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ENERGY UPDATE

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FROM THE

Editor's desk...

IWT Breach: A Violation of Global Trust

India has recently breached the Indus Water Treaty (IWT), which was signed under the World Bank guarantee in Karachi on 19 September 1960 by then Indian prime minister Jawaharlal Nehru and former Pakistani president Ayub Khan. The treaty aimed to ensure agreed water distribution between India and Pakistan to avoid bilateral water conflicts and tensions.

The pact allocates the waters of the Indus River system — giving India control of the eastern rivers Ravi, Beas, Sutlej and Pakistan the western rivers Indus, Jhelum, Chenab. Despite wars and diplomatic deadlocks, the treaty survived for decades. However, India's recent conduct is not only alarming but blatantly violates the letter and spirit of the treaty. It is a direct breach of international law and a betrayal of a solemn commitment made before the global community.

India's continued construction of dams on Pakistan's share of rivers — notably the Kishanganga and Ratle projects — is a clear violation of the IWT. These projects obstruct the natural flow of water into Pakistan and compromise its agricultural output, food security, and energy generation capacity. India's unilateral actions show disregard for the mandatory prior notification and dispute resolution process outlined in the treaty. This behavior is not just a technical breach — it is an act of hostility wrapped in hydropolitics.

India's defiance amounts to a violation of World Bank-mediated obligations. As a guarantor of the treaty, the World Bank has the moral and legal duty to intervene decisively. Yet, India's blatant disregard for its terms continues largely unchecked. Such inaction erodes the credibility of international institutions and makes a mockery of treaties created to foster peace and cooperation.

More disturbingly, India's water aggression sets a dangerous precedent. Water is a basic human right and a shared resource, not a tool of coercion or control. By manipulating water flow and blocking Pakistan's legal share, India threatens regional stability and tramples on international humanitarian principles. In the modern age, weaponizing water is no less dangerous than waging war.

Pakistan has consistently raised its concerns through diplomatic channels, legal forums, and with the World Bank — but patience is not unlimited. A treaty is only as strong as the trust between its signatories. If India continues to act in bad faith, it will be solely responsible for the collapse of a historic agreement.

The World Bank and international legal bodies must rise above their silence and compel India to comply with the water treaty. This is not just a bilateral issue — it is a test of the world's commitment to justice, fairness, and peace. India must be held accountable for the breach of the water treaty with Pakistan.

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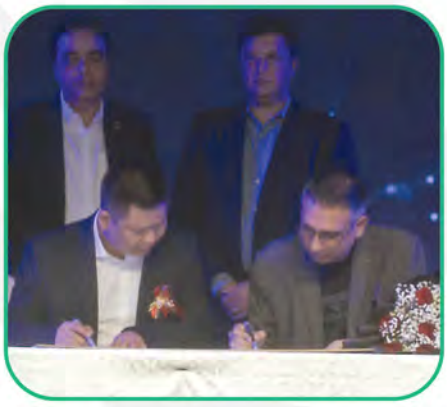

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Governor Sindh

I extend my heartfelt congratulations to Energy Update on the occasion of its 19th anniversary. Over the past 19 years, the publication has played a commendable role in promoting energy awareness, policy dialogue, and sustainable development within Pakistan's energy sector.

Your continuous efforts in highlighting critical energy challenges, advocating for renewable solutions, and encouraging stakeholder collaboration are deeply appreciated. Energy Update has evolved into a credible platform that not only informs but also inspires progress toward a resilient and self-sufficient energy future.

The Governor's Office remains a staunch supporter of initiatives that strengthen the energy sector through innovation and inclusive development. I wish Energy Update continued success in its noble mission of energising Pakistan's path toward sustainability and growth.

Syed Nasir Hussain Shah

Minister for Energy, Government of Sindh

Warmest congratulations to Monthly Energy Update on celebrating 19 years of excellence in energy journalism. Your efforts in highlighting key sectoral developments, facilitating policy discussions, and promoting sustainable energy transitions are truly admirable.

As Minister for Energy, I am proud to reiterate Sindh's commitment to leading Pakistan's energy transformation. Our province has taken bold steps—from harnessing indigenous resources in Thar and the Gharo-Jhimpir wind corridor, to pioneering initiatives like Pakistan's first provincial Transmission and Dispatch Company. These efforts reflect our strategic focus on affordability, sustainability, and industrial growth.

I commend Energy Update for consistently amplifying these important efforts and serving as a powerful platform for public-private collaboration in the energy sector. May your influence continue to grow in the years ahead.

Syed Murad Ali Shah

Chief Minisiter, Sindh

I extend my heartfelt congratulations to Energy Update on the occasion of its 19th anniversary. Over the past 19 years, Energy Update has commendably served as a vital platform for fostering awareness, informed dialogue, and policy insight within Pakistan's energy sector.

Your unwavering commitment to highlighting critical issues, promoting healthy discourse, and advocating for sustainable, practical solutions to the country's energy challenges is truly praiseworthy. Through dedicated journalism, Energy Update has significantly contributed to shaping public opinion and guiding key stakeholders toward a more secure, self- reliant energy future.

The Government of Sindh remains committed to leading in achieving national energy self- sufficiency in the shortest possible time. Our focus is on providing the most economical and sustainable energy solutions to domestic, commercial, and industrial consumers, ensuring that accessibility and affordability remain central to our strategy.

In exercising the constitutional powers granted to provinces under the 18th Constitutional Amendment, the Sindh government continues to harness indigenous energy resources for the benefit of our people and the nation. From the vast coal reserves in Thar to the pioneering wind corridor between Gharo and Jhimpir, we are resolutely committed to their responsible and optimal utilisation.

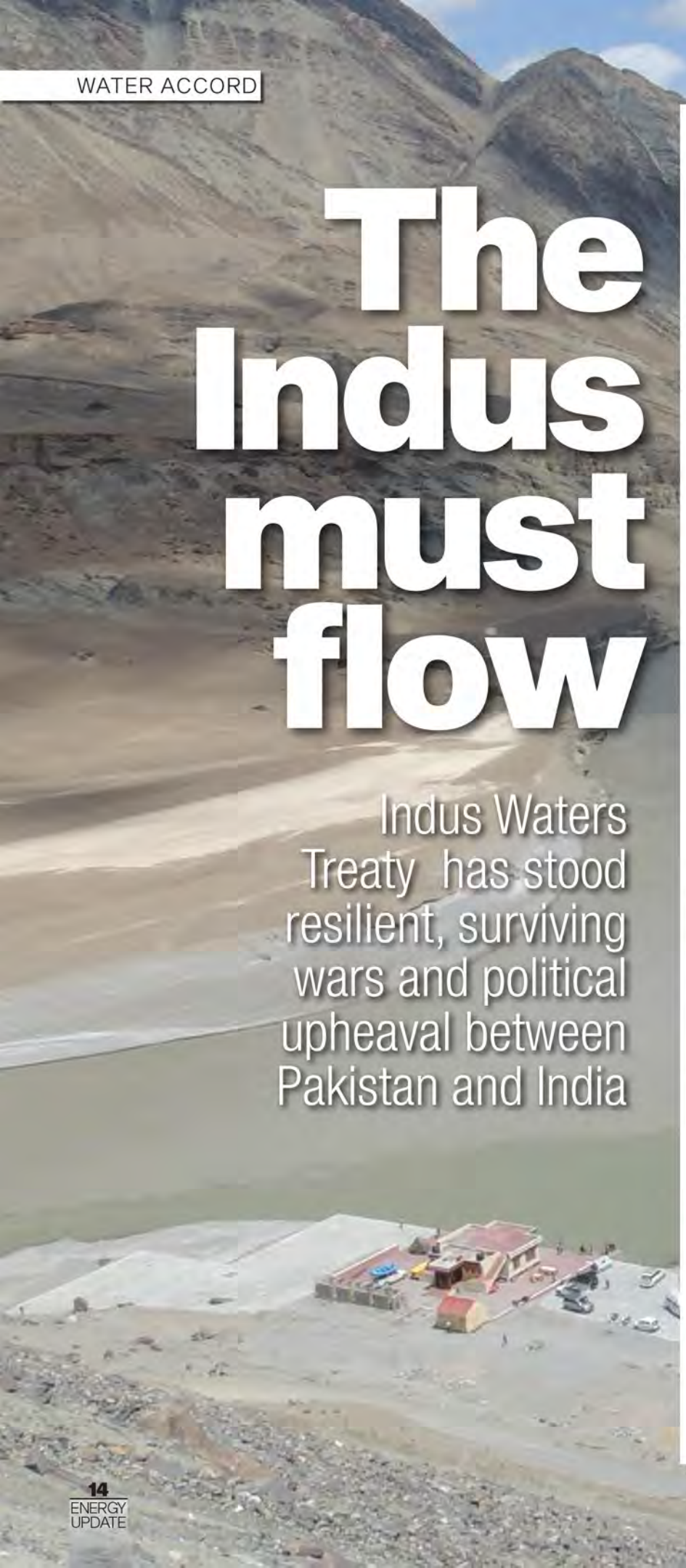
Sindh has also led the way in institutional energy development. We are proud to have established Pakistan's first provincial Transmission and Dispatch Company, enabling the delivery of clean energy from solar and wind projects to industries at the most affordable rates. Furthermore, we are in the process of setting up Pakistan's first provincial power sector regulator to ensure a more robust and responsive regulatory framework.

The Sindh government stands ready to support private sector initiatives, particularly in developing wind- solar hybrid power plants, thereby enhancing renewable energy generation and ensuring a reliable, cost-effective power supply for industrial growth.

On this important milestone, I wish Energy Update continued success in its mission to energise the national discourse on sustainable power development.

The Indus must flow

Indus Waters Treaty has stood resilient, surviving wars and political upheaval between Pakistan and India



Dr Abid Qaiyum Suleri

The writer heads the Sustainable Development Policy Institute (SDPI) and is a member of the advisory board of the Asian Development Bank Institute

For decades, the Indus Waters Treaty (IWT) has stood resilient, surviving wars and political upheaval between Pakistan and India. It safeguarded a precious resource essential to Pakistan's agriculture, economy, and energy security. Today, that critical pact faces unprecedented challenges as India signals to unilaterally hold the IWT in abeyance, pushing our country into uncharted waters.

Pakistan's dependence on the Indus River system cannot be overstated. Roughly 80 per cent of our agriculture depends on the Indus, Jhelum and Chenab rivers, and nearly a quarter of our economy hinges on this vital lifeline. Major cities rely on these rivers for drinking water and sanitation, while hydropower projects like the Tarbela and Mangla dams provide nearly a third of our electricity. Any disruption, even slight, threatens not just food security but also our livelihoods.

Yet, despite India's recent rhetoric, it is important to recognise that practically stopping the flow of these rivers overnight is beyond India's immediate capability. Two of its dams, Kishanganga and Baglihar (and the third one, Ratle –in coming soon mode) are run-of-river dams constructed to produce electricity and not for water storage. India currently lacks sufficient infrastructure, such as large storage dams and extensive canal systems, to significantly divert or withhold water. Any intended alteration of river flows would require massive construction projects spanning years, if not decades.

Beyond political and diplomatic hurdles, India faces substantial engineering, geological, seismic, seasonal and physical challenges. The Himalayan region, through which these rivers flow, is geologically fragile and highly susceptible to seismic activity. Classified under seismic zones IV and V, it frequently experiences significant earthquakes, making large dam construction risky and potentially catastrophic. Large dams increase the risk of reservoir-induced seismicity, where the weight of accumulated water can trigger earthquakes by altering stress on geological fault lines.

From an engineering perspective, constructing infrastructure capable of significantly diverting large rivers in such mountainous terrains involves enormous logistical challenges. Massive dams and reservoirs require stable geological conditions, which are largely absent in these areas. The rugged terrain and steep slopes also significantly complicate construction, greatly increasing both the cost and the time required for such infrastructure.

The laws of physics also present barriers. Redirecting vast volumes of water away from their natural course demands enormous energy and highly complex systems of tunnels and canals, which are both expensive and difficult to maintain. Significant ecological disruptions, such as landslides triggered by seismic activity, could also lead to natural blockages or sudden reservoir breaches, causing catastrophic flooding downstream.

India's recent actions will not significantly impact Pakistan's water share through the three western rivers in the short term. From April to September, the seasonal flow of water in the Indus basin simply exceeds India's storage limits; rather, it has to release surplus water to Pakistan from the three eastern rivers (where it has storage dams as per the IWT) during the monsoon season.

However, one cannot ignore India's water aggression. India's suspension of treaty obligations, especially regarding data-sharing and inspections, increases the uncertainty and unpredictability of water flows, making it difficult for Pakistan to plan its flood management, extensive canal-fed agricultural system, interprovincial water distribution, and electricity generation.

By unilaterally walking away from the IWT and defying the provisions of the treaty, India may pursue a gradual escalation strategy, incrementally building storage and diversion infrastructure that could alter water availability in the medium to long term. This might include expanding existing hydroelectric projects, initiating construction of new dams with larger storage capacities, and incrementally increasing irrigation and water-use projects in IIOJ&K.

In this scenario, Pakistan's legal options, though limited, remain important. Internationally, India cannot simply abandon its treaty obligations without severe diplomatic repercussions. The Indus Waters Treaty does not contain provisions for unilateral withdrawal, making India's current moves not only diplomatically reckless but also legally indefensible under international norms and the Vienna Convention of Treaties.

While Pakistan can engage international bodies like the World Bank and the International Court of Justice, realistically these institutions have limited enforcement power. They can facilitate dialogue and exert moral pressure but ultimately cannot compel India to abide by the treaty. Thus, Pakistan's diplomatic strategy must realistically balance international advocacy with strong domestic action.

India's unilateral action on the IWT risks eroding trust with its other neighbours. Countries like Bangladesh and Nepal, which share critical river basins with India, may reconsider their positions on water-sharing agreements, viewing India as a potentially unreliable partner. This erosion of trust could reshape regional alliances and diplomatic relationships in South Asia.

As Pakistan's steadfast strategic ally, China will play a significant role in this unfolding drama. India's attempt of water weaponisation could be self-harming, potentially inviting China to reconsider its approach to managing the Brahmaputra River, which flows from Tibet into India. Historically, the Brahmaputra has been a sensitive topic in Sino-Indian relations. For instance, in 2016, during the Doklam border standoff, China temporarily halted sharing hydrological data on the Brahmaputra, a pointed reminder of India's vulnerability.

Without any formal water-sharing agreement with India, China holds significant leverage and could use India's current move as an international precedence to use its upstream position strategically.

Having said that, Pakistan cannot rely on external factors only. It will have to enhance its water storage and security by accelerating the completion of dams such as Diamer-Basha, Mohmand and Dasu. Technological adoptions for enhanced real-time river flow monitoring, investing in predictive hydrological modeling, and upgrading infrastructure resilience are key for better flood management. All of the above measures will have to be supplemented by adopting advanced irrigation techniques and promoting widespread water conservation practices to safeguard against any potential unpredictability in water availability.

India's recent moves should also serve as a clarion call for our polity. Water security must transcend political divides. As Pakistan faces both human-made threats and the unpredictable impacts of climate change, unity and clear-headed policymaking become indispensable.

The Indus waters have been nourishing the region we call Pakistan today for the last many centuries. Protecting this lifeline requires not only vigilance against external threats but also the resolve to implement solutions within our grasp.

A $8 trillion Tug-of-War sparks federal-provincial showdown

EU Report

A serious dispute is likely to erupt between Pakistan's federal government and its provinces over who should take the lead in exploring and extracting the country's vast reserves of rare earth metals—critical minerals increasingly viewed as more strategic than oil and gas.

In a recent episode of his popular television show, senior political analyst and commentator Najam Sethi delved deep into the growing controversy between Islamabad and the provinces. The debate centres on ownership, control, and profit-sharing from major upcoming mining projects aimed at tapping into Pakistan's immense wealth in rare earth elements.

The provinces argue that they are entitled to as much as 90 per cent of the proceeds from any natural resource or mineral discovered within their geographical boundaries. In contrast, the federal government maintains that ownership of such resources ultimately lies with the federation. It asserts its right to claim the lion's share of revenues, citing its role in nation-building and infrastructure development essential for such mega-projects.

This clash is not new—it harks back to the discovery of natural gas in Sui, Balochistan, decades ago. Back then, the Baloch tribes voiced their grievances over not receiving natural gas or adequate royalties from fields located in their own territory. The federal government, in response, pointed out that it had funded and developed the entire discovery and extraction operation, including associated infrastructure like pipelines, roads, and power supplies.

The federal government continues to argue that natural resources—especially those with national strategic value—belong to the entire country, not a single province. This stance was evident in the contentious negotiations over the Reko Diq mining project, where the federal government, the Balochistan provincial authorities, and foreign investors engaged in protracted talks to determine their respective shares.

Nationalist parties, however, have long insisted that provinces should have complete control—100%—over any resources found within their boundaries. The tension between these opposing views is now intensifying as rare earth minerals come into focus.

Globally, rare earth elements have become indispensable for high-tech industries: from smartphones and electric vehicles to advanced military systems and space exploration. These minerals are often deemed more valuable than fossil fuels, and their control has become a strategic concern for world powers. Currently, China dominates both the production and processing of rare earth elements, but demand is surging in the United States and other developed nations.

Sensing the geopolitical and economic importance of these minerals, the federal government of Pakistan has taken a proactive stance. Recognizing that reliance on oil and gas alone will not ensure future economic growth, Islamabad has begun holding high-level conferences, revising mining laws, and coordinating with international partners to fast-track rare earth exploration.

According to the federal government, the provinces lack the financial strength, technical expertise, and international credibility needed to manage such large-scale, capital-intensive projects. Additionally, foreign investors often prefer dealing with centralized authorities that can offer stable guarantees—something the federation believes only it can provide.

As part of its push, a major conference was recently held, featuring the Prime Minister, the Army Chief, and prospective foreign investors. The conference unveiled a federal report—compiled with the help of international consultants—estimating that Pakistan possesses a staggering US$8 trillion worth of rare earth mineral reserves. To put that in perspective, Pakistan's current GDP is around US$400 billion, making these mineral reserves an economic game-changer.

With such immense potential at stake, the federal government insists it should lead all exploration and extraction efforts. However, this position runs up against the 18th Constitutional Amendment, which grants significant autonomy to provinces, including rights over natural resource management.

This constitutional friction sets the stage for an intense political and legal battle. Provinces are expected to resist federal encroachment fiercely, especially in light of historical grievances and long-standing demands for greater resource sovereignty.

Given the high stakes and legal ambiguities, it is highly likely that the matter will eventually land in the newly formed Constitutional Bench of the Supreme Court of Pakistan. The Bench will be tasked with resolving this pivotal dispute that could shape the future of Pakistan's resource governance—and its broader economic trajectory—for decades to come. ■

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Clean energy shift meets resistance

Waqas Moosa

The writer is the Chairman of Pakistan Solar Association

Undermining solar adoption sends the country veering off course

Once cautiously hailed as optimistic & futuristic option, Pakistan's renewable energy journey seems to be at a dangerous crossroads. Hastily introduced and poorly justified recent amendments to the country's net-metering policy have rattled the solar industry. This decision has led to the grave concerns among investors, environmentalists, and energy experts. At stake is not only the economic viability of residential and small-scale solar projects, but also Pakistan's broader commitments to sustainable development and energy security.

Pakistan's net-metering policy, first introduced in 2015, has played a pivotal role in advancing solar adoption. It allowed consumers to install rooftop solar panels and sell surplus electricity back to the national grid — offering both financial returns and a sense of energy autonomy. The results were transformative. Over a few short years, net-metering turned passive consumers into active energy producers, reshaping how citizens interacted with the national power infrastructure.

But now, with the government's recent policy shift, the foundations of this transformation are being eroded. The proposed changes reduce the compensation rate for surplus electricity sold back to the grid — from Rs 27 per kWh to a mere Rs 10 — and more critically, eliminate the unit-to-unit offsetting mechanism. Together, these changes amount to an effective 80% cut in the actual financial return for solar adopters. The impact on the solar industry is not just significant — it is existential.

Pakistan's power grid is plagued by overcapacity in thermal power generation, massive line losses exceeding 20 percent, outdated billing systems, and billions in circular debt. These are systemic issues — solar adopters are mere scapegoats. Targeting them does not address the rot; it merely delays the reckoning.

The government's justification hinges on a familiar narrative: distribution companies (DISCOs) are losing high-value customers to solar energy, exacerbating their already precarious financial state. In response, the policy aims to disincentivize further solar adoption. But this response is based on a flawed diagnosis. The real disease lies elsewhere — entrenched inefficiencies in the energy sector.

Pakistan's power grid is plagued by overcapacity in thermal power generation, massive line losses exceeding 20 percent, outdated billing systems, and billions in circular debt. These are systemic issues — solar adopters are mere scapegoats. Targeting them does not address the rot; it merely delays the reckoning.

Debunking the Myths

Several misconceptions underpin the government's position, and they deserve careful scrutiny.

Myth 1 is that the solar is a luxury for the wealthy. While it is true that new technologies often begin with the affluent, this is a natural

cycle of innovation. Early adopters help scale the market, driving down costs and enabling access for the broader population. Penalizing these pioneers disrupts this economic logic and stalls mass adoption.

Myth 2 is that the net-metering users are draining DISCO revenues. The real financial burden on the power sector stems not from net-metering users, but from Independent Power Producers (IPPs) and Captive Power Plants (CPPs), which place nearly 20 times the pressure on the system. Reforming IPP contracts, even marginally, could yield far greater savings than stripping benefits from solar users.

Myth 3 is that slashing solar returns will strengthen DISCO finances. Quite the opposite. As battery costs fall and technology improves, affluent users will turn to off-grid solutions—solar plus battery storage—altogether severing ties with DISCOs. As more high-value customers defect, the financial burden on the grid will intensify, and the remaining consumers—often less affluent—will bear the brunt through rising tariffs.

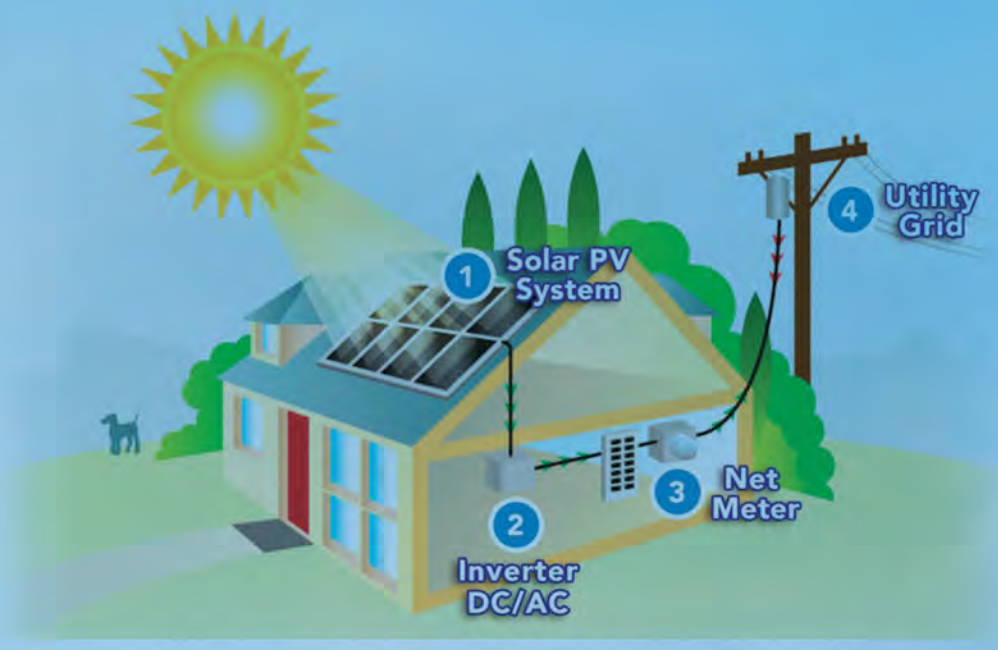
Myth 4 is that the net-metering is the reason for declining electricity demand. In truth, net-metered solar accounts for only 7.5% to 12% of recent demand reduction. The bigger culprits are macroeconomic woes: spiraling inflation, currency devaluation, and prohibitive energy costs that have forced businesses to scale back operations or shut down entirely.

As of fiscal year 2023–24, Pakistan had installed around 3,000MW of net-metered solar capacity — 2,400MW within DISCO territories and another 600 MW under K-Electric. But, this is just a fraction of the 27,000MW worth of solar panels imported into the country. An estimated 20,000MW of solar operates outside the net-metering regime — suggesting a silent, growing shift toward self-sufficiency.

The state's crackdown on the net-metered segment, therefore, seems both arbitrary and ineffective. It punishes a small but visible community while ignoring the silent migration toward off-grid alternatives.

The Unseen Consequences

The ripple effects of these policy amendments could be devastating. As compensation shrinks and battery technology advances, more consumers will disconnect from the grid entirely. The current policy all but incentivizes this behavior. The result? A shrinking customer base left to shoulder the fixed costs of a bloated and inefficient grid, with higher tariffs for all who remain.



Applying a blanket policy nationwide ignores stark regional disparities. Areas with low solar penetration and severe load shedding—often rural and underserved—are unfairly penalized alongside urban centers. These communities lose access to the very solution that could alleviate their energy poverty.

Pakistan has pledged to achieve 30% clean energy by 2030. Undermining solar adoption at this critical juncture sends the country veering off course, increasing its dependence on imported fossil fuels, worsening air quality, and weakening its international climate standing.

By discouraging solar, the country risks stifling private investment, slowing job creation in a high-growth sector, increasing foreign exchange outflows, and missing out on critical technological transfer.

The current policy overlooks several often invisible yet vital benefits of distributed solar. Solar energy produced near the point of consumption reduces transmission losses and alleviates stress on the grid during peak demand hours. Distributed solar helps cut fossil fuel use, improve air quality, and preserve foreign exchange reserves by reducing fuel imports.

Lower energy bills boost productivity and enable Pakistani businesses to offer more competitive pricing globally. Unlike IPPs that rely on sovereign guarantees and long-term contracts, net-metering projects are entirely privately funded—without any take-or-pay obligations or capacity payments.

This is not uncharted territory. Global experiences offer a wealth of lessons. California's NEM 3.0 was introduced with a two-year lead time, allowing stakeholders to prepare. The Netherlands pursued gradual tariff adjustments in consultation with industry. China harmonized solar expansion with grid stability through phased reforms.

Pakistan's abrupt and opaque policy change stands in stark contrast. It has introduced uncertainty, eroded investor confidence, and created chaos where consistency was most needed. The Pakistan Solar Association calls on policymakers to take a step back and reassess. This is not a plea for preferential treatment—it is a demand for fairness, transparency, and strategic thinking.

The government must revisit the proposed amendments and engage meaningfully with all stakeholders—industry, academia, and civil society. It should develop pragmatic, forward-looking policies that address the power sector's core challenges without derailing renewable energy progress. The government differentiate between high-penetration areas and the broader national landscape and promote a transparent policy-making process grounded in evidence and inclusion.

Pakistan's solar future still shines bright—but only if we choose dialogue over disruption, progress over regression, and vision over short-term fixes. ■

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M. Naeem Qureshi
Managing Editor Energy Update

Energy Update conducted an interview with Managing Director (MD) TNB REMACO Malaysia Abidin Bin Sarjo, in which he said that TNB REMACO is well-positioned to play a strategic role in shaping Pakistan's energy future. TNB REMACO plans to expand the O&M capabilities not only in combined cycle gas turbine but also in coal and hydro plants, solar and wind power projects. The detailed interview is given below:

Q. No1: TNB REMACO has been active in the Pakistan energy sector for a while. Can you share some milestones and developments that the company has achieved in Pakistan so far?
Answer: TNB REMACO has maintained its active presence in Pakistan for the last almost 25 years in the power sector. Presently, the company is executing a 12-year Operation and Maintenance (O&M) contract of 1,223MW RLNG Combined Cycle Power Plant at Balloki, District Kasur, Punjab.

Previously, TNB REMACO had successfully completed several O&M contracts, including 235MW TNB Liberty Power, 225MW Combined Cycle Power Plant at Narowal, and the 84MW New Bong Escape Hydro Electric Power Plant at Mirpur, AJ&K.

Q. No 2: How do you see the energy sector in Pakistan evolving over the next five years, and what role do you envision TNB REMACO playing in shaping this future?
Answer: As per the IGCEP 2024 -2034 (Indicative Generation Capacity Enhancement Plan), there are many hydro power and solar & wind power plants as well as coal projects coming up in Pakistan.

In this evolving landscape, TNB

REMACO is well-positioned to play a strategic role in shaping Pakistan's energy future. TNB REMACO plans to expand the O&M capabilities not only in combined cycle gas turbine but also in coal and hydro plants, solar and wind power projects. Also, TNB REMACO takes notice that Pakistan is embarking on renewable energy as a game changer for future power generation resources. TNB REMACO aims to support Pakistan's energy transition by expanding its services to include renewable and hybrid energy projects, while continuing to enhance plant efficiency, reliability, and environmental performance. Through a focus on local capacity building, technology transfer, and innovation-driven operations, TNB REMACO is committed to being a key partner in delivering sustainable, efficient, and future-ready energy solutions for Pakistan. Furthermore, TNB REMACO is also looking forward to exploring opportunities to participate in the growth of power generation, transmission, and distribution of electricity in Pakistan.

Q. No 3: In your opinion, what are the biggest challenges facing the energy sector in Pakistan today, and how is TNB REMACO addressing these challenges through its operations and projects?

Answer: Pakistan is facing the most serious and damaging load shedding, outages, and shortage of the most vital ingredient for modern society – power. Pakistan's per capita electricity consumption is around 449kWh. To reach 1000 kWh per capita, Pakistan will have to add 40,000MW in the next 10 years. This can only be achieved if 10,000MW of private hydropower, 10,000MW of public hydropower, 10,000MW of nuclear and 10,000MW of thermal (gas and coal) is added in the next 10 years.

TNB REMACO addresses these challenges through a strategic focus on operational excellence, efficiency, and long-term reliability in power plant operations. By leveraging its global expertise and local experience, the company ensures optimized performance of power plants under its care, such as the 1,223 MW RLNG Combined Cycle Power Plant at Balloki. TNB REMACO employs advanced maintenance strategies, real-time performance monitoring, and stringent safety protocols to reduce downtime and improve energy output.

Furthermore, the company supports capacity building by training local talent and sharing best practices, while also exploring opportunities to contribute to Pakistan's clean energy transition through potential involvement in renewable and hybrid energy projects. Through these initiatives, TNB REMACO remains committed to being a dependable partner in addressing the energy sector's most pressing challenges.

Q. No. 4: Given the current energy landscape in Pakistan, what opportunities for investment do you foresee in the coming years, and how is TNB REMACO planning to attract new investments to drive growth?

Answer: As per IGCEP 2024 -2034, there are many upcoming opportunities in Pakistan in the power sector. TNB REMACO will be eagerly looking forward to availing the O&M opportunities in the future power plants commissioning in Pakistan. Additionally, TNB REMACO is also looking forward to Joint Ventures with Pakistani companies in other business fields, including repair and maintenance, maintenance, repair and overhaul, Test & Diagnostic, Project & Technical Services and Advance Drone Technology, while continuing to deliver high-performance in O&M services to its clients. By focusing on technology, local talent development, and strategic collaborations, TNB REMACO aims to support sustainable growth, both for itself and for Pakistan's energy sector. ■

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HUAWEI empowers solar installers with advanced training for residential & commercial markets

EU Report

In a significant stride toward strengthening Pakistan's clean energy landscape, Huawei has launched a dedicated Installers Training Program tailored for the residential and commercial solar market. The initiative is designed to equip solar professionals with advanced knowledge of Huawei's intelligent photovoltaic (PV) technologies and promote best practices in installation.

Held under the umbrella of the Huawei Installer Community Program, the training offered a dynamic and hands-on learning experience for participants. The sessions covered a wide spectrum—from detailed technical insights and live product demonstrations to real-world application scenarios of Huawei's Smart PV solutions. Attendees praised the depth of content and the interactive nature of the training, highlighting a renewed confidence in deploying Huawei's cutting-edge solutions. The program not only aims to elevate installation standards across the country but also serves as a vital bridge between technology providers and the local solar workforce.

By deepening engagement and fostering knowledge sharing, Huawei continues to champion solar innovation in Pakistan. The event stands as a milestone in the ongoing transition to clean, reliable, and sustainable energy—echoing Huawei's commitment to building a greener future. ■

A huge loss to biodiversity, environment looms

Corporate Farming Plan in Sindh: A Bid to Benefit Elites

Special Report by Mansoor

Small farmers and laborers will be deprived of livelihoods; forced migration will take place which will put burden on the resources of cities

Corporate farming in Sindh, initiated under the federal government's Green Pakistan Initiative (GPI), has sparked widespread controversy and resistance from political, national and religious parties in parallel with civil society groups, including lawyers' bodies and the general public. A very heated debate is going on across Sindh, in which the government argues it modernizes agriculture, while opponents and experts describe it as harmful to small-scale farmers, environment, biodiversity, ecosystem, and provincial rights.

According to a report, the caretaker Sindh government in Jan 2024 signed an agreement to give more than 52,000 acres of land in its six districts for corporate farming for 20 years. Under the agreement, the local administration in Sindh had identified approximately 52,713 acres of "barren" land — 28,000 acres in Khairpur, 10,000 acres in Tharparkar, 9,305 acres in Dadu, 1,000 acres in Thatta, 3,408 acres in Sujawal and 1,000 acres in Badin — to be handed over to a company for the next 20 years to execute its Green Pakistan Initiative.

Another report says: "Pakistan inherited the feudal system from the British Raj. Land distribution in Pakistan is highly unequal as 5pc of large landholders possess 64pc of the total farmland and 65pc small farmers hold 15pc of the land. Some Gulf countries had purchased lands in Pakistan, particularly in Sindh and Balochistan, that would cause water scarcity and deprive local farming communities of their rights."

The focus on large-scale agribusiness will sideline small farmers, limiting their access to markets and resources. Altering natural landscapes can lead to soil degradation and loss of biodiversity and environment sustainability.

The Karachi Bar Association, Awami Tehreek, Sindh United Party, PPP-SB, Jeay Sindh Qaumi Mahaz, Sindh Taraqi Pasand Party, and other parties have been opposing the corporate farming. Critics argue that corporate farming in Sindh poses several threats to local farmers. Leasing large tracts of land to corporations can displace small farmers who have traditionally cultivated these lands.

The shift to corporate farming will deprive local farmers of their primary source of income. The introduction of large-scale farming could strain water resources, affecting the availability of water for local communities. The transformation of land use may lead to environmental degradation, affecting biodiversity and soil health.

The people of Sindh expressed concerns that the lease agreements do not specify measures to safeguard the interests of indigenous people, potentially exacerbating poverty and deepening social inequalities in the region.

There are concerns over the opaque nature of the agreements and the absence of consultations with local stakeholders. The shift to corporate farming may marginalize small farmers, leading to increased poverty and social unrest. If the corporate farming initiative proceeds without addressing these concerns, it could lead to increased social unrest. Displacement and marginalization of local communities may fuel protests and resistance.

Unsustainable farming practices could harm the ecosystem, affecting agriculture and livelihoods. The diversion of water resources for corporate farming may lead to disputes between provinces and within communities. The perceived overreach by federal and military entities could erode trust between the provincial government and its constituents.

While the goal of modernizing agriculture is

commendable, the approach of implementing corporate farming in Sindh raises significant concerns. Ensuring transparency, protecting the rights of local farmers, and preserving the environment are crucial for the sustainable development of the region. Engaging with local communities and stakeholders is essential to address these challenges and to foster inclusive growth.

To save farmers and laborers from the loss of their area lands, it is a dire need to promote agroecology and cooperative farming practices that involve local communities and ensure shared benefits. Village-level land-use planning should be made to empower rural communities to decide how local land is used. Solid steps must be taken to stop the construction of new canals and water infrastructure that diverts water from existing farmlands to corporate farms.

Equitable water distribution, with priority given to small farmers and tail-end users, should be ensured across Sindh province. Corporate farming projects need to be challenged in courts, especially when they violate environmental laws, land rights, or public consultation requirements. Furthermore, parliamentary resolutions should be tabled in the Sindh Assembly to expose and block corporate farming deals, besides demanding full disclosure of land leases, project agreements, and water allocations related to corporate farming.

There is also a need to promote organic and climate-resilient agriculture, linked to local markets, not export-oriented corporate chains. Alerting international human rights and environmental organizations is also mandatory about land grabs, displacement, and water theft occurring under corporate farming in Sindh. It will also be good to urge global donors and development agencies to halt funding for corporate projects that displace rural communities. ■

BURDEN OF BILLS

Karachi's Shocking Power Play

Will honest consumers be forced to pay KE's Rs 84 billion write-off?

EU Report

Karachi Electric's staggering Rs 84 billion write-off claim, currently under review by the National Electric Power Regulatory Authority (NEPRA), must not become a financial burden on the city's honest, bill-paying electricity consumers. This was the unanimous stance taken by senior journalists and analysts, Sohail Iqbal Bhatti and Syed Khalid Mustafa, during the latest episode of their joint podcast.

Both seasoned media professionals warned that transferring this massive financial liability to loyal, responsible consumers, who neither default on payments nor engage in electricity theft, would be nothing short of penalising them for doing the right thing.

Mr. Bhatti revealed that K-Electric's initial write-off claim was Rs 76 billion, which eventually escalated to Rs 84 billion as the issue dragged on. According to him, K-Electric has persistently lobbied for these losses to either be absorbed into the electricity tariff charged to its consumers or paid out as a government subsidy. He emphasised that the company is determined to recover the massive amount by any means necessary. Notably, K-Electric stands as the only power distribution company (DISCO) in the country to have formally submitted such claims. While NEPRA had introduced a clear framework and guidelines for the submission and settlement of such claims, other DISCOs refrained, primarily because they lacked the documentation and compliance necessary to substantiate their cases. K-Electric, however, leveraged its influence within government circles to push NEPRA into holding a public hearing.

These claims, Mr. Bhatti explained, pertain to unpaid electricity bills dating back to 2017, owed by defaulting consumers that K-Electric failed to recover. Under NEPRA's guidelines, any such submission must include comprehensive biodata and supporting information on the defaulters—a condition many DISCOs could not meet.

Energy That Moves Life

Mr. Khalid Mustafa added another critical dimension to the discussion, highlighting that at the time of K-Electric's privatisation, many parts of Karachi were "no-go areas" where meter reading staff couldn't safely operate due to a breakdown in law and order. In such areas, the enforcement and collection of bills became nearly impossible. Moreover, he pointed out a key psychological factor: consumers of a privatised utility like K-Electric often feel less compelled to pay bills compared to a state-owned DISCO, which can legally involve law enforcement agencies against defaulters.

Importantly, Mr. Bhatti clarified that these claims do not even include long-standing unpaid bills from decades past, focusing instead solely on the post-2017 period. He strongly criticized the idea of passing these claims onto the law-abiding consumers, calling it "highly unethical" and urging NEPRA to protect the financial interests of low- and middle-income households in Karachi.

"Why should those who pay their bills regularly be forced to shoulder the losses caused by electricity thieves and chronic defaulters?" Bhatti questioned, underscoring the principle of fairness that should guide NEPRA's decision.

In another segment of the podcast, the duo addressed the recent resignation of NEPRA's Balochistan member. Mr. Mustafa noted that the Balochistan government had expressed dissatisfaction with the outgoing member's performance, possibly influencing his decision to step down.

As NEPRA's final verdict on K-Electric's write-off claims looms, all eyes are now on the regulatory body to uphold justice—and ensure that Karachi's conscientious consumers aren't left footing the bill for others' negligence. ■

The Great Mining Mirage

Kaiser Bengali Exposes Hype Behind Pakistan's Mineral Dreams

Mustafa Tahir

The Writer is Deputy Editor Energy Update

In a recent candid appearance on a popular podcast, eminent economist Dr Kaiser Bengali laid bare the myths surrounding Pakistan's ambitious mining narrative, raising pressing questions about legality, feasibility, and economic realism.

Dr Bengali began by highlighting a critical constitutional oversight: mining and mineral development are provincial subjects, a fact enshrined in Pakistan's Constitution even before the landmark 18th Amendment. "The 1973 Constitution clearly states that the federation has no role in this subject," he emphasized.

According to him, any memoranda of understanding (MoUs) related to mining should be signed by provincial chief ministers, not federal representatives. "When the federal government signs such MoUs, it is not just inappropriate—it is unconstitutional and illegal," he stated.

He went on to critique two much-touted initiatives—the China-Pakistan Economic Corridor (CPEC) and the Special Investment Facilitation Council (SIFC)—both of which were once hailed as game-changers for Pakistan's economy. "Despite the drumbeating, neither initiative has managed to turn around the national economy," he said. Now, he warns, a similar wave of unrealistic optimism is being promoted around Pakistan's supposed vast mineral reserves.

"People are being told that Pakistan will become rich through mining. But this is another bubble," Dr Bengali cautioned. He explained that developing a single mine can take up to 10 years, involving extensive phases such as prospecting, satellite surveys, and analysis of quantity, quality, and depth. Most of these reserves, he noted, lie in remote areas of Balochistan, which currently lack even the basic infrastructure to support such large-scale operations.

He pointed out that although a railway line does run across Balochistan, the actual mining sites are not located near these tracks. This presents a major logistical challenge. "A comprehensive road network is essential to first connect the mining zones to the railway line for transporting heavy mining equipment and machinery," Dr Bengali explained. "Later, these same roads would be used to transport extracted minerals to other parts of the country and ports for export."

"First, you need roads, then water supply, and even housing for workers—all in areas that are practically barren and isolated," he added. The cost to build this infrastructure runs into billions of rupees, and Pakistan's cash-strapped government struggles to even fund ongoing development projects. "Where will the money come from to build the essential groundwork before mining can even begin?" he asked.

Dr Bengali's sobering analysis serves as a reality check for policymakers and the public alike. While Pakistan's minerals may glitter with promise, he reminds us that without sound governance, legal clarity, and massive investment in infrastructure, they are unlikely to deliver the economic salvation many are hoping for. ■

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Carbon markets with a gendered lens

Women-led carbon projects could be the triple wins for climate, communities and credit buyers; Carbon markets are emerging as an essential financial mechanism in the global effort to combat climate change

Sadia Ishrat Satti

The writer is a gender and climate specialist at the Sustainable Development Policy Institute (SDPI), Islamabad

Carbon markets are emerging as an essential financial mechanism in the global effort to combat climate change. By assigning a monetary value to carbon emissions, these markets incentivise emission reductions while supporting sustainable development goals through compliance and voluntary frameworks.

As a cornerstone of the Paris Agreement's objectives, they mobilise resources for initiatives like reforestation and clean energy projects, contributing to poverty alleviation and environmental integrity. Although this market instrument is being widely used, the rising problem with this market is equitability, particularly gender equity.

According to the UN, women comprise 80 per cent of those displaced by climate change, yet they receive less than 10 per cent of climate finance a stark gap. This will further deteriorate if gender-responsive climate finance instruments are not mainstreamed particularly for the Global South.

One of these instruments is gender-responsive carbon markets. These markets go beyond traditional carbon trading by intentionally empowering women and marginalised groups as leaders, beneficiaries, and decision-makers in climate projects. Far from being a mere moral imperative, this approach boosts project success carbon credits with gender equity certifications selling

for 78 per cent more than standard offsets, proving that inclusion drives both impact and profit.

What are gender-inclusive carbon markets? These innovative markets embed principles of gender equity into their frameworks, ensuring marginalised groups – especially women – actively participate and benefit from climate initiatives. Women disproportionately affected by climate change play significant roles in environmental stewardship and resource management. Integrating gender equity into carbon projects amplifies effectiveness by fostering women's leadership, improving adaptive capacities, and creating economic opportunities through projects like clean cookstoves and reforestation.

South Asia is progressively integrating gender-inclusive financial services within climate and carbon projects to address systemic barriers faced by women and enhance their participation in sustainable development. Women, who disproportionately bear the impacts of climate change, often face limited access to financial resources and decision-making roles. Innovative strategies across the region have demonstrated measurable success in bridging these gaps, fostering both economic empowerment and climate resilience.

One notable example is India's Kashi Hills REDD+ initiative, Village Savings and Loan Associations (VSLAs) enable 5,000+ women to access microloans for sustainable livelihoods like agroforestry. By pooling small savings ($1/month), they invest in forest-friendly businesses, boosting incomes by 30 per cent while reducing deforestation by 15 per cent.

Another project operates in several developing countries, including Ethiopia, India and South Africa, under the Fair Climate Fund initiative. This programmeutilises blockchain-based payments to directly transfer carbon revenues to women's mobile wallets, improving transparency. In Andhra Pradesh, this cut payment delays by 90 per cent, while in Ethiopia, it increased women's participation in clean cookstove projects by 50 per cent. These initiatives not only enhance women's financial independence but also contribute to broader climate goals by encouraging sustainable practices.

South Asia's gender-inclusive approaches differ from other regions like Africa or Latin America by emphasising community-led solutions tied directly to financial inclusion. For instance, carbon credits with gender co-benefits sell for significantly higher prices – up to $12/ton compared to $7/ton for standard credits, highlighting the economic value of inclusion.

South Asia attracts three times more private investment for gender-focused carbon projects than conventional ones. By learning from regional successes, Pakistan can craft tailored strategies that address its unique challenges while fostering transformative change.

Women face significant challenges in participating equitably in carbon markets, particularly in South Asia, where deep-rooted gender inequalities intersect with climate vulnerabilities. According to the World Bank report, limited land rights and decision-making power are among the most pressing barriers, as only 12 per cent of women in South Asia own land. This exclusion locks women out of agroforestry and renewable energy projects that require land ownership.

Inadequate access to information and capacity-building opportunities further restrict women's involvement. Rural women spend 5–8 hours per day on unpaid care work, leaving little time for training or engagement in carbon projects. A survey in Bangladesh revealed that 80 per cent of women living in carbon project areas had never heard of carbon credits, highlighting the information gap that prevents them from fully understanding or contributing to market mechanisms. Coupled with time poverty due to traditional gender roles, these limitations perpetuate exclusion from climate action and decision-making processes.

Financial exclusion is another critical barrier. The IFC Gender Finance Gap Report states that women are 28 per cent less likely than men to access formal credit for climate projects. Gender inclusion strengthens both the environmental and economic impact of carbon markets.

Policy frameworks are beginning to recognise these benefits. Pakistan's National Climate Gender Action Plan (2023) mandates at least 30 per cent of women's participation in climate finance programmes, setting a precedent for integrating gender equity into national strategies. Innovative solutions are also emerging across South Asia to address systemic barriers and amplify women's roles in carbon markets. For example, the W+ Standard quantifies gender impacts by measuring outcomes such as hours saved via clean cookstoves and translating them into economic value. Blockchain traceability systems have increased women's benefit shares from carbon projects in Kenya from 18 per cent to 52 per cent.

Pakistan's first carbon market policy, introduced during COP29 in Baku, represents a significant step in the country's climate action strategy. The policy aims to achieve climate targets, promote green investments, and foster a low-carbon economy through mechanisms like cap-and-trade and voluntary carbon markets.

To fully unlock the potential of gender-inclusive carbon markets in the country, policymakers must mandate gender quotas in project staffing and benefit-sharing mechanisms while developing SDG-aligned pricing models that reward co-benefits like those certified by the W+ Standard. Investing in mobile-friendly carbon literacy programmes for rural women can further bridge information gaps and foster inclusive participation. Women-led carbon projects could be the triple wins – for climate, communities and credit buyers.

By addressing systemic barriers and scaling innovative solutions, Pakistan can transform its carbon markets into powerful tools for advancing both environmental sustainability and social equity. The recently issued Pakistan policy guidelines for trading in carbon markets include gender equality as one of the co-benefits of carbon credits but future iterations of the policy should have a dedicated gender lens for carbon trading to harness the benefits of gender-inclusive carbon markets. ■

Growatt SPE Hybrid Inverters

Blackout-Proofing Pakistani Homes

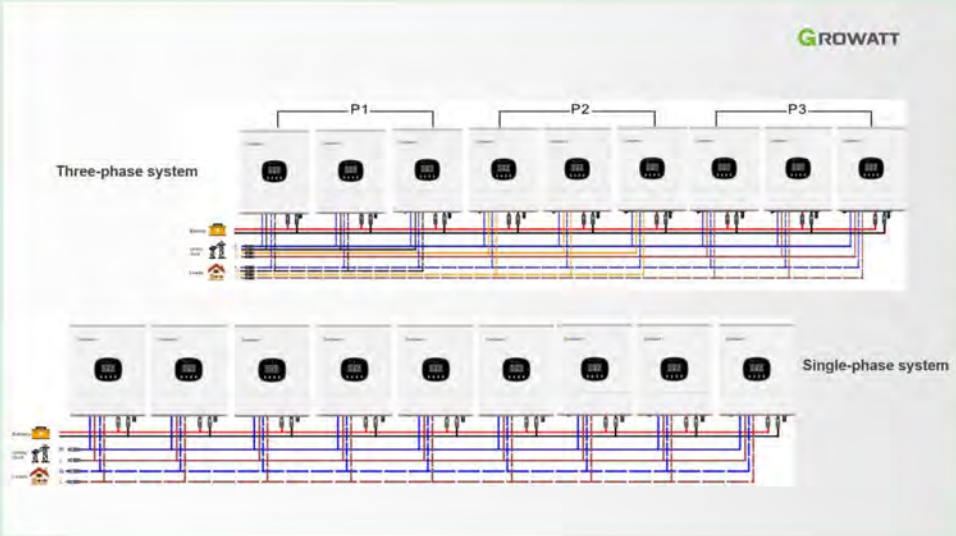
EU Report

As solar technology matures and grid reliability remains a persistent challenge, homeowners in sun-rich regions like Pakistan are rapidly adopting solar systems as both a cost-saving measure and energy safety net. With over 3,000 hours of annual sunshine accelerating this shift, Pakistan's residential solar market has seen year-on-year growth since 2020.

Growatt, a global solar innovator entrenched in the Pakistani market since 2016, has progressively empowered local households to achieve energy independence through customized solutions. Building on this legacy, the company now introduces its SPE Series IP20 hybrid inverters – a purpose-engineered energy hub combining solar conversion, battery storage integration, and intelligent energy management, designed specifically for cost-conscious markets demanding robust backup capabilities.

Available in 3.5kW to 12kW configurations, the series accommodates different residential rooftop orientations through its dual MPP trackers. The entry-level SPE 3500-6000TL HVM-G2 supports 8000W PV input, sufficient to power a small home, while maintaining a 1.0 power factor for minimal energy waste. For larger installations requiring whole backup during outages, the SPE 12000 ES delivers 12kW output scalable up to 108kW via 9-unit parallel setup– a flexibility further enhanced by supporting single-phase and three-phase configurations, empowering users to address both current energy demands and future scalability needs without infrastructure constraints.

Equipped with dedicated built-in BMS communication ports that includes CAN/RS485, the inverters maintain precise control over lithium battery operating parameters. The Battery Low Voltage Disconnect (BLVD) function automatically turns the non-critical loads on and off based on the the battery's state of charge (SOC), ensuring optimal energy management.



The SPE Series establishes a 24/7 energy command center via the ShinePhone App, enabling users to monitor real-time PV generation, household consumption patterns, and battery charge/discharge status. Integrated time-of-use algorithms autonomously optimize battery cycling schedules to align with dynamic electricity pricing, prioritizing stored energy deployment during peak-rate periods. This adaptive management protocol maximizes solar self-consumption potential while systematically reducing grid dependence. Three intelligent energy dispatch strategies are available as below:

Solar First (SOL): Prioritizes solar energy to power loads and charge batteries when sunlight is available.

Solar and Utility Power (SNU): Automatically switches between solar and grid power based on availability.

Utility Power First (UTI): Prioritizes grid power when solar energy is insufficient. These modes, along with the option to configure export power settings, give homeowners complete control over how their solar systems generate, store, and consume.

Certified across tropical, temperate, and desert climates, Growatt SPE series demonstrates stable performance in temperature fluctuation management, humidity resilience, and voltage variation adaptability. Its modular architecture allows seamless capacity expansion through parallel unit integration, future-proofing households against evolving energy demands. ■

39th IEEEP International Symposium

Call for strengthening academia-industry ties

EU Report

In today's rapidly evolving technological landscape, stronger collaborations between academia and industry are essential to drive innovation, research, and sustainable national development.

Engineering universities, with their potential to generate cutting-edge solutions, must not operate in silos but engage actively with industry leaders and professional bodies. This was a key theme echoed by speakers at the 39th IEEEP Multi-Topic International Symposium held in Karachi, where experts called for bridging the persistent disconnect between engineering education and industrial needs in Pakistan.

The two-day symposium, hosted by the Institution of Electrical and Electronics Engineers Pakistan (IEEEP), served as a high-level platform for discussing ways to transform universities into engines of innovation. Speakers emphasized the importance of revising academic curricula to align with emerging industrial technologies and ensuring that engineering graduates are industry-ready.

Pakistan Engineering Council Chairman, Engineer Wasim Nazeer, addresses inaugural ceremony of 39th Multi-Topic International Symposium of Institution of Electrical and Electronics Engineers Pakistan at a hotel in Karachi.

Engineer Wasim Nazeer, Chairman of the Pakistan Engineering Council (PEC), was the chief guest at the event. He announced PEC's commitment to acting as a vital link between universities, industry, and professional organizations.

"We are initiating consultation sessions with bodies like IEEEP to develop a unified strategy for resolving key engineering challenges through collaborative efforts," he said. Nazeer also underscored the need for professional ethics and unity within the engineering community, urging them to adopt a leadership role in national infrastructure development.

IEEEP Karachi Centre Chairman, Engineer Navid Akram Ansari, echoed these sentiments, highlighting the urgent need to revamp engineering curricula to meet industry demands. He encouraged universities to remain open to new ideas and partner with organizations like IEEEP for guidance and career counselling.

"Rigid academic structures hinder technological progress," he noted, adding that universities must prepare students to become active contributors to Pakistan's development.

Dr Khalid Waleed, Research Fellow at the Sustainable Development Policy Institute, used his keynote address to propose environmental and economic reforms in the energy sector. He advocated for the early retirement of coal-based power plants and shifting to solar power for lifeline consumers, aiming to reduce subsidy burdens and earn carbon credits for the country. ■

Pakistan Engineering Council Chairman, Engineer Wasim Nazeer, receives a special memento at the inaugural ceremony at 39th Multi-Topic International Symposium of Institution of Electrical and Electronics Engineers Pakistan at a hotel in Karachi. Pakistan Engineering Council Chairman, Engineer Wasim Nazeer, addresses inaugural ceremony of 39th Multi-Topic International Symposium of Institution of Electrical and Electronics Engineers Pakistan at a hotel in Karachi.

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From Solar Panels to Electric Wheels

CEO Unveils Bold Vision for a Cleaner, Self-Reliant Pakistan

EU Report

"I began my journey back in 2005 with a firm resolve to serve my fellow countrymen with unwavering dedication, honesty, and a deep commitment to offering the best products as real solutions to the power shortfall challenges faced by consumers across Pakistan," says Muhammad Zakir Ali, CEO of Inverex Solar Energy.

Ali made these remarks in a brief but impactful conversation during the Inverex Pride & Performance Awards, recently held in Kuala Lumpur, Malaysia. The event, which celebrated and honoured top-performing dealers, retailers, and stakeholders in Pakistan's clean energy sector, marked a historic milestone — it was the first time a Pakistani clean energy company hosted such a prestigious event internationally, with the aim of strengthening global awareness about solar energy solutions for Pakistan's power consumers.

Speaking to Energy Update, the Inverex CEO revealed that one of the foundational goals of his enterprise had been the indigenous production of solar technology and equipment — a vision that has already begun materializing. "We've successfully kick-started local manufacturing of solar components, and we're now shifting our focus to the indigenous assembly of lithium batteries and other advanced clean energy solutions," he explained.

Ali emphasized that in 2025, his company aims to ensure that at least 25 percent of its marketed products are produced within Pakistan, further solidifying Inverex's commitment to self-reliance and technological advancement in the renewable energy space.

Beyond solar energy, Inverex is also making bold strides into Pakistan's electric vehicle (EV) market. "We've already begun introducing small electric vehicles, and soon we'll roll out electric-powered SUVs and other larger vehicles — all under the Inverex brand," Ali announced. This ambitious move positions Inverex as the first Pakistani solar company to venture into the EV sector, signaling a new era for clean transportation in the country.

Ali concluded by lauding his team for their dedication and hard work in making the Malaysia event a grand success. "This was more than just a celebration — it was a statement of purpose. We are here to lead, innovate, and empower Pakistan's clean energy future," he said. ■

Pioneering Inclusive Development in Thar

EU Report

In the early 1990s, the Geological Survey of Pakistan (GSP) uncovered a staggering 175 billion tonnes of lignite coal beneath the golden sands of the Thar Desert. This vast, indigenous resource held the promise of transforming Pakistan's destiny by ushering in a new era of energy security and economic prosperity. To realize this Thar dream, Engro, in partnership with the Government of Sindh and other associates, established the Sindh Engro Coal Mining Company (SECMC) in 2009.

The Thar Block II, allocated to SECMC, contains 2.4 billion tonnes of coal - a mere 1.5% of Thar's total potential. With Phase 1 and 2 of the mine expansion completed and Phase 3 by mid-2026, the mine's capacity is set to reach 11.2 million tonnes per annum. Since its inception, the project has saved Pakistan approximately USD 1.3 billion in foreign exchange by reducing reliance on imported fuels.

While the energy potential of Thar is undeniable, the story of SECMC is not just about coal extraction or energy production; it is about transforming lives. Thar, despite its immense natural wealth, remains one of Pakistan's most underdeveloped regions, ranking low on the Human Development Index. Historically, the people of Thar have faced challenges such as limited access to quality education, healthcare, and sustainable livelihoods.

From the onset, SECMC adopted a holistic approach to development, ensuring that the benefits of the Thar project reached the local community. This was not just about corporate social responsibility; it was a moral imperative. In collaboration with other Thar Block II entities, SECMC established the Thar Foundation to drive an inclusive business model based on the United Nations' Sustainable Development Goals (SDGs). Out of the 17 SDGs, 13 priority areas have been targeted for direct intervention, focusing on poverty alleviation, sustainable livelihoods, healthcare, education, clean water, sanitation, and gender equality.

Driven by its vision to create socio-economic opportunities for the people of Thar, SECMC nurtures local talent to actively contribute to the region's transformation. The Company has created approximately 4,100 jobs, with 60% of these positions filled by individuals from the Thar region. Additionally,

over 2,000 people have received vocational training in fields such as solarization, welding, and hospitality, equipping them with skills to secure sustainable livelihoods.

Remarkably, SECMC and the Thar Foundation prioritized community well-being even before coal mining began. Today, the Foundation operates 28 school units, providing quality education to over 5,000 students, with 35% female enrolment. Additionally, skill development programs continue to expand, offering training in diverse fields such as welding, solarization, IT, stitching, and dressmaking. The Government Polytechnic Institute (GPI) in Mithi provides a Diploma of Associate Engineering (DAE) in mining, electrical, mechanical and civil engineering. Over 300 students, including 13 women for the first time, are enrolled in these diploma courses. Furthermore, 75 students were sent to China for specialized training in Operations & Maintenance (O&M) of power plants, equipping them with advanced expertise. Upon their return, these skilled individuals were seamlessly integrated into local industries.

Seven medical facilities, such as Thar Foundation Hospital, Marvi Clinic, and Gorano Clinic and others, have offered free critical healthcare services to more than 300,000 community members since inception.

SECMC has also been a catalyst for gender equality in Thar. Historically, cultural restrictions and low female literacy rates limited women's participation in the workforce. Thar Foundation has empowered over 300 women by training them as lady health workers to serve in various healthcare facilities. Additionally, more than 180 female teachers are inspiring and educating the next generation in local schools. The resilient and talented women of Thar are breaking barriers by taking on unconventional roles, such as RO plant operators, solar panel operators and dump truck drivers. Approximately 130 grants have also been provided to various beneficiaries including Small and Medium Enterprises (SMEs) and low-income families who invested in tuck shops and livestock to enhance their livelihoods.

The Thar Foundation's Village Electrification Project (VEP) for the first-ever installation of solar systems with battery has brought uninterrupted power supply and a renewed sense of hope to 15 villages and settlements across Thar Block II and the Gorano area. Under this project, almost 100 percent solarization of 3,150 households – including 361 in Gorano - has been achieved.

SECMC has also prioritized environmental conservation and biodiversity. In partnership with the International Union for Conservation of Nature (IUCN), a detailed flora and fauna study was conducted, highlighting the region's rich ecological treasures and efforts for its preservation. The Gorano Reservoir has been declared a Wetland Sanctuary by IUCN, serving as a haven for migratory birds and vultures. The area has also become a hub for bio-saline agriculture, with 16 edible plant species successfully cultivated and over 120,000 fish thriving in bio-saline waters, directly benefiting 1,500 households. The Foundation's 'Thar Million Tree' program has also been a resounding success, under which a dense forest was grown on 100 acres at Thar Block II site to increase greening efforts and promote biodiversity.

The success of Thar project showcases that when governments, private entities and local communities collaborate, transformative change is achievable. It is a reminder that economic growth and human development are two sides of the same coin. As Pakistan embarks on a mining revolution, community inclusivity and people should be at the heart of progress to unlock the full potential of our nation's resources. ■

Pakistan plans to save $17bn by removing high-cost energy projects

EU Report

The government intends to save Rs4,743 billion (USD17 billion) by excluding 7,967MW of high-cost energy projects and adjusting project completion timelines under the upcoming Indicative Generation Capacity Expansion Plan (IGCEP) 2024-2034, the Prime Minister's Office (PMO) said Thursday.

According to a press release issued by the PMO, the decision was made during a meeting chaired by Prime Minister Shehbaz Sharif in Islamabad to discuss the reduction of electricity tariffs and implementing sustainable reforms in the energy sector, focusing on the IGCEP.

Under the IGCEP, the government aims to prioritise local resources and alternative energy sources like solar, nuclear, and hydropower over imported fuels, which is expected to save Pakistan several billion dollars in foreign exchange reserves.

The government also aims to gradually phase out capacity payments to power generation companies, added the statement. During the meeting, PM Shehbaz noted that after a recent reduction of approximately Rs7.50 per unit in electricity rates, the government is committed to pursuing an effective strategy for sustainable energy sector reforms to provide further relief to the public.

Small renewable energy projects in IGCEP: HEPA seeks PM's support for inclusion

The prime minister directed relevant authorities to expedite the completion of key projects, including the Diamer Bhasha Dam, to ensure effective systems for energy production and water storage in the country.

"Any delay in the completion of energy projects is unacceptable," he emphasised. The prime minister also announced that a free market for electricity generation will be established in the near future. "The creation of this market will enable competitive power supply, leading to more sustainable electricity availability and further reduction in tariffs," PM Shehbaz was quoted as saying in the statement.

During the meeting, the prime minister was briefed on ongoing reforms in the energy sector.

Upon the PM's instruction, a re-evaluation of the IGCEP revealed that there was room for further improvement. The Task Force subsequently revised the plan to better align with ground realities and future needs.

The briefing added that for the next ten years, the IGCEP paves the way for power projects to be awarded through competitive bidding and electricity to be sold at the lowest possible price. The meeting was attended by Minister for Power Sardar Awais Leghari, Minister for Economic Affairs Ahad Khan Cheema, Minister for Information Attaullah Tarar, Minister for Petroleum Ali Pervaiz Malik, and senior officials from relevant institutions.

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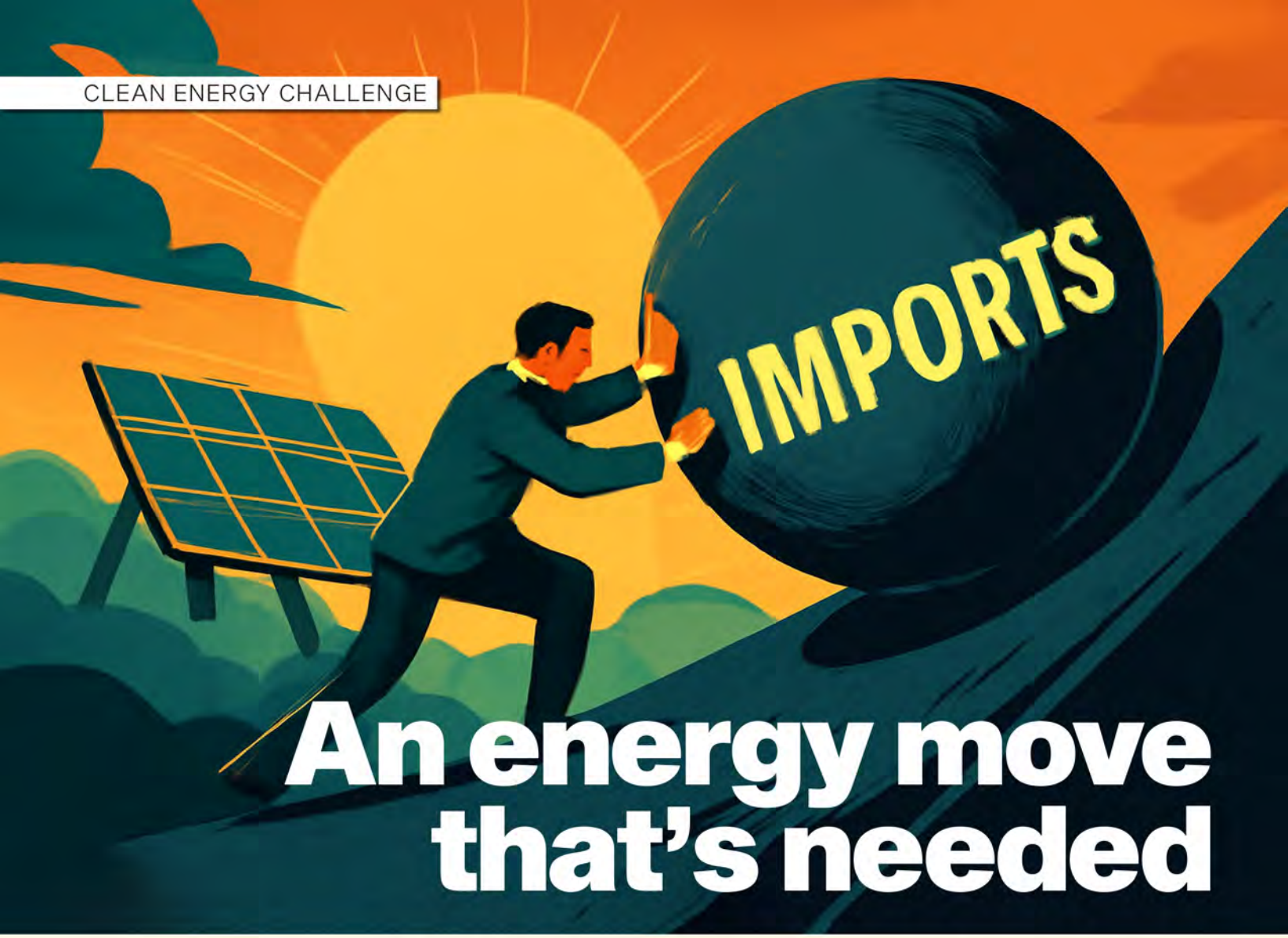
KSTAR New Energy marked its official entry into the Pakistani market with a vibrant launch event held on January 8th, 2025. The event brought together industry leaders, partners, and renewable energy enthusiasts to celebrate KSTAR's commitment to powering Pakistan with innovative solar solutions.

Held in a lively atmosphere, the event showcased KSTAR's cutting-edge solar inverters and energy storage systems tailored to meet the region's growing energy needs. Keynote speakers highlighted the brand's global success and its vision for a greener, more sustainable Pakistan.

With a strong focus on quality, reliability, and local support, KSTAR New Energy aims to play a pivotal role in driving the country's transition to clean energy. The launch event marks just the beginning of an exciting journey toward a brighter and more energy-efficient future.



An energy move that's needed

The next key challenge in clean energy transition is on the technology front with its overdependence on imported technologies, such as solar panels

Shafqat Hussain

The writer is an academic and researcher based in Jamshoro

Pakistan struggles with a complex trilemma involving energy security, environmental sustainability, and economic stability, necessitating a decisive shift to a green economy built on local innovation and expertise.

Green transition is transforming the built environment, transport and industrial systems while reshaping the global energy order. At its core, indigenous technology and skilled workforce development stand as key pillars of a sustainable energy transition.

However, Pakistan ranks 113th out of 120 on the World Economic Forum's 2024 Energy Transition Index, relying heavily on imported technologies and foreign expertise, making its economy vulnerable. While its Alternative and Renewable Energy (ARE) 2019 policy focuses on local manufacturing, workforce development and technology transfer, the country lacks a specific implementation plan. There is a dire need for a well-defined strategy with specific targets and timelines for local talent development, technology transfer and indigenous innovation.

Pakistan faces a critical workforce gap in the clean energy transition. While awareness has increased, practical skill development remains inadequate. With 64 per cent of the population under 30 and 4.5 million unemployed youth, unemployment among the 15–24 age group stands at 11.1 per cent, according to the Pakistan Economic Survey 2023–24. Therefore, strategic upskilling is essential to unlock opportunities in the green transition. Many workers in traditional sectors like construction and automotive possess transferable skills but lack structured pathways for transition. Electricians and HVAC technicians, for instance, could shift to solar PV and wind turbine maintenance with targeted re-skilling.

Globally, green skills are reshaping industries from renewable energy and sustainable transport to green tech and circular economies, with climate mitigation and adaptation among the top job creators. The World Economic

Forum's Future of Jobs Report 2025 projects eight million new jobs by 2030, while the energy sector alone will add another million, making it the second-largest tech-driven employment sector after IT & AI. Renewable energy jobs surged to 16.2 million in 2023 up from 13.7 million in 2022, driven by solar PV growth, according to IRENA's Renewable Energy and Jobs Annual Review 2024.

Yet, Pakistan lags in recognising this shift. This is not just a workforce gap; it is a skills gap. As cleantech becomes increasingly digitised, demand for AI engineers, energy analysts and grid specialists is rising. Proficiency in data analytics, energy modelling and automation is now essential for Pakistan's energy future. Without urgent action, the country risks missing out on the economic dividends of the global energy transition.

Pakistan must move beyond conventional education in energy and power systems to advanced concepts like AI-driven energy systems, hybrid renewable systems, smart grids, EV integration, bioenergy, hydrogen, blockchain energy trading, energy modelling and optimisation, IoT, digital twins, energy informatics, conditioning monitoring & fault diagnosis, advanced DC architectures and energy storage solutions.

Beyond advanced technical concepts, Pakistan's energy transition demands expertise in entrepreneurship, energy economics and resource assessment, energy poverty, energy justice and equity, energy policy & law, power planning and management, power markets, and green finance. Without this interdisciplinary foundation, even the most advanced engineering solutions will struggle to drive real-world impact.

Therefore, the country must integrate these emerging areas into its educational framework and launch a national capacity development program for green certifications in renewable energy, energy efficiency, energy management, smart grids, mini/microgrids, energy modelling and analytics, electric vehicles, the circular economy, sustainability, ESG framework, net zero energy buildings, carbon markets and green finance. Just as digital skills and IT certifications have been institutionalised through national initiatives, a similar approach is essential to equip the workforce for the rapidly evolving energy landscape.

Pakistan's energy transition hinges on technical expertise, home-grown innovation and strong policy intervention. By investing in human capital and advancing technology, the country can achieve energy security and reshape its energy future, attaining energy independence and climate resilience

This shift requires sustained investment in green human capital from both the public and private sectors, backed by policy recognition, structured training, and industry alignment. Academia must update curricula, the private sector must actively engage in CSR-driven capacity-building programs, and the government must introduce targeted initiatives to foster a skilled workforce. International donors must prioritise local expertise over infrastructure financing to ensure Pakistan's transition is locally led.

Encouragingly, programmes such as the Margalla School on Energy & Climate (MSEC) by Renewables First trains future energy leaders. While such efforts are impactful, the responsibility lies with the state to institutionalise and scale these programmes through public-private partnerships, academia-industry collaboration, vocational training, and structured micro-degree and postgraduate diploma programmes. A well-structured framework, such as a Green Skills Council, can align government, academia, technical institutes, sectoral bodies and industry to build a workforce ready for evolving energy needs, driving a sustainable energy transition.

The next key challenge in Pakistan's clean energy transition is on the technology front with its overdependence on imported technologies, such as solar panels, wind turbines, inverters and battery storage in the renewable energy sector. This reliance raises project costs, widens the trade deficit, and exposes the industry to global price volatility.

Domestic manufacturers primarily assemble mounting structures rather than producing advanced components such as photovoltaic cells, wind turbine blades, and high-efficiency inverters. Weak technology transfer agreements further limit innovation. These gaps have left Pakistan reliant on imports, stalling the development of a competitive domestic renewable energy sector.

Pakistan's solar market is also expanding rapidly, but unchecked imports by unauthorised traders have flooded it with substandard panels. A strong local industry can address these challenges by ensuring standardised, high-quality production and a more reliable supply chain.

Moreover, local manufacturing offers a massive opportunity to create and diversify demand amid surplus electricity, gas shortages, and a ballooning import bill, which the government continues to subsidise. Producing energy-efficient appliances like solar cookers, water heaters and electric geysers for cooking, water and home heating can reduce reliance on costly imports. However, to scale up these technologies, lowering upfront costs is essential, something achievable through domestic production. Establishing local units can streamline supply chains, reduce costs, and enhance reliability, ultimately making clean energy more affordable and strengthening the economy.

Pakistan's energy transition hinges on technical expertise, home-grown innovation and strong policy intervention. By investing in human capital and advancing technology, the country can achieve energy security and reshape its energy future, attaining energy independence and climate resilience. ■

IFC to help develop market for e-vehicles

Kalbe Ali

To help accelerate the adoption of electric mobility in Pakistan, the Ministry of Industries and Production has signed an agreement with the International Finance Corporation (IFC) that will promote investment in two- and three-wheel electric vehicles.

The project will support policy, regulatory, and standards-related reforms to create an enabling environment for investment across the value chain, helping to fill market gaps and remove legal and regulatory barriers.

The IFC will provide technical implementation support and work with key regulators, including the Engineering Development Board (EDB), National Energy Efficiency and Conservation Authority (NEECA), and Pakistan Standards and Quality Control Authority (PSQCA), to build institutional capacity and streamline the development of a market for such vehicles in Pakistan. The signing ceremony was attended by Haroon Akhtar Khan, special assistant to prime minister for Industries and Production Division and other officials. ■

Mining bill and autonomy

Rafiullah Kakar

The writer is a public policy and development specialist from Balochistan

The recently concluded Mineral Summit was proclaimed a success by federal officials. Yet beneath the celebratory tone lies a contentious debate — particularly in KP and Balochistan — over a draft mining legislation reportedly prepared under the supervision of the SIFC. The Balochistan government has already enacted a version of this bill, while KP continues to deliberate.

The timing of this legislation, and the opaque process that birthed it, have raised legitimate concerns about its constitutional validity, centralising tendencies, and potential sociopolitical fallout. Constitutionally, provinces in Pakistan have long held exclusive jurisdiction over minerals — excluding nuclear-related resources — even prior to the 18th Amendment. In this context, fears of federal encroachment are not without basis.

The KP bill, while imperfect, retains essential elements of provincial control. Its references to the federal mineral wing are advisory and non-binding. Still, their very inclusion invites future overreach. In contrast, the Balochistan Act goes a step further. It not only permits the federal mineral wing to make recommendations on mineral development, licensing, leasing, and financial aspects including royalties, but appears to surrender the province's right to initiate proposals on these matters, reducing its role to one of passive review. Though technically non-binding, the legal role of the federal government can potentially lead to serious encroachment.

Legally binding frameworks are needed for benefit-sharing and local ownership. Both the KP and Balochistan frameworks allow temporary permits to be granted for projects deemed of "national interest" — a vague designation that includes licences to federally owned public enterprises. Such provisions undermine provincial autonomy.

To their credit, the laws decentralise some authority to newly established provincial mineral authorities and district committees, replacing the erstwhile discretion of secretaries, directors general, and deputy commissioners. However, the inclusion of two federal representatives with voting rights in provincial authority might be problematic. These members should serve as observers, not decision-making members.

Mining is a long-horizon sector. It demands political stability, policy continuity, and social licence to operate. But Pakistan's political elite functions on extremely short time horizons, motivated more by immediate gains and rent-seeking than long-term planning. Past episodes — Reko Diq, IPPs — are cautionary tales of rushed, opaque deals that ended in litigation or disrepute. On a technical level, the country lacks the institutional depth and financial capacity to negotiate mining contracts that balance investor interest with public good. In the current climate, any foreign-backed agreements are more likely to serve short-term gains than long-term development.

Similarly, our history of community benefit-sharing in mining is dismal. Corporate social responsibility remains tokenistic at best, with few tangible gains for affected populations. The new legislations do little to reverse this trend. What is needed is a complete rethink of the model — one that places local communities at the heart of decision-making and revenue-sharing. vAt least five per cent of royalties must go directly to resource-producing districts, over and above provincial royalty. Mining legislation should mandate 100pc local employment in unskilled jobs and a minimum of 50pc in skilled roles, with a plan to raise the latter to 90pc over 10 years.

Establish a provincial mineral wealth and development fund: This should include a provincial wealth fund, where 25-40pc of royalties are saved for future generations under strict fiduciary rules and independent oversight; a community development fund to pool 5pc district royalties, 3-5pc company profits and other funds for investment in infrastructure and services of local community.

All mining licences and contracts, including those for Reko Diq and Saindak, must be fully disclosed; companies linked to politically exposed persons should be flagged; and detailed, disaggregated data on royalties, production, taxes, and social expenditures must be published regularly.

Pakistan stands at a crossroads. It can either repeat the mistakes of opaque, centralised, and authoritarian resource governance—or it can reimagine mining as a platform for inclusive, democratic, and community-led development. If reforms are not grounded in transparency, accountability, and respect for provincial and community rights, then no summit, however well-marketed, will bring lasting prosperity. ■

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Is our solar ready for climate extremes?

Sadia Ishrat

The writer is a gender and climate specialist at the Sustainable Development Policy Institute (SDPI), Islamabad

Islamabad's weather turned wild in just a few minutes. One moment, it was a normal afternoon; the next, huge hailstones started crashing down, smashing car windshields, breaking windows and, most worrying of all, destroying solar panels all over the city.

People watched in shock as their solar rooftops, symbols of the city's green progress, were left covered in broken glass and twisted metal. This storm wasn't just a surprise; it was a wake-up call for everyone living here.

> This storm wasn't just surprise; it was wake-up call for everyone living here

Over the last ten years, Islamabad has become a model for clean energy in Pakistan. Solar panels have popped up on homes, businesses and commercial buildings. Many of us have felt proud seeing our city shine with new technology and hope for a cleaner future. But now, after this sudden hailstorm, we're left wondering: are these solar panels strong enough to survive the kind of extreme weather that climate change is bringing more often? The damage is everywhere – panels shattered, frames bent and power knocked out in many neighbourhoods.

It's not just about the cost of repairs or the mess to clean up. This storm has shown us that our plans for a greener future have weak spots we can't ignore. Most solar panels are built to handle normal rain and sun, and maybe some small hail. But the recent storm was on another level, with hailstones as big as golf balls – much bigger than what most panels are tested for. As weather like this becomes more common, we need to ask ourselves how safe our future is if our clean energy systems can't handle these storms. Islamabad's experience is a warning for all of us to rethink how we protect our green investments.

The hailstorm hit Islamabad's solar panels hard and caused a lot of damage. Across key sectors – including G-6, G-9, F-10, E-11 and G-11 – rooftop solar panels and solar carports, particularly those supporting electric vehicle charging stations, were broken or ripped off where they were attached. The hailstorm was so strong that it twisted and bent the metal frames holding up the solar panels, making many solar setups stop working completely. Because of this, homes and businesses that depended on solar power lost electricity for a long time, which made the situation even harder after the storm. This incident raises urgent questions: Are household-level solar systems, as currently designed, resilient enough for the extreme weather Pakistan is beginning to experience? Islamabad's experience is a stark reminder that without climate-resilient infrastructure, even the most well-intentioned clean energy transitions may falter when

nature strikes back.

Most solar panels use tempered glass designed to resist moderate hail, but industry standards like UL 61730 typically test for hailstones only up to 25 mm – far smaller than the golf-ball-sized hail that battered Islamabad. In recent years, manufacturers have prioritised cost-cutting by producing larger panels with thinner glass, which has made them more fragile. Even when panels appear intact after a storm, micro-cracks caused by hailstones larger than three centimetres can silently degrade performance, reducing energy output and shortening the system's lifespan. The debate around the cost and benefit analysis of having more weather-resilient panels or more efficient panels is now more important.

The vulnerability of rooftop solar panels to hail damage is not just a matter of material strength but also design and planning. Low-angle, fixed installations – common on flat roofs in Pakistan – take the full brunt of hail impacts, whereas steeper or adjustable mounts can deflect hailstones more effectively. Despite this, resilient designs are often overlooked due to higher costs. Panels facing the direction of prevailing storms are especially at risk, making site-specific orientation and weather-informed placement essential.

Unfortunately, many systems in Pakistan lack basic protective features like reinforced frames or impact-absorbing shields. In the absence of mandatory resilience standards, cost-cutting prevails over durability. This has left thousands of households exposed to the very climate risks solar power is supposed to mitigate.

International cases show a clear path forward. During the March 2024 Fort Bend hailstorm in Texas, several solar farms withstood more than 500-year hail events by deploying automated 'hail-stow' systems that adjusted panel tilt to deflect damage. These systems demonstrate the value of operational readiness, not just hardware strength.

Technological advancements are rapidly improving panel resilience. AIKO's panels with reinforced 3.2mm glass and impact-resistant polymers withstand hailstones up to 40mm. Methacrylate-based solar skins in Europe absorb impacts without compromising efficiency. Panels certified under UL 61730 and IP68 standards are tested for hailstones up to three inches at 88 mph. Smart solutions like Trina Solar's AI-driven hail-stow systems offer dynamic protection without significant power loss, unlike fixed covers that block sunlight when deployed.

Globally, regulators are tightening standards and offering incentives for climate-resilient solar infrastructure. Pakistan must do the same. Adopting proven international standards, mandating climate-tested technologies and raising public awareness are essential steps. Without proactive planning and regulation, the country risks turning a clean energy promise into a liability in the face of accelerating climate extremes.

The recent hailstorm in Islamabad has laid bare a critical vulnerability in our green energy transition: the lack of robust standards and preparedness in rooftop solar infrastructure. To safeguard household investments and ensure long-term energy resilience, Pakistan must urgently introduce and enforce stringent insurance of panels and certification protocols for solar panels, mandating minimum impact-resistance thresholds that align with the realities of a changing climate. Public awareness campaigns should educate consumers on the importance of durable materials, panel orientation, and adaptive protection systems, empowering households to make informed choices.

Equally important is the proactive role of regulatory bodies – such as PPIB, Nepra and the Ministry of Industrial Production – in not only enforcing quality standards and resilient installation guidelines, but also facilitating the adoption of advanced technologies like AI-enabled stow systems and reinforced coatings. Without a coordinated push for quality assurance, awareness and regulatory oversight, the promise of rooftop solar risks being undermined by the very climate it aims to combat. ■

NTDC-KE Interconnection Project Applauded

EU Report

Sindh Energy Minister Syed Nasir Hussain Shah has said that the interconnection project between K-Electric (KE) and the National Transmission and Despatch Company (NTDC) will play a key role in ensuring the supply of affordable electricity to consumers in Karachi.

He made these remarks while chairing a high-level review meeting on the project. The session was attended by KE CEO Moonis Alvi, NEPRA Member (Technical) Rafiq Shaikh, NTDC Managing Director Muhammad Waseem, and other key officials.

During the meeting, the KE CEO and NEPRA representative briefed the minister on the challenges facing the project. In response, Minister Nasir Shah assured the participants that the governments of Sindh and Balochistan would extend all possible support to remove any obstacles hampering progress.

He emphasized the strategic importance of the interconnection, stating that once fully operational, it would allow Karachi to receive more low-cost electricity from the national grid. This would benefit both domestic and industrial consumers.

He highlighted that in November 2024, when the interconnection capacity reached 1,000MW, the fuel cost per unit was reduced by Rs5, resulting in total savings of Rs24 billion — a clear indication of the project's economic impact.

Shah also stressed the importance of resolving right-of-way and land acquisition issues to ensure the timely completion of the project. He reiterated the government's commitment to sustainable and integrated energy solutions that lower electricity costs, boost industrial growth, and ensure long-term energy security.

"This project is an essential part of national efforts to transform Karachi into a strong engine of Pakistan's economic development," he added.

Huawei FusionSolar showcases smart energy solutions at key regional expos across Pakistan

Huawei FusionSolar, a global leader in smart photovoltaic (PV) and energy storage solutions, continues to strengthen its presence in Pakistan's renewable energy landscape through active participation in major regional expos. Alongside its Tier-2 partners, Huawei has been at the forefront of promoting advanced solar technologies, engaging stakeholders, and accelerating the adoption of sustainable energy solutions across various industrial and commercial sectors.

EU Report

ISEM Solar Energy Expo Faisalabad

In Collaboration with Air Solution

At the Faisalabad Expo, Air Solution—Huawei's regional partner—engaged industrial stakeholders with cutting-edge solar solutions ideal for textile and manufacturing sectors.

Solar Energy Expo Multan by Setup

Represented by A Power

In Multan, A Power, Huawei's regional partner, attracted strong interest at the solar energy expo Multan by Setup, highlighting intelligent energy systems for residential, agricultural, and commercial users.

29th Textile Asia Fair Karachi

Participation by Diwan International

At 29th Intetnational Textile Asia Fair Karachi, Diwan International represented Huawei FusionSolar, presenting tailored solar solutions for the energy-intensive textile industry.

These dynamic participations reflect Huawei's growing influence in Pakistan's solar ecosystem, empowering industries to embrace a smarter, greener energy future.

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The sun rises on the power grid

Consumers altering traditional electricity paradigm

Dr Khalid Waleed

The writer has a doctorate inenergy economics and serves as a research fellow in the Sustainable Development Policy Institute (SDPI)

The economic landscape constantly evolves through innovation and obsolescence – a process economist Joseph Schumpeter called 'creative destruction'.

New technologies and models replace outdated ones, as seen in the historical transition from the steam engine to the internet. Today, Pakistan's power grid is undergoing a similar shift, driven by the rapid rise of rooftop solar. This decentralised generation model challenges the centralised utility structure, offering both opportunity and disruption.

Schumpeter's theory explains how capitalism thrives on disruptive change, driven by innovation, profit motives and competition. In Pakistan, falling solar PV costs and rising grid tariffs are fueling this transformation. Consumers are becoming 'prosumers' – generating their own power – and are fundamentally altering the traditional electricity paradigm.

From an energy economics standpoint, this represents a transition in the structure of electricity supply from a natural monopoly to a more contestable and distributed generation model. Historically, the electricity sector operated under cost-of-service regulation due to the characteristics of a natural monopoly – high fixed costs, indivisibility of capital and economies of scale. However, existing scientific literature suggests that distributed generation technologies such as rooftop solar inherently disrupt these assumptions by reducing the minimum efficient scale required for market entry and introducing competitive pressures on previously monopolistic utilities.

Historically, disruptive technologies often face resistance. The 19th-century Luddite movement, where textile workers destroyed machines that threatened their jobs, exemplifies this pattern. While Pakistan's solar shift is different, similar tensions persist. Power utilities, fearing revenue losses and underutilised assets, may view decentralised solar with apprehension. Stakeholders may cling to cross-subsidisation mechanisms and legacy infrastructure to protect vested interests. However, the Luddite example underscores the futility of resistance; what is needed instead is a managed transition that balances innovation with social impact.

Pakistan is experiencing a sharp rise in rooftop solar adoption, disrupting its power sector. Net-metering capacity jumped from 5MW in 2017 to 2,451MW by FY2024, reaching 4,135MW by December. At the current pace, it may surpass 14,000MW by FY2034. This surge is fueled by soaring grid tariffs (Rs47/kWh in 2024), falling solar panel costs, favourable net-metering policies, and an unreliable grid.

However, this growth challenges grid finances. In FY2024, net-metering reduced sales by 3.2 billion kWh, shifting Rs101 billion in fixed costs to other users – raising average tariffs by Rs0.9/kWh. By FY2034, the impact could rise to Rs545 billion and Rs3.6/kWh. These pressures stem not just from solar, but also from entrenched inefficiencies and outdated tariff structures.

Rooftop solar also strains conven-

tional plants. Reduced grid demand has led to costly part-load operations – Rs55.67 billion in Partial Load Adjustment Charges (PLAC) in FY2023–24, up from Rs46.59 billion in FY2022–23 – violating economic dispatch principles. DISCOs, whose revenues depend on volumetric sales, will be hit hard. While they pay Rs6,460/kW/month in capacity charges, they recover only Rs200–500/kW/month from consumers, creating a tariff mismatch that worsens circular debt and threatens privatization plans. Technically, net metering introduces grid issues like back-feeding, causing voltage fluctuations and operational challenges in a system built for one-way flow.

The discourse around rooftop solar must also acknowledge technical challenges associated with solar net-metering. One prominent issue is 'back-feeding', a condition where surplus solar-generated electricity flows back into a distribution grid originally designed for one-way transmission. Unregulated back-feeding can lead to voltage fluctuations, grid instability and increased operational complexity for distribution companies. Recently, we saw in Sri Lanka the Ceylon Electricity Board's (CEB) appeals to all rooftop solar system owners across the country to voluntarily switch off their systems during daytime hours – till 3pm each day – from April 13 to April 21.

To manage such challenges, countries like Australia have begun charging solar prosumers a fee for using the grid essentially as a virtual battery, highlighting that even mature renewable energy markets must address these complexities.

However, it is critical to contextualise the Australian experience. Unlike Pakistan, Australia does not face pronounced tariff anomalies, widespread systemic inefficiencies or entrenched capacity trap problems.

Understanding Pakistan's electricity consumption mix is essential for appreciating the impact of rooftop solar. In FY2023–24, the household sector emerged as the largest electricity consumer, accounting for approximately 50 per cent of total consumption. Up to 60 per cent of Pakistan's electricity consumption comes from unproductive sectors, with only about 18 per cent attributed to the industrial sector. Rooftop solar offers a potential solution to this imbalance by reducing residential demand and, in the long run, making grid power more attractive and affordable for industrial users.

The increasing adoption of rooftop solar by high-end consumers, who previously contributed significantly to the cross-subsidy pool, is now jeopardising the financial sustainability of this system. From an economic efficiency perspective, this results in a distortion in marginal cost pricing. Addressing this imbalance may require a shift toward cost-reflective tariffs or targeted subsidies funded through fiscal resources rather than embedded cross-subsidies.

The only way forward is to adopt a prudent policy framework for Pakistan's power sector, one that strategically employs the dual approach of 'Sunrise and Sunset'. This approach emphasises nurturing a conducive regulatory, technical and financial environment for the 'Sunrise' by accelerating rooftop solar adoption through streamlined net-metering policies, targeted incentives, affordable financing, supportive grid modernisation and tariff rationalisation that encourages productive electricity demand.

While some argue that net metering primarily benefits the wealthy, the reality in Pakistan is different: most adopters are middle-class families that have invested their hard-earned savings for energy security in the face of rising tariffs and unreliable grid supply. Solar is not a luxury; it is a necessity-driven choice for a more resilient and sustainable future, one that can ultimately enhance productive demand within the power grid. ■

BOOSTING POWER SECTOR

Turkiye-Pakistan energy ties

Turkiye has realised reform that has attracted over $100 billion investments into its electricity markets

Alparslan Bayraktar

The writer is Turkiye's minister of energy and natural resources

For years on end, Turkiye and Pakistan have enjoyed the agency of brotherly relations. Not only have we been historically bound, but we have also streamed rivers into seas with cooperation and partnerships, from cultural to economic to language and energy. Just two months ago, we were here for the visit of President of Turkiye, HE Recep Tayyip Erdogan and how glad I was to be back in the beautiful city of Islamabad for the Pakistan Mining Investment Forum.

Turkish-Pakistani energy relations have dived into a deeper route than ever before. From deep-sea drilling and seismic research to know-how transfer in critical minerals and electricity production. On my recent trip, it was an honourable experience to meet with Prime Minister Shehbaz Sharif and sign off on the Memorandum of Understanding where Turkish Petroleum will jointly bid with the national oil companies of Pakistan in the Indus offshore basin. We look forward to this exciting opportunity that will open doors to decades long partnerships. I would like to congratulate my counterpart, HE Minister of Oil Ali Pervaiz Malik, on this outstanding cooperation.

But we are not limited to oil and gas, Turkiye and Pakistan are also working together in know-how transfer for critical minerals. Both countries have significant reserves and the development of these sites will offer a strategic value chain benefiting both nations. Similar to the gold rush of the mid-19th century, we now live in the age of 'critical minerals rush'. Nations that control the supply of their critical minerals, including rare earth elements, will hold the competitive advantage.Turkiye has developed a simultaneous understanding of performing strategic and collaborative paths to reach the growing energy demands of our populations and industries. Over the last two decades, Turkiye has realised a reform that has attracted over $100 billion of investments into its electricity markets. As a result, the country now enjoys a competitive market that incentivises new investments and provides affordable prices for its citizens. Pakistan today is on the verge of a similar reform. We are ready to share our experiences and fully support the Pakistani leadership for their determination.

The recent developments in our relations will benefit not only both nations but add to the stability and prosperity of local economies and the region as a whole. A strong Turkiye-Pakistan partnership is one full of opportunities. Long live the people of Pakistan and Turkiye, long live Turkish-Pakistani brotherhood. ■

Unlocking green energy

Pakistan can achieve its renewable energy targets with the right policies in place

Nazifa Butt & Shanzey Asghar

Nazifa Butt is the climate action and sustainability director at WWF-Pakistan
Shanzey Asghar is a researcher

Pakistan, with a population of about 241 million, has been facing an energy crisis since 2006 as electricity supply has not been meeting the demand.

Pakistan has a total energy demand of about 25,000 MW. However, the supply is limited to around 22,000 MW, leaving 3,000 MW gap that widens to 6,000 MW in peak summer. In March 2024, Pakistan's total installed electricity generation capacity reached 42,131 MW.

The country generated 92,091 GWh of electricity. Thermal power generation accounted for the largest share with 59.4 percent followed by hydro at 25.4 percent, nuclear at 8.4 percent and other renewable sources at 6.8 percent. Pakistan's energy sector contributes approximately 47 percent of the greenhouse gas emissions in the country.

High dependence on fossil fuels is not sustainable given the financial and environmental costs that add to Pakistan's climate vulnerability. Pakistan holds a strategic geographical position. It is rich in renewable energy potential that offers a key solution to the country's ongoing energy problems and global call for sustainable energy.

This year, Earth Day's theme, Our Power, Our Planet, is a reminder of the urgent need to triple the country's clean energy generation by 2030. Pakistan's renewable energy policies are closely linked to Nationally Determined Contributions that highlight its climate action plan under the Paris Agreement. The updated NDC targets, submitted in 2021, include: transitioning 60 percent of national energy mix to renewables; electrifying 30 percent of transportation; banning imported coal-based power; and 50 percent emission reduction by 2030. This shift is driven by several policy initiatives like Alternative Renewable Energy 2019 policy and National Electric Vehicle policy that promote transition to clean energy and sustainable transportation. Other policy frameworks, like National Power Policy 2013, CPEC Energy Framework and Indicative Generation Capacity Expansion Plan, provide guidance for future energy mix and energy diversification.

From WWF-Pakistan's perspective, and in alignment with this year's theme, a strategic transition is necessary to unlock Pakistan's green energy future. This shift is not just about

power generation, it is also about empowering people and protecting the planet. We can support this transition by advocating for effective policies and collaborating with stakeholders from all sectors, including government, private business, civil society and local communities.

WWF-Pakistan under the Climate and Energy Programme has been working on increasing energy security by providing clean energy to remote areas, farms and rural households alongside supporting initiatives towards energy conservation and promotion of renewable energy resources through facilitation dialogues between stakeholders. WWF-Pakistan in partnership with SAMA Verte supported the development of Pakistan Cooling Action Plan between 2021 and 2023 through stakeholder consultations that facilitate market assessment of cooling appliances and provide research expertise to address the data gaps in the cooling sector. The implementation of PCAP actions has the potential to reduce (from present to 2030) 28Mt of CO2 emissions (5Mt CO2 direct and 23Mt CO2 indirect) and 50tWh in energy consumption.

SolaPanda is a practical solution to tackle climate change using renewable energy to off-grid and on-grid communities. The initiative is helping attain the 2030 agenda for sustainable development goals more efficiently, mainly SDG 7: affordable and clean energy, SDG 11: sustainable cities and communities and SDG 10: reduce inequalities. Under the One Planet City Challenge, WWF-Pakistan is providing 12 communal biogas plants to 41 households, 1,650 home based solar units to off-grid communities and 960 households with fuel efficient stoves and gasifiers to increase energy security and climate resilience in Karachi.

Despite various commitments, Pakistan's renewable energy sector faces challenges due to lack of regulation, climate finance, decentralised renewables and local manufacturing. Grid infrastructure needs to be developed to ensure reliable transmission, improve capital markets strategies and boost investor confidence.

With the right policies and implementation strategies, Pakistan can achieve its renewable targets, overcome emissions and promote sustainable growth. This green energy transition must include the integration of decentralised renewables like mini solar-grids for rural areas, promoting energy policies related to renewable targets and climate goals, mobilising green financing using energy bonds, and encouraging public engagement and awareness campaigns that empower youth and marginalised groups as stakeholders. Consistency in policy, implementation and finance are key to achieving a low-carbon energy secure future. ■

CORPORATE SOCIAL RESPONSIBILITY

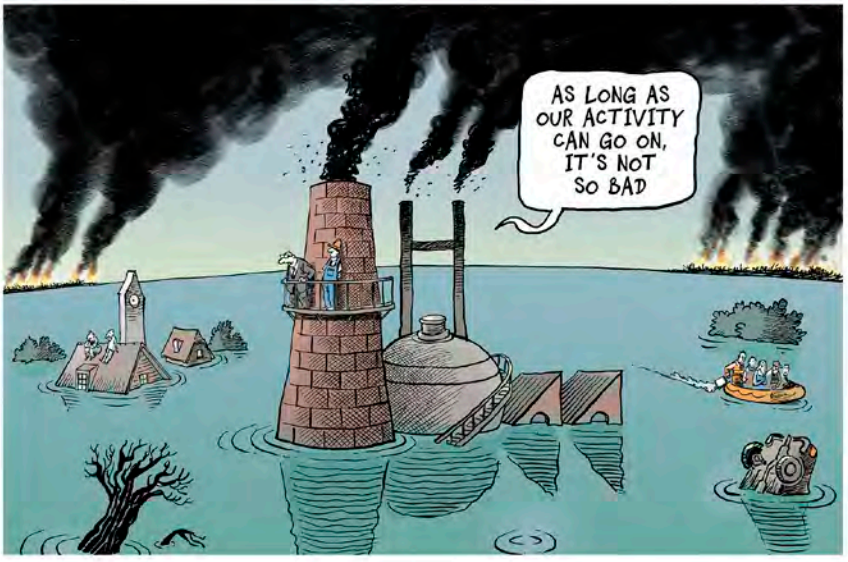
NBP vows to championing disability

EU Report

National Bank of Pakistan (NBP) has reaffirmed its commitment to championing disability inclusion in the workplace at the Global Disability Summit 2025 in Berlin, Germany. The Summit, jointly organized by the International Disability Alliance (IDA), the Government of Germany, and the Government of Jordan, brought together global leaders to chart a unified path forward for the rights and inclusion of Persons with Disabilities (PWDs).

Representing NBP at the Summit, Senior Executive Vice President & Group Chief Human Resource Group, Mirza Muhammad Asim Baig, spoke at a key session highlighting the role of the banking sector in enabling access to financial services for marginalized communities.

Reaffirming NBP's strong commitment to disability inclusion, Mr. Baig shared insights into the Bank's ongoing initiatives in partnership with the Asian Development Bank (ADB) and the Global Disability Innovation Hub (GDI Hub). The bank is actively working to eliminate financial barriers and promote equal opportunities across its nationwide network. ■



Huawei & Bahum Join Hands with NEECA to Boost EV Charging Infrastructure Across Pakistan

Huawei Technologies Pakistan and Bahum Associates recently held a high-level meeting with the National Energy Efficiency and Conservation Authority (NEECA) to advance the deployment of Electric Vehicle Charging Stations (EVCS) across Pakistan. With NEECA actively implementing regulatory frameworks for EV infrastructure, including cost-effective tariffs, safety standards, and grid readiness, this initiative marks a significant step toward a sustainable and electrified future. The government's proactive approach aims to accelerate EV adoption by streamlining infrastructure development, fostering public-private partnerships, and reducing electricity tariffs for charging stations. Huawei and Bahum are committed to supporting this national initiative, leveraging their expertise to drive Pakistan's transition to a cleaner, greener transportation ecosystem.

Ziewnic Hosts Training Session in Karachi, Partners with Quetta Gladiators for PSL X

Ziewnic recently organized a dynamic training session in Karachi to enhance industry knowledge and engagement. In a major sports collaboration, Ziewnic also announced its partnership with Quetta Gladiators for the upcoming PSL X, highlighting its commitment to innovation and youth empowerment.

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Carbon levy: A fail-safe?

Pakistan has tragically failed to establish a pro-growth and sustainable economic paradigm

Furqan Ali And Arfa Ijaz

The writer is a Peshawar-based researcher who works in the financial sector

Despite decades of 'reforms', Pakistan has tragically failed to establish a pro-growth, anti-cyclical, and sustainable economic paradigm. This is primarily due to the overreliance on fiscal austerity and a flawed political economy, evident in macabre issues like bloated tax expenditure, bleeding SOEs, and pathetic public service provision.

On the one hand, this cookie-cutter approach limits development expenditure and extracts ruthlessly from a narrow tax base. On the other hand, current expenditure is rising sharply, particularly in terms of interest payments. Consider that in the past five years, the fiscal deficit averaged 7.0 per cent of GDP, while interest payments consumed 81 per cent and 400 per cent of tax revenue and development expenditure, respectively, for FY24.

The external trade account only adds to the gloom. A deteriorating investment climate is stifling sustainable exports and import substitution, compounded by looming global shifts like the EU's CBAM and US reciprocal tariffs, which threaten to escalate the economic crisis. The CBAM, with its transition towards full integration, disproportionately affects Pakistan.

For example, the World Bank's CBAM Exposure Index reveals that Pakistan's electricity sector is 1.44 times more carbon-intensive than the EU average, leaving its exporters vulnerable to penalties. If tariffs are implemented, they could further strain the external accounts – especially given the lack of meaningful change in Pakistan's climate policies.

Against this backdrop, the government seems hamstrung in its ability to spend on vital areas such as climate action. The climate division's budget over the past five years reflects a troubling inconsistency. After peaking at Rs14,327 million in 2021-22, funding sharply declined to just Rs4,050 million in 2023-24, with a slight recovery in 2024-25. These fluctuations undermine long-term climate planning and indicate a lack of sustained political commitment to environmental priorities.

With recent negotiations, carbon taxation is gaining traction in Pakistan as part of the $1.3 billion IMF Resilience and Sustainability Facility (RSF) agreement, which is expected to include reforms such as formula-based fuel

pricing and the introduction of a carbon tax.

As per SDPI's brief on 'Carbon Taxation for Sustainable Industrial Transformation: Modalities around Equity and Revenue Recycling', carbon pricing mechanisms like carbon taxes and emissions trading systems (ETS) have rapidly gained global support, with 75 jurisdictions covering 24 per cent of global emissions. In 2023 alone, these systems generated over $100 billion in revenue, highlighting their fiscal potential and effectiveness in driving environmental change. Implementation of these taxes is already underway in various countries.

Estimates suggest that an equitable and efficient carbon tax could fund renewable energy initiatives and hard-to-abate sectors while fostering economic growth. A $20/ton tax could yield 1.2 per cent of GDP annually, providing stable revenue for both climate and development goals. For economies with large informal sectors like Pakistan, it can also generate higher revenue with lower administrative costs.

Economically, high energy costs – such as the Rs70/litre petroleum levy – exert inflationary pressure, disproportionately impacting low-income households. And the power sector, on the other hand, due to inefficiencies in all dimensions has caused a large circular debt along with a dismayed tariff structure. According to the IEA, 2024 electricity rates averaged 6.3 cents/kWh in the U.S. and India, 7.7 in China, 4.7 in Norway, and 11.5 in the EU. In contrast, Pakistan's energy-intensive industries paid around 13.5 cents/kWh, significantly higher than global averages. Plus, energy poverty remains a pressing issue, with over 40 million people still lacking access to electricity.

The political economy is further distorted by policies like fossil fuel subsidies, which amount to Rs1.3 trillion annually. These subsidies undermine market signals and directly contradict emission reduction goals.

Pakistan should create a Climate Fiscal Framework in collaboration with the IMF, linking carbon taxation to the country's Resilience and Sustainability Facility (RSF) commitments. Revenue from the carbon tax should be pooled into the Pakistan Climate Fund and managed by the Pakistan Climate Change Authority, with oversight from the Climate Change Council. Coordination with provincial governments will be crucial to ensure broad support and smooth execution. The initiative should focus on both emission reduction and revenue generation, with compensation mechanisms to mitigate economic impacts.

Pakistan must revamp its governance structure, particularly in the power sector, to minimise supply-side cost overruns. Without addressing these inefficiencies, the carbon levy could simply be passed on to consumers, exacerbating inflation and making Pakistani industries less competitive globally.

Carbon tax revenue could also be strategically allocated to reduce the tax burden on labour through reductions in personal income and payroll taxes. This fiscal policy approach would serve to neutralise the regressive effects of the carbon tax on households, while simultaneously enhancing labour market participation and overall economic efficiency.

Finally, Pakistan must adopt a pro-growth, anti-cyclical approach to ensure that fiscal policies, including carbon taxation, strengthen economic resilience during downturns, stimulate growth and protect industries in the long term, thus creating a solid foundation for a low-carbon, high-resilience economy. Done with precision, carbon taxation could position Pakistan as a leader in sustainable economic development. ■

APL, HUBCO to establish EV charging facilities

Attock Petroleum Limited (APL) has entered into a collaboration agreement with HUBCO Green (Private) Limited (HGL), a wholly owned subsidiary of Hub Power Holding Limited, to establish electric vehicle (EV) charging infrastructure at selected APL locations nationwide. APL announced the development through a notice to the Pakistan Stock Exchange (PSX), confirming that the agreement was signed on April 24, 2025. Under this partnership, APL and HGL aim to accelerate the rollout of advanced EV charging facilities across Pakistan, supporting the country's growing shift toward electric mobility. HUBCO Green had earlier inaugurated its first EV charging station at Ocean Mall, Karachi, on January 21, 2025, and outlined plans to expand its network to major highways, motorways, urban centers, and upscale commercial destinations. This collaboration follows HGL's recent agreement with Pakistan State Oil Company Limited (PSO) in February 2025 to install EV charging infrastructure at PSO outlets across the country.To further boost the EV sector, the government recently issued licenses to 57 EV manufacturers—including 55 for two- and three-wheelers and two for four-wheelers—and slashed EV charging tariffs by 45%, reducing the rate from Rs71.10 to Rs39.40, to make EV adoption more affordable for the public.

No way seen in near time to get rid of loan shakes

Pakistan's external debt-liabilities skyrocket

Dr Farrukh Saleem

The writer is a columnist based in Islamabad

Every year, a back-breaking Rs10 trillion is consumed by debt servicing alone; federal govt is compelled to borrows for survival

Our gross external debt and liabilities have soared from $44 billion in 2008 to a staggering $132 billion. Every year, a back-breaking Rs10 trillion is consumed by debt servicing alone. Then comes the Rs7 trillion handed over to provinces under the 18th Amendment — and just like that, the federal government is left with nothing. Zero.

What happens next? The federal government borrows to survive. Over Rs2 trillion for defence? Borrowed. Rs1.8 trillion in grants? Borrowed. Rs1.7 trillion for development? Borrowed. Rs1.4 trillion in subsidies? Borrowed. More than Rs1 trillion in pensions? Borrowed. Even the Rs839 billion needed to run the civil government? You guessed it — borrowed. Ours is a debt-fuelled existence.

We chase solutions in International Monetary Fund (IMF) loans. We pin our hopes on bilateral aid. We resort to austerity. And yet, nothing works. Let's shift our monetary thinking. Bitcoin is a finite asset: only 21 million will ever exist. Bitcoin's performance: 10-year Compound Annual Growth Rate (CAGR) is more than 70%.

The US holds the largest national stash of Bitcoin at 198,000 coins, followed closely by China with 190,000. The UK holds 61,000, Ukraine 46,000, and North Korea 13,000. The UAE is buying Bitcoin. Even smaller nations are in the game: Bhutan holds 8,000 and El Salvador 6,000. Other countries like Venezuela, Finland, and Georgia also maintain Bitcoin reserves.

The government of Pakistan has two choices. Choice 1: do nothing. The cost of doing nothing: further debt, more IMF dependency. Choice 2: do something non-traditional: pay off the debt and reclaim economic sovereignty.

Here's a historical what-if: Had Pakistan allocated just $500 million to Bitcoin in 2015, that investment could have grown to over $10 billion today — a 20x return, based on historical price movements.

The State Bank of Pakistan (SBP) doesn't need to gamble; it needs to think long-term and outside-the-box. Consider this high-upside, strategic hedge: the SBP gradually allocates $5 billion into Bitcoin over the next two years, buying dips and spreading out entry points.

Then, let the cycles play out: First cycle (4-5 years): $5 billion grows 5x into $25 billion. Second cycle (another 4-5 years): $25 billion grows 5x into $125 billion. That's 95 % of Pakistan's external debt — potentially wiped out in 8-10 years, without borrowing another dollar.

How about Pakistan issuing 'Bitcoin Sovereign Bonds' – modelled on El Salvador's 'Volcano Bonds' — to raise capital by tapping into global crypto wealth?

I propose a $1 billion sovereign bond issue, as a starting point. Market the bond to global crypto investors hungry for yield and upside. Highlight Pakistan's strategic geography, talent pool, and investment potential.

Pakistan is in a debt trap with limited options. Bitcoin offers a non-traditional, high-upside hedge. Bitcoin's market cycles reward patience, offering Pakistan a lifeline. Bitcoin's risk is justified by its potential rewards. This isn't speculation; it's evidence of Bitcoin's potential to transform Pakistan's financial future if embraced strategically. With global adoption rising sharply, Bitcoin is a calculated risk worth taking for Pakistan's economic salvation. ■

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Wired for growth in Pakistan

World added historical 473 gigawatts of new renewable power in 2024; power prices have pushed manufacturers towards solar energy; wind energy remains a missed opportunity

Ahad Nazir

The writer is an associate research fellow at SDPI

The observance of Earth Day each year serves as a sober reminder that environmental sustainability cannot be treated as a peripheral ambition. At the heart of that ambition lies energy—how nations produce it, distribute it and use it to either widen inequality or spur opportunity. The energy sector alone accounts for more than three-quarters of global greenhouse gas emissions, a fact repeatedly highlighted by the International Energy Agency. But beyond emissions, energy lies at the root of a country's competitiveness, its trade profile and the resilience of its industrial base.

The global pivot towards renewable energy is no longer a mere aspiration, it is under way. The International Renewable Energy Agency, in its latest report on global capacity, noted that the world added 473 gigawatts of new renewable power in 2024. This growth—driven almost entirely by solar and wind—was the fastest in history, marking a 15.1 percent increase over the previous year. Across economies, the shift is creating millions of jobs, reducing industrial input costs and offering countries insulation from the volatility of fuel imports.

Pakistan's position within this transformation remains tentative. The country's energy landscape is defined by structural inefficiencies and fiscal pressures, with electricity prices now among the highest in South Asia. These prices have pushed manufacturers — particularly in textiles and agro-processing—into off-grid solutions, to largely solar. This migration, while relieving pressure on the grid, fragments the energy economy and undermines coordinated investment in long-term infrastructure. In 2024, Pakistan imported 22 gigawatts of solar panels capacity —one of the highest volumes globally—but the expansion has been uneven. Those with means have exited the grid; others continue to bear the cost of an underperforming system.

This asymmetry highlights a deeper issue: unless the transition is deliberately inclusive, it risks reinforcing existing divides. The Sustainable Development Policy Institute, in its Annual State of Renewable Energy Report, argues for reorienting solar expansion through targeted financing models for lower-income users and cooperatives. Their policy work further stresses the economic rationale for developing a local solar assembly and warehousing base. With solar equipment prices increasingly vulnerable to global supply chain shocks and currency volatility, domestic manufacturing is no longer a luxury—it is an economic necessity. Anchoring solar supply

chains locally will not only reduce the import bill but also create jobs across procurement, fabrication, logistics and servicing.

Grid capacity is another limiting factor. Transmission losses still exceed 17 percent and voltage reliability remains inconsistent. For industrial investors, these are not technical issues—they are dealbreakers. Upgrading distribution infrastructure, deploying microgrids in underserved regions and rolling out smart metering are interventions that directly impact cost, downtime and production efficiency. SDPI's pilot work in northern Pakistan, where decentralised hybrid systems are being tested, points to a scalable model that expands access while generating local employment. Such systems are particularly suited for off-grid rural districts, of which many are poised for agri-business growth if energy reliability can be ensured.

Wind energy remains a missed opportunity. While the potential exceeds 130 gigawatts in the southern corridor, policy inertia, land access constraints and regulatory ambiguity have stifled investment. A more coordinated effort—through auction-based project development and wheeling incentives for industries—can re-position wind as a viable export-aligned power source, particularly for energy-intensive manufacturing hubs. Pakistan is already under pressure from global buyers to de-carbonise its exports; facilitating low-cost, renewable captive power can allow firms to meet these benchmarks and retain international competitiveness.

At the centre of all this lies the electricity market itself. The shift to a competitive trading bilateral contracts market (CTBCM) is a major reform. If implemented effectively, this can dismantle the legacy of single-buyer inefficiencies and create a dynamic market where price signals encourage innovation, efficiency and risk-sharing. However, recent analysis cautions that unless accompanied by robust regulation and dispute resolution mechanisms, the CTBCM could replicate the same concentration of power it aims to undo. What's needed is not just deregulation but a re-balancing—between producers and consumers and between policy ambition and market discipline.

Efforts to renegotiate contracts with independent power producers (IPPs) have shown some promise. The conversion of returns from dollar to rupee, the transition to take-and-pay models and the claw-back of excess profits are important corrections. These gains must now be directed toward building the next phase—investments in grid modernisation, storage capacity and renewable integration. Without this reinvestment loop, relief will be short-lived.

Storage remains the most underdeveloped aspect of Pakistan's energy architecture. Without it, the country will struggle to stabilise intermittent renewables. Second-life electric vehicle batteries, pumped hydro and even hydrogen-based systems must be brought into the planning horizon. The SDPI has been working on demonstration projects and frameworks that support public-private models for localised storage, particularly in industrial zones and logistics parks. These are areas where every minute of outage translates into economic loss, making them ideal candidates for early adoption.

Green finance is the enabling layer beneath all of this. At present, Pakistan's financial system lacks the depth to support scaled renewable deployment. SDPI's collaboration with development finance institutions and the State Bank of Pakistan has already resulted in frameworks for ESG-linked loans, blended finance and green bonds. But execution remains limited. Unless these financial tools are routinised through commercial banking channels and de-risked through partial guarantees, the private sector will remain on the margins.

Every reform suggested above—from solar localisation to wind procurement, from market deregulation to storage integration—has direct implications for Pakistan's economic trajectory. Lowering the cost of energy improves industrial margins and export pricing. Expanding access generates rural employment and triggers local enterprise development. Creating a diversified energy portfolio signals stability to investors and reduces fiscal stress from imported fuels. A modern, responsive energy sector becomes a magnet for capital—not a liability to be subsidised.

The opportunity before Pakistan is not just to decarbonise, but also to industrialise differently. Clean energy, if governed well, can drive an economic turnaround that has eluded the country for decades. But this requires clarity of purpose, institutional maturity, and above all, policy coherence. The frameworks exist. SDPI's Clean Energy Transition Programme has mapped out scenarios, policy pathways and implementation models that link renewable energy to the broader economic reform agenda. The gap now is not technical or financial—it is political and operational.

Earth Day should not be a time for promises. It should be a moment for recalibration. The country's energy future, and with it its economic prospects, will be decided not by capacity additions alone, but by whether that capacity leads to cheaper power, more jobs and investor confidence. If it does, Pakistan's energy transformation will be more than symbolic—it will be strategic. ■

Rs22 ceiling in tariff removed to boost EVs

EU Report

The federal government has set a reduced base tariff of Rs39.70 per unit for electricity used at electric vehicle (EV) charging stations, while allowing their operators the flexibility to add additional charges, without any ceiling, to cover operational costs, says a press release.

The Managing Director of the National Energy Efficiency & Conservation Authority (NEECA), Dr Sardar Mohazzam, disclosed this while speaking as the keynote speaker at the 5th meeting of the Central Standing Committee of the FPCCI on Energy. He said that the earlier Rs70 per unit tariff applied to the charging stations, including Rs22 charged by the EV users to cover the operational expense of the charge points. Dr Mohazzam said the government had removed the ceiling of Rs22, and the charging stations' owners could add whatever amount they deemed appropriate to cover their operating costs.

The NEECA chief said the revised tariff policy reflected the fact that the operational costs of a charging station varied in different parts of the country, especially when set up on inter-city highways and hilly areas. He told the participants of the meeting that merely two no-objection certificates (NOCs) were required by the NEECA to grant permission for setting up the charging station anywhere in the country, as one of the NOCs was issued by the relevant power distribution company and the other by the area civic or land owning agency.

He said that NEECA had laid down a simplified process for setting up a charging station, and a prospective operator could secure permission for the purpose in just 15 days. He said that Rs50,000 was charged for granting registration to a new charging station, and the entire application process had been made online. Dr Mohazzam said the NEECA staff had been asked to fully assist the prospective investors and entrepreneurs who were willing to establish EV charging facilities. ■

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Pakistan needs to phase out reliance on fossil fuels

Prioritising and optimising the use of solar PV technology in Pakistan

Ayoub Hameedi

The writer is a Stockholm-based policy analyst and the founder and operations manager of Project Green Earth

Pakistan is blessed with numerous natural resources that can facilitate sustainable social and economic development. An abundance of sunshine is one such natural resource. It is in our interest to harness it to decarbonise electricity generation sector. According to the Pakistan Economic Survey (2023-2024), Pakistan produced 59.45 percent of its electricity from thermal sources during FY 2024 (July-March). Hydel power was the second biggest producer of electricity with 25.35 percent share, followed by nuclear power with 8.41 percent share and other renewable resources with 6.79 percent share. Altogether, renewables (including hydropower) generated 32 percent of electricity for Pakistan during FY 2024. However, without hydropower, the overall share of renewable resources comes to a mere 6.79 percent

Pakistan must prioritise other renewable sources, particularly solar PV, to reduce its greenhouse gas emissions. Pakistan should work to phase out fossil fuels as quickly as possible to remain competitive at the global level. According to Carbon Brief solar PV based electricity is now cheaper than coal and gas in some countries. An exponential growth in its installed capacity can help Pakistan bring down the electricity prices. This can promote employment creation, foster sustainable economic growth and help mitigate poverty.

A Deutsche Welle report said Pakistan was expected to install 17 GW of solar PV in 2024. Ember, in its report titled Solar power continues to surge in 2024, said that Pakistan imported 12.5 GW of solar PV panels during January-July 2024. Had all these imported PV panels been installed in 2024, it would represent excellent growth. However, the country must also ensure that the imported solar PV panels follow solar PV industry standards. Households should pay attention to regular service and cleaning of PV panels. Taking these precautions can help us maximise return on investment and guarantee that the installed PV panels work for at least 25 years. Huawei Technologies Co Ltd suggests that negligence in maintenance and cleaning of solar PV panels can result in decline of electricity production from the installed units. Thus, it is vital to regularly clean PV panels to extend their life span and to optimise their functioning.

Solar PV based electricity is now cheaper than coal and gas in many countries.

The solar PV revolution in 2024 should be just the beginning for Pakistan. It will be beneficial if the country can maintain the trend for at least a decade. India had more than 102 GW of installed solar capacity on February 11 (2025). According to the National Solar Energy Federation of India, Rajasthan had over 33 GW of installed solar capacity followed by Gujarat with 32.9 GW; Tamil Nadu with 24.5 GW; Karnataka with 23 GW; and Maharashtra with 21.5 GW.

As per Solar Power Europe, China installed 253 GW of solar PV in 2023 alone. It was followed by the US with 32.4 GW; Brazil with 15.4 GW; and Germany with 15 GW. Pakistan installed 1.3 GW of solar PV in 2023. It is encouraging that Pakistan is scaling up its installed solar PV capacity. Fraunhofer Institute for Solar Energy Systems has pointed out that Germany exported electricity worth 1.94 billion euros in 2013 and over 2 billion euros in 2015. This can happen in Pakistan as well. Decentralised power production can leave surplus electricity at the national grid level which can then be exported to neighbouring countries.

According to the Petroleum Division (Ministry of Energy) Pakistan imported petroleum products and crude oil worth $8.4 billion during FY 2024. 79 percent of the imports were used by the transport sector. During FY 2023, 11 percent of imported petroleum products were consumed by the power sector and 77 percent by the transport sector.

Pakistan must phase out its reliance on fossil fuels. Rapid expansion of solar PV technology will be a step in the right direction. It will lower our GHG emissions, mitigate poverty, bring down electricity prices, increase export revenue and create jobs. ■

Diwan International Launches Pakistan's First CHINT Flagship Store in Karachi

Diwan International (Pvt) Ltd has proudly inaugurated Pakistan's very first CHINT Flagship Store in a landmark event held at Denso Hall on MA Jinnah Road, Karachi. The grand opening marks a significant leap in the availability of advanced electrical and automation solutions within the country.

The store showcases CHINT's globally acclaimed range of products including high-performance switchgear, circuit breakers, and cutting-edge energy management systems – all now available under one roof for the Pakistani market.

The launch event was graced by a large number of industry professionals, business partners, and technology enthusiasts, celebrating a major milestone in smart energy adoption. Diwan International's initiative sets a benchmark for innovation and reliability in Pakistan's power sector, bridging local demand with international quality.

With this launch, Diwan International reaffirms its commitment to powering a smarter, more energy-efficient future for Pakistan.

PPDA meeting with Standing Committee on Energy at Parliament House

The 8th meeting of the Standing Committee on Energy (Petroleum Division) of the Parliament House held at recently at Parliament House Islamabad to discuss problems of petroleum dealers Association and sharing suggestions to improve petroleum industry. Malik Khuda Baksh presented a bouquet on behalf of Abdul Sami Khan, Chairman Pakistan Petroleum Dealers Association (PPDA), to Syed Mustafa Mehmood, Chairman of the Standing Committee, as a gesture of goodwill and representation from PPDA. He was accompanied by Raja Waseem (Vice Chairman-PPDA), Ch. Zafar Elahi (Member-PPDA), and Faisal Arif (Member-PPDA) of the Association. The meeting was chaired by Syed Mustafa Mehmood, MNA, who warmly welcomed the Federal Minister for Energy (Petroleum Division), Ali Pervaiz Malik, for his presence and participation.

Federal Minister addressed the Committee, where key matters concerning the petroleum sector were discussed in detail. Malik Khuda Baksh, Senior Vice Chairman of the Pakistan Petroleum Dealers Association (PPDA), also took the opportunity to highlight the critical challenges faced by petroleum dealers across Pakistan, presenting the Association's concerns and policy recommendations on behalf of Abdul Sami Khan, Chairman of PPDA. On the matter of Deregulation of Petroleum Products Malik Khuda Baksh briefed the honorable committee about the high-level meeting held at PSO House, Karachi, which was attended by Minister of Petroleum – Musadik Malik, Chairman OGRA – Masroor Khan, Director General (Oil), MD PSO, delegation of PPDA, led by Chairman Abdul Sami Khan.

He emphasized that deregulation of the petroleum industry was discussed in detail in that meeting, where Minister Musadik Malik assured Abdul Sami Khan that beside everything, we will make sure to consult your association and Chairman. Without your recommendation, we will not proceed with any decision.

Refineries Urge Resolution of Sales Tax Anomaly Jeopardizing $6 Billion Investment

A high-level delegation of oil refineries, led by Mr. Adil Khattak, Chairman of the Oil Companies Advisory Council (OCAC), met with the Federal Minister for Petroleum and the Federal Minister for Finance to urgently address a critical issue arising from the Finance Act 2025. The delegation highlighted that the exemption of petroleum products from sales tax under the new legislation has created a serious anomaly — refineries and Oil Marketing Companies (OMCs) are now unable to adjust the sales tax paid on inputs, making normal operations financially unsustainable.

The delegation warned that this taxation distortion not only disrupts day-to-day business but also undermines the viability of the government's Brownfield Refineries Upgradation Policy. "The $6 billion investment planned for refinery upgradation is now unfeasible due to the withdrawal of input tax adjustment," Mr. Khattak stated.

He further pointed out that repeated delays in implementing the Refineries Upgradation Policy over the last five years

have already cost the national economy approximately $5 billion in potential savings and development.

Both ministers assured the delegation that they were fully cognizant of the issue and pledged to take immediate steps to address the matter in consultation with relevant stakeholders.

Mr. Adil Khattak emphasized that swift action is essential to restore investor confidence and ensure energy security for the country.

What is the ideal temperature for solar panels

Rob Rich

Switching a home to solar power (or, at least, installing solar panels to help offset some of your grid usage) can be a worthwhile endeavor. It can also be kind of a headache, with several common myths to dispel, a number of pros and cons that you'll need to weigh, and several types of consumer panels and companies to choose from.

On top of all of that, you do indeed also need to think about the heat. Like most other electronic devices, solar panels are affected by prolonged exposure to high temperatures. They generally won't heat up to the point of becoming a danger – their surfaces can and do reach up to 149 degrees Fahrenheit — but getting too warm does still create a problem. Similar to how humans tend to have a more difficult time doing physical activity when it's really hot, solar panels aren't able to output as much energy, to the tune of an energy loss of 1%, 5%, and so on, as temperatures rise above a panel's ideal range.

The best temps

The baseline temperature for a solar panel is 77 degrees Fahrenheit or 25 degrees Celsius. It's the temperature at which consumer-grade panels are tested (to determine their temperature coefficient), and for all intents and purposes, is the industry standard performance cutoff.

What you want to look for when choosing your solar panels is a number that looks like a negative percentage in degrees Celsius (for example, "-0.40% C"). This temperature coefficient is a quick look at roughly how much of a percentage in energy production you can expect to lose for every degree above that 77 degrees Fahrenheit/25 degrees Celsius ceiling. In other words, a coefficient of -0.50% C means that every degree above 25 C will lose half a percent — so at 35 C (95 F), the panel would lose a full 5% of its effectiveness.

Colder climates don't really pose this kind of problem for solar panels. In fact, it's the opposite, because as long as the panels aren't being blocked by snow, their efficiency actually gets a boost.

Getting around the problem

Other than living somewhere with a cooler overall climate, there isn't a whole lot you can do on your own to prevent a temperature-based drop in efficiency. Solar panels are designed to sit in the sun, so they can physically handle the heat, and panels are typically installed an inch or two above the actual roof to allow for a bit of airflow and reduce heat buildup.

What you can do is plan for it. If you know your location tends to get pretty warm, or expect that average temperatures in your area will rise above 77 degrees as time goes on, pay attention to the temperature coefficients of the panels you're thinking of having installed. If it fits your solar energy plans and your budget, go for the panels with the least amount of dropoff (ex, "-0.24 C" instead of "-0.30 C").

Also, remember that different models of solar panels from different companies can have their own coefficients. So if one source has too much of a dip in efficiency for your liking, try shopping around a bit more.■

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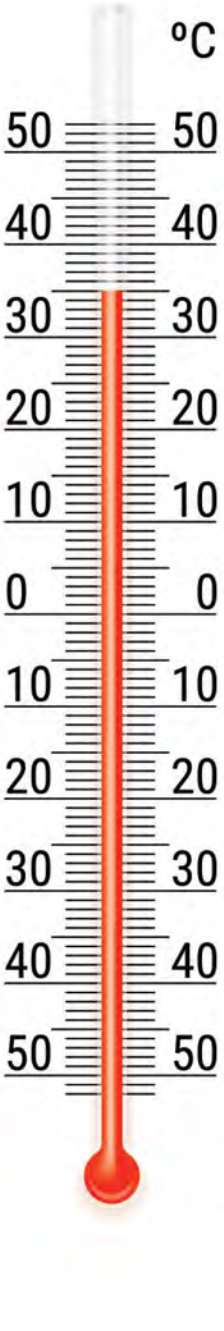
Pakistan's Energy Crossroads

As temperatures rise, the reliance on energy-intensive cooling systems hikes



Prof Abdul Waheed Bhutto

The writer is a seasoned academic and researcher at Dawood University of Engineering and Technology (DUET), Karachi

The intensifying effects of climate change are becoming increasingly evident, with hotter summers leading to escalating demands for cooling, particularly in countries like Pakistan. As temperatures rise, the reliance on energy-intensive cooling systems, such as air conditioners and fans, significantly increases electricity consumption, placing immense pressure on the national grid.

As of March 2024, Pakistan's total installed electricity capacity stands at 42,131 MW, as reported in the Pakistan Economic Survey 2024. The country generated 92,091 GWh of electricity, with an average annual generation of about

10,513 MW. The household sector is the largest consumer, accounting for 49.2% of total electricity usage. The commercial sector follows with 6,905 GWh (10.1%), and other sectors such as street lighting and general services consume 4,530 GWh (6.6%). Together, these sectors make up 65% of the overall consumption, which fluctuates dramatically with seasonal demands.

Electricity demand in Pakistan peaks at around 12,000 MW during the winter months. However, in the summer, it rises sharply to approximately 30,000 MW-a striking difference of nearly 18,000 MW. This seasonal variation is largely driven by the increased cooling needs, predominantly from the residential sector, exacerbated by suboptimal building insulation and the continued use of energy-inefficient appliances.

Despite having adequate power generation capacity, distribution companies in Pakistan still implement load shedding in low-recovery areas to reduce financial and revenue losses. During these outages, especially in the sweltering summer heat, wealthier households increasingly turn to solar energy as a reliable alternative to grid electricity. Furthermore, the provincial governments of Sindh and Punjab have launched initiatives to solarize government offices and buildings, aiming to cut recurring costs and promote the wider use of solar energy.

Pakistan's energy landscape remains complex, with slow GDP growth since the COVID-19 pandemic exacerbating tariff challenges.

By the end of 2024, Pakistan made significant progress in solar energy adoption, importing 22 gigawatts of solar panels-more than the total solar capacity of countries like Canada and the UK. This shift has been largely driven by market forces, including the declining cost of solar technology and rising diesel generator prices. Although the government's involvement has largely been confined to removing import duties and initially supporting net metering policies-which have recently been rolled back-this shift represents a pivotal departure from Pakistan's legacy of energy shortages and grid unreliability. The growing adoption of decentralized solar power, bolstered by improvements in battery storage technologies, is fostering a more resilient and self-sufficient energy landscape, diminishing reliance on the conventional centralized grid.

Pakistan's energy landscape remains complex, with slow GDP growth since the COVID-19 pandemic exacerbating tariff challenges. Despite sufficient power generation capacity, underutilization of infrastructure has led to rising capacity charges, creating tensions between the government, which struggles to reduce electricity costs, and industrialists, who argue that affordable energy is essential for economic growth. Additionally, Pakistan's commitment to the IMF, which mandates the removal of fuel and electricity subsidies, adds further complexity. Structural and financial constraints limit the government's ability to balance these demands, making it harder to achieve sustainable and inclusive development.

Despite ongoing challenges, the government has introduced a notable relief package to ease the electricity cost burden across all consumer categories. Commercial rates have been reduced by Rs 8.58 per unit (12%), industrial by Rs 7.69 (13%), and residential by Rs 6.14 to Rs 6.71 per unit-translating to a 17%-32% cut based on usage. This timely measure has been welcomed by the business community, reflected in a positive stock market response, and is expected to have a broader stimulative impact on the economy. However, country's energy sector faces significant challenges, exacerbated by inefficiencies in its transmission and distribution (T&D) systems, with losses in FY 2023-24 recorded at 18.31%, well above the allowable limit of 11.77%. These high losses add Rs. 276 billion to the circular debt, emphasizing the need for urgent reform in T&D infrastructure to ensure financial stability. Additionally, Pakistan's per capita electricity consumption is far lower than that of developed economies, with Pakistan consuming only 644 kWh per person, compared to 9,610 kWh in Australia, 12,000 kWh in the US, 4,000 kWh in China, and 1,200 kWh in India. This disparity highlights a substantial gap in energy usage, offering significant potential for growth and development within Pakistan's energy sector.

The government's efforts to address Pakistan's energy challenges are hindered by a complex tariff structure and financial constraints. Industrialists are calling for tariff reductions, emphasizing that affordable energy is essential for boosting productivity and economic growth. However, policy limitations and ongoing issues like transformer overloading, generation losses from distributed generation during load shedding, and policy uncertainties complicate efforts to meet these demands. Additionally, the electricity grid faces immense pressure, especially in the summer months when consumption spikes to around 30,000 MW due to cooling needs, further stressing an already inefficient and outdated infrastructure.

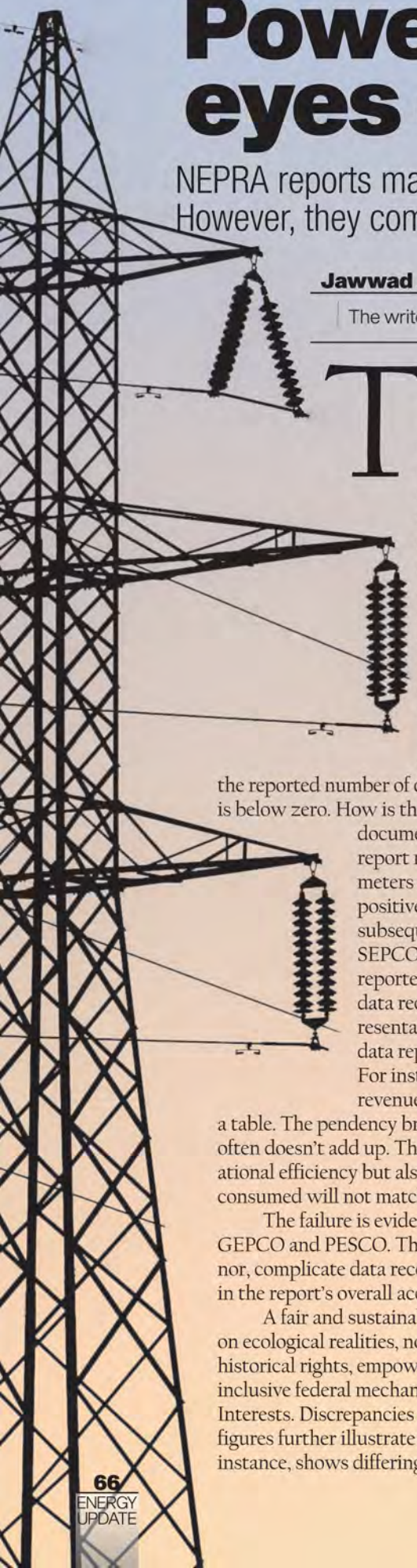
In response to the challenges facing its energy sector, Pakistan is focusing on improving energy efficiency while transitioning to a more sustainable energy model with increased reliance on renewable sources like solar power. This shift is part of a broader effort to enhance climate resilience and governance, moving away from a history of conflict and instability. However, the country faces significant hurdles, including heavy reliance on imported technology, which stifles local capacity, limits job creation, and makes the sector vulnerable to global supply chain disruptions. Additionally, high initial investments in renewable energy technologies pose a barrier to widespread adoption, while the ongoing climate crisis and infrastructure weaknesses present both immediate and long-term challenges.

A key issue that remains largely unaddressed in Pakistan's energy strategy is the underutilization of daylight during the summer months. Shifting school start times to 7 am and office hours to 8 am, as practiced in the EU, US, and India, could optimize energy usage, reduce cooling needs, and significantly lower electricity demand. To fully realize its renewable energy potential, Pakistan must focus on developing local manufacturing capabilities, fostering innovation, and reducing renewable energy costs. Additionally, significant investments in the electricity grid are necessary to improve its capacity and reliability, ensuring efficient integration and distribution of renewable energy. By addressing these challenges, focusing on energy efficiency, and transitioning to renewable sources, Pakistan can build a more sustainable and resilient energy future.

This integrated approach-expanding renewable energy, modernizing the grid, and reducing costs-is crucial for establishing a sustainable, reliable, and equitable energy system. As Pakistan shifts to solar energy during the day, the evening transition to the grid will be a critical test of its stability and capacity to handle rising demand, especially during peak hours. ■

Power sector in the eyes of the regulator

NEPRA reports make a lot of relevant data available to the stakeholders. However, they come with disclaimers that tend to undermine its credibility



Jawwad Rizvi

The writer is a senior economic journalist

The National Electric Power Regulatory Authority has released its half yearly report with notes denying responsibility in case of any inaccuracies for which, it implies, the blame must lie with the distribution and generation companies that provide most of it. While there is a lot of data and one can begin to see patterns in it, the disclaimer tends to undermine the credibility of the report and the confidence in any conclusions one might draw from the data.

Some of the errors are absolute shockers. For example, the reported number of defective meters in some instances is below zero. How is that even possible? Yet, the report documents cases where some DISCOs report negative numbers for defective meters at the end of the month and a positive number at the beginning of the subsequent month. The anomaly is for SEPCO for five out of the six months reported. There is either some error in data recording or an attempt at misrepresentation. There are inconsistencies in data reporting across various sections. For instance, the number of 'lost' units or revenue collected varies slightly in many a table. The pendency breakdown of defective meters often doesn't add up. This raises doubts on not only operational efficiency but also on recovery figures as the units consumed will not match the units billed.

The failure is evident across IESCO, LESCO, FESCO, GEPCO and PESCO. These discrepancies, seemingly minor, complicate data reconciliation and erode confidence in the report's overall accuracy.

A fair and sustainable water policy must be built on ecological realities, not fantasies. It should respect historical rights, empower all provinces and be guided by inclusive federal mechanisms like the Council of Common Interests. Discrepancies in recovery ratios and revenue figures further illustrate these issues. HESCO's data, for instance, shows differing figures for the amount billed and recovered between the Billing & Collection – July 2024 table and the Recovery — Tariff Wise Consumers, Units Sold, Revenue Billed & Rate Per Unit table. Similarly, PESCO's data has inconsistencies in the amount and units billed across different tables.

All effective tariff calculations rely on these figures. This is why the variations necessitate a thorough review to ensure accuracy. Moreover, there is a wide skew in the tariff applicable under HESCO and SEPCO compared with the rest of the DISCOs. Both SEPCO and HESCO consumers seem to enjoy lower tariffs rate. This could explain their unusually high (over 100 percent) recovery rates. Consumer complaints documentation is another interesting area. Such was the grievance handling performance at some DISCOs, notably GEPCO, that it resolved more complaints than it got during July-September. This suggests that it either had a a significant backlog that it went through or that the data is misleading.

There are many instances where the data requires explanatory notes provided by the regulatory body but none have been included. LESCO, for instance, boasts a recovery ratio of 108 percent with a tariff around Rs 41. FESCO, with a lower tariff, however, has posted a recovery ratio of 99 percent. The report's analysis of transmission and dispatch losses often fails to explain the underlying causes.

Recovery ratios may be misleading due to a lack of transparency regarding disconnections and write-offs. Apparent improvements in recovery rates might reflect use of coercive tools (for instance, aggressive disconnection policies) or accounting adjustments rather than sustainable improvements in collection strategies.

The report also suffers from broad methodological weaknesses that limit its effectiveness as a diagnostic tool. Data discrepancies aside, the Performance Reports shed light on the standings of the DISCOs which have been facing a new set of challenges over the last few years — the biggest being changing energy consumption patterns.

The recent rapid solarisation has led to fewer customers being entirely dependent on the grid for their power needs. This is reflected in the low utilisation factor of generation plants across the country. Stunted economic and industrial growth too has suppressed demand. Resultantly, the utilisation factor does not surpass two-thirds across any type of generation. The average factor was less than 50 even during the peak summer months (July-September). The underutilisation results in higher costs for the consumers as they have to bear a higher portion of the fixed costs incurred regardless of utilisation. ■

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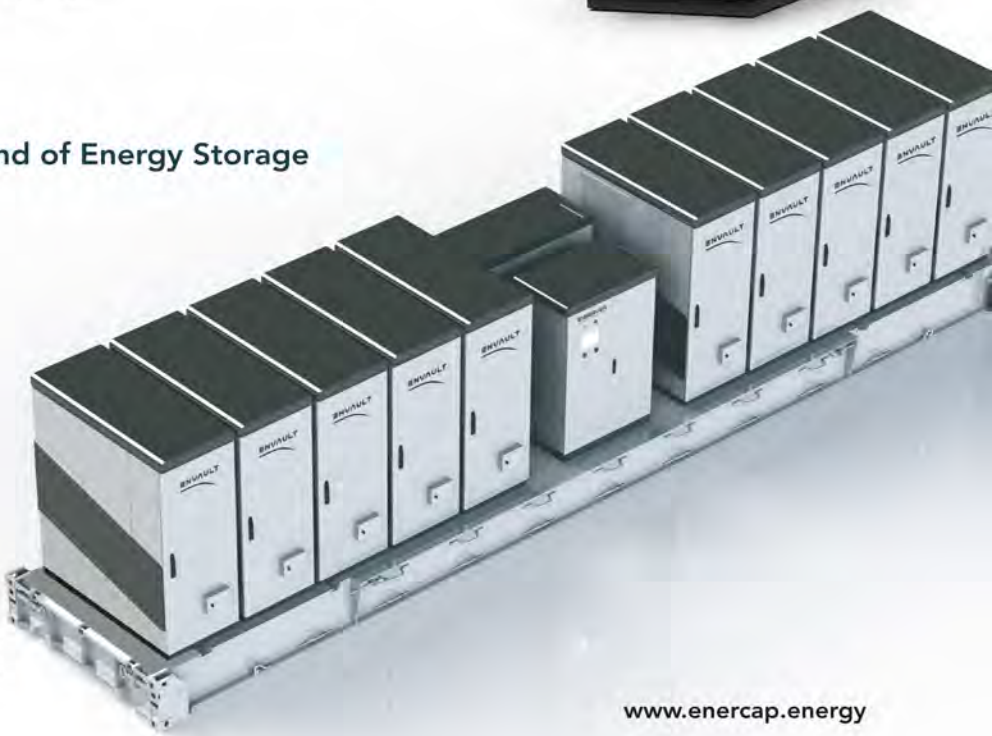

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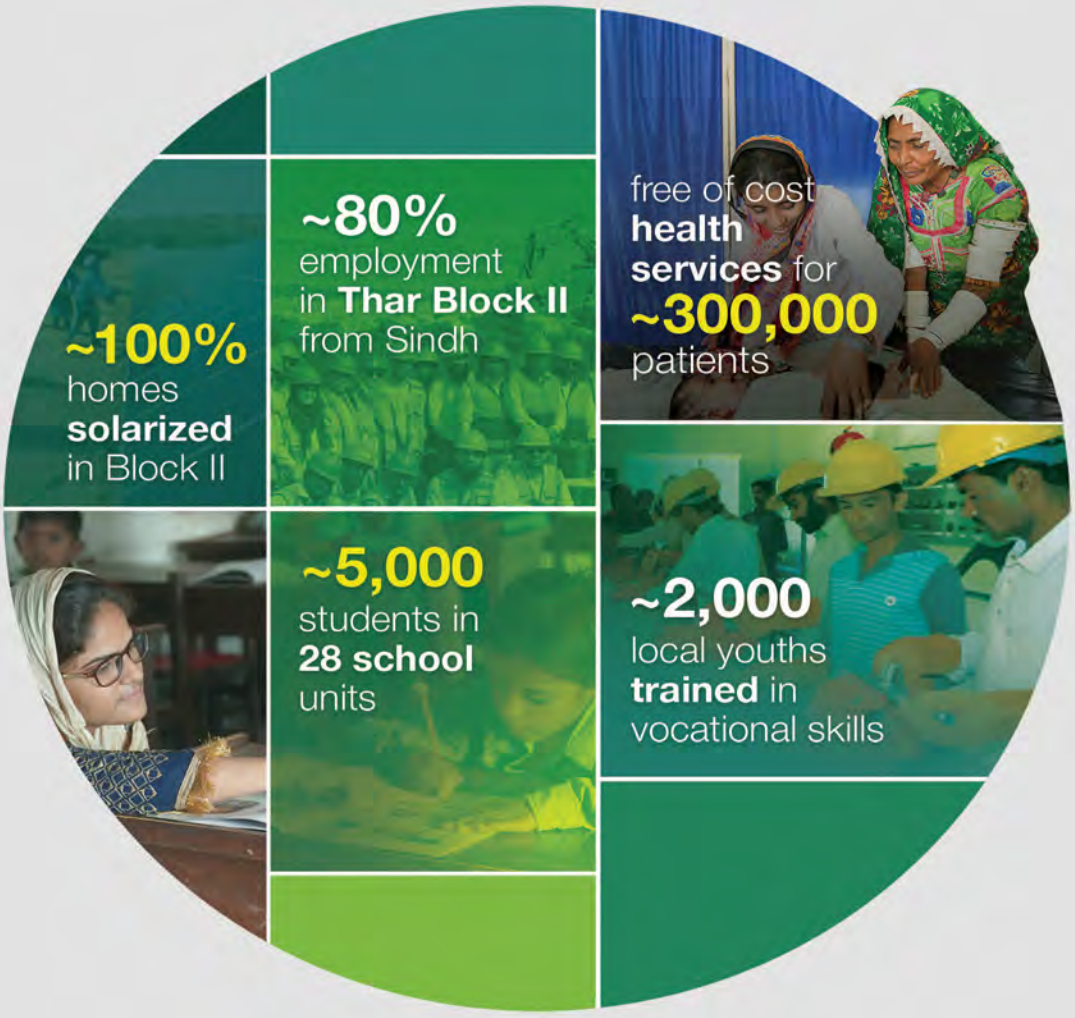

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