEWS

Solar panels worth $2.1bn imported from China in last fiscal

EU Report

Pakistan imported around 15 GW solar panels worth $2.1 billion from China over the past fiscal year, a study titled 'The Great Solar Rush in Pakistan' revealed.

"Contributing to this transition is the increased electricity tariffs—up by 155 percent over three years—driving high consumption households and industries to shift toward solar energy solutions." In the past year, this has resulted in a 10.4 percent drop in grid electricity demand, with projections indicating further decline emphasizing the need for grid modernisation and revised demand forecasts to support decentralised energy generation.

In parallel, falling battery prices are also likely to boost solar adoption, making urgent grid adaptation essential for maintaining the financial viability of Pakistan's utility model. Global and local analysts, during the study launch, here on Thursday attributed Pakistan's rapid shift to solar as a unique, consumer-driven "solar rush" fueled by rising electricity costs, declining technology prices and strong import trends. At the launch of the study titled 'The Great Solar Rush in Pakistan' by Renewables First explores this shift, highlighting Pakistan's growing prominence in the renewable energy landscape of developing nations, analysts from different parts of the world in the energy transition through renewable means is quite commendable.

"Pakistan's solarisation drive is indeed impressive but we have also seen these trends being replicated in other emerging markets," said Jenny Chase, Solar analyst at Bloomberg NEF. What makes Pakistan unique is the rapid nature of these additions, she further emphasized. It was noted that Pakistan's market stands out globally, with 27 GW in imports since 2020 and significant growth across residential, industrial and agricultural sectors. On adapting the grid infrastructure to accommodate these imports, Syed Faizan Ali, member Prime Minister's Solarisation Committee, said, "With strong policy alignment, we can harness this growth while addressing these operational challenges." ■

NFEH, Energy Update's joint visit to SECMC

Empowering Thar: Sustainable Coal Mining and Community Welfare

Mustafa Tahir

In a notable initiative underscoring the growing emphasis on sustainable development, a joint team from the National Forum for Environment and Health (NFEH) and Energy Update recently visited District Tharparkar in Sindh province.

Hosted by the Sindh Engro Coal Mining Company (SECMC), the visit centered around Pakistan's largest open-pit coal mining site, located in block-II of Thar coal, within the town of Islamkot.

The delegation was taken on an insightful tour of the coal mining site and surrounding coal-based power plants, observing firsthand the impressive operational safety and environmental protection measures being implemented. SECMC has been successfully extracting about 25,000 tonnes of coal daily from block-II, which has enabled the operation of four coal-based power plants generating a total of 1320 megawatts (MW) of electricity for the national grid. The team was keen to understand how Thar coal is not only contributing to Pakistan's energy security but also promoting self-reliance in energy production, with immense potential to further bolster the nation's electricity generation capacity.

One of the key highlights of the visit was the extensive community welfare programmes orchestrated by the Thar Foundation, aimed at ensuring that the local Thari community reaps the benefits associated with the ongoing coal mining and power generation activities. A notable stop was the Marvi Clinic in Islamkot, where representatives of the Thar Foundation briefed the team on the network of healthcare facilities established to provide state-of-the-art treatments for the people of Islamkot. The foundation also operates mobile health units, delivering essential healthcare services to nomadic villagers in remote areas.

The commitment to health extended to the provision of ambulance services for critically ill patients, facilitating their transport to the Civil Hospital in Mithi. The team also learned about an ambitious plantation drive utilizing bio-saline water from the region, part of larger efforts to maintain environmental sustainability while supporting local agricultural practices. The visiting team also planted tree saplings at the plantation site to further make Thar clean and green. Later, the team also visited an agro farm of the Dua Foundation in Tharpakar to witness how a green initiative has been producing massive livelihood opportunities for the local villagers to transform their lives through farming.

Addressing another critical issue in Thar, the visitors reviewed the reverse-osmosis water filtration plant managed by the Thar Foundation, which provides clean drinking water to communities frequently facing drought conditions. This essential facility is a lifeline for the local Thari population, ensuring access to safe water in a region where such resources are scarce.

The team also assessed the resettlement and rehabilitation programmes for local villagers displaced by coal mining activities, ensuring that their transition is handled with care and respect. Educational initiatives were also a significant part of this community-focused visit, with the team visiting schools established by the Thar Foundation in partnership with the Citizens Foundation. These schools are providing quality education to thousands of children, further promoting the socio-economic uplift of the area.

Emphasizing the importance of corporate social responsibility (CSR), the SECMC and Thar Foundation are leading examples of how energy companies can operate sustainably while uplifting local communities. Their efforts to maintain Gold Standards in coal mining and CSR work illustrate a commitment to minimizing environmental impact while maximizing socio-economic benefits for the backward Thari people. In addition to environmental considerations, the visit

highlighted SECMC's initiatives to support the emotional and psychological well-being of its workforce. Recognizing that many employees work far from home for extended periods, SECMC has invested in excellent boarding and messing facilities, setting a commendable standard for other energy sector companies to emulate.

The collaboration between China and Pakistan in the Thar coal mining and power generation project exemplifies the positive outcome of international partnerships for the benefit of Pakistan's energy sector. This model offers valuable lessons for other companies in the energy sector, stressing the importance of safeguarding the environment and ensuring that surrounding communities share in the benefits of industrial activities.

The visit concluded with remarks from NFEH President Muhammad Naeem Qureshi, who commended SECMC's coal mining operations and the CSR initiatives of the Thar Foundation. "The commitment to community welfare and environmental standards seen in Thar should serve as a benchmark for the entire energy sector," Qureshi stated. "It's inspiring to witness how industry players can integrate community development into their core operations." As the team departed from Thar, it was clear that the collaborative efforts of SECMC and the Thar Foundation are setting the stage for a transformative era in Sindh, one where energy production harmonizes with the welfare of the local populace, ensuring that the region not only lights up Pakistan but also thrives responsibly under the shadow of its natural resources.

The joint visit to Thar by teams from NFEH and Energy Update proved to be perfectly timed, as the region's hilly areas were lush and green, a stunning transformation brought about by the consistent monsoon rains over the past few months. The vibrant greenery challenged the common perception of Thar as a barren desert, showcasing the area's hidden beauty. On the second day of our visit, the team was treated to a refreshing early morning light rain, further enhancing the picturesque landscape. The exploration of Thar also highlighted the remarkable achievements in coal mining and power generation, which stand as prime examples of effective public-private partnerships and international collaboration. The Sindh government plays a pivotal role, being the majority shareholder in the SECMC while also investing in a state-of-the-art road network and an airstrip to ensure swift connectivity between urban centres and the coalfields. This infrastructure is crucial for the efficient operation of coal-based power plants in the region.

Moreover, the Sindh government actively encourages private sector participation in managing coal mining operations and community welfare initiatives, aiming to maximize benefits for the local population. The Thar coal and energy projects are also integral to the China-Pakistan Economic Corridor (CPEC), illustrating a collaborative effort among the Pakistani government, private enterprises, and Chinese partners to bolster the nation's energy security and uplift the historically marginalized Thari communities. This exemplary model of energy development is one that could be replicated across Pakistan, fostering growth and sustainability in other regions. ■

Towards Take and Pay contract settlement

Syed Akhtar Ali

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

Energy prices have increased tremendously which has created controversy and unrest in the country. IPP (Independent Power Producer) contracts are under great debate.

Many people argue that these are unfair and unjust. Take or Pay contracts are criticized arguing that IPPs are paid even if no electricity is produced and supplied.

Capacity charges (in ordinary language) fixed charges are too high being two third of the total and fuel cost being one-third. It used to be opposite earlier. Some people even proposed nationalization of the total electrical system.

DISCOs are already in public sector. Nationalization would mean nationalization of the IPPs. Some Ex-Wapda experts yearn the Wapda days and criticize the whole idea of power sector restructuring and break-up of Wapda. We will examine in this space as to the validity of these arguments and proposals and investigate if some relief is possible to the consumers.

Apart from IPP charges in the consumer tariff, there are a number of add-ons in the IPP selling price. Bulk of these add-ons are from Discos.

There are, what people consider unreasonable add-ons from Discos; apart from technical losses which may be reasonably added at 5-10%, there is theft and uncollected receivables which bring these add-ons to more than 20%.

Some Discos have rather excessive and unacceptable add-ons such as PESCO, HESCO and SEPCO exceeding 30%. Some Discos have quite low add-ons under or around 10%, which may however be reduced also under better circumstances and controls.

There are two types of energy contracts with some variations; Take or Pay and Take and Pay. We have Take or Pay contract system with IPPs. Under these contracts, a fixed percentage of the IPP capacity is to be bought by the power purchaser mandatorily.

Generally, 80-85% of the capacity is specified in case of thermal power plants. If an IPP does not and cannot supply this much, it has to pay a penalty, although there are force-majeure conditions which protect both the sides under extraordinary conditions.

An unwanted situation under Take or Pay contact system, from the point of view of the buyer or consumer, is that it has to pay even if it does not need the electricity and does not buy it as per contracted capacity. This results in an increase in the unit cost or selling tariff of electricity. It has to be clarified that only fixed cost are to be paid by the buyer in case of not buying. Fuel and other variable costs are not paid in case of non-supply. Thus part of the cost is paid not all.

Reportedly, GoP is at an advanced stage of negotiations with IPPs to reach an amicable and mutually agreeable solution. Some of the Take or Pay IPP contracts are being converted to Take and Pay, reportedly.

We will in the following examine the issues that may have to be solved. The case of the IPPs which are in debt servicing may be very difficult. One may, in the first instance, consider the projects that have paid off their debts. Let us call these Equity-only projects.

Take and Pay conversions of these IPPs have a much reduced determined tariff than the ones which are yet in debt servicing mode. It may be detrimental to the buyers' (consumers') interest to leave the price issue dangling and not covered by some upper limit. One may argue that in that case why not have the status quo? However, let us postpone this part of the

discussion for later.

On the other hand, If you pay the already reduced tariff of Equity-only IPPs and buy lesser quantity as and when you have the requirement (supposedly much lesser than what is provided in take or pay tariff), IPPs may not accept it. The GoP negotiators may not have yet come across the pricing issue. What then is the solution?

The solution may be that IPPs are allowed to sell it to the third parties, either under a bilateral contract system provided in the CTBCM frame-work or by creating a spot market exchange.

However, in this particular situation, bilateral contracts may have direct or indirect harmful impact on the buyers and the market, e.g., price collusion.

Bilateral contracts and spot market for Take and Pay spot market may not be mutually exclusive. Spot market pricing that is being proposed by this scribe is a compromise solution that may be win-win for both the parties.

Spot market exchange offers a solution wherein there is a provision of upper limit. Equity-only IPPs (Debt-paid projects) can be provided an upper limit equal to the Take or Pay tariff.

Fixing upper limits is not an unknown concept in most world market exchanges. These are used for dealing with extra-ordinary situations or market conditions.

The upper limit of tariff in spot market exchange of electricity varies by region and country, depending on market rules and regulatory frameworks. In India, the upper ceiling for spot market tariffs in India is IRs 12 per unit (approximately $0.16 USD/kWh) on power exchanges like IEX and PXIL. Upper limits, however, in this particular situation of ours is to balance the buyer-seller interests.

One of the major objections against CTBCM has been that almost all of the capacity is contracted. And none would be available for CTBCM market operations. Only future projects may be eligible for CTBCM and that also under competitive bidding which may itself be bound in a Take or Pay situation, e.g. the recent KE bidding for a Solar PV project.

This is a huge opportunity for market enthusiasts that Take or Pay contracts are being converted to Take and Pay as a consequence of a highly aggressive public campaign and what is termed as an unacceptable and unaffordable consumer tariff.

It is a long time now that the people have been looking forward to a competitive electricity market under which undue or unfair prices have not to be paid by them.

Many steps have been taken starting from breaking the monolith of Wapda and many independent actors, organizations and companies have been created which together will form to be the part of the competitive market.

However, CTBCM has taken undue delay, partly, due to the market design issue. For example, Wheeling charges (payments to be made by the producers (IPPs) to the distribution companies for providing their distribution services) could not be determined for the last two years.

And now, GoP has decided to privatise the Disco, which would further complicate the issue. A situation is developing under which GoP may have to decide which to do first-CTBCM or Disco privatization. We will take up the linkage and complications of the two in the forthcoming article. ■

LPG Marketers Announce Newly Elected Office-Bearers

Pakistan LPG Marketers Association (PLPGMA) recently held its elections for the 2024-26 term, resulting in the appointment of new office bearers and members to its Executive Committee. The newly elected officials include prominent industry figures committed to advancing the LPG sector in Pakistan. Ahsan Mehmood Butt, Managing Partner of Shaheen Gas (Pvt.) Limited, has been appointed Chairman. Amir Nawshad of GasMan (Pvt.) Limited will serve as Senior Vice Chairman, and Salahuddin Ahmad, Director of Ravi Gas (Pvt.) Limited, has taken the role of Vice Chairman. The Executive Committee members comprise Tauqeer-ul-Hassan Khan (OPI Gas), Khurram Khan (Pioneer Gas), Ahmed Latif Sheikh (Synergy Resources), Fahad Naeem (Burewala Energy), Taimur Asif Mirza (Iramin Gas), Farogh Ahsan Malik (Almas Gas), and Rehan Ashraf (GMSA Energy). Additionally, Naila Ahsan Butt, Director of BBN Energy, has joined as a representative for women entrepreneurs. With their diverse expertise, the newly appointed members aim to enhance LPG industry standards and promote sustainable practices. ■

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IPPs Saga in Pakistan: Who Truly owns?

Engr Suleman Najeeb Khan

The writer is a former Vice President, IEEEP

The Pakistan power system is ever in the news – unfortunately, always in the negative sense. The power tariffs are backbreaking while the service to the power consumers has plummeted to the lowest rung.

The whole county has turned into power sector analysts – with all and sundry coming-up with bizarre solutions. The solutions fall between renewable energy as the ultimate solution and privatising Discos, as seemingly these entities are unable to recover the required revenues.

However, the whole debate forgets that more than 80% of the cost making up the present power tariffs relates to power generation and that the IPPs, both in the private and governmental domains, are predominantly responsible for the present surge in costs.

A little foray reveals that indeed it is so and basically it is the private IPPs and the governmental undertakings, based on the same architecture as that of the private sector IPPs that are responsible for the back-breaking tariffs.

The falling PKR viz. a viz. the USD may have contributed, but surely remains the poor second. What exactly is the architecture of IPPs? We see that firstly a sponsor comes and who is ready to invest the equity portion, which could be in the range of 20 to 30% of the total cost of the project.

Once the project, inclusive of technology and fuel along with its location, is firmed up, then arrangements for funding through commercial loan for the rest up to 80% cost of the project is made.

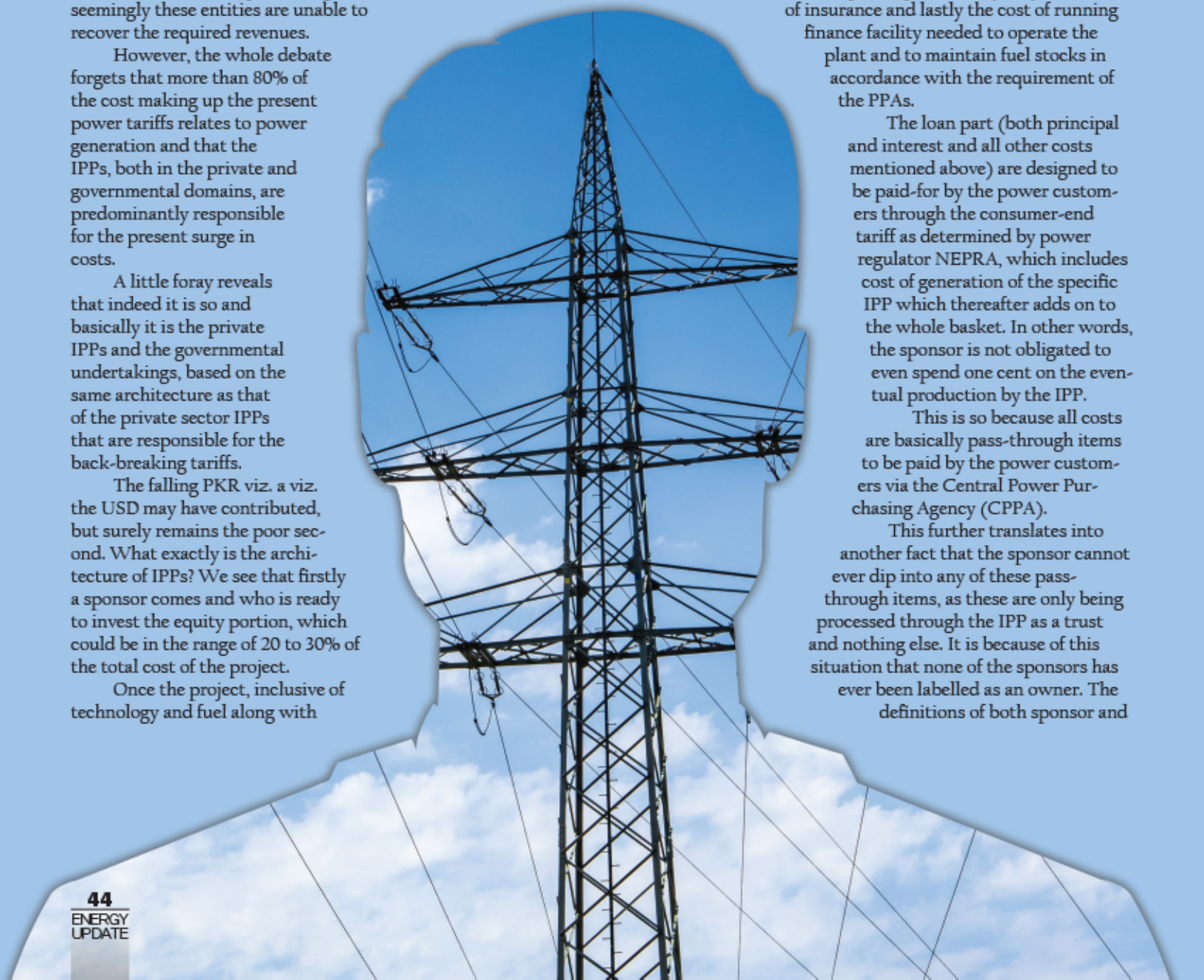
All of the loans are on the availability of a GoP-backed sovereign guaranteed Power Purchase Agreement (on the take or pay basis). Based on the various power policies of the Govt. of Pakistan, the return on equity could be from 15 to 18%, and which will be paid to the sponsor for the whole currency of the Power Purchase Agreement (PPA).

The cost of the IPP production includes the fixed return on equity as the per the relevant policy, the O&M cost (inclusive of fixed and variable portions), the cost of fuel needed to run the power plants, the yearly burden of insurance and lastly the cost of running finance facility needed to operate the plant and to maintain fuel stocks in accordance with the requirement of the PPAs.

The loan part (both principal and interest and all other costs mentioned above) are designed to be paid-for by the power customers through the consumer-end tariff as determined by power regulator NEPRA, which includes cost of generation of the specific IPP which thereafter adds on to the whole basket. In other words, the sponsor is not obligated to even spend one cent on the eventual production by the IPP.

This is so because all costs are basically pass-through items to be paid by the power customers via the Central Power Purchasing Agency (CPPA).

This further translates into another fact that the sponsor cannot ever dip into any of these pass-through items, as these are only being processed through the IPP as a trust and nothing else. It is because of this situation that none of the sponsors has ever been labelled as an owner. The definitions of both sponsor and



owner as depicted in various encyclopaedias as below:

"Sponsor or sponsorship may refer to a person or organization with some role (especially one of responsibility) regarding another person or organization: Sponsor (commercial), supporter of an event, activity, or person. Sponsor (legislative), a person who introduces a bill."

"Sponsor is the one who assumes responsibility for some other person or thing"

"A person who owns something: one who has the legal or rightful title to something: one to whom property belongs."

Once the difference between a sponsor and an owner is understood, it can be easily comprehended that a sponsor is distinct from an owner, and both these cannot ever be used in place of each other and nor these can be used in any document to mean the same thing. It is because of this fact that all of the documents having any nexus with the IPPs – initial application or proposal submitted to the PPIB, the implementation agreements, LOIs, the applications to Regulator NEPRA, the LOS by the PPIB (so-called one window facilitator for IPPs), the tariff determinations made by NEPRA and the eventual PPAs (Power Purchase Agreements) do not talk about any IPP owners and rightly restricts itself to the word "SPONSORS".

Additionally, all of these documents, on the basis of which any IPP operates, do not ever use the word "OWNER" and nor even any illusion to this word is ever made except in the PPAs where the corporate body / entity is considered as an owner.

The corporate body is basically the trustee of the interests of the sponsor (pitching in just with an equity portion) and the end-users who basically are footing all of the expense including but not limited to the management expenses – a part of the O&M expenditure, which would also contain the financial burden of the sponsor if he is a part of the management of the IPP.

The above definitions are most telling, specially the fact that all pass-through items are just being passed through the IPPs sponsors for process only and such items / costs can never be made a part of any profiteering by the sponsors.

Unfortunately, and surely criminally, most sponsors have dipped into this trust held by them while all entities required to assure that nothing of the sort happens have acquiesced or have been complicit in letting the sponsors make criminal gains. This all is evident in the balance sheets to a great extent – while much seems to be hidden from any prying eye.

Once the fact that the sponsors do not own the IPPs and that they are only allowed the fixed return on their equity amounts, the question arises as to who owns the IPPs and what should be the fate of these entities once the PPAs end or get terminated.

The answer lies in the fact as to who has paid for setting-up the IPP in question and then as to who has paid (in full) for the operations. It is seen that, but for equity part, basically 20% and on which too the sponsors have been making windfall gains and that too in USD terms, all of the cost has been paid by the purchaser viz. the GoP through the consumer-end power tariffs. Besides, all costs for operations too are paid by the purchaser – hence, in no case can the sponsor claim ownership of the IPP in question.

The least could have been the takeover with 20% ownership (equalling the equity amounts) being left as shareholding of the original sponsors.

This is evident on the basis of the fact that except for the equity part of 20% cost of the IPP/Power Plant, which too is suspect as in all cases heavy over-invoicing is evident, all other operational costs including fixed and variable O&M charges (including the burden of insurance and interest payments on finance to maintain fuel stocks etc.) have been paid in toto by the power consumers of Pakistan through the relevant GoP entities.

It is a foregone conclusion that the real owners of these IPPs, including the ones whose PPAs have ended, are owned by the power consumers of Pakistan and the sponsors of the same have no right at all to the same.

In fact, they need to be held responsible for defrauding the people of Pakistan as has been truly depicted in the HUBCO's Audit Report of 1997 and then in the Muhammad Ali Commission Report of 2020. It will be opportune to keep this fact in view while terminating the current PPAs, which is being contemplated by the GoP at present. ■

Sindh CM inaugurates Rs6bn projects

EU Report

Sindh Chief Minister Syed Murad Ali Shah on Tuesday inaugurated major road and energy projects worth Rs6 billion across the city and declared that those initiatives reflected his government's commitment to improving infrastructure and embracing the idea of renewable energy to benefit the people of Karachi.

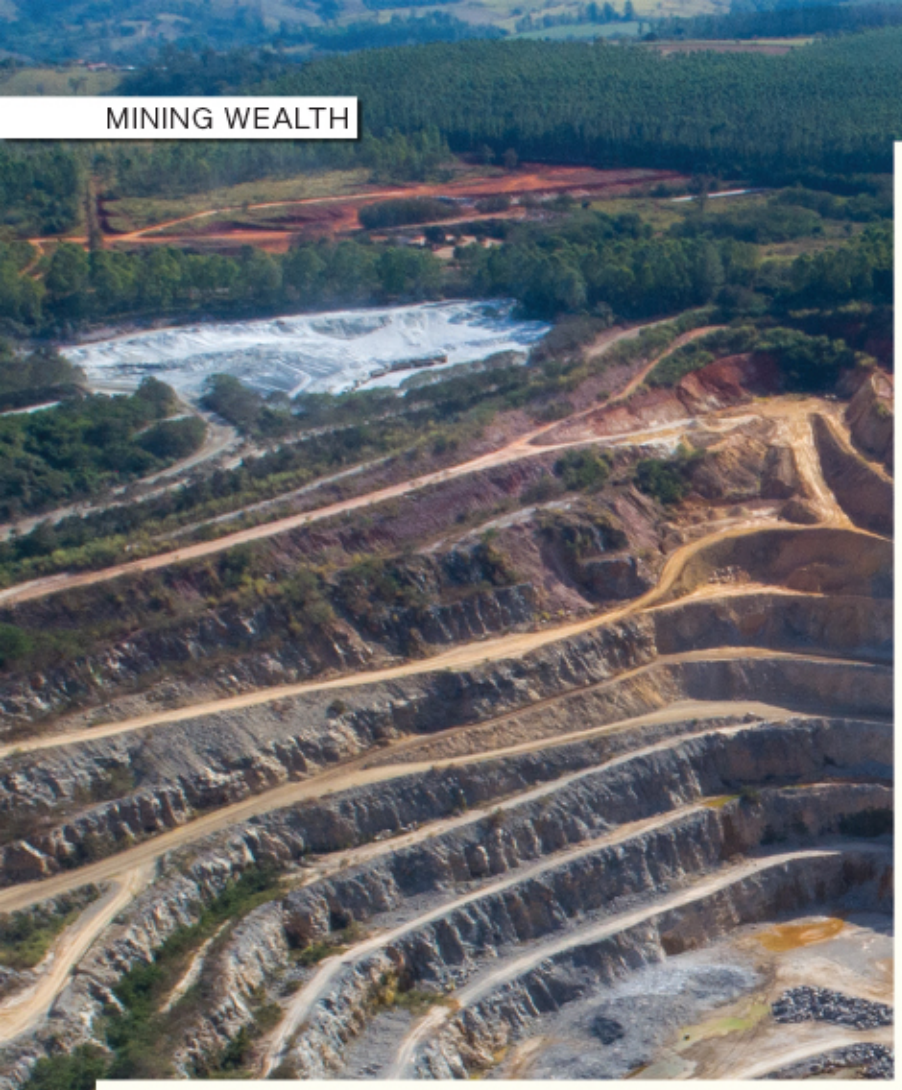
During his five-hour-long visit to different parts of the metropolis, he inaugurated a football ground in district East, three road projects in districts West and Central and solarisation of the Central Jail Karachi and Dow University of Health Sciences.

Central prison, DUHS Ojha campus converted to solar energy. He announced that his government had launched a 400 MW solar power project, with the solar project in Karachi being at an advanced stage.

The CM said his government would not rely on the National Transmission and Dispatch Company (NTDC) for the transmission of solar power from the Solar Park being established at Manjhand, and would instead lay a provincial transmission line.

Additionally, 50 government buildings were provided with solar energy in the first phase of solarisation, and in the second phase, Dow University Hospital, Ojha Campus, and Central Jail Karachi had been solarised.

"Both projects are expected to recover their investment cost within two years," he said and added that the government had also initiated a project to provide home solar systems to 200,000 households and was working on a 400 MW solar power system at Keenjhar Lake. The chief minister said that Thar coal-fired projects were producing the low-cost power in the country. ■



Minerals for growth and development

Humayun Akhtar Khan

The writer is chair and CEO, Institute for Policy Reforms. He has a long record of public service

Recent global experience shows that minerals have driven high economic growth in many low and middle-income countries. With the right approach, they can be equally useful in Pakistan, to drive high growth and reduce foreign dependence.

For years, Pakistan has sat atop large mineral resources. It has one of the world's largest copper and coal deposits. Yet, its stated efforts to realise gains from mining have not met with success. Change may be afoot, as the SIFC has mineral development as one of its priorities. The government of Pakistan would also have a dedicated mining ministry.

Estimates for Pakistan's mineral reserves vary. Copper deposits are said to be between 1.4 billion and 3.5 billion tons. Iron ore is 1.5 billion to 3.0 billion tons and coal is 165 billion tons. In addition, Pakistan has large reserves of chromite, bauxite, manganese, and salt as well as gold and silver. At present, the sector employs about 300,000 workers. The US's Energy Information Administration places Pakistan as one of the top ten countries in shale oil and gas resources, which is a subject for a separate focus. The sector brims with promise. There is a lot for the government and private companies to do.

The idea of developing minerals for overall prosperity is centuries old. In the 19th century, the US, Canada and Australia relied on minerals to great success. Minerals still play a role in the latter two economies. More recently, mining yielded rapid GDP growth in Chile, Peru, Botswana and Indonesia. Government revenue grew. That in turn went to building the economy's capacity. Human resource quality and infrastructure improved, raising overall welfare. In Chile especially, minerals stimulated downstream and supply-side industries. Such progress did not happen through market forces alone. Government policies promoted these links.

Critics emerged by the 1950s, finding flaws in relying on mining wealth. And in the 1990s, another

set of researchers coined the term the 'resource curse'. They argued that mineral resources caused inequality, a rentier class and took attention away from the efficient use of resources.

The last 20 years have revived faith in minerals as a source of broad-based growth – albeit this happened during a period of rising commodity prices. In 2014, World Bank experts McMahon and Moreira studied the economic progress of five mining-dependent low or middle-income economies – Chile, Ghana, Indonesia, Peru and South Africa. Their research showed these economies outperforming non-mining economies across many indicators. Active government policies caused these gains. Their governments used tax revenues for investment in public goods. These policies linked the mining sector with other industries. Chile and Indonesia built value-added industries such as copper-based electronics and battery production. They also put quotas on the export of raw minerals. These policies took shape gradually.

In addition to GDP growth, they saw a better quality of human capital. Their infrastructure improved, especially in the mining regions. Businesses diversified. Mining firms needed a host of services from machine repairs to construction to industrial clothing. Firms and workers learned these skills and transferred them also to other industries. Contrary to the 'resource curse' idea, governance too improved along most indicators. Local firms became competitive through a policy that linked them with foreign investors.

In the past, Chile imported most goods and services for the mining industry. In a few years, it became a regional supplier of these goods and services, with 720,000 workers. Soon Chile began exporting these goods globally. This became possible as the government and large mining firms joined hands to upgrade about "250 Chilean-based firms into world-class suppliers" (McMahon and Moreira).

Chile's port city of Antofagasta is a good example of how to build an industrial cluster around mining resources. Prodded by the government, ten large mining firms and two universities formed a JV "to provide support services for the productive and technological growth of small and medium enterprises" in the region. Early support included long-term credit and cofinancing by the Chilean development agency. Foreign firms that became part of the programme received subsidies, with a sunset. They were also made in charge of "training and integration of local suppliers".

Such policies make a success of mineral development for the whole economy. Otherwise, the economy could end up with the 'resource curse'. Drawing lessons from experience, the government must make mining FDI firms true partners in the country's development. They must commit to sharing infrastructure costs, CSR, and training of workers and to gradually move into the processing of ores.

The country would lose if we attracted FDI merely on the basis of generous tax incentives or profit guarantees. Remittance of profits by these firms would further stress the external account. Tax holidays and profit guarantees would burden taxpayers and consumers. Not committing them to processing or developing local suppliers would lead to exporting raw goods. If profit for the investor comes mainly from government support and not the market, firms will have no incentive to use new technology or to improve production efficiencies.

It is a delicate balance that the government must strike. It must ensure the profitability of the investment but be aligned with national goals.

On its part, the government too must make key reforms. Rather than focus on solving problems for each investment, it must have a strategic focus on developing of minerals. It must broaden the reach and quality of geological surveys. It must also lead to meeting the infrastructure gap, help firms access local financing and upgrade human resources. Permit processing times must be reduced, gradually moving the process online. The royalty law must optimise between attracting FDI and revenue growth for the state. Through tax or other policies, the government must encourage the use of technology to make the sector more productive and environmentally friendly. Firms may be nudged into using solar power or recycled water. They must also adopt better waste management practices.

The state must ensure transparency in dealing with the private sector. Also, the government may commit to the long-term stability of tax policy. There should be no surprises for the investor. Strengthening of public finance is a laudable goal. But the increase in revenue must be for citizens to build human and physical inputs for the country and the mining area. Revenue growth must not fall into the deep abyss of public finance that mostly pays for interest and subsidies. The added revenue must be earmarked for public goods.

In the past, mining investors in Pakistan have met with capricious treatment. This caused losses to both sides. Also, Pakistan's reputation took a hit. Dealing with investors must be in the spirit of cooperation and partnership. The government may take time to firm up an agreement ensuring that the economy's interest is paramount. Once agreed, though, both parties must go full speed for the success of the project.

Pakistan can unlock the potential of its mineral wealth to drive growth and inclusive development. It must revisit its approach to public policy in which transparency and cooperation with the private sector. It must do so while giving priority to national goals. ■

Pakistan's green energy leap

Murtaza Talpur

The writer is an assistant director, Climate Change Adaptation at the Pakistan Red Crescent Society (PRCS), Islamabad

Energy plays a vital role in sustainable economic growth and development. Over the last couple of years, climate change has played havoc socio-economically and so Pakistan has started a major shift to green energy, accepting the need for sustainable energy sources to fuel its economic growth and meet accelerating climate challenges.

This shift is driven by several factors, including rising fossil fuel costs, increasing energy demands, and the global push to mitigate climate change impacts. As Pakistan moves forward with its green energy agenda, there is much to analyze in terms of private-sector collaboration, government policy, and the challenges that persist.

Positive aspect is that government has made green energy key component of its long-term energy strategy

The positive aspect is that the government has made green energy a key component of its long-term energy strategy. One of the most notable steps has been the State Bank of Pakistan's introduction of more favourable financing options for renewable energy projects. This initiative has been crucial in encouraging investments in wind and solar energy, making it easier for businesses and households to transition away from traditional energy sources.

The government has also reduced interest rates on loans for renewable energy installations, opening the door for small businesses and households to adopt clean energy technologies.

Besides financial incentives, the government is directing statutory reforms that will boost green energy use. Policies such as net metering permit households with solar panels to sell extra energy back to the national grid. It helps to build a stronger case for investing in solar power. Pakistan is self-assured meaningfully to increase its share of renewable energy in the overall energy mix with these incentives in place. It helps to meet the target of 30 per

cent renewable energy by 2030.

Green energy initiatives have proactively and equally been accepted by the private sector. The previous year, a consortium of oil companies made a landmark move by pledging to renewable energy investments in Pakistan. These old-fashioned energy companies are expanding their portfolios, exploring solar and wind energy projects that bring them into line with the national energy transition strategy. These companies have historically been dependent on fossil fuels, and are now venturing into green energy – highlighting the substantial shift in business dynamics and the recognition of lasting sustainability.

Solar energy has, in particular, come out as a fast-growing sector in Pakistan. The geographic location of the country gives plenty of sunshine, making it an ideal place for solar power generation. Just recently, there has been an obvious increase in the installation of rooftop solar systems, especially in urban areas where power shortages and rising electricity prices are grave issues. Both residential and business consumers are turning to solar power – not just for energy cost savings, but also for the dependability it offers among recurrent power disruption.

Wind energy is another area where substantial progress has been made in the last couple of years. The coastal areas of Sindh and Balochistan, where wind speeds are consistently high, have been the focus of wind energy projects. Wind development farms have been seen in these areas that contribute to the national grid while offering a cleaner alternative to natural gas and coal. Besides, the cost of solar and wind technologies continues to fall. These are becoming more cost-effective with conventional energy sources, and increase their appeal to both public and private-sector investors.

Regardless of all this progress made, several challenges towards Pakistan's transition to green energy ought to be addressed for long-term success. One of the key issues is the outdated energy infrastructure.

While green energy-supporting policies are in place, their implementation is often very slow and inconsistent. For instance, the net metering system, which was introduced to encourage solar power use, has been met with resistance from some power distribution companies. These companies fear the loss of revenue as more consumers become energy producers. This resistance slows the adoption of renewable energy technologies, primarily in provinces where the execution of federal policies is frail.

Another challenge lies in the financial barrier to entry. While the State Bank's financing options have lowered costs, the upfront investment for solar and wind installations remains high for many households and small businesses. Awareness campaigns and further financial incentives will be critical in overcoming this obstacle and promoting broader adoption of renewable energy solutions.

The geographic diversity of Pakistan also offers substantial hydropower potential but it remains mainly underused. The northern regions, with their many rivers and streams, offer huge opportunities for both large- and small-scale hydropower projects. Not long ago, small hydropower plants were developed in rural areas; they provide clean energy to off-grid communities. These schemes not only help address the rural energy crisis but also lessen the stress on the national grid.

However, large-scale hydropower projects have been slow to develop because of high initial costs and long approval procedures. Major projects like the Diamer-Bhasha and Mohmand dams, when completed, are expected to significantly boost Pakistan's hydropower capacity. These projects will not only provide a reliable source of energy but also address water storage issues, helping Pakistan cope with the increasing frequency of droughts and floods due to climate change.

The green energy projects not only bring environmental benefits but also provide economic opportunities. Environmental benefits are equally significant. By expanding the use of renewable energy, Pakistan can decrease its carbon emissions and improve air quality – mostly in urban areas. The journey of Pakistan's renewable energy is yet in its early stages, but the progress made in the last couple of years seems promising. The supportive policies of the government together with growing private-sector investments have set the stage for a future where green energy can play an essential role in powering the nation. ■

Lucky Cement completes 28.8MW wind power project

EU Report

Lucky Cement, one of Pakistan's largest cement manufacturers, completed and commissioned the 28.8MW captive wind power project at its Karachi plant. The company announced the development in its notice to the Pakistan Stock Exchange (PSX) on Tuesday. "We are pleased to announce the successful completion and commissioning of our 28.8 MW captive wind power project at the company's Karachi plant, a significant milestone achieved by the company," stated the notice. Lucky Cement informed the project has been completed within the stipulated timelines and costs and has commenced operations as of 21st October 2024. "With this achievement, our installed power generation capacity for self-consumption from renewable sources now stands at 55%, including solar power plants and waste heat recovery plants at both locations (Karachi and Pezu)," read the notice. Lucky Cement said sustainability and adoption of clean energy are part of the company's strategy. The "installation of the wind power project is a testament to its commitment to conserving energy and promoting green energy resources".

BME focuses on mining projects

EU Report

The 49th Annual Management Committee meeting of Bolan Mining Enterprises (BME) was held recently in Quetta and attended by the joint venture (JV) partners, Pakistan Petroleum Limited (PPL) and the Government of Balochistan (GoB). MD & CEO PPL Imran Abbasy along with senior PPL officials participated in the meeting, while the Government of Balochistan was represented by the Secretary Mines & Minerals Development Department Saidal Khan Luni, Additional Secretary Industries and CEO of Balochistan Mineral Resources Limited. The discussions focused on enhancing operational efficiency and fostering sustainable growth for BME. The JV partners explored strategies to optimize resource extraction, improve infrastructure and promote the sustainable development of BME's mining projects. ■

Can COP29 break climate deadlock?

Shafqat Kakakhel

The writer is a retired ambassador and former UN assistant secretary-general

Fiscal hardships in developed countries led to reduced foreign aid pledges; burgeoning economic woes of developing countries amplify adverse effects of climate change

The forthcoming annual UN meeting on Climate Change (COP29), hosted by Azerbaijan in Baku on November 11-22 is being held amidst geopolitical, economic, and climatic upheaval.

The Middle East situation remains unabated; hostilities affecting Ukraine and Russia have persisted; fiscal hardships in developed countries have led to reduced foreign aid pledges; and burgeoning economic woes of developing countries have amplified the adverse effects of climate change.

The significance of the Baku Climate Summit has been enhanced by concerns among climate experts over the lack of progress in reducing greenhouse gas emissions. Multiple studies by climate scientists have expressed the fear that the goal of restricting the increase in temperature to 1.5 C compared to pre-industrial levels may not materialise.

Their worries gain credence from the rapid increase in the number and severity of climate-induced extreme events such as floods, hurricanes and storms, sea level rise, heatwaves, droughts and accelerated melting of ice and snow in the glaciers. Unrest among youth groups in the rich countries has grown exponentially.

Azerbaijan is gearing up for hosting its first mega global event which is likely attract up to 40,000 visitors comprising 4000 to 5000 government officials and the rest representing the UN and other multilateral agencies, the business community, civil society and the media. Baku city is being spruced up.

Azeri Ecology Minister Mukhtar Bayef, the designated COP29 president, has visited a large number of countries, including Pakistan, to discuss the COP agenda and garner support for positive outcomes on key issues.

The challenges in Baku have become daunting because several intergovernmental meetings held this year, including the inter- sessional conference in Bonn in June and consultations in New York, have failed to bridge the gaps in positions of developed and developing nations on vital but complex subjects, especially financial support to developing countries for climate related actions. The major issues at COP29 are noted below.

COP29 is billed as the Climate Summit because it has to reach an agreement on what is called the New Climate Quantified Goal (NCQG) to replace the pledge of $100 billion provided by the developed countries for climate actions of developing countries which was fixed in 2009 but met only once – in 2023.

Developing countries are demanding between $500 billion and $1 trillion which, they contend, match the range of funds for implementing their national adaptation plans (NAPs). The European Union claims to have articulated a positive negotiation stance on NCQG but has not divulged the amount contributed by its members.

The COP28 decision for the establishment of the Loss and Damage Fund did not indicate how the Fund would be resourced. A fund-raising event held in Dubai had prompted pledges of $900 million for the Fund, a fraction of the lowest estimates for loss and damage-related actions.

In Baku, developing countries are likely to demand a decision on regular, periodic replenishment of the fiscal resources of the L&D Fund which their rich partners will resist. The L&D battle will include unresolved differences over the source of the money: developing countries demand contributions from public funds of rich states which instead prefer diverse sources, including large endowments set -up by philanthropies.

Meanwhile, the pending agreement with the World Bank for operating the Fund must be signed and the Executive Director and other L&D Fund personnel need to be appointed along with finalisation of the rules and regulations concerning activities eligible for receiving funding,

Developing countries continue to lament that the global climate discourse has all along been dominated by the imperative of bolstering mitigation efforts, which has overshadowed their existential challenges of adaptation. Funds earmarked for adaptation are less than a quarter of the total amounts. The compilation of National Adaptation Plans assisted by the UN system has raised hopes of greater attention to developing countries' adaptation priorities for reducing their vulnerability to climate induced extreme weather events.

In Baku, developing countries will call for addressing all aspects of a comprehensive global goal on adaptation which should reflect the targets set in their National Adaptation Plans as well as the UAE Framework for Global Climate Resilience agreed at COP28.

The discussions in Baku will aim to further develop the consensus reached in COP28 on the UAE Dialogue on Implementing the Global Stocktake Outcomes calling for measures by states to " transition away from fossil fuels in energy systems" and the Mitigation Ambition and Implementation Work Programme (MWP) approved by COP27.

A number of countries, including China, have launched domestic schemes of carbon trading but the Paris Agreement's call for the creation of a robust and well-regulated international carbon market has remained unheeded. At the June climate conference in Bonn, the COP president-designate announced that one of his priorities was to resolve pending technical issues concerning Article 6.

The next round of Nationally Determined Contributions (NDCs) is due a few months after COP29. Climate scientists and activists have called on the world's large carbon emitters (China, the US, India and oil-rich states) to announce bold and ambitious new NDCs providing for drastic cuts in their carbon emissions.

The World Resource Institute has suggested five priorities should inform the new NDCs. These include: setting 2035 as target year and strengthening emission reductions aligned with the 1.5 C and Net Zero targets; accelerating system-wide transformations by establishing ambitious ,time-bound sectoral targets; building resilience to increasingly dangerous irreversible impacts such as desertification, sea level rise; boosting investments and strengthening governance to turn targets into practice; and putting people at the centre of climate action by creating jobs, improving healthcare and education and skill development. ■

GREEN ENERGY

Solar gains, grid pains in Pakistan

EU Report

The standard for policymaking is to establish clearly defined short, medium, and long-term goals. Unfortunately, Pakistan's power sector has long been plagued by knee-jerk reactions, with the government playing the game of whac-a-mole: constantly addressing one issue only for another to emerge. It's a never-ending cycle.

After considerable effort, the government has successfully negotiated with the first cohort of Independent Power Producers (IPPs) to sunset their power projects. The next batch of IPPs from the 2002 era is soon to follow. Although it is likely that newer IPPs will also undergo similar changes, reports of abrupt payment halts are concerning.

These unprecedented reforms are being implemented to reduce electricity production costs for the general public, regardless of investor sentiment. However, the intense focus on IPPs is diverting attention from other low-hanging opportunities, such as rooftop solarization.

Net metering is rapidly growing, and many eligible customers, including industries, are installing systems to become energy-independent. It is crucial for the government to balance its solarization efforts with its initiatives to reduce the overall electricity basket rate for all consumers.

While shelving large power projects is generating savings, rapid solarization could undermine this effort if enough large industries switch to solar panels. Numerous reports indicate a surge in industrial solar installations, and this shift could also occur in affluent residential areas, reducing grid consumption.

This does not suggest an outright opposition to promoting solarization but calls for more prudent regulation. Let's do some basic math to illustrate the point. Solar panels and lithium-ion batteries are becoming more affordable, encouraging customers to opt for these solutions.

An informal survey in Karachi shows that a 10-kW system with two 5 kW storage batteries costs around PKR 1.5 million, including all expenses. Battery prices have nearly halved in the last year, making peak load shaving economically viable.

This system can generate about 42 units of electricity in a day on average in Karachi, with the majority being available for net metering or self-consumption. If we extrapolate this to the year, it translates it to savings of about PKR 800,000, allowing for a system payback period of less than two years. Larger systems would have an even shorter payback period.

The useful life of panels is about 20 years, so it appears that a solar customer is gaining 10x on their investment over the useful life of their panels. The battery life is claimed at 5000 cycles. However, considering it is at 4000 cycles, the life is of 10 years, and this gives 5x return on battery investment.

As battery prices continue to fall, reduced buyback rates in line with global trends may still be offset by increased self-consumption. This would help mitigate cost-shifting effects on lower-income electricity users who depend on cross-subsidies to keep rates affordable.

It is pertinent to note that this does not mean the government must take a U-turn on its policies but that it needs to look at things holistically so that the interest of the majority of customers is protected who will perhaps remain on the grid.

While focusing on big-ticket items, the tariff-setting process should be revisited to allow solar to enter the market more sustainably. Pakistan's mission to lower its energy costs is reminiscent of Achilles' formidable power. But without sufficient focus and adaptability, all it can take to topple the system is a small, well-placed arrow on his heel. ■

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Analysis: Will new IPP deals make electricity any cheaper?

IPP owners and energy experts don't share the govt's enthusiasm, claiming that similar re-negotiations in the past had failed to yield the intended benefits

Nasir Jamal

The prime minister has recently announced that five independent power producers (IPPs) have agreed to "voluntarily" negotiate their power purchase agreements with the government. The move, as claimed by the power minister, would save Rs411 billion and bring down the per unit electricity tariff by Rs0.71. However, IPP owners and energy experts don't share the government's enthusiasm, claiming that similar re-negotiations in the past had failed to yield the intended benefits.

Other than the money paid to these power producers, they believe a plethora of other issues like poor transmission system, power generation through expensive fuel, and low recovery, etc, are also contributors to expensive electricity. However, the government, under pressure due to intense flak over the rising cost of electricity, focused on renegotiating IPP deals and formed a task force for this purpose.

The five IPPs — Rousch Power, Saba Power, Atlas Power, Lalpir Power Limited and Hub Power Company Limited (Hubco) — which started working under the independent power policies of 1994 and 2002, made the decision after months of clamour over the agreements signed with these power producers which bound the government to pay them even for the electricity it didn't purchase.

These costs, known as capacity payments, are widely blamed for soaring electricity prices. Under the new arrangements yet to be signed, the five IPPs will be paid outstanding dues only for the cost of electricity they have supplied to the grid, according to media reports. It is also claimed that the Rs80-100 billion, owed to these companies as capacity payments, is also being re-negotiated.

Once these five deals are finalised, the task force plans to renegotiate contracts with all other IPPs set up after 2002, barring those built under the China-Pakistan Economic Corridor (CPEC).

According to the chief executive officer of an IPP, any serious effort to reduce electricity prices has to take into account inefficiencies in the system, like an expensive

energy mix, low bill recovery, absence of transmission system to supply cheaper power produced in the south to the north and falling consumption.

"The authorities may achieve some temporary gains by coercing us into accepting the revised agreement, but the electricity tariffs cannot be reduced on a sustainable basis without holistically addressing the issues plaguing the entire energy supply chain," he adds.

A breakdown of electricity tariffs shows that capacity payments account for 35pc of the Rs51.81 per unit retail cost, while taxes and levies make up 31pc.

Massive devaluation of the rupee, increase in the foreign debt servicing costs of power plants, and declining power consumption have also significantly contributed to the rising electricity tariff in recent years, says the chief financial officer of a power company.

These issues are likely to persist as trade figures show that in the last few months, Pakistan has imported solar panels from China that can produce around 13,000 megawatts of electricity.

Cost of renegotiation

While the intended benefits for consumers are disputed, the government's "strong-arm tactics" to extract these benefits are expected to dent the confidence of local and foreign investors in the energy sector.

Insiders say the IPPs "caved under pressure" as they were told to either re-negotiate the deals or face the possibility of forensic audits of their projects. The latter could have led to criminal cases against these power producers, official sources claim. The weakening investor confidence in the energy sector is evident from the government's failure to attract investors for its 600MW solar project in Muzaffargarh.

This shows "lingering fear" among investors that the government "will not honour its contract and might force its revision" a few years down the line, says Zeeshan Ashfaque, an energy sector expert based in Islamabad.

"Contract revisions may have yielded some savings for the government, but they have happened at the cost of long-term policy stability and without any known benefit to consumers", says a Karachi-based power sector analyst.

One downside of such measures is that the government is forced to offer similar or enhanced incentives to IPPs the next time it needs their support.

Oversimplifying a complex issue

Consumers have been agitating against soaring electricity prices for years without any response from the government. In recent weeks, however, officials seemed to have woken up from their slumber to tackle the issue.

This was in part due to the campaign by business lobbies, led by former caretaker minister Gohar Ejaz, who blames capacity payments charged by IPPs for expensive electricity.

He claims these payments could be halved to Rs1tr if all power plants were made to switch to the take-and-pay model. This, he argues, will reduce consumer tariffs by Rs10 per unit.

But many analysts and power sector insiders believe Mr Ejaz is over-simplifying a complex issue. According to them, no power plant can operate without capacity payments as these are necessary to cover debt payments, operational and maintenance costs, staff salaries and guaranteed return on equity.

Any reforms in the power sector that actually provide a tangible benefit to users have to be holistic and also incorporate systemic issues other than IPPs' contracts. For this, the government will have to take a whole-of-the-sector approach: one that takes care of the interests of both consumers and investors while also ensuring a stable policy and political environment.

Courtesy Dawn

E Turbo Motors achieves another milestone

E Turbo Motors Pvt Limited marked a significant milestone with the launch of a groundbreaking initiative in the event industry, under the visionary leadership of CEO Mr. Usama Sheikh. This landmark occasion, held with great fanfare, signifies the company's continued growth and dedication to excellence.

The launch event was graced by Mr. Sharjeel Inam Memon, Senior Minister for Information, Transport, and Narcotics Control, as the Chief Guest. The event saw the participation of several high-profile dignitaries, including Sindh Provincial Ministers, MNA Dr. Mirza Ikhtiar Baig, and esteemed diplomats from the Sultanate of Oman, Korea, Kuwait, Russia, Yemen, and Morocco.

The gathering also included renowned Islamic scholars, government officials, media representatives, and other notable figures, whose presence contributed to the event's success. Their support was instrumental in making this historic day unforgettable.

On behalf of the entire team at E Turbo Motors Pvt Limited, Director Saleem Khan and CEO Usama Sheikh expressed their heartfelt gratitude to the distinguished guests for their encouragement and continued support. Their contributions have energized the company's mission of leading innovation in the industry.

The age of electricity

Syed Rashid Husain

At the offices of the Centre for Global Energy Studies (CGES) at 17 Knightsbridge, London, veteran Saudi oil minister, the late Sheikh Ahmed Zaki Yamani would look into his crystal ball and prophecise, "Oil will not end, oil era will come to an end." That was prophetic, especially when uttered in an era when Peak Oil was the currency in circulation.

Decades later, my wonderful friend, Fatih Birol, the Executive Director of the Paris-based International Energy Agency (IEA), is speaking the same language: "We are entering the Age of Electricity."

While unveiling the IEA's keenly awaited World Energy Outlook (WEO) 2024, the IEA executive director added, "In energy history, we've seen the Age of Coal and the Age of Oil, and we're now moving rapidly into the Age of Electricity.

Despite the oil producers' negating the assertion, the IEA continues to maintain that due to the ongoing transition, global fossil fuel demand is set to peak by the end of the decade, meaning surplus oil and gas supplies could drive investment into green energy, and fossil fuel market prices could continue to feel the heat.

IEA's World Energy Outlook maintains that global fossil fuel demand will peak by the end of the decade as the world moves towards green fuels

"In the second half of this decade, the prospect of more ample — or even surplus — supplies of oil and natural gas, depending on how geopolitical tensions evolve, would move us into a very different energy world," Mr Birol said at the release of WEO last Wednesday, Oct 16.

Surplus fossil fuel supplies would likely lead to lower prices and could enable countries to dedicate more resources to clean energy, moving the world into an "age of electricity," he added.

The transition is obvious. A record high level of clean energy came online globally last year, the IEA noted, including more than 560 gigawatts (GW) of renewable power capacity. Around $2 trillion is expected to be invested in clean energy in 2024, almost double the amount invested in fossil fuels, as costs for most clean technologies are resuming a downward trend after rising in the aftermath of the Covid-19 pandemic, WEO-2024 reported.

This will help renewable power generation capacity rise from 4,250 GW today to nearly 10,000 GW in 2030 in the current policy scenario, WEO-2024 added. This is indeed short of the target set at COP 28 — three times the current renewable output — but still more than enough, in the aggregate, to cover the growth in global electricity demand, and push coal-fired generation into decline.

Nuclear is one of seven clean energy technologies that are key to affordable and secure transitions, but overcoming barriers to deployment, including network infrastructure, should be a priority worldwide. As per the WEO-2024, the share of nuclear power is likely to remain close to 10 per cent under the three main long-term scenarios presented in the outlook.

Electricity use has grown at twice the pace of overall energy demand over the

last decade, with two-thirds of the global increase in electricity demand over the last ten years coming from China, leading this ongoing transition. In the current policy scenario, the IEA says the country's oil use for road transport is set to decline.

China accounted for 60pc of the new renewable capacity added worldwide in 2023 — and in six years, by 2030, China's solar photovoltaic (PV) generation is on course to exceed the total electricity demand of the United States today, the WEO-2024 highlighted. To be fair, though, to a certain extent, this decline in Chinese fossil fuel consumption would be offset by a large increase in oil use as a petrochemical feedstock.

Electric vehicle sales in China are already expected to hit the 50pc mark this year. All this means that by 2050, EVs will displace some six million barrels per day of oil demand.

Yet, there are open questions about how quickly and efficiently new renewable capacity can be integrated into power systems and whether grid expansions and permitting times will keep pace with growth in electricity consumption. Policy uncertainty and a high cost of capital are holding back clean energy projects in many developing economies, including Pakistan.

Electricity demand growth is set to accelerate further in the years ahead and rise even more quickly in scenarios that meet national and global net zero goals, the WEO-2024 emphasised. The accelerated electricity demand growth is driven by light industrial consumption, electric mobility, cooling, data centres, and artificial intelligence.

Currently, 60 cents are spent on grids and storage for every dollar spent on renewable power. By the 2040s, this reaches parity in all scenarios. Many power systems are vulnerable to an increase in extreme weather events and cyberattacks, putting a premium on adequate investments in resilience and digital security.

Is Pakistan ready for this coming electricity revolution? We are far behind. We urgently need affordable electricity from all sources. Maybe it is time for us to take a helping hand from a trusted friend, China, in this sector, too, and prepare for the inevitable.

Courtesy Dawn

IPPS MALADY

93 IPPs operating in country with capacity of 22,671 MW

50 IPPs are based on local investment, 17 IPPs on foreign investment and 26 on local and foreign investments: govt paid Rs428.435 billion capacity payment during financial year 2023-24 of four IPPs

Naveed Butt

Federal Minister for Energy (Power Division) Sardar Awais Ahmad Khan Leghari said that a total of 93 Independent Power Producers (IPPs) are currently operating in the country having a cumulative power generation capacity of 22,671 MW.

In a written reply to a question of MNA Muhammad Atif, Federal Minister Leghari, Monday, told the National Assembly that a total of 50 IPPs are based on local investment, 17 IPPs are based on foreign investment and 26 IPP are based on combination of local and foreign investments.

The minister said that the government has paid a total of Rs428.435 billion capacity payment during financial year 2023-24 of four IPPs; China Power Hub Generation Company (Pvt) Ltd (Rs137.035 billion), Huaneng Shandong Ruyi Energy (Pvt) Ltd (Rs113.707 billion), Port Qasim Eclectic Power Company (Pvt) Limited (Rs120.373 billion) and Lucky Electric Power Company Limited (Rs57.32 billion).

The minister said that the existing Power Purchase Agreements allow the IPPs to recover their fixed costs including debt servicing through Capacity Purchase Price which is absolutely on the basis of availability of plant for generation. He said that the Prime Minister has constituted a task force to identify and oversee implementation of structural reforms in the power sector of Pakistan, with a view to reduce electricity tariff for the consumers, as well as, the financial burden of the sector borne by the federal government.

Capacity payment issue: 10 IPPs seek PM's intervention

According to the written reply there are many sponsors/ shareholders such as Lucky Cement Mills Limited, Lucky Textile Mills Limited, Gadoon Textile Limited, Mustafa Tapal, Adnaan Tapal, Daanish Tapal, Maqsood Ismail, Muhammad and others of IPPs on Wind. Similarly, the shareholders of IPPs on fuel are Hub Power Company Limited, Kohinoor Energy Limited and Lucky Electric Power Company.

The foreign shareholders of IPPs are Korea Water Resources Corporation, Daewoo Engineering and Construction Co Ltd, KOEN, Dl E and C, Shanghai Electric Dubai, Shanghai Kaihal Industrial Co Ltd, Huaneng Shandong Power Generation Company Limited, Jining Chengjian Investment Co Ltd, Alo-Mirqab Capital SP, China Three Gorges South Asia Investment Limited, Zirlu Enerji Elektrik Uretium A.S, Super Success Investments Limited, JPL Holding Limited, Engie S.A France, Best Green Energy Limited, etc.

He said that there are five commissioned IPPs having install capacity 3,742-MW in Balochistan. He said that Hub Power Project, HUBCO on furnace oil located at Tehsil Hub, district Lasbela has capacity 1,292 MW, Habibullah Costal Power Project on gas/ RLNG at Quetta has installed capacity of 140 MW, Uch Power Project on low btu gas at Dera Murad Jamali district Nasirabad has installed capacity 586 MW, Uch-II Power Project at Dera Murad Jamali installed capacity 404 MW and China Power/ Hubco Power Project on imported coal, installed capacity 1,320 MW and upcoming 300MW coal-based power project on imported coal in December 25, 2024 in Gwadar. In another replay, the minister said that the government could not arrange of sources so far to pay circular debt of Rs2.3 trillion. However, he said that various measures are being taken to limit further increase in the circular debt stack. ■

The denominator challenge: Navigating Pakistan's energy crisis

Ayla Majid

Writer is Founder & CEO of Planetive

Pakistan's energy sector is facing unprecedented challenges, with rising electricity tariffs playing a central role. At the heart of this crisis is what can be described as the "Denominator Challenge"— a shrinking base of paying consumers, which exacerbates the already high per-unit cost of electricity. Coupled with fixed capacity payments, this creates a cycle of escalating costs and economic strain that threatens to deepen Pakistan's energy and financial woes.

Capacity payments— fixed costs paid to power producers regardless of actual electricity demand— are a significant issue plaguing Pakistan's energy sector. These payments have been steadily rising, as high as 60-70 percent of the total cost of electricity production. This burden is particularly pronounced because, as good paying and industrial consumers transition off-grid, the base of remaining grid-connected consumers shrinks. These off-grid consumers, driven by rising electricity prices and unreliable service, are increasingly turning to solar and other renewable energy solutions.

As a result, the "denominator" of grid-reliant consumers becomes smaller, while the costs of capacity payments remain fixed. This leads to an increase in the per-unit cost of electricity for those still connected, many of whom are lower-income households that cannot afford to adopt off-grid solutions. The capacity payment system, which was initially structured to ensure energy availability, is now amplifying the financial strain on Pakistan's energy sector.

Rising tariffs in Pakistan are partly driven by global factors, such as the increasing cost of imported fuels and the depreciation of the Pakistani rupee. In 2023 alone, electricity tariffs increased by 26 percent, directly impacting consumers. Many households, particularly those with lower incomes, are finding it increasingly difficult to afford basic energy needs, with electricity bills taking up a larger share of their disposable income.

While Pakistan is struggling with these issues, countries in the broader region, such as the UAE and Saudi Arabia, are investing heavily in renewable energy projects to diversify energy sources. Although Pakistan faces different economic constraints, these regional investments demonstrate the potential for reducing long-term energy costs and bringing a balance in the energy mix through a focused shift toward renewables.

Solar energy adoption through net metering has become one of the few escape routes for some residential and industries consumers who have the affordability. Net metering, introduced in 2015, allows solar users to sell excess electricity back to the grid, offsetting their electricity bills. By 2024, Pakistan has added approximately 1200 MW of solar capacity through net metering, with 700 MW added in the current year alone. Solar solutions have become increasingly attractive as grid electricity prices continue to rise.

The industrial sector has been hit hard by rising energy costs as well. Addressing Pakistan's energy crisis requires urgent reforms. In the short term, the government should consider targeted subsidies and financial support for the most vulnerable consumers. More equitable pricing mechanisms, where tariffs reflect actual consumption

patterns, could help alleviate the burden on low-income households.

In the midterm, Pakistan must diversify its energy mix by increasing the share of renewables in its grid. Investments in solar and wind energy could bring down the overall grid basket price and reduce dependency on expensive imported fuels, which can be achieved through a planned scheme of new generation through auction based mechanisms to get the best market price.

Pakistan could also leverage carbon trading and offset mechanisms to fund further investment in renewable energy projects, fostering a greener, more sustainable energy future.

Another silver lining is opening a door for significant green jobs. According to the World Bank, Pakistan could generate 300,000 jobs through investments in renewable energy by 2030. This includes 190,000 direct jobs and 137,000 indirect jobs, providing an additional economic benefit that could help alleviate poverty and boost economic growth.

By creating a well-defined road map Pakistan certainly has all the right reasons to come out of the prevailing energy sector challenges.

Writer is Founder & CEO of Planetive, with financial advisory and governance experience across energy and infrastructure sectors. Sits on many local and global boards. Sustainability advocate. Serving on the Global Future Council on Energy Transition of the World Economic Forum. ■

ECONOMIC EMPOWERMENT

Benefitting through SCO and BRICS

To achieve economic gains, Pakistan must shed obstructionist policies

Dr Manzoor Ahmad

The writer is a Senior Fellow at PIDE. Previously, he has served as Pakistan's ambassador to the WTO and FAO's representative to the United Nations at Geneva

Following the recent successful hosting of the Shanghai Cooperation Organisation (SCO) summit, Pakistan is now keenly lobbying for inclusion in BRICS, the prominent bloc of emerging economies.

Originally comprising Brazil, Russia, India, China, and South Africa, BRICS recently expanded its membership to include influential Middle Eastern nations such as Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE. While the SCO and BRICS share some similarities – most notably the dominant roles of China, Russia, and India – there are important distinctions.

The SCO, primarily a Eurasian organisation, was initially founded with a security focus but is gradually broadening its agenda to encompass economic cooperation. On the other hand, BRICS initially formed as a loose economic alliance to counterbalance Western influence in global organisations, is now positioning itself to play a more prominent political role in the evolving world order.

Pakistan's decision to join the SCO was a strategic move, and its potential bid for BRICS membership reflects an attempt to assert its independence on the global stage. However, the critical question remains: can Pakistan derive tangible economic benefits from joining these influential blocs? Historically, Pakistan has not benefited much economically from its participation in multilateral organisations. For example, it was one of the founding members of the General Agreement on Tariffs and Trade (GATT) in 1948, an agreement widely regarded as one of the most successful in reducing trade barriers and increasing global integration. However, Pakistan hardly gained from its membership of that organisation due to its lack of engagement. Later, when GATT was subsumed into the World Trade Organisation (WTO) in 1995, Pakistan again became a founding member. Yet, the country showed minimal commitment to reforming its trade policies to fulfil its international commitments.

On the other hand, many developing countries, notably China and Vietnam, significantly boosted their international trade and global integration after joining that organisation and by aligning their domestic policies with international commitments.

If Pakistan is seeking economic gains, it needs to seriously examine its inward-looking approach. The recent SCO declaration, adopted in Islamabad, acknowledged the 'tectonic shifts' in the global economy, particularly in information technology, digitalisation, artificial intelligence, and e-commerce. Member states resolved to deepen cooperation in these areas, including countering protectionist trade measures. However, Pakistan may face challenges in this regard. One reason is that while most SCO members are actively involved in ongoing WTO negotiations on new agreements related to the areas noted in the declaration such as digital trade and e-commerce, Pakistan remains a bystander. In fact, it has yet to become a signatory to the WTO's Information Technology Agreement, the first such agreement concluded in 1997, which has since become one of the organisation's most successful plurilateral agreements. All SCO members within the WTO are already part of this agreement, positioning them to build on it more effectively.

This focus explains why an overwhelming majority of Asia-Pacific countries has chosen to be part of this trade bloc, which is also led by China. The key takeaway from these examples is that merely joining regional or multilateral blocs does not automatically guarantee economic benefits. If Pakistan genuinely seeks to achieve economic gains, it must move away from its current obstructionist policies. The country should leverage its strategic geographical location to facilitate the flow of transit trade among SCO members. Likewise, it needs to shed its dubious reputation as one of the world's most protectionist countries and transition into a forward-looking, globally integrated economy. Furthermore, to benefit from modern technologies, Pakistan should actively engage in international agreements related to information technology, digital trade, and e-commerce. Without these proactive steps, joining new blocs may result in minimal real outcomes rather than tangible economic benefits. ■

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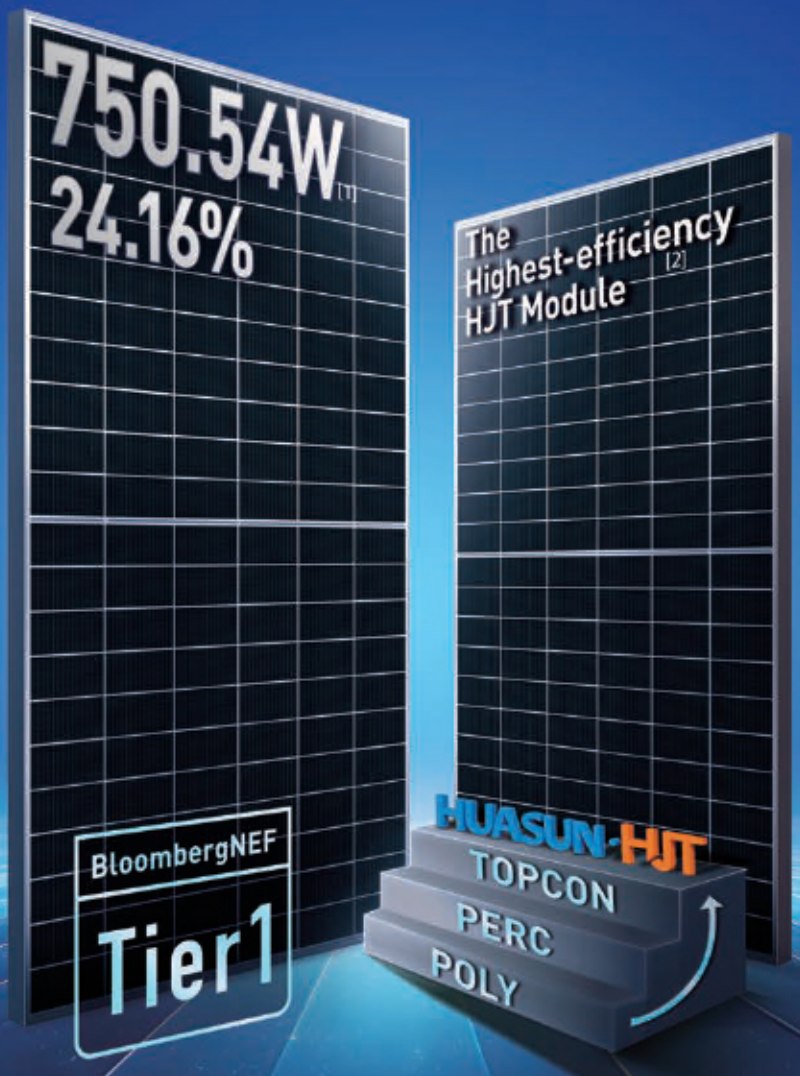

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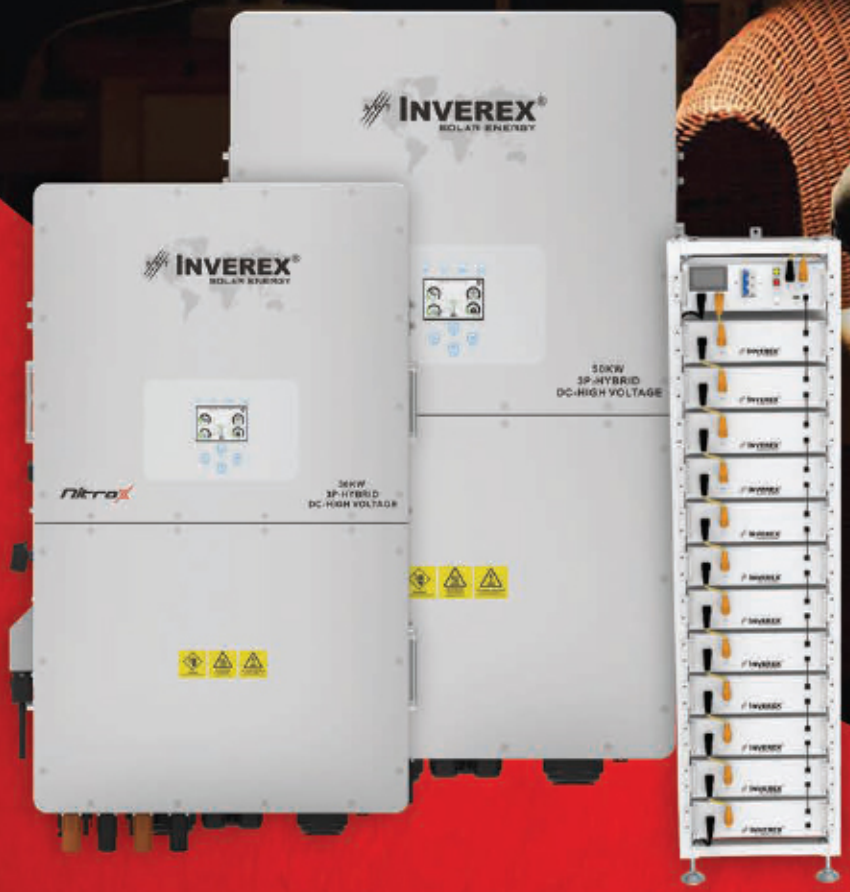

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