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ENERGY UPDATE

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GOODBYE TO GREEN ENERGY?

FORCED EXITS LOOM FOR PAKISTAN'S OIL
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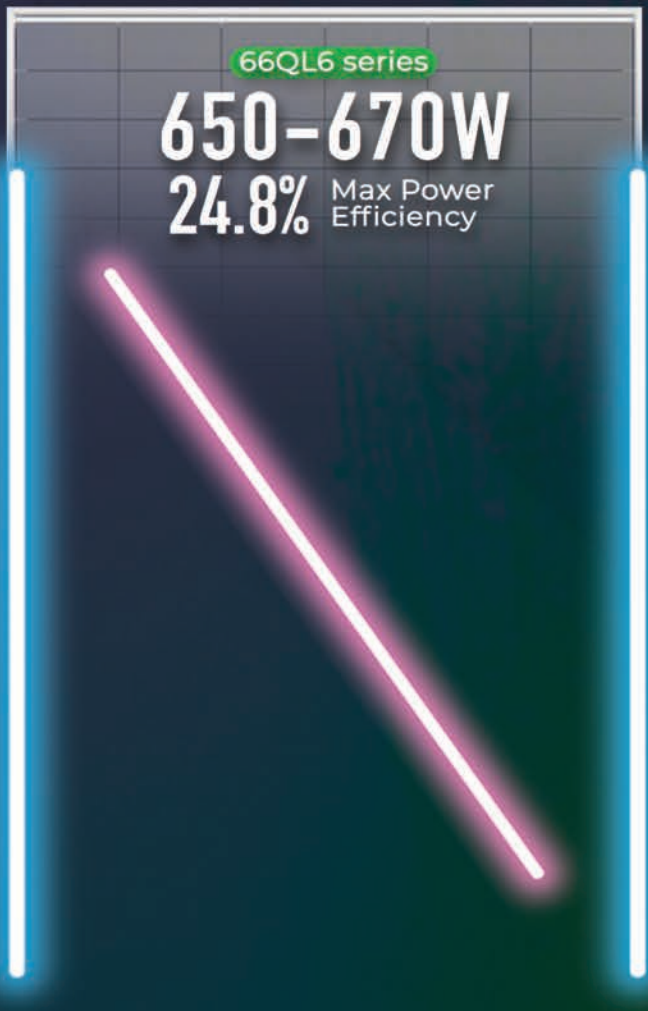

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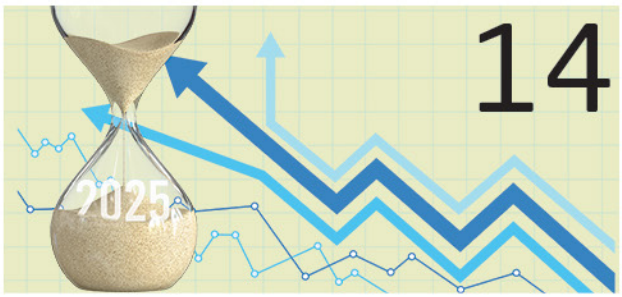

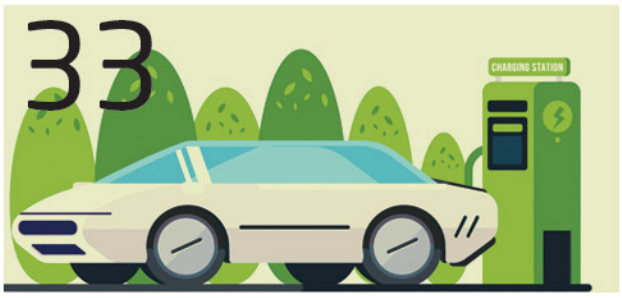

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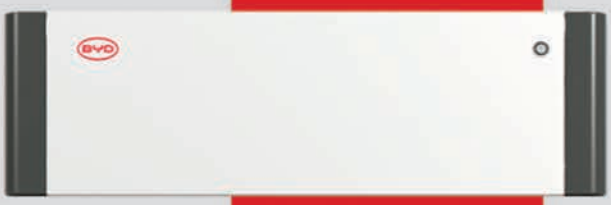

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FROM THE

Editor's desk...

Venezuela Sovereignty Under Siege

The US aggression against Venezuela has sparked severe criticism in the world geopolitics, specially from the International community. It seems that the US military operation in the oil-rich country amounts to an invasion that clearly shows a 'Might and Right' Policy' and injustice. The US stance of levelling allegations of criminality, showing strategic interest in oil reserves, and claims of defending democracy, have no weight as the affected country's sovereignty, and regional peace remains threatened. If such actions are allowed, then every powerful country will invade weak country close to it.

Some analysts believe Venezuela may descend into deeper internal conflict and resistance against foreign occupation. International pressure and legal action at the UN could force negotiations and a peaceful political transition. The US' large-scale military operation against Venezuela, in which it captured Venezuelan President Nicolás Maduro and his wife, Cilia Flores, and shifting them to its soil on criminal charges seems a blatant violation of international law. This dramatic event has intensified longstanding tensions between Venezuela and the US, raised questions about sovereignty, and refocused global attention on oil politics and geopolitical competition.

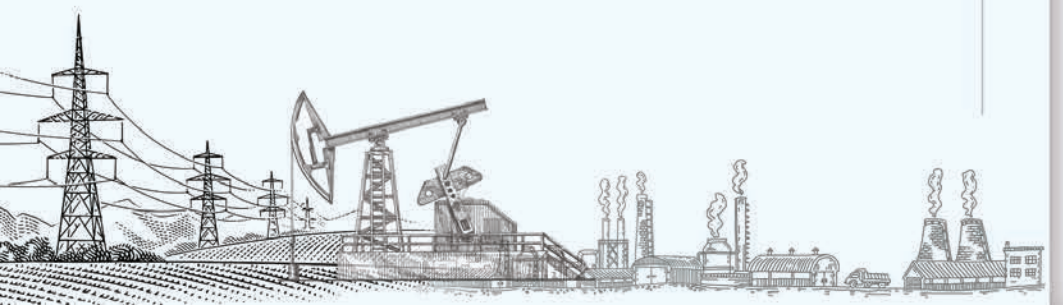
Seemingly, the US operation violates the United Nations Charter, which prohibits the use of force against another state's sovereignty without Security Council authorization or self-defense justification.

US administrations have repeatedly accused Venezuela's government of human rights abuses, corruption, and ties to narcotics trafficking. Sanctions targeting Venezuela's oil sector and financial system began under earlier US presidents and escalated over the last decade. Venezuela's close ties with countries like China, Russia, and Cuba have further complicated relations and shaped global reactions.

In late 2025, the US escalated its military presence in the Caribbean and implemented a naval blockade on Venezuelan oil shipments, claiming it was intended to restrict illicit activities and pressure the Venezuelan government.

Venezuela holds the largest crude oil reserves in the world, which are 17 % of global reserves, exceeding those of Saudi Arabia. Venezuela's oil, though vast, has been under-exploited due to underinvestment, mismanagement, and sanctions. In 2025, the country's oil output was well below historic levels — around 860,000 barrels per day, far lower than its production a decade ago. Venezuela's economy has been in crisis for over a decade, ever since oil revenues collapsed and hyperinflation eroded living standards.

There is an urgent need that the UN should come forward against the US and end its actions forthwith. The international community should raise voice at the UN forum to help Venezuela and its people to pass independent life besides playing a due role for the release of the country's president and his wife.



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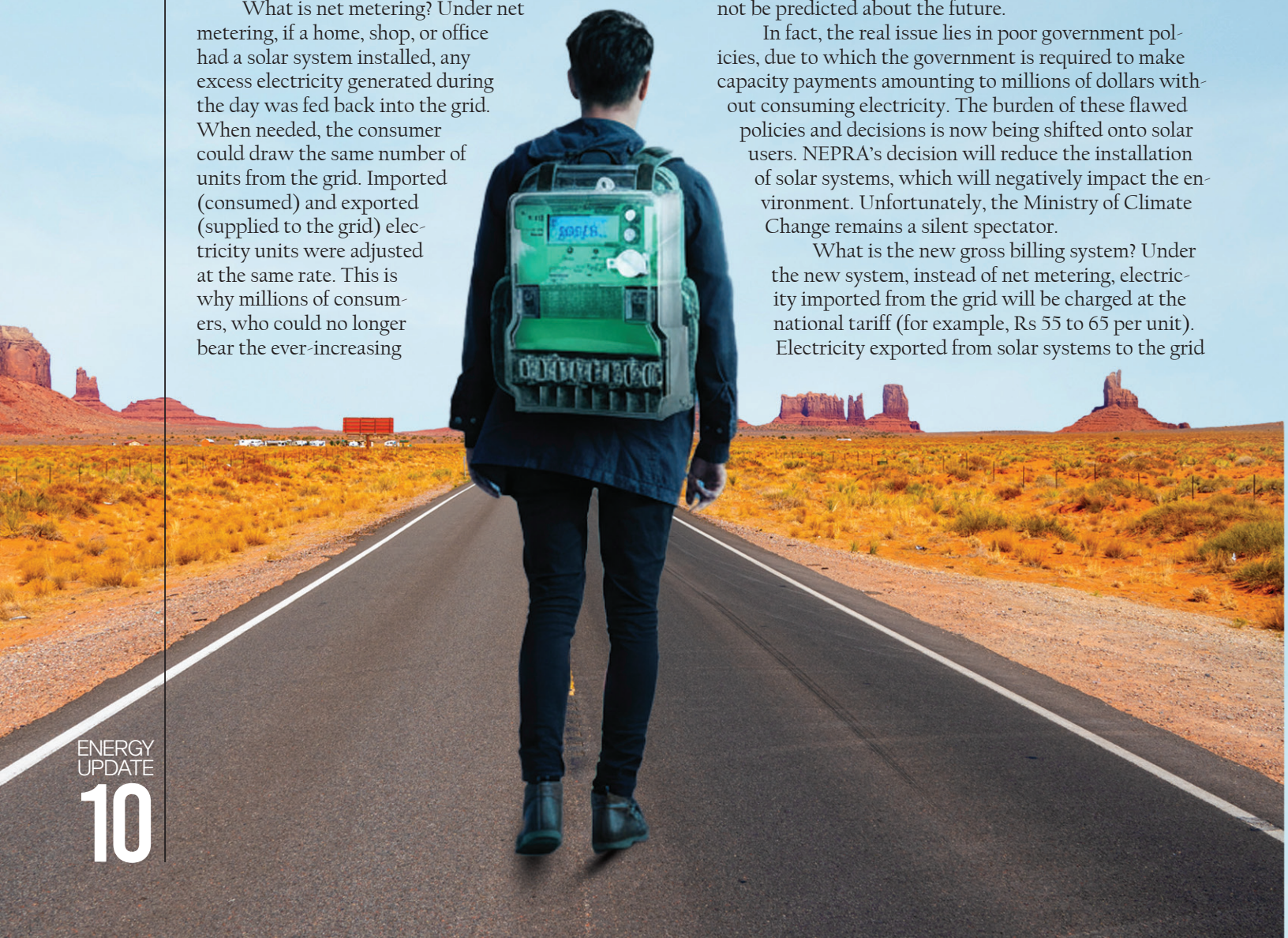
End of net metering – goodbye to green energy?

Moin M Fudda ONZM, SI

The writer is founder of Group "Save the Planet via Green Energy"

The Federal Government has made a final decision to abolish the Net Metering system for solar installers and replace it with a gross billing policy. For the implementation of this decision, power regulator, NEPRA, has formally issued draft rules. Deviating from established procedures, NEPRA has not announced any date for a public hearing this time. It is quite possible that after ten years, Pakistan will be the first country to end the net metering after such a short period while neighbouring countries are not only promoting net metering but, in some cases, even allowing neighbours to sell excess electricity to each other.

What is net metering? Under net metering, if a home, shop, or office had a solar system installed, any excess electricity generated during the day was fed back into the grid. When needed, the consumer could draw the same number of units from the grid. Imported (consumed) and exported (supplied to the grid) electricity units were adjusted at the same rate. This is why millions of consumers, who could no longer bear the ever-increasing electricity prices, were increasingly attracted towards installing solar systems.



Why did the ministry of energy recommend ending net metering? According to officials of the Ministry of Energy, net metering was causing electricity generation companies losses worth billions of rupees, and grid and system costs were not being recovered.

However, on 18th November 2025, Central Power Purchasing Agency (CPPA) CEO Rehan Akhtar while testifying before the NEPRA said that while solar generation is increasing, but this does not have a significant impact on the grid.

According to him, the energy costs had led to a shift to solar power. "They are now consuming more due to solar availability but their offtake from the national grid has not changed. Their withdrawal from the grid is almost stable. They are drawing the same quantities they were drawing earlier," he said, adding, however, the same could not be predicted about the future.

In fact, the real issue lies in poor government policies, due to which the government is required to make capacity payments amounting to millions of dollars without consuming electricity. The burden of these flawed policies and decisions is now being shifted onto solar users. NEPRA's decision will reduce the installation of solar systems, which will negatively impact the environment. Unfortunately, the Ministry of Climate Change remains a silent spectator.

What is the new gross billing system? Under the new system, instead of net metering, electricity imported from the grid will be charged at the national tariff (for example, Rs 55 to 65 per unit). Electricity exported from solar systems to the grid

will be paid not at the current Rs 24 per unit of National Average Purchase Power Purchase Price (NAPPP), but at around Rs 9 per unit of National Energy Power Purchase Price (NEPPP). Imported and exported units will no longer be netted off against each other; instead, they will be calculated separately, meaning a gross billing system will be enforced.

Ironically, due to flawed policies of officials, the government on the one hand will continue for nearly the next ten years to purchase electricity from solar IPPs at rates exceeding Rs 49 per unit (in dollar terms) and, on the other, solar users will be pushed toward installing batteries, thereby storing excess electricity for personal use rather than selling it cheaply to the grid. At the same time State Bank will be forced to spend millions of additional dollars on importing batteries because of this decision.

What could be the solution? Every Pakistani takes pride in the fact that Prime Minister Shehbaz Sharif has repeatedly emphasized the need to promote solarization. Therefore, to avoid shattering of his vision, the writer respectfully requests the Prime Minister to direct NEPRA not to alter the existing system but, instead, introduce a national carbon emission (CO_2) policy. Under such a policy, net metering consumers could transfer their carbon credits to DISCOs, which could then sell them in international markets to improve their financial indicators.

According to an international survey, Pakistanis are among the most generous people in the world in terms of donations (Zakat and charity). Hence, the Prime Minister is once again requested to intervene and halt NEPRA's action and simultaneously issue directives to establish "Digital Electricity Units Trust" (DEUT) in every major city.

Through these Trusts solar units voluntarily contributed by solar system installers could be digitally transferred from DISCOS to Not for Profit Organizations who will then pass these on to deserving households, especially to widows, through a well-defined policy and mechanism thereof. ■

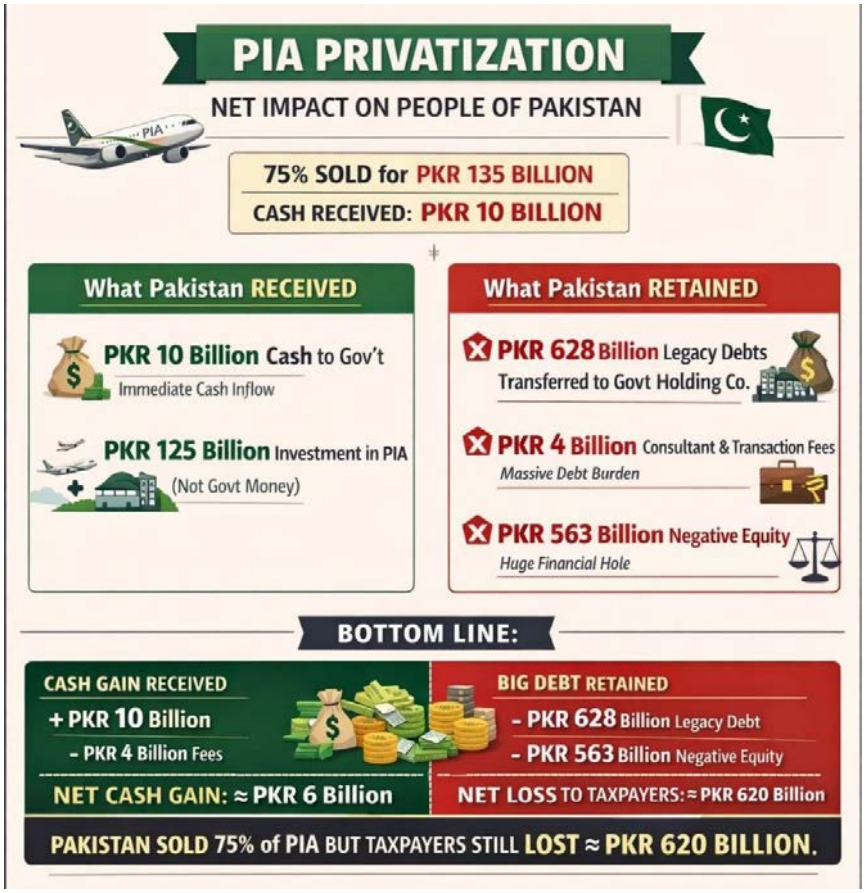
Saudi Arabia's decision to accept China's yuan

Masood Zaidi

Saudi Arabia's decision to accept China's yuan for oil payments marks a bold shift with far-reaching implications for the global financial order. China currently purchases around 25% of Saudi oil production—approximately 6.17 million barrels per day—and settling part of this trade in yuan could deal an estimated annual blow of $50 billion to the long-standing petrodollar system. Since 1974, oil trade denominated in US dollars has underpinned American economic dominance, forcing energy-importing nations to rely on the dollar.

The catalyst for this shift was the freezing of over $300 billion in Russian reserves after the Ukraine war in 2022, which alarmed not only Russia but also China, India, and others about the risks of dollar dependence. This accelerated efforts toward local-currency trade and alternative financial arrangements. Arab states, with vast assets parked in US banks and bonds, increasingly view over-concentration as a strategic risk.

With BRICS partners expanding and promoting currency swaps and barter trade, the dollar's monopoly may gradually erode. While this transition will be slow and the dollar remains dominant for now, reduced petrodollar reliance could eventually put structural pressure on the US economy, which already functions largely as the world's import market. The journey is long—but the direction is clear. ■



Urgent call made to unlock solar energy amid net-metering regime under scrutiny

FPCCI, Energy Update debate on net-metering, rooftop solar policy changes

Mustafa Tahir

A strong and unified call to urgently harness Pakistan's vast clean energy potential—particularly its abundantly available solar power—resounded at a high-level seminar that brought together policymakers, industry leaders, energy experts and environmental advocates. The overarching message was clear: accelerated deployment of solar energy is critical to drive rapid industrialisation, provide affordable electricity to industries, energise off-grid homes in remote rural areas, and ease the mounting electricity burden on ordinary consumers.

The seminar, organised by the Federation of Pakistan Chambers of Commerce & Industry (FPCCI) in collaboration with Energy Update, focused on recent changes proposed in the government's net-metering and rooftop solar policies and the serious concerns these changes have raised for both industry and consumers.

Addressing the gathering, FPCCI Senior Vice-President Saquib Fayyaz Magoon stressed that Pakistan must follow the example of developed economies by fully exploiting its untapped renewable energy resources. He said that with such vast clean energy potential available locally, industries should not be pushed towards shutdowns due to unaffordable electricity tariffs.

He warned that unresolved electricity pricing issues had posed a grave threat to Pakistan's industrial base. He urged the government to act swiftly. Any further delay, he cautioned, could undermine industrial competitiveness, exports and employment at a time when the economy could ill afford such setbacks.

Faizan Ali Shah, Adviser to the Power Division, assured participants that the proposed amendments to the net-metering regime were not designed to derail Pakistan's transition to renewable energy. Instead, he said, they were intended to correct financial anomalies within the existing electricity tariff structure.

He explained that rooftop solar electricity was generated at around Rs10 per unit, whereas the government could no longer afford to purchase surplus power at Rs35–40 per unit, as this differential was ultimately passed on to other consumers.

Highlighting regional and international comparisons, the Power Division adviser pointed out that India's annual energy demand stood at 1,695 terawatt-hours (TWh), compared with 111 TWh for the Netherlands and 183 TWh for the UAE. Pakistan's energy demand, by contrast, remained at around 100 TWh, despite being geographically much larger than both the UAE and the Netherlands—underscoring the country's vast untapped potential for growth.

He also cited the sharp decline in solar generation costs, noting that the electricity purchase price of the Quaid-e-Azam Solar Park was 14 US cents per unit at the time of commissioning, which had since fallen to around 3 US cents per unit—a rate comparable to that proposed for net-metering consumers.

From the industry's standpoint, Pakistan Solar Association (PSA) Chairman Waqas Moosa cautioned that abrupt or drastic changes to the net-metering regime could drive rooftop solar users towards battery-based systems with minimal dependence on the national grid. Such a shift, he warned, would further exacerbate the already fragile financial position of public sector power distribution companies.

He informed the seminar that solar power systems with a cumulative capacity of around 40 gigawatts (GW) had already been installed across Pakistan, with 6 GW accounting for net-metering capacity by 2025. According to PSA estimates, consumers had invested approximately US$2 billion in rooftop solar installations.

Mian Zahid Hussain termed it irrational for the government to simultaneously pay inflated capacity charges to under-utilised IPPs while also purchasing excess electrici-

ty from rooftop solar systems at high rates.

Clean energy advocate and financial analyst Moin M Fudda reminded participants that net-metering was first introduced in the United States as early as 1971, whereas Pakistan began reconsidering the policy barely a decade after its adoption. He argued that purchasing surplus electricity at Rs25.98 per unit should not be seen as a burden, particularly when such power involved no transmission losses and was significantly cheaper than electricity generated by conventional IPPs.

Waqas Khaleeq, CEO of Smart Solar, highlighted the macroeconomic benefits of solar energy, noting that greater reliance on renewables could help Pakistan cut its annual oil import bill of around US$15 billion, while also reducing carbon emissions from fossil fuel-based power generation.

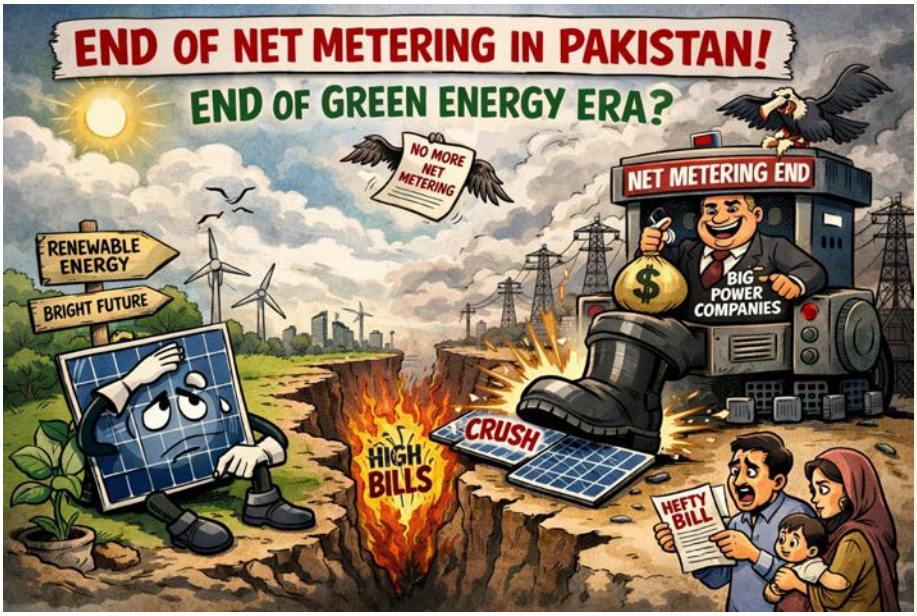
Drawing on India's experience, he said net-metering there was allowed for systems with capacities of up to one megawatt (MW). He added that India had already installed 11 GW of solar capacity and that two major Indian conglomerates had jointly acquired 900,000 acres of desert land to set up large-scale solar manufacturing facilities.

Another solar industry leader, Muhammad Zakir Ali, expressed optimism that Prime Minister Shehbaz Sharif would reject the proposed changes to safeguard the legitimate interests of consumers who had already invested in rooftop solar systems.

Concluding the seminar, Muhammad Naeem Qureshi, President of the National Forum for Environment & Health (NFEH), urged the government to fully account for the immense environmental benefits of solar energy in addressing the climate crisis. Even while reviewing incentives, he appealed for renewable energy equipment and technologies to remain tax-free in the broader interest of economic growth and environmental sustainability.

The event was also attended by Energy Update

Director Finance Ruqiya Naeem, CMO Engr Nadeem Ashraf, Marketing Manager and Deputy Editor Mustafa Tahir, along with other stakeholders, underscoring the publication's continued commitment to informed dialogue on Pakistan's energy future. ■



How was 2025 for economy?

Mansoor Ahmad

In 2025, Pakistan's economy remained on a fragile recovery path with modest growth, stabilisation in key price indicators, and continued reliance on external support programmes. Real GDP growth for FY2025 was modest, around 2.6-2.7 per cent, below original targets but marking a slight improvement from the previous year. Inflation fell sharply compared to the high double-digits of recent years. Official figures reported inflation as low as around 4.6 per cent in mid-2025, with occasional month-to-month volatility later in the year (about 6.1 per cent in November 2025).

After holding policy rates for most of the year the SBP announced a slight reduction of 0.5 per cent in policy rate to 10.5 per centFor part of the fiscal year, Pakistan recorded a current account surplus, helped largely by strong remittance inflows. Pakistan received further IMF financing (about $1.2 billion) in December 2025 under its ongoing programme, acknowledging progress but urging continued reforms.

Stabilisation was the dominant narrative of 2025. Prices became less volatile, and macro indicators looked less erratic than in 2023-24, but growth remained below potential and the economy stayed vulnerable to shocks. Performance in health in 2025 showed modest quantitative improvements, though structural challenges remained. Key indicators such as infant mortality declined slightly, and life expectancy ticked up modestly. Registered

healthcare personnel increased (eg, doctors, nurses), and the number of primary care facilities and basic health units remained substantial. But health spending remained very low -- total health expenditure was less than 1.0 per cent of GDP. Chronic underinvestment in public health infrastructure and preventive services is taxing the health of poor.

In the Finance Division, the progress was incremental, not transformative. Health services remained underfunded relative to needs, and broader outcomes (maternal mortality, comprehensive coverage) still require sustained public investment.

Education saw some structural focus but constrained financing. Enrolment and access movements continued at various levels, including higher education expansion through scholarships and infrastructure improvements. Universities (public and private) increased, and technology initiatives (eg, digital campuses, LMS systems) aimed at improving access and quality.

Education spending remained below 1 percent of GDP, consistent with long-term underfunding. Overall literacy remained low at around 60 per cent, with particularly wide gender and rural-urban gaps.

Programmes like the Benazir Income Support Programme (BISP) and other social safety nets saw budget increases, reflecting priority on cushioning the most vulnerable. Despite government efforts, poverty reduction progress stagnated or slightly reversed, with external shocks and limited structural reforms keeping many households near or below poverty levels. World Bank analyses highlight this risk.

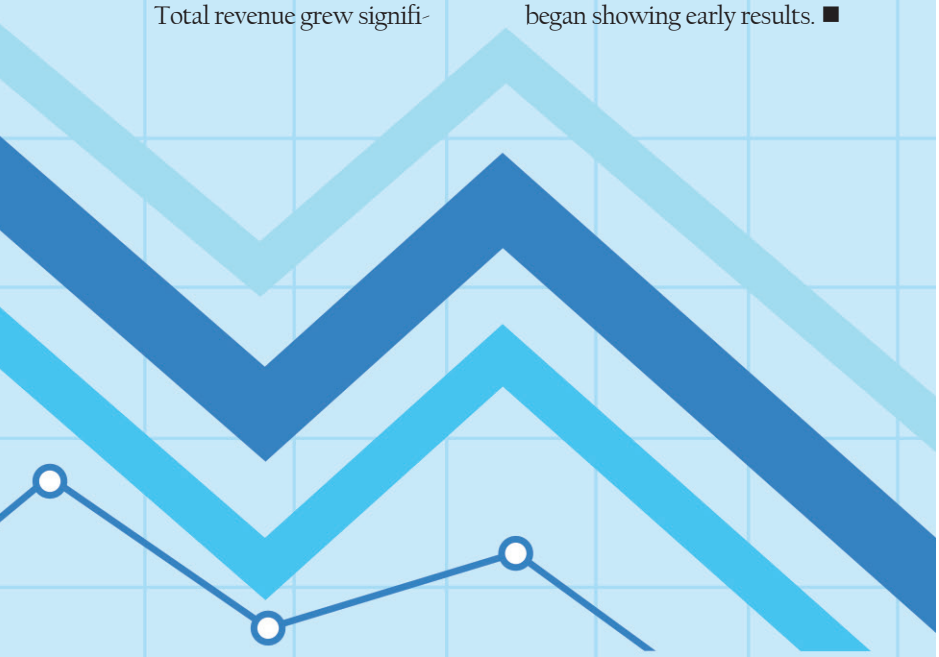
Total revenue grew significantly in FY2025 -- revenue collection climbed (around Rs13 trillion), with tax revenues rising too. Strong remittance inflows and better export performance supported public finances and the external sector.

The tax-to-GDP ratio remained low by regional standards, highlighting structural weaknesses in mobilizing domestic resources. Informal sectors, exemptions, and compliance gaps continued to weaken the revenue base, making sustainable public finance difficult without reforms. Reliance on external financing (IMF, friendly countries) persisted to bridge fiscal and external gaps.

Governance in fiscal policy, regulation and public service delivery -- showed mixed signals. Macroeconomic stabilization measures suggested better policy calibration. Digitalisation of tax administration and fiscal discipline under IMF oversight were noteworthy efforts.

Structural governance issues such as bureaucratic inefficiency, political economy hurdles, and weak enforcement of reforms continued to blunt the impact of reforms. There is a need for deeper institutional reforms to make stabilization durable.

2025 saw a significant reduction in headline inflation compared to previous years' highs. Official reports placed consumer inflation in a low single digit range for significant stretches of the year. Some volatility reappeared later, but the overall trend was towards stability which is an important macro achievement. 2025 was a year of stabilisation and cautious recovery -- inflation came down, remittances bolstered the external account, and key reforms under the IMF and domestic plans (like Uraan Pakistan) began showing early results. ■



Five major business groups announce investment plans

EU Report

Five major business groups of Pakistan - Lake City Holdings, Fatima Group, Deen Group, Hilton Group, and Surti Group - have announced investments worth billions of dollars in Balochistan. The market value of these business groups is USD5 billion. This comes after Mari Energies Limited disclosed that its wholly owned subsidiary, Mari Minerals (Private) Limited, has entered into a joint venture agreement with Globacore Minerals Limited for mineral exploration activities in the province. At a recently-held ceremony, former federal minister and business icon Gohar Ejaz said that with the start of mineral development, an era of peace and progress will bring job opportunities in the country.

Sindh Energy Secretary reviews progress on strategic Thar Coal Railway Project

EU Report

On the directives of Sindh Chief Minister Syed Murad Ali Shah, Provincial Energy Secretary Shahab Qamar Ansari, along with Commissioner Mirpurkhas Faisal Uqali and senior officials, visited Choor near Umerkot to review progress on the strategic Thar Coal Railway Project. The team inspected the 105-kilometer railway line linking Thar coal mines with Bin Qasim, a key initiative to strengthen Pakistan's energy security by ensuring efficient coal transportation. The project also includes a 9-kilometer extension to Port Qasim and a dedicated coal unloading facility.

The Chief Minister has emphasized that the railway will connect Thar coal with the national rail network and Port Qasim. The Rs 90 billion project is being jointly funded by the Sindh and Federal governments, with Sindh contributing 50 percent and having released Rs 6.61 billion so far.

Expressing satisfaction, the Energy Secretary directed teams to accelerate work and praised Pakistan Railways and FWO for their cooperation.

Offshore wind turbines

Rachel Williamson

Rachel Williamson is a science and business journalist, who focuses on climate change-related health and environmental issues.

Certain species of fish can be up to two times bigger when living in protected offshore wind farm zones, a new study has found. Not only do the rough surfaces of turbine monopiles and submarine cables provide new habitats for sponges, corals, anemones and other sessile organisms, but that extra food source allows other creatures to thrive as well.

"These benthic-dominated [ocean flora and fauna that live close to the seabed] ecosystems are critical for nutrient cycling, diversifying food webs and even storing carbon," said Murdoch University emeritus professor Neil Loneragan, a coauthor on the paper in Global Ecology and Conservation. "The results from the paper are very encouraging – they show wind turbines create a different localised marine environment with many positive attributes."

The paper, by researchers from Murdoch and Dalian Ocean universities, compared data from the Zhuanghe offshore wind farm in China's northern Yellow Sea with a control area without turbines around 6km east across 2023 and 2024. It was built between 2019 and 2021 and is the largest offshore wind project in northeast China, with an installed capacity of 1.35 gigawatts (GW).

They fed Ecopath with Ecosim software models with biological and environmental survey data collected from the Zhuanghe wind farm and a nearby control area without any offshore wind activity. What they found were more groups and more complexity in the oceanic food chain, especially for macroinvertebrates and fish, as seabed creatures had new surfaces to colonise, from footings to the gravel around monopile bases to other subseas infrastructure to colonise.

The relative total impact of each functional group for (A) Zhuanghe OWF and (B) the control area in the northern Yellow Sea estimated by Ecopath software. Circle size shows the percentage relative biomass of each group. Fat greenling fish were estimated to be twice as big in the offshore wind zone as out of it; the Korean rockfish was more than three times bigger, as is the predatory Asian rapa whelk. "Sessile organisms, such as the blue mussel Mytilus edulis and other suspension-feeding invertebrates colonized the monopiles in the OWF, constituted over 50 per cent of the total biomass," the paper says.

"Most fish functional groups exhibited significantly greater biomass in the OWF area, particularly demersal [seabed-living] species, which is consistent with the findings from other studies and their suggestion that OWFs act as "fish aggregation devices". "For instance, our model showed that benthic fish biomass nearly doubled in the OWF area compared to the control area." And while the paper notes the risks created by exploration and construction, including habitat destruction and disturbances to birds, marine mammals and fish, it also notes that disrupting the seabed can stir up nutrients which adds to the food available. ■

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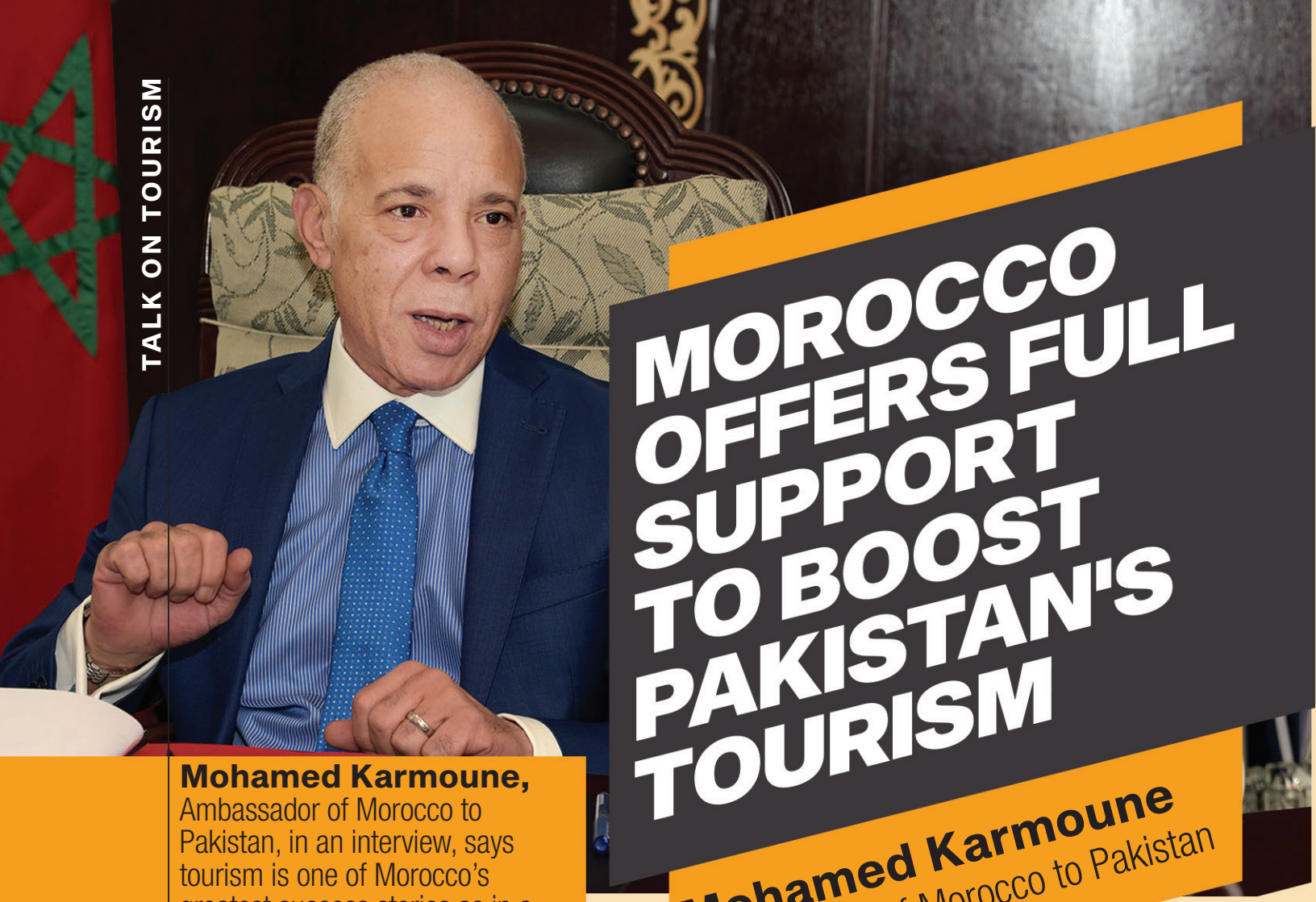

MOROCCO OFFERS FULL SUPPORT TO BOOST PAKISTAN'S TOURISM

Mohamed Karmoune
Ambassador of Morocco to Pakistan

Mohamed Karmoune, Ambassador of Morocco to Pakistan, in an interview, says tourism is one of Morocco's greatest success stories as in a single year, we have welcomed nearly 12 million international tourists; tells we are just 14 kilometres from Spain; recalls bilateral relations between Pakistan and Morocco have spanned more than seven decades, marked by mutual goodwill, shared values, and a deep sense of fraternity as two brotherly Islamic nations

Naeem Qureshi

The Writer is Managing Editor of Energy Update and Environment Activist

Bilateral relations between Pakistan and Morocco have spanned more than seven decades, marked by mutual goodwill, shared values, and a deep sense of fraternity as two brotherly Islamic nations. From Pakistan's diplomatic support to Morocco's liberation movement in 1952 to the establishment of formal diplomatic ties in 1958, the relationship has grown steadily. Today, both countries see enormous untapped potential — especially in tourism, travel, trade, and investment.

In this exclusive interview, Mr Mohamed Karmoune, Ambassador of Morocco to Pakistan, speaks to Energy Update about Morocco's readiness to share its globally acclaimed tourism expertise with Pakistan, its commitment to expanding bilateral trade, and its vision for a stronger South–South partnership. The interview also includes expanded remarks of the Honorary Consul General of Morocco in Karachi, Mirza Ishtiaq Baig, who stresses the strategic importance of strong economic and tourism linkages.

Energy Update: Pakistan and Morocco have enjoyed a long-standing bilateral relationship. Could you share some historical context behind this bond?

Ambassador Mohamed Karmoune: Certainly. The relationship between Pakistan and Morocco dates back to 1952, even before the establishment of our formal diplomatic ties in 1958. In 1952, Pakistan issued a diplomatic passport to a key leader of the Moroccan liberation movement, enabling him to address the United Nations General Assembly in support of Morocco's quest

for independence. This gesture remains a deeply valued chapter in our shared history.

Energy Update: How would you assess the current trade and economic relations between the two countries?
Ambassador Mohamed Karmoune: While our bilateral trade volume currently stands at around US $8 million annually, the potential is far greater. For years, Morocco has been a leading exporter of phosphate to Pakistan, which is crucial for Pakistan's fertiliser production and, consequently, its food security. This mutually beneficial trade arrangement has remained stable since 2008.

Energy Update: Morocco has achieved remarkable success in becoming a world-class tourist destination. How can Pakistan benefit from Morocco's experience?
Ambassador Mohamed Karmoune: Tourism is one of Morocco's greatest success stories. In a single year, we have welcomed nearly 12 million international tourists — a result of sustained investment in infrastructure, marketing, security, and hospitality.

Morocco is fully willing to share its expertise with Pakistan. With its mountains, deserts, coastline, heritage sites, and vibrant cultural traditions, Pakistan has tremendous potential to become one of the most attractive destinations in the world. What is needed is strategic investment, skilled manpower, and modern tourism management practices — all areas where Morocco can extend full cooperation. We stand ready to help Pakistan build a robust tourism ecosystem by sharing best practices, capacity building, institutional support, and experience-based guidance.

Energy Update: How receptive are Pakistanis to travelling to Morocco? Has there been an increase in people-to-people connectivity?
Ambassador Mohamed Karmoune: People-to-people connections are steadily increasing. Every month, we issue more than 200 visas to Pakistani travellers, and this number is rising. Pakistanis are keen to explore Morocco — its historical cities, beaches, mountains, and cultural diversity.

Enhanced connectivity, frequent business delegations, and stronger collaboration between tourism operators will further deepen these ties.

Energy Update: Morocco's geographical location is strategically significant. How can Pakistan benefit from this?
Ambassador Mohamed Karmoune: Morocco enjoys a unique geographical advantage. We have a long coastline stretching 3,500 kilometres along the Atlantic Ocean and the Mediterranean Sea. We are just 14 kilometres from Spain, across the Strait of Gibraltar — a distance even a strong swimmer could cross. A ferry ride from Morocco to Spain takes only 45 minutes.

Energy Update: What is your vision for future cooperation between the two countries?

Ambassador Mohamed Karmoune: "Our cooperation must now expand rapidly. Morocco is committed to strengthening ties with Pakistan under the principle of South–South cooperation. With more trade delegations visiting each other's countries, I am confident that our trade and economic footprint will grow significantly. Most importantly, we want to help Pakistan build a globally competitive tourism industry. Morocco is ready to extend full support — from training and joint ventures to tourism planning and hospitality reforms."

Remarks of Mirza Ishtiaq Baig, Honorary Consul General of Morocco in Karachi
Speaking to Energy Update, Mirza Ishtiaq Baig — a well-known businessman and Honorary Consul General of Morocco in Karachi — strongly emphasised the need to elevate Pakistan–Morocco ties to an unprecedented level, particularly in tourism and trade. He said:" Pakistan stands at the threshold of becoming one of the world's most fascinating tourist destinations. What it needs is the right strategic direction, professional training, and global marketing — areas in which Morocco has excelled for decades.

As Morocco's Honorary Consul General, I am fully committed to facilitating regular Pakistani trade and tourism delegations to Morocco. These exchanges will expose our Pakistani entrepreneurs, investors, and officials to Morocco's modern tourism infrastructure and help them replicate proven models back home.

He added that Morocco's success in attracting millions of tourists can serve as a blueprint for Pakistan. Mr Baig said: "Morocco transformed its tourism industry through integrated planning, investor-friendly policies, and a welcoming environment. Pakistan can achieve even more, given its unparalleled natural beauty and cultural richness. Our mission is to create strong business linkages, build mutual confidence, and ensure that both nations benefit from each other's strengths." ■

Celebrating Two Decades of Global Solar Leadership and 12 Years of Trusted Impact in Pakistan

EU Report

As the world accelerates its transition towards renewable energy, few names command as much credibility and scale in the solar industry as Jinko Solar Co., Ltd. Marking 20 years of global solar leadership and 12 years of trusted operations in Pakistan, the world's No. 1 photovoltaic (PV) brand recently celebrated a remarkable journey defined by innovation, reliability, and market confidence.

With more than 370 gigawatts (GW) of PV modules delivered globally, Jinko Solar has emerged as a benchmark for technological excellence and industrial scale. In Pakistan, where the demand for affordable and reliable clean energy continues to grow, the company's sustained presence over the past 12 years has played a pivotal role in shaping the country's solar ecosystem.

A landmark celebration in Lahore

To commemorate this milestone, Jinko Solar hosted its Annual Success Event, "12+.12+ Legacy Celebrations," on December 23, 2025, at The Nishat Hotel, Emporium Mall, Lahore.

The prestigious gathering brought together a wide cross-section of the solar value chain, including distributors, EPC partners, industrial customers and key stakeholders from across Pakistan's renewable energy sector.

The event was attended by JinkoSolar's senior global and regional leadership, underscoring the company's long-term commitment to the Pakistani market. Distinguished guests included Mr. Gener Miao, Chief Marketing Officer; Mr. Daniel, General Manager - INP Region; Mr. Jimmy Pu; Ms. Lynette; and Mr. Shehan Talagala, Sales Director, along with the dedicated Jinko Solar Pakistan team comprising Mr. Tahir Hashim, Mr. Faraz Muhammad Khan, Mr. Faizan Hashmi, and Mr. Awlia. Their collective presence highlighted the strategic importance of Pakistan within JinkoSolar's global growth vision.

Unveiling next-generation solar technology

A major highlight of the evening was the official launch of Jinko Solar's latest high-efficiency PV module, Tiger Neo 3.0. The newly introduced module represents a significant

leap forward in solar technology, offering a module efficiency of up to 24.8%—among the highest in the industry.

Designed to deliver higher energy yield, enhanced reliability and optimised long-term performance, Tiger Neo 3.0 has been engineered with a strong focus on real-world operating conditions. Its advanced design makes it particularly well-suited to Pakistan's diverse and demanding climate, ensuring improved output and durability for both utility-scale and commercial installations.

12 Years, 12 Gigawatts, Unmatched Trust

During the celebrations, Jinko Solar also marked a historic achievement: the supply of more than 12 GW of high-efficiency PV modules in Pakistan over the past 12 years. This milestone is a powerful indicator of the confidence placed in the brand by the local market.

Most notably, Jinko Solar stands as the only PV manufacturer to have supplied approximately 10 GW of solar modules in Pakistan within just two years. This extraordinary accomplishment reflects the company's unmatched manufacturing capacity, robust global supply chain and consistent product quality, as well as the deep trust it enjoys among Pakistani customers and partners.

Entering the 20th anniversary year

The Lahore event also formally marked the beginning of Jinko Solar's 20th global anniversary celebrations, which will be observed throughout 2026 under the inspiring theme:

"2006 All in Solar, 2026 Solar For All."

The theme captures the company's two-decade-long commitment to solar energy and its forward-looking vision of making clean, reliable and affordable solar power accessible to communities and industries worldwide.

Collaboration, recognition and the road ahead

The evening featured insightful keynote addresses, recognition of outstanding partners, and meaningful networking among industry leaders, followed by a gala dinner. The gathering served not only as a celebration of past achievements but also as a platform to strengthen collaboration across Pakistan's growing solar sector.

By reaffirming its position as the world's No. 1 PV brand and a leading solar solutions provider in Pakistan, Jinko Solar once again highlighted its unwavering focus on innovation, sustainability and partnership. As Pakistan continues its journey towards energy security and decarbonisation, Jinko Solar's technological leadership and long-standing market presence are set to remain central to shaping the country's clean energy future. ■

PIA's new owners eye swift turnaround through service upgrade

Name of Pakistan International Airlines will remain unchanged, as stipulated under the privatisation agreement;19 additional aircraft would be inducted into PIA's fleet over the next three to four years

EU Report

Renowned businessman and investor Arif Habib, who heads the business consortium that recently acquired Pakistan International Airlines (PIA), has said that winning back passenger trust is the single most critical objective for the airline's new ownership if it is to return to profitability in the shortest possible time following its privatisation.

Speaking on a recent podcast, Mr Habib outlined an ambitious revival roadmap aimed at restoring both the commercial viability and historic prestige of the national flag carrier. He said the incoming privatised management is considering a comprehensive visual and service overhaul, including redesigned staff uniforms to project a fresh, modern identity for PIA.

He revealed that significant improvements are planned across the entire passenger experience — from upgraded check-in counters and redesigned aircraft cabins to enhanced in-flight entertainment systems. The interior of the aircraft will be revamped to give passengers a renewed sense of comfort and quality, while airline staff will undergo specialised training programmes to better serve passengers in line with international service standards.

Habib said that 19 additional aircraft would be inducted into PIA's fleet over the next three to four years, taking the total number of new passenger aircraft to 64 within the next six years. The expansion will include both Airbus A-320 and Boeing 777 aircraft, encompassing narrow-body as well as wide-body planes, though the operational focus will remain on narrow-body aircraft in line with route demand and efficiency considerations. He added that several grounded aircraft would be repaired and made operational again to quickly expand capacity.

Assuring affordability, Habib said that airfares would be rationalised to help PIA regain a larger share of Pakistan's air travel market. Under the new business plan, the airline will increase the frequency of domestic flights to improve nationwide connectivity, while a targeted strategy will also be adopted to expand flight frequencies to high-demand Middle Eastern destinations, catering to Pakistan's large expatriate workforce.

"The revival of PIA's past profitability and legacy hinges on restoring public confidence," Habib said, adding that sustainable growth is only possible through consistent service quality, operational reliability, and customer satisfaction.

Towards the end of his discussion, Habib emphasised that the human resource strength of PIA must remain fully aligned with the vision of the new ownership to successfully implement the fresh business plan. He said the airline's workforce and its privatised management must remain on the same page, working in close coordination to achieve profitability, operational efficiency, and long-term growth.

Responding to a question, he clarified that the name of Pakistan International Airlines will remain unchanged, as stipulated under the privatisation agreement. ■

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MINERAL ECONOMIC HARASSMENT

MINERAL ECONOMIC HARASSMENT OCCURS WHEN ADMINISTRATIVE OR REGULATORY ACTIONS — UNSUPPORTED BY LAW OR TECHNICAL RATIONALE — OBSTRUCT LEGITIMATE MINING ACTIVITY

Dr Raania Ahsan

The writer is a former Executive Director General, Board of Investment; Prime Minister's Office, public policy & inclusive development expert and corporate lawyer

Pakistan's mineral wealth remains trapped not beneath the earth — but within a governance maze that investors struggle to navigate. Pakistan sits atop extraordinary geological potential. Copper, gold, chromite, iron ore, and rare earth elements together represent an estimated USD 5–6 trillion in subsoil wealth. Yet, mining contributes less than 1 percent to GDP, and foreign investment in the sector rarely exceeds USD 100 million a year. The gap between potential and performance is not driven by geology or commodity cycles. Increasingly, Pakistan's real constraint is institutional: a regulatory environment so unpredictable that state processes themselves have become the greatest investor risk.

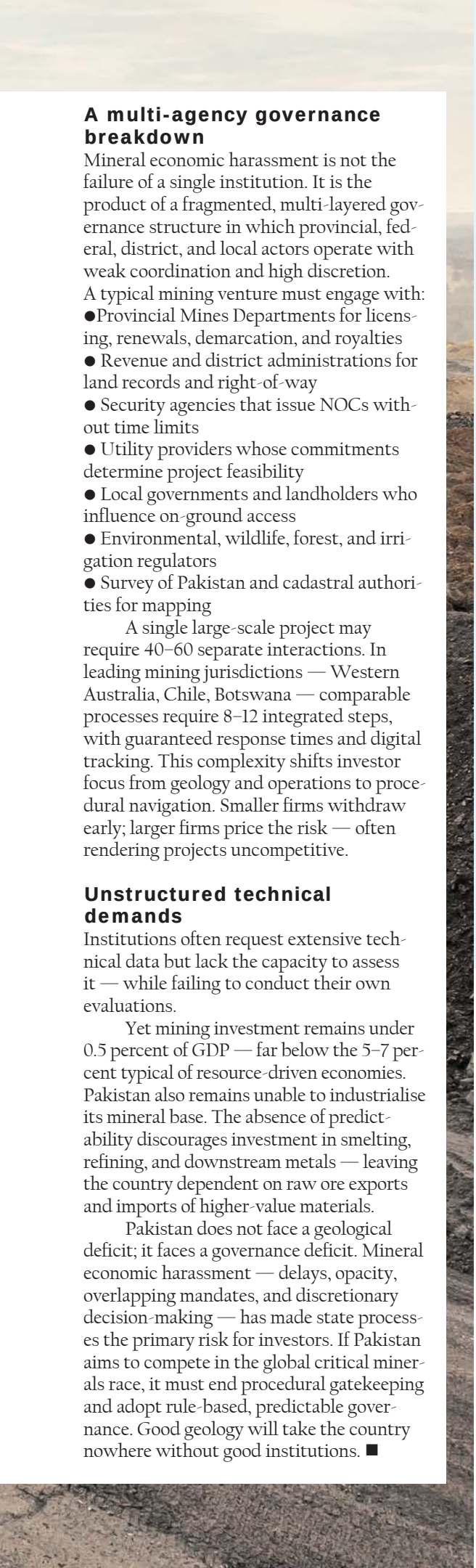
This reality — best described as mineral economic harassment — has become a structural deterrent. Investors confront delays, shifting requirements, overlapping mandates, and opaque decision-making. These frictions collectively create an uncertainty premium that even long-term, risk-tolerant mining companies struggle to justify.

What mineral economic harassment means?

Mineral economic harassment occurs when administrative or regulatory actions — unsupported by law or technical rationale — obstruct legitimate mining activity. The term does not imply intent; it captures the behaviour of a system where:

- Applications linger without written objection or approval
- Rules are interpreted differently across institutions
- Procedures lack timelines and standardised checklists
- Overlapping land allocations arise due to outdated maps
- Agencies impose requirements outside their statutory mandate
- Technical decisions depend on bureaucratic discretion

Pakistan's most visible example remains the 2010 refusal to grant Barrick Gold a mining lease despite statutory compliance — a decision that ultimately led to a USD 6 billion arbitration award. Far from an anomaly, the case revealed systemic fractures still embedded across the sector.



A multi-agency governance breakdown

Mineral economic harassment is not the failure of a single institution. It is the product of a fragmented, multi-layered governance structure in which provincial, federal, district, and local actors operate with weak coordination and high discretion.

A typical mining venture must engage with:

- Provincial Mines Departments for licensing, renewals, demarcation, and royalties
- Revenue and district administrations for land records and right-of-way
- Security agencies that issue NOCs without time limits
- Utility providers whose commitments determine project feasibility
- Local governments and landholders who influence on-ground access
- Environmental, wildlife, forest, and irrigation regulators
- Survey of Pakistan and cadastral authorities for mapping

A single large-scale project may require 40–60 separate interactions. In leading mining jurisdictions — Western Australia, Chile, Botswana — comparable processes require 8–12 integrated steps, with guaranteed response times and digital tracking. This complexity shifts investor focus from geology and operations to procedural navigation. Smaller firms withdraw early; larger firms price the risk — often rendering projects uncompetitive.

Unstructured technical demands

Institutions often request extensive technical data but lack the capacity to assess it — while failing to conduct their own evaluations.

Yet mining investment remains under 0.5 percent of GDP — far below the 5–7 percent typical of resource-driven economies. Pakistan also remains unable to industrialise its mineral base. The absence of predictability discourages investment in smelting, refining, and downstream metals — leaving the country dependent on raw ore exports and imports of higher-value materials.

Pakistan does not face a geological deficit; it faces a governance deficit. Mineral economic harassment — delays, opacity, overlapping mandates, and discretionary decision-making — has made state processes the primary risk for investors. If Pakistan aims to compete in the global critical minerals race, it must end procedural gatekeeping and adopt rule-based, predictable governance. Good geology will take the country nowhere without good institutions. ■

OGDC Announces Major Oil and Gas Discovery at Baragzai X-01 Well in Kohat, Khyber Pakhtunkhwa

EU Report

As a New Year gift for the nation, Oil and Gas Development Company Limited (OGDC), the operator of the Nashpa Exploration Licence with a 65 percent working interest along with joint venture partners, on Thursday announced a major oil and gas discovery over the Datta Formation at its exploratory well Baragzai X-01 (Slant) located in Kohat district of Khyber Pakhtunkhwa. The joint venture partners include Pakistan Petroleum Limited (PPL) with 30 percent working interest and Government Holding (Private) Limited (GHPL) with five percent carried interest.

The discovery is the result of OGDC's focused exploration campaign in the Nashpa Block. The Baragzai X-01 (Slant) well was spudded on December 30, 2024, and drilled to a total depth of 5,170 metres into the Kingriali Formation.

Based on the interpretation of open-hole wireline log data, a Cased Hole Drill Stem Test (DST-02) was conducted in the Datta Formation. The well is currently producing 4,100 Barrels per Day (BPD) of oil and 10.5 Million Standard Cubic Feet per Day (MMSCFD) of gas. The production was achieved through a 32/64-inch choke at a wellhead flowing pressure of 3,880 pounds per square inch (PSI), confirming the commercial potential of the reservoir.

This discovery will make a positive contribution towards reducing the country's energy demand and supply gap by adding indigenous oil and gas resources. It will also strengthen OGDC's hydrocarbon reserves base and support Pakistan's energy security objectives.

OGDC reaffirmed its commitment to sustained exploration activities aimed at unlocking the country's hydrocarbon potential and contributing to economic stability through reliable domestic energy supplies, as the nation steps into the New Year with renewed optimism. ■

Punjab mulling establishing Renewable Energy Authority

EU Report

The Punjab Government is considering the establishment of a 'Provincial Renewable Energy Authority' to promote renewable energy across the province.

In a meeting chaired by provincial minister for energy Faisal Khokhar, Secretary Energy Dr Farrukh Naveed and other officials gave a detailed briefing on green energy projects and ongoing and new schemes included in the Annual Development Programme (ADP) 2025-26.

The meeting emphasized the promotion of hydrokinetic turbines, solar, wind, and bio-energy projects, and proposed the creation of a 'Provincial Renewable Energy Authority'.

During the briefing, it was stated that by December 2027, 21.119 megawatts of solar power will be generated. Under the energy department, 11 ongoing and 18 new development schemes have been included in the plan.

This is patchwork economics

Syed Asad Ali Shah

The writer is a former managing partner of a leading professional services firm and has done extensive work on governance in the public and private sectors

IMF has unveiled yet another set of conditions; Pakistan's power crisis is not a mystery. It is the inevitable outcome of managing deep structural failures with accounting tricks

The IMF has unveiled yet another set of conditions under the Extended Fund Facility: asset declarations, corruption action plans, sector studies, sugar-market liberalisation, bond-market diagnostics, new taxes and procedural benchmarks. On paper, it looks like a busy reform agenda. In reality, it appears to be patchwork, lacking both coherence and serious intent to reform.

Many of these measures create the appearance of reforms following the Governance & Corruption Diagnostic Assessment (GCDA), while carefully avoiding the central problem that has kept Pakistan trapped in recurring crises for decades: a political economy that insulates decision-makers from failure and rewards preservation of the status quo.

Once again, the IMF skirts the core structural failures that actually determine outcomes: the absence of merit in key appointments, weak and politically captured institutions, incentive systems that reward obedience rather than competence, and elite dominance over regulators and economic decision-making. Instead of confronting these issues head-on, the programme relies on technical checklists and procedural milestones – tools that are easier to negotiate, monitor and reverse.

Without fixing who runs institutions, how they are chosen and what consequences they face for failure, Pakistan will continue to produce shallow governance, weak implementation, and predictable policy reversals. No number of roadmaps, action plans or diagnostic studies can substitute for merit-based leadership and institutional credibility.

In fact, some of these conditions risk making matters worse. Higher and more regressive taxes extract additional revenue from already overtaxed segments of society while leaving elite rents untouched. Cost pressures on agriculture and industry erode competitiveness without addressing structural inefficiencies. Fragmented 'action plans' multiply paperwork but do not alter behaviour.

This is not reform. It is cosmetic conditionality — technical language used to avoid politically painful change. Pakistan does not suffer from a shortage of good proposals. It suffers from a system in which decision-makers face little downside for adverse outcomes and often privately benefit from failure. Until reforms create real risks for non-performance and real rewards for delivering results, IMF programmes will continue to stabilise crises temporarily without changing trajectories.

Nowhere is this failure more visible than in the power sector.

Pakistan's power crisis is not a mystery. It is the inevitable outcome of managing deep structural failures with accounting tricks. The IMF has capped power subsidies at Rs893 billion and imposed a Rs400 billion ceiling on new circular debt. Yet, almost simultaneously, the Economic Coordination Committee approved a Rs522 billion circular-debt flow — effectively conceding that inefficiencies, losses and non-recoveries will continue and be absorbed through the budget.

This is at best fiscal cosmetics rather than reform. Allowing circular debt to grow and then 'neutralising' it with taxpayer money

guarantees one outcome: nothing improves. Loss-making distribution companies remain untouched, recoveries stay weak, line losses persist and consumers keep paying higher tariffs, including Rs3.23 per unit merely to service past failures. The system protects those who run it while shifting the burden onto citizens and productive firms.

The problem is not a lack of knowledge. The solutions are well known: lowering generation costs through fuel-mix optimisation and competitive procurement; enforcing non-negotiable benchmarks to reduce line losses and recovery losses; and ensuring that failure carries consequences. Beyond this, real reform requires smart privatisation to introduce competition and accountability, and a strong, independent, technically credible Nepra that regulates effectively, enforces discipline and protects consumers rather than accommodating inefficiency.

But these steps threaten entrenched interests. And therein lies the real constraint.

Risk means that poor performance must carry tangible consequences: removal from office, loss of authority, reputational damage and legal exposure. It means institutions cannot be staffed on loyalty or obedience, but on integrity and competence — and that incompetence and corruption carry a cost. It means regulators cannot be captured without consequence, and fiscal indiscipline cannot be indefinitely deferred through accounting adjustments.

Reward means that those who deliver outcomes — lower losses, higher recoveries, better service, export growth, fiscal discipline — gain institutional security, professional credibility and political capital. Reform cannot rely on personal sacrifice alone; it must be aligned with tangible incentives.

None of this happens through superficial checklists. It happens through structural changes in power and accountability. This is where IMF programmes consistently fall short. The Fund is comfortable with prescribing taxes, price adjustments and reporting requirements. It is far less comfortable confronting appointment processes, governance structures and elite capture – even though these are precisely the levers that determine success or failure.

Truth-telling in such a system is costly. Those who speak honestly are often marginalised, while those who display obedience are rewarded. But avoiding the truth has proven far more costly for the country.

Pakistan does not need another list of conditions. It needs a correction of its political economy — one that makes reform unavoidable for decision-makers because failure is no longer safe and success is finally rewarded. Until that happens, every IMF programme will remain patchwork on a collapsing structure — and patchwork economics will continue to deliver gains for a few and permanent pain for the overwhelming majority in the land of the pure. ■

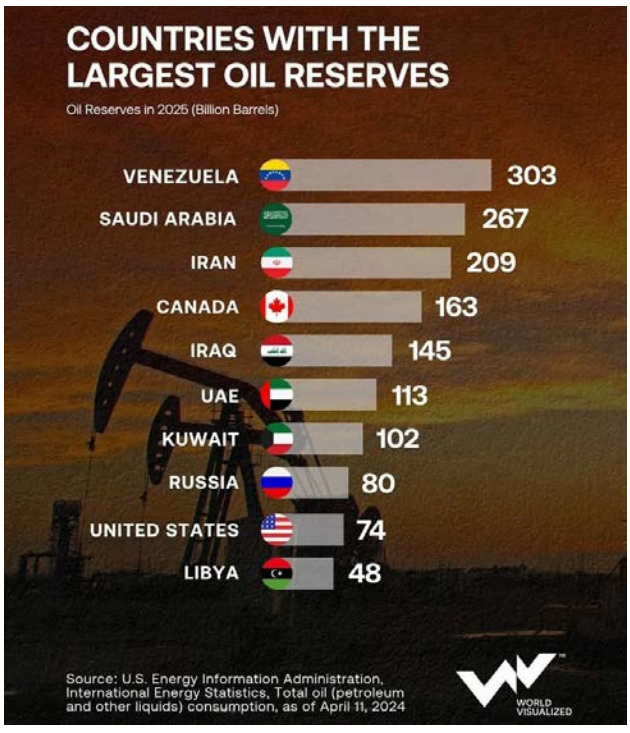
K-P CM Directs Timely Completion of Provincial Transmission Line

EU Report

Chief Minister Muhammad Sohail Afridi has directed the Khyber-Pakhtunkhwa Transmission and Grid Station Company to ensure the timely and high-quality completion of the provincial government's ongoing transmission line project, underscoring its importance for economic growth and energy self-reliance. Chairing a review meeting at the Chief Minister's Secretariat on the Khyber-Pakhtunkhwa Transmission Line and Distribution Company, the chief minister said electricity generated from provincial power projects would be supplied to industries at affordable rates to promote industrialisation, economic stability and job creation. He also instructed officials to complete the feasibility study for the proposed Khyber-Pakhtunkhwa Power Distribution Company within six months and to finalise the draft Regulatory Authority Act.

During the meeting, progress on power transmission infrastructure and hydropower projects was reviewed. Officials informed the chief minister that completion of ongoing hydropower schemes over the next four years would add 800 megawatts to the provincial system. Work is underway on a 120-kilometre transmission line from the Mitaltan Powerhouse to Chakdara Grid Station, with construction currently in progress on the 40-kilometre Lot-I.

Briefing the meeting, officials said the 36MW Daral Khwar hydropower project has been completed and is operational, while seven other projects with a combined capacity of 224MW are currently under implementation. ■



Carbon Credits: How Much are they Beneficial?

Experts believe that carbon credits cannot replace real emission cuts

Muhammad Ali Falak

The writer is a Fulbright alumnus

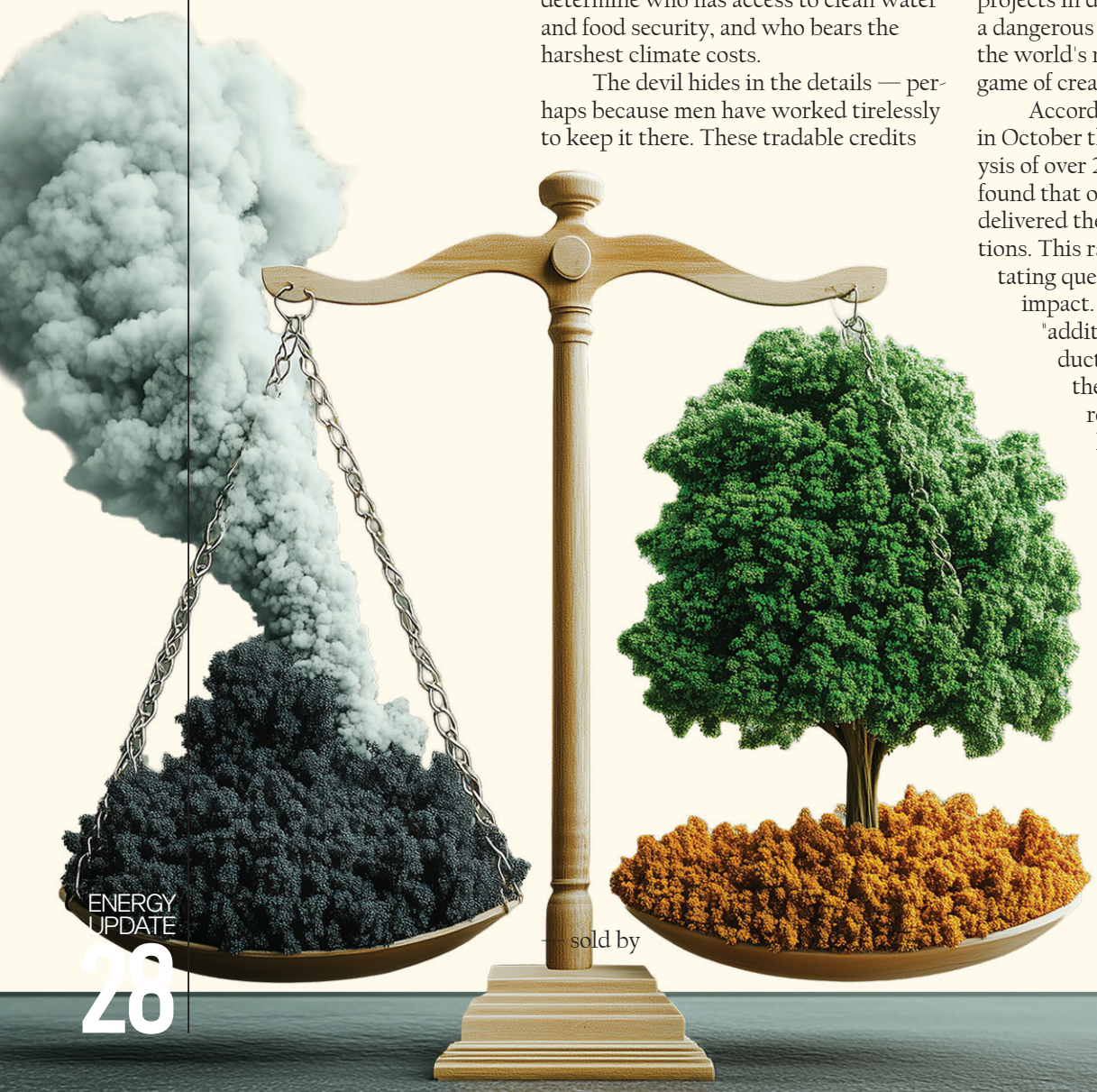
It takes nearly a three-hour post-graduate lecture for a professor to explain the concept of carbon credits to a room full of professionals struggling to understand how this abstract financial instrument connects to the real world. Yet outside that classroom, it is rapidly becoming the currency of survival for billions of people who will live and die by the consequences of the markets' design. From drought-stricken villages of Africa to flood-battered plains of Pakistan, carbon credits may soon determine who has access to clean water and food security, and who bears the harshest climate costs.

The devil hides in the details — perhaps because men have worked tirelessly to keep it there. These tradable credits — sold by projects that claim to reduce or absorb greenhouse gases - have become the currency of climate comfort. Every tonne of carbon emitted by an airline, oil company or tech giant can be cancelled out by paying for a tree planting drive, forest protection scheme or a renewable energy project elsewhere. The transaction is meant to neutralise pollution, as if it never happened.

However, there is a catch! If good intentions could cool the planet, we would already be safe. Instead, we are burning faster than ever and pretending we aren't. The concept sounds elegant: polluters pay to compensate for emissions while supporting climate-positive projects in developing nations. But it's a dangerous illusion that risks turning the world's most urgent challenge into a game of creative accounting.

According to a Nature publication in October this year, a 2024 meta-analysis of over 2,300 carbon offset projects found that only less than 16 per cent delivered their promised emission reductions. This raises a simple but devastating question impact carbon credit impact. Credits are supposed to be "additional", i.e. the emission reduction wouldn't occur without the credit sale. Yet developers routinely inflate their baselines to mint more credits. Even when projects are real, permanence is rarely guaranteed. Forest-based credits, for instance, can go up in smoke in a single wildfire.

Despite this, governments, corporations and international institutions increasingly rely on them to meet climate targets. The Paris Agreement's Article 6 has created new frameworks for trading credits, while voluntary markets are booming. In 2024 alone, the voluntary market was



worth over $2 billion as China, South Korea, Canada and Australia, among others, still allow companies to use carbon offsets instead of reducing emissions; consequently, low-quality credits flood the market, driving down carbon prices and weakening incentives for real decarbonisation. The European Union, recognising this danger, phased out offsets from its Emissions Trading System in 2020. But elsewhere, the practice persists.

Credits distort climate action. When a company prioritises $15 credit over $50 to decarbonise its operations, the short-term balance sheet improves but the planet pays the difference. Carbon offsets appeal because they allow governments to set ambitious climate goals while continuing to subsidise fossil fuels. Offsets shift the burden of action from rich polluters to poorer nations. A company in Europe can claim climate leadership by funding a reforestation project in Kenya even if that forest later burns or displaces local communities.

Scientific assessments have declared the offset system broken. Whether it's avoided deforestation, clean cookstoves or renewable energy projects, most offset types suffer from lack of additionality, inaccurate measurement or impermanence.

Experts believe that carbon credits cannot replace real emission cuts. Governments should phase them out of carbon-pricing systems. Corporations should stop using them to reach "net zero" targets and instead invest directly in clean energy, efficiency and sustainable infrastructure. Above all, policymakers must understand that carbon neutrality achieved on paper does not equate to climate stability in reality. ■

Pakistan's energy system

Pakistan's energy system is the country's immediate economic choke point; expensive LNG imports, recurring shortages and structural inefficiencies leave little room for industrial expansion

Mashhood Urfi

The writer works at the Sustainable Development Policy Institute (SDPI), Islamabad.

If you have driven down Constitution Avenue or through the diplomatic enclave in Islamabad lately, you may have noticed a line of unfamiliar flags brightening the roadside. Kyrgyz, Turkmen, Uzbek and Turkish colours now sit beside Pakistan's own. They are not just decoration but reflect a strategic shift that has been gathering pace quietly but steadily. Pakistan is looking north again, and this time the shift carries real economic weight.

The recent visit of Kyrgyz President Sadyr Zhaparov put a frame around that change. For years, Pakistan's diplomacy was constrained by the demands of its immediate neighbourhood. Today, its ambitions are shaped by something more practical: the recognition that its ports, geography and market size can support a new economic orientation that links Central Asia to the Arabian Sea. The flags are visible because long-stalled projects are showing signs of life, even if the progress remains uneven.

Pakistan's energy system is the country's immediate economic choke point. Expensive LNG imports, recurring shortages and structural inefficiencies leave little room for industrial expansion. This is why the northern turn begins with energy corridors.

CASA 1000 has regained momentum. Islamabad and Bishkek used the recent summit to reaffirm their commitment to a project designed to carry surplus summer hydropower from Kyrgyzstan and Tajikistan. Inside Afghanistan, progress is uneven but not frozen. Afghan authorities say work has resumed on parts of their segment, though the project is still far from full-scale construction. For Pakistan, even partial forward motion matters. Seasonal electricity delivered reliably across the summer months would ease peak load pressure and reduce dependence on costly thermal units. The essential variable now is predictable commissioning. TAPI, the gas pipeline from Turkmenistan to South Asia, remains more complex. Turkmenistan has advanced its domestic work and Afghan officials report preparatory activity, including trenching and material movement in limited zones. But the main transit stretch through Afghanistan is far from complete and still faces financing, political and security headwinds. The project is inching forward. It is not yet advancing fast enough to meet timelines. Still, for Pakistan, TAPI represents a chance to diversify its long-term gas supply and secure a regional source that could stabilise part of its energy mix.

CASA 1000 has regained momentum. Islamabad and Bishkek used the recent summit to reaffirm their commitment to a project designed to carry surplus summer hydropower from Kyrgyzstan and Tajikistan Energy may anchor the pivot, but trade will determine its scale. Islamabad and Bishkek have set a near-term goal of lifting bilateral trade to $100 million, up from its modest baseline. This requires the long-delayed Transit Trade Agreement as well as basic improvements in customs and border management.

Beyond Central Asia, Pakistan is edging into a broader Eurasian conversation. Recent test cargo shipments to Russia via the International North-South Transport Corridor (INSTC) indicate a strategic opening. If the corridor matures, Pakistan can position itself as a warm-water outlet, connecting Pakistan's economic reality is straightforward. The country's industrial centres will rely increasingly on imported electricity from the north and, if TAPI progresses, regional gas from the west. The Pivot North is no longer a diplomatic experiment. It is an economic requirement. If managed well, it can turn Pakistan into a practical connectivity hub for an emerging Eurasian region. If managed poorly, it will leave the country trapped in familiar cycles of high energy costs, supply disruptions and unrealised potential.

The direction is set. What matters now is disciplined delivery.

Solar rush unlocked $17-19bn in investment in 8 years: study

In FY25 alone, solar mobilised $5-6bn, emerging as one of Pakistan's strongest channels of private capital

Rehan Ayub

Pakistan's solar rush has unlocked $17-19 billion in private investment between FY17 and FY25, driven by household savings, rooftop systems, and the expansion of EPC (Engineering, Procurement, and Construction) and installation services, according to a study released on Friday.

In FY25 alone, solar mobilised $5-6 billion, emerging as one of the Pakistan's strongest channels of private capital, the study 'The Many Dividends of Solar Rush in Pakistan', launched by think tank Renewable First said.

"This surge in activity has generated 300,000 direct and 200,000 indirect jobs, strengthening service industries, supply chains, and rural electrification efforts," the study stated.

It highlighted that the mass-scale adoption of solar photovoltaic (PV) was not only reducing fossil dependence and easing grid strain but also mobilising private capital, creating jobs, and cutting emissions at scale. As Pakistan grapples with mounting climate risks, including the recent devastating monsoon floods, distributed solar continues to deliver one of the country's strongest mitigation outcomes. "In FY25, solar PV avoided an estimated 35 million MtCO□-eq, pushing cumulative avoided emissions since FY17 to over 83 million MtCO□-eq." At the current trajectory, Pakistan could avoid 50 million MtCO□-eq annually by FY30, avoiding more emissions than the total currently produced by the country's entire power sector, according to the study.

Pakistan's rapid solar uptake has positioned it as the second-largest global importer of Chinese solar panels in FY25, bringing in 17.9GW, with cumulative imports surpassing 50GW, as per the stats given by the study.

Households, farms, and industries are increasingly shifting to solar as "it makes financial sense because of rising grid tariffs and expensive imported fuels".

"Amid Pakistan's worsening economic and employment challenges, the country's solar rush is delivering clear cross-sectoral dividends, from declining thermal reliance to new economic activity and the creation of much-needed jobs," noted Muhammad Sheraz, Energy Analyst at Renewables First. "These outcomes are not only transforming the energy sector but also laying the foundation for substantial economic growth." With the deployment of an estimated 32GW of solar PV, the report found that Pakistan could potentially generate 42TWh of distributed electricity annually, equivalent to 38% of current grid sales. This rapid growth in behind-the-meter generation is eroding the role of conventional power plants. Imported coal has seen the sharpest decline, the study mentioned, with utilisation falling from 78% to just 11% between FY22 and FY24.

"RLNG plants have dropped from 51% to 31%, while local coal has eased from 81% to 70%. With RLNG cargoes for FY26–27 already cancelled and coal imports continuing to fall, these trends suggest a deep and structural shift in Pakistan's fossil energy demand, driven not by policy mandates, but by the momentum of consumer-led solar adoption."

The study suggested to align Pakistan's power sector policies with the fast-growing reality of distributed energy resources. This included modernising grid and resource planning, undertaking tariff and market reforms suited to declining grid consumption, clarifying policies for distributed generation, storage, and flexible resources, and updating regulatory frameworks to enable a decentralised, consumer-driven energy future. "Policies and planning frameworks must now keep pace with this shift to ensure the system is prepared for a rapidly changing energy landscape," Sheraz noted. ■

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Cheap water, costly collapse

Every year, system quietly loses more carrying capacity; distributaries that once ran full now limp at perhaps 60–70 per cent of design discharge

Mohsin Leghari

The writer is a former Punjab minister for irrigation and finance, with extensive experience in Pakistan's provincial and federal legislatures

On an early March afternoon near the tail of a distributary in Lower Chenab, the rotation chart on the patwari's wall still shows that water is due. The wheat crop requires its final irrigation before harvest. On the ground, there is only a thin brown trickle that dies in the channel before reaching the final outlets. "The field needs water, but there is none", one farmer says quietly. "If we miss this turn, the wheat grain will be light and the harvest will fall".

We are often told that canals are a gift of nature and a legacy of the British. What they do not say is that for about 2,300 years, from the Mauryas to the British Raj, governments that built large canals never treated irrigation water as a free good.

Kautilya's Arthasastra demanded a separate 'water share' of about 20–33 per cent on crops irrigated from state works. Firuz Shah Tughlaq imposed haqq-i-sharab on his new canals. The Mughals embedded the cost in higher land revenue on irrigated tracts. The British, for example, in the Chenab Colony, charged occupiers about Rs3.75 per acre for wheat when gross revenue from wheat was only around Rs25. A mid-teens percentage for water alone.

Today, the same acre of wheat earns the farmer in the region of Rs80,000 and he pays Rs400 in abiana, about 0.5 per cent. Sugarcane is worse: Rs1,600 against something like Rs280,000 in gross revenue. In real terms, the water charge is now only a small fraction of the effective rate compared to historical rates. This is not tradition. It is a political invention of the last half-century – and it is killing the system.

The numbers are brutal. Punjab requires at least Rs25–30 billion annually simply to desilt, repair gates, and keep the canals flowing at their designed capacity. It collects less than Rs4 billion in abiana. The result is silted channels, broken regulators, and dying tail-ends.

On paper, Punjab has even equipped itself with a modern Punjab Irrigation, Drainage and Rivers Act (2023). It authorises the government to fix water rates and other fees by area, crop, season, use and even volume, and to levy betterment charges on land that benefits from irrigation and drainage works. In other words, the law already allows us to price water more accurately and recover part of the project costs from the very users who benefit. Yet in practice, we still behave as if canal water must remain almost free, even as the canals themselves decay.

Every year, the system quietly loses more carrying capacity. Distributaries that once ran full now limp at perhaps 60–70 per cent of design discharge. Tail-end farmers in systems routinely get less than half of their sanctioned shares. Their response is ra-

tional: Around 1.4 million tubewells now pump roughly 50–55 MAF of groundwater every year – about four times the live storage of Tarbela, Mangla and Chashma combined, and nearly nine times Tarbela's current live capacity. Water tables in parts of Punjab are falling by tens of centimetres each year, and close to a metre in some pockets.

The supposed subsidy for cheap canal water is spectacularly regressive. The biggest beneficiaries are not small peasants but head-reach landowners who pay less than one per cent of their gross income for canal water, while the tail-end tenant pays many times more in diesel and borrowed tubewell water and still gets half the crop. We have run the most radical fiscal experiment in the history of the Indus basin: trying to operate the world's largest contiguous irrigation network on symbolic tariffs. The experiment has failed. The good news is that the fix is modest, fair, and well within the bounds of international and historical practice.

A phased abiana increase to about 6–8 per cent of gross revenue by 2032 would still be only around half of typical colonial-era water-charge burdens, yet it would generate roughly Rs30 billion a year. Make it progressive and cushion the small landholder: 0–5 acres pay 50 per cent of the standard rate, 25–100 acres pay 150 per cent, above 100 acres pay double or more. Give tail-end outlets an automatic rebate if their sanctioned share is not delivered. Ring-fence every rupee in a statutory Punjab Irrigation Maintenance & Development Fund. Link higher abiana to strict groundwater caps and to solar subsidies that are available only with efficient irrigation. None of this requires a new law; it only requires that Punjab use the pricing and betterment powers it has already given itself under the 2023 Act.

Even after such an increase, water would remain cheaper than fertiliser, diesel, pesticides or labour on a per-acre basis. The purpose is not to punish farmers, but to send a clear signal that canal water is scarce, valuable and must be paid for if the system is to survive. ■

Europe's EV retreat mean for Pakistan?

Battery recycling represents area where country could develop genuine competitive advantage

Faran Mahmood

The writer is a Cambridge graduate and works as a strategy consultant

On December 16, the European Union (EU) dropped its plan to ban new combustion-engine cars by 2035, making this the EU's biggest policy retreat from its own green agenda. As German and Italian carmakers struggle to compete with Tesla and BYD, the revised policy has offered European automakers a lifeline to continue focusing on hybrid variants. Manufacturers had warned that billion-dollar penalties would result if the existing targets remained unchanged.

The global electric vehicle (EV) landscape is fracturing into distinct trajectories. Chinese manufacturers like BYD, Geely and SAIC have achieved massive production scale, technological leadership and significant cost advantages. Chinese EV prices typically run around 20% below EU-made models, while China's spare production capacity of three million EVs annually is twice the size of the entire EU market.

Between 2020 and mid-2024, Chinese-built EVs' market share in Europe surged from 3.5% to 27.2%, with Chinese brands alone growing from 1.9% to 14.1%. This explosive growth prompted both tariff responses and policy backtracking. European policymakers are now attempting to slow their own net-zero transition to give domestic manufacturers breathing space, while simultaneously seeking to block Chinese competition.

The European carmakers' association, ACEA, also cited insufficient market demand and inadequate charging infrastructure as justifications for the policy shift. Volkswagen welcomed the retreat, calling it "economically sound" and "pragmatic". However, Volvo, which has built a comprehensive EV portfolio over the past decade, warned that weakening long-term commitments for short-term relief could undermine the EU's competitiveness in the years ahead.

This policy change came just a week after US carmaker Ford Motor cut production lines for several EV models due to weak demand. With Trump's administration reportedly deliberating an end to subsidies for Tesla, these policy shifts come at a time when both the US and the EU have already slapped tariffs on Chinese electric vehicles. This suggests the issue extends beyond protecting legacy automakers and blocking competitive Chinese alternatives, pointing instead to deeper demand-side and supply-chain challenges.

China produces nearly 90% of global cathodes and virtually all anodes, and accounts for more than 80% of final battery cell production. It hosts almost two-thirds of lithium processing capacity, nearly all graphite processing, close to 80% of cobalt processing and around a third of nickel processing. While China holds only about 1% of global cobalt reserves, it has made systematic overseas investments in refining capacity, securing control over critical mineral supply chains through joint ventures.

Pakistan's untapped mineral potential

These minerals, once rarely mentioned beyond scientific circles, are now at the heart of modern innovation

Zahid Maqsood Sheikh

The writer, a former technocrat, regularly writes on governance, current affairs and development matters

Across the world, rare earth minerals have become a central topic of discussion, influencing global politics, technological development, and long-term economic strategies. These minerals, once rarely mentioned beyond scientific circles, are now at the heart of modern innovation. Their increasing global demand, limited availability, and strategic significance have pushed countries into quiet yet intense competition.

Major global powers such as the United States and China, along with several developing nations, are all racing to secure reliable access to these resources because the future of energy systems, defence capabilities, and advanced manufacturing depends heavily on them.

Rare earth minerals refer to seventeen chemical elements that have become essential for modern technology. While these elements are not particularly rare in the Earth's crust, they are often not found in concentrations that make extraction easy or economically viable. This makes them both valuable and strategically important. These minerals are used in almost every modern device we rely on, including smartphones, LED lights, flat-screen TVs, laptops, digital cameras, wind turbines, hybrid vehicles, electric car batteries, and solar panels. They are also crucial for heat-resistant ceramics, powerful magnets, specialized lenses, and advanced optical materials that support industries across the world.

The importance of these minerals becomes even more apparent when we consider their role in defence technologies. Minerals such as neodymium, praseodymium, and terbium are key to the function of jet engines, submarine systems, precision-guided missiles, advanced radar equipment, and night-vision devices. These minerals help shape the technological superiority of modern militaries. In healthcare, rare earth elements are equally indispensable, playing a role in MRI machines, diagnostic imaging systems, and surgical lasers that require precision and stability in medical environments.

This high degree of dependence on rare earth minerals has created a global imbalance in supply. China dominates the industry, from extraction to refining, and supplies most of the world's demand. Europe imports nearly all of its rare earth minerals from China, while countries like the United States are working to rebuild their own supply chains to reduce their dependence on a single source. As global competition heats up, rare earth minerals have quietly become a strategic asset that can influence economic, diplomatic, and technological decisions.

Against this global backdrop, Pakistan's geological potential stands out. Regions such as the northern areas, Azad Kashmir, Khyber Pakhtunkhwa, and Balochistan are believed to contain significant deposits of rare earth minerals. Elements like cerium, lanthanum, neodymium, and praseodymium have been detected in these regions. These minerals are central to renewable energy technologies, electric mobility, defence manufacturing, and high-tech industries. Despite the promise these resources hold, however, most of Pakistan's deposits remain unexplored or undeveloped.

However, as Pakistan moves forward in tapping into its mineral potential, it must remain aware of the lessons learned from Africa's experience with its mineral-rich countries. Africa holds nearly a third of the world's critical minerals, yet many of its nations continue to face poverty, instability, and weak institutions. The key challenge is not simply discovering resources, but managing them responsibly.

Mineral-rich regions, like Balochistan, should see direct benefits from mining activities through investments in infrastructure, education, and healthcare. Without these, local resentment and provincial tensions could arise, undermining the potential benefits. Moreover, Pakistan must prioritize environmental protection and ensure that mining practices are sustainable, preventing long-term damage to the land. If Pakistan invests in modern extraction technologies, transparent regulations, and local processing capabilities, it could generate higher-value exports, create jobs, and encourage innovation. This would ensure that the country's mineral wealth becomes a driving force for national growth, rather than a source of conflict or instability.

Global interest in Pakistan's rare earth minerals, especially those vital for modern technologies, presents a significant opportunity. However, without careful planning and strategic development, mineral extraction could create uneven benefits, exacerbate provincial tensions, or lead to short-term contracts that provide little long-term value. The country's decisions in the early stages will shape the future of its mining industry.

To succeed, Pakistan must build strong institutions, ensure transparency in contracts, and guarantee that mineral-rich regions benefit directly from mining activities. Environmental protection must be a core part of the strategy, with modern standards for land restoration, safety, and community consultation. Foreign partnerships should be based on long-term national interests, with an emphasis on value addition, technology transfer, and local processing. This approach would not only create jobs but also support the country's development in a sustainable way. ■

12 Major CPEC Energy Projects Completed Across Sindh

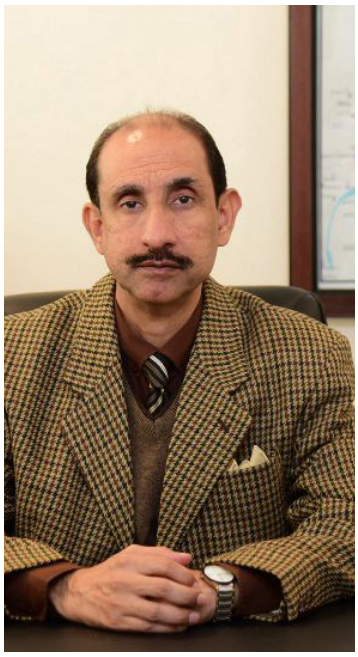
EU Report

Sindh's less-developed regions have witnessed a major energy transformation under the China-Pakistan Economic Corridor (CPEC), with 12 power projects successfully completed.

According to official documents from the Ministry of Planning, Development and Special Initiatives, the completed projects span multiple financing modes — including Independent Power Producer (IPP), Foreign Direct Investment (FDI) and Built-Operate-Transfer (BOT) arrangements.

In Tharparkar, the landmark 660MW Engro Thar Power & Mine project was completed at a cost of $995 million, advancing Pakistan's shift toward utilising indigenous coal resources. The district also saw completion of several major IPP projects, including the 330MW Thar Energy Limited, 330MW ThalNova Thar Power, and the 1,320MW Shanghai Electric (TCB-I) project — each deepening the energy potential of the Thar coal ecosystem. Additionally, the 7.8MTPA TCB-II Mine ($850 million, FDI) and the 7.8MTPA Thar Block-I project ($990 million, FDI) further expanded mining capacity. In Thatta, four renewable initiatives have strengthened Sindh's clean energy footprint: 100MW UEP Wind Farm ($250m), 100MW Three Gorges Wind Power ($150m), 50MW Sachal Wind Farm ($134m), and 50MW Hydro China Dawood Wind Project ($113m). At Port Qasim, Karachi, the 1,320MW Port Qasim Coal Power Project — built with a $1.9 billion investment — now serves as one of Pakistan's largest baseload power sources. ■

Shahzad Iqbal Appointed Member (Gas), OGRA



The Federal Government has appointed Shahzad Iqbal as Member (Gas) of the Oil and Gas Regulatory Authority (OGRA).

Iqbal brings 35 years of extensive regulatory and sectoral experience to the Authority, with a distinguished career in Pakistan's oil and gas sector. Prior to this appointment, he served in senior leadership roles within OGRA's where he handled complex regulatory matters relating to gas transmission and distribution, tariff determinations, Unaccounted-for-Gas (UFG), consumer protection, and coordination with gas utilities and other stakeholders.

COAL AS PAKISTAN'S HOMEGROWN ANSWER TO POWER SHORTAGES

IMPORTED FUEL MAKES POWER COSTLY AND EXPOSES THE COUNTRY TO PRICE SHOCKS

Zunaib Khanzada

The writer is a freelance Journalist

Pakistan faces a long-standing challenge, which is steady and affordable electricity for homes and industry. Imported fuel makes power costly and exposes the country to price shocks and supply breaks. Turning instead to local coal resources offers a practical path to secure base load power, lower tariffs, and keep energy spending inside the country.

The Thar region holds one of the largest coal deposits in the world. Geological surveys estimate reserves of around 175 billion tonnes of lignite spread across more than 9,000 square kilometre. This is part of Pakistan's overall coal reserves of about 186 billion tonnes as of 2024, which, if developed carefully, can supply power for centuries. Using this resource would reduce the huge outflow of foreign exchange that comes from buying imported coal and fuel.

Since 2019, Thar Block II alone has generated more than 27,000 gigawatt hours of electricity and helped the country save around 1.3 billion dollars in foreign exchange.

Local mining will also create jobs for thousands of workers, develop infrastructure in Sindh, and keep wealth circulating inside Pakistan instead of leaving the country in the form of foreign payments.

Poland, India, and even parts of China also expanded local coal generation to ensure that industries and households did not face blackouts. These examples highlight that while renewables and cleaner technologies are important, coal remains the backbone for stable base load electricity when crises strike. The Jamshoro Power Company Limited (JPCL) project is well-placed to lead this shift. The JPCL project, initially conceived before 2013, originally planned to use 80% imported coal and 20% local coal for its two 660 MW units.

K-Electric is now working to convert one unit to 100% local coal, aiming to provide affordable energy to Karachi and reduce the government's subsidy burden. This conversion, which is vital for Pakistan's energy affordability and security, is expected to bring significant economic benefits, including over $2 billion over the project's lifespan. By utilizing local coal, the transition will reduce energy costs, enhance energy security, and align with the government's strategy to decrease reliance on fuel imports.

Experts and seminars in Pakistan have argued that replacing imported coal can save billions in foreign exchange, lower electricity prices and protect the economy from swings in world coal and shipping markets. For example, current production of 2,640 megawatts from Thar is expected to expand to over 3,000 megawatts, while mining capacity in Block II has increased to 7.6 million tonnes annually and is being expanded to 11.2 million tonnes. These savings and expansions can be redirected toward plant upgrades, local jobs, and regional development near mining areas.

Environmental and social concerns must be treated seriously. Modern coal plants with better technology can cut emissions per unit of power compared with older units. The Shanghai Electric plant in Thar, for example, has built-in emission controls that reduce particulate matter and sulphur dioxide. Careful planning must include dust control, safe water use, land rehabilitation and community programmes in mining areas.

Pakistan should pair any local coal plan with investments in cleaner coal technology and a long-term roadmap to include renewables as they scale up. This balance will make local coal a bridge that secures power while the country expands cleaner options. Importantly, countries that used coal successfully for decades have shown that strict environmental rules can allow coal and renewables to work side by side. Pakistan has the chance to adopt the same approach. ■

DIPLOMATIC ENCLAVE

Danish Ambassador H.E. Maja Derrous Mortensen's first official visit to Karachi was a packed and productive one, the visit concluded with a courtesy call on the Governor of Sindh, Kamran Tessori.

Ambassadors of France and Germany are deeply honored to have presented the 2025 Franco-German Prize for Human Rights and the Rule of Law to Mr. Pirbhu Satyani for his commitment to the rights of women, children and minorities.

Türkiye Ambassador H.E. İrfan Neziroğlu visited Haji Kala Khan, who served as the security guard of Quaid-e-Azam Muhammad Ali Jinnah, at his home in Rawalpindi.

Brig. Ajaz Ahmad Khan, PPL, briefs H.E. Nawaf bin Saeed Al-Malkiy, Saudi Ambassador to Pakistan, on preparations for Pakistan Pavilion at FMF 2026.

A very good courtesy meeting between Ambassador Robert-Jan Siegert and the Governor of Punjab, Sardar Salim Haider Khan, discussing ways to boost trade, innovation, & sustainable growth between the Netherland and Pakistan, as well as celebrating the strong hockey link between the two countries.

At the Russian Embassy School, a charming fairy tale titled "A Knock at the Door on New Year's Eve" was presented to celebrate the New Year.

Sindh Chief Minister Syed Murad Ali Shah meets UAE Ambassador Salem Mohammed Salem Al-Bwab Al-Zaabi at CM House

Prime Minister of Pakistan Mian Muhammad Shahbaz Sharif visits Bangladesh High Commission to offer condolences for demise of Former Prime Minister of Bangladesh Khalda Zia.

Sweden Ambassador H.E. Alexandra Berg von Linde joined the ASIC Pakistan Mitigation Series 2025, speaking in the plenary on how a just and green transition can strengthen industry, protect communities, and unlock new opportunities for Pakistan.

Energy mismatch in the age of AI

Rapid proliferation of Artificial Intelligence is exacerbating acute energy crisis

Mirza M Hamza

The writer is an economist and an educationist.

Modern technological transitions over the past two centuries have centred on the human obsession with converting one form of power into another. The invention of electricity created numerous ways to use, move and store energy. Thus, with each invention, the light bulb, the telephone, the automobile, the airplane and the computer, the energy demand grew steadily.

Each new technological phase created energy demand that was neither linear nor exponential. To put that into perspective, global electricity consumption expanded from 66.4 terawatt-hours in 1900 to 29,165 TWh by 2022, a 440-fold increase. Overall, energy growth was stable at approximately 2.0 per cent annually from 1800 to 2000, masking spikes during electrification, motorisation and suburbanisation. In Pakistan, the trajectory was notably steeper and more dramatic. Starting with just 60MW of installed capacity at independence in 1947, the country expanded to 46,605MW by 2025, amounting to a 777-fold increase over 78 years.

The rapid proliferation of Artificial Intelligence (AI) is exacerbating an already acute energy crisis. Unlike previous inventions that expanded demand gradually to allow energy infrastructure to keep pace, AI does not allow power systems to catch up. Training a model requires substantial computational resources. For example, training OpenAI's ChatGPT-4 required 50 gigawatt-hours alone. That is enough power to meet San Francisco's energy needs for three days.

As compute requirements surge, data infrastructure itself is being reinvented. As author Karen Hao notes in her book Empire of AI, the industry is moving beyond traditional data centres to 'megacampuses', facilities designed to consume electricity on a scale comparable to entire cities. GPU racks draw multiple times more power than conventional servers, and a single query to ChatGPT can require up to 10 times as much electricity as a standard Google web search, according to the International Energy Agency. Developers and utilities are now planning sites where power demand could exceed anything the digital economy has seen before.

Data centres, which are the

backbone of AI systems, consume electricity roughly four times faster than utilities can add new capacity, creating what analysts have called a '10-year solution for a 24-month problem'. Nations that cannot secure affordable energy will not participate in the AI future, no matter how brilliant their engineers or how ambitious their plans. AI data centers are growing at 15 percent annually, with AI-specialised servers expanding at 30 per cent annually.

This rapid proliferation creates a multi-dimensional problem. Historically, innovations dispersed energy demand across households and transport networks. AI, in contrast, concentrates massive consumption in single locations. A single hyperscale data centre consumes as much electricity as a city of 100,000 people. Data centers take 2 to 3 years to build, but grid upgrades require four to eight years, resulting in a demand-supply mismatch. In the US, data centres will account for nearly half of all electricity demand growth between 2024 and 2030. By decade's end, America will consume more electricity processing data than manufacturing all energy-intensive goods combined including aluminum, steel, cement and chemicals.

Meanwhile, analysts warn that energy security is increasingly becoming a concern as AI expansion intensifies. Recently, China stockpiled about 1.2 to 1.3 billion barrels of oil, accumulating 900,000 barrels daily, with Russia supplying over 20 percent at discounted rates. The US is taking a different direction, investing in dedicated clean energy infrastructure for AI. Google signed contracts for 500MW of small modular nuclear reactors by 2030. Microsoft has signed a long term nuclear power agreement linked to the Three Mile Island site, supplying around 800MW of power later this decade. Amazon ordered four small modular reactors. Meta signed 150MW of geothermal energy contracts and requested up to 4 gigawatts of additional nuclear capacity.

Data centres, which are the backbone of AI systems, consume electricity roughly four times faster than utilities can add new capacity, creating what analysts have called a '10-year solution for a 24-month problem'

Among emerging economies, India is pursuing the most aggressive strategy of all. Google is investing $15 billion for a gigawatt-scale AI hub in Visakhapatnam, Reliance Industries is building a 3-gigawatt facility in Jamnagar, and TCS's HyperVault secured $1 billion from TPG. The IndiaAI Mission aims to support over 10,000 GPUs, and Deloitte projects the country will need 40 to 50 TWh of additional electricity plus USD 360 billion in investment by 2030. To meet this demand, India is simultaneously expanding coal for baseload security, accelerating renewable deployment, and targeting 100 GW of nuclear capacity by 2047, more than tenfold its current 8.8 GW.

Amid this global race, where does Pakistan stand? The country's entire gross electricity generation in 2024 was 137.5 TWh, which averages to roughly 15,639 MW of continuous power over the year. This is less than one-third of Pakistan's 46,605MW of installed capacity, reflecting significant under-utilization. For perspective, US data centres consumed 183 TWh in 2024, more than Pakistan generates to power 241 million people, industry and agriculture combined. ■

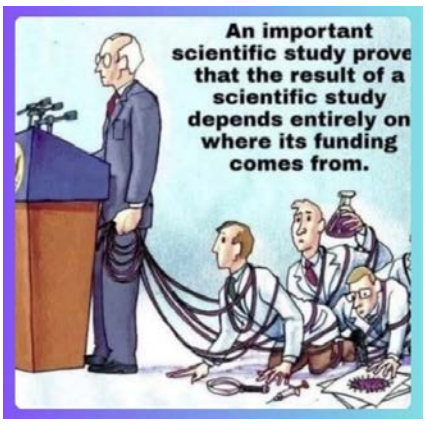
Islamabad's Environmental Crisis: A City on the Brink

Rauf Klasra

Islamabad, once celebrated for its greenery and clean environment, is now facing a severe environmental and public health crisis. I recently attended a Senate Standing Committee on Climate Change meeting, chaired by Senator Sherry Rehman, and returned deeply concerned. The Federal Minister for Climate Change, Dr. Musadik Malik, was absent, reflecting a worrying lack of attention to critical issues.

Committee members revealed shocking facts: thousands of cusecs of untreated sewage flow daily into Rawal Dam, supplying residents with contaminated water. Despite directions two years ago to install a water treatment plant, no tenders have been issued. Officials cite "lack of funds," though billions have been raised from plot sales. The use of sewage-contaminated water is spreading diseases like hepatitis.

Meanwhile, tree-cutting continues unabated. Acres of forest in Sector I-8 were destroyed overnight, while the city expands under flyovers and underpasses. Officials prioritize development and aesthetics over essential environmental and health safeguards. Senator Rehman warned that environmental pollution now poses a bigger threat than terrorism. Pakistan, among the ten countries most vulnerable to climate change, cannot afford bureaucratic negligence. If this destruction continues, Islamabad risks becoming a city like New Delhi—suffocating under smog and pollution. Citizens deserve urgent action: functional water treatment plants, strict oversight of development projects, and a halt to indiscriminate tree-cutting. Without it, Islamabad's beauty and livability are under serious threat.



Managing the Indo-Pak Region's largest Waste load

SSWMB showcases modern solutions, Pakistan's first major urban biogas breakthrough

EU Report

At a high-level seminar in Karachi, the Sindh Solid Waste Management Board (SSWMB) presented the full scale of its modern, scientific and technologically enabled waste management practices that now handle a record 14,800 tonnes of waste produced daily in Karachi—the highest among major metropolitan cities of the Indo-Pak Subcontinent. SSWMB also outlined upcoming sustainable practices it is set to adopt as part of Pakistan's broader journey towards achieving the Sustainable Development Goals (SDGs). Central to this vision was the announcement that the Board's first large-scale biogas plant, designed to utilise Karachi's massive organic waste stream, will become operational in December 2025, supplying low-cost cooking gas to Clifton's energy-deprived households.

SSWMB's first major biogas plant set to launch

The landmark announcement was made by SSWMB Managing Director Tariq Ali Nizamani, while addressing a seminar on sustainable urban waste management aligned with the SDGs. The event was organised at the Federation House in Karachi by the FPCCI's Central Standing Committee on SDGs in collaboration with the National Forum for Environment & Health (NFEH). Nizamani revealed that the Bagh Ibn-e-Qasim biogas plant would process seven tonnes of livestock waste daily, providing subsidised cooking gas—priced at Rs 2,000 per month—to 70 to 80 households in Clifton. In its second phase, the plant will generate electricity to help resolve chronic lighting issues at the historic park.He added that a second biogas plant would soon be built at Karachi's Cattle Colony, further strengthening SSWMB's strategy of converting organic waste into useful energy instead of allowing hazardous dumping into the sea, which contributes devastatingly to marine pollution.

Karachi produces more daily waste than Mumbai, Delhi, and Dhaka

Highlighting the gravity of the waste challenge, Nizamani noted that Karachi's daily solid waste output—over 14,800 tonnes—surpasses the generation of other mega-cities such as Mumbai, Delhi, and Dhaka. District Central alone contributes over 3,000 tonnes per day, the highest among the city's seven districts. He said that 42 per cent of Karachi's waste is organic, offering massive potential for conversion into biogas and compost if segregation systems are strengthened. Karachi also produces 25 per cent of Pakistan's total recyclable plastic waste, underscoring the city's value for the circular economy.

Modern, scientific systems already in place

The SSWMB chief informed participants that more than 13,000 workers and 2,305 vehicles operate daily to collect and shift waste from households to transfer stations and landfills. Real-time digital systems and cutting-edge monitoring technology are being used to track the entire waste chain—ensuring transparency, efficiency, and accountability. A dedicated helpline, call centre, and mobile application help citizens register waste complaints round the clock. To curb dangerous littering practices, SSWMB has sought approval from the Sindh government to impose fines of up to Rs 20,000 on heavy vehicles that spill waste on major roads. This move aims to curb the unchecked scattering of garbage across the city. Nizamani also highlighted the World Bank-funded SWEEP project, which is modernising Karachi's waste infrastructure through new garbage transfer stations and a fully engineered sanitary landfill. ■

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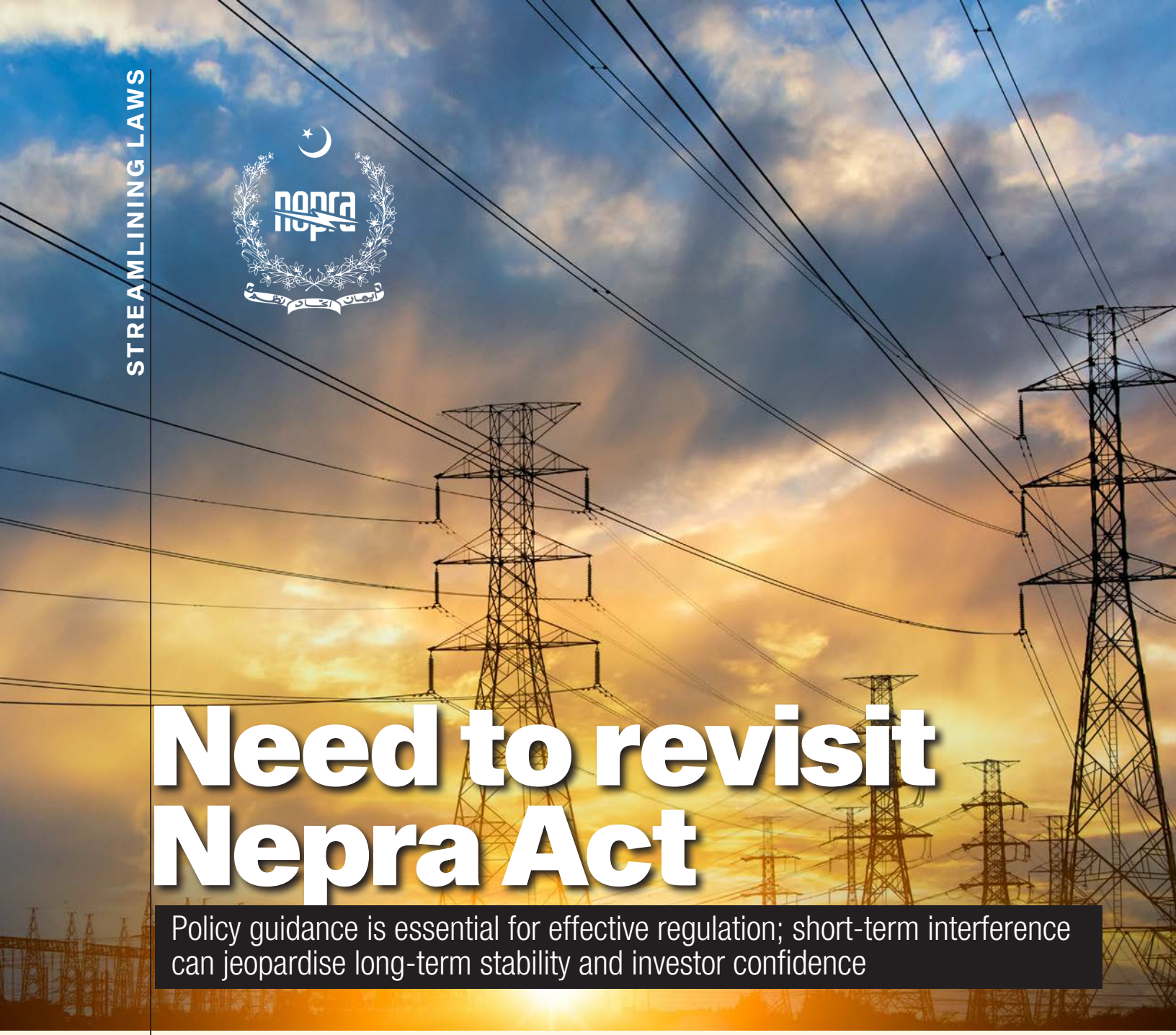


Need to revisit Nepra Act

Policy guidance is essential for effective regulation; short-term interference can jeopardise long-term stability and investor confidence

Afia Malik

The writer is an economist and researcher with expertise in the energy sector, based in Islamabad.

A few weeks ago, the minister for power indicated that the government is considering amending the Nepra law to ensure the regulator's accountability. The minister was right in pointing out the regulator's incapacity, which has led to a two-year delay in K-Electric's tariff determination. He also said that the regulator should not be controlled, but that there should be accountability for how decisions are made, their quality and the appointments to the authority.

Here, it is essential to see what the current law says about the regulator's accountability. In 1997, parliament enacted the Regulation of Generation, Transmission, and Distribution of Electric Power Act, which established Nepra as an independent regulatory authority. Initially free from government oversight, Nepra later connected with the Ministry of Water and Power and, subsequently, the Ministry of Law and Justice to improve coordination with the federal and provincial governments. Since 2000, it has operated under the Cabinet Division, alongside other regulatory authorities.

Under section 42 of the Act, Nepra must prepare Annual Reports and the State of Electric Power Services Report for submission to the Council of Common Interests (CCI) and the Federal Government. Nepra has published these reports since 2003-04, but they have never been evaluated at any forum (no official record).

It is not the regulator's fault. As Nepra was created under a parliamentary Act, parliament or its committees can question its performance and budgetary use, or review the process for regulatory decisions, but cannot direct the outcomes of any specific case. Nepra is answerable for delays in tariff determinations (or any other

decision) upon request by Parliament.

The Nepra Act also requires the regulator to maintain public files and accurate financial records, which are audited annually by the auditor general of Pakistan, thereby ensuring accountability and transparency in regulatory processes. Transparency is further upheld through public hearings and the availability of documents on their website, which includes decisions and their justifications.

The 2018 amendments allow an appellate tribunal to review Nepra's procedures, while the government (Power Division) can only issue the energy policy framework for Nepra to implement.

The existing law also defines the process for appointing the authority, including the chairman and its members. It is the government's duty to ensure that regulators are appointed through a transparent legal process. If the government fails to appoint a competent individual, it is a failure on its part, not on the regulators'. According to section 4(2) of the law, the federal government may remove the chairman or any member found to be incompetent or guilty of misconduct after an inquiry by the Federal Public Service Commission. In other words, the law allows sufficient flexibility to hold the regulator accountable.

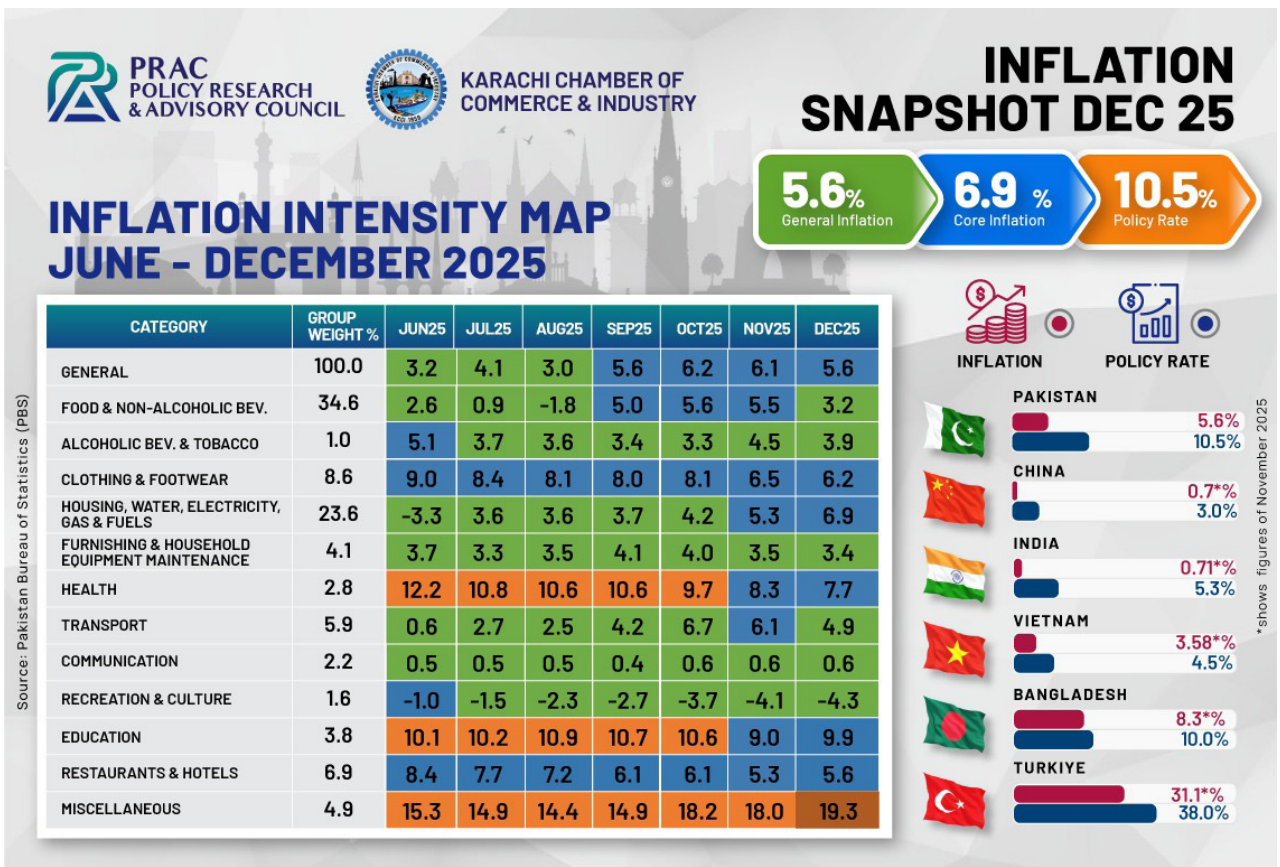
On the other hand, regulatory autonomy is as important as its accountability. Nepra must have the powers to issue licenses, determine tariffs, specify standards, review and assess their implementation and regulate processes, independently of the influence of power sector companies (it regulates) and independent of the Power Division, which effectively runs public-sector energy companies.

The legislation needs amendments to clearly define roles while ensuring the regulatory body's independence remains intact and its accountability is maintained. Interference occurs when external entities, particularly the executive, such as the power division, undermine a regulatory body's independent judgment, for instance, pressuring Nepra to set a specific tariff for a company or to grant a preferred company a license.

The optimal design of any regulatory institution always carries the risk of organisational failure unless credibility and transparency in regulatory decisions are established. When ministers and bureaucrats are directly involved in pricing and licensing decisions, it can compromise regulatory credibility and impact investment decisions. Politicians often reject justified tariff increases for short-term political gains, sacrificing long-term benefits to consumers and investments and ultimately undermining regulatory trust. Without regulatory credibility, investors aware of the risks associated with their investments may demand higher tariffs to compensate for increased risk (as seen in the case of IPPs) or leave (as in the case of Shanghai Electric). Ideally, investors prefer to invest in industries with independent regulatory agencies that operate without government interference.

A robust regulatory framework is essential for enhancing the efficiency of utility services, particularly in monopolistic environments. In Pakistan's electricity distribution sector, there are significant concerns about Nepra's perceived bias in favour of government-owned companies. Only an independent and effective regulator can ensure fairness for investors, quality services at affordable rates for consumers and prevent government exploitation for political purposes.

Regulating the regulator involves ensuring accountability through laws and formal procedures. Policy guidance is essential for effective regulation, while short-term interference can jeopardise long-term stability and investor confidence in the sector. ■



CATEGORY	GROUP WEIGHT %	JUN25	JUL25	AUG25	SEP25	OCT25	NOV25	DEC25
GENERAL	100.0	3.2	4.1	3.0	5.6	6.2	6.1	5.6
FOOD & NON-ALCOHOLIC BEV.	34.6	2.6	0.9	-1.8	5.0	5.6	5.5	3.2
ALCOHOLIC BEV. & TOBACCO	1.0	5.1	3.7	3.6	3.4	3.3	4.5	3.9
CLOTHING & FOOTWEAR	8.6	9.0	8.4	8.1	8.0	8.1	6.5	6.2
HOUSING, WATER, ELECTRICITY, GAS & FUELS	23.6	-3.3	3.6	3.6	3.7	4.2	5.3	6.9
FURNISHING & HOUSEHOLD EQUIPMENT MAINTENANCE	4.1	3.7	3.3	3.5	4.1	4.0	3.5	3.4
HEALTH	2.8	12.2	10.8	10.6	10.6	9.7	8.3	7.7
TRANSPORT	5.9	0.6	2.7	2.5	4.2	6.7	6.1	4.9
COMMUNICATION	2.2	0.5	0.5	0.5	0.4	0.6	0.6	0.6
RECREATION & CULTURE	1.6	-1.0	-1.5	-2.3	-2.7	-3.7	-4.1	-4.3
EDUCATION	3.8	10.1	10.2	10.9	10.7	10.6	9.0	9.9
RESTAURANTS & HOTELS	6.9	8.4	7.7	7.2	6.1	6.1	5.3	5.6
MISCELLANEOUS	4.9	15.3	14.9	14.4	14.9	18.2	18.0	19.3

Pakistan can transform plastic pollution into a circular economy

With the right policies, plastic can move from being a pollutant to a resource, supporting jobs, reducing emissions and cleaning up cities

Mustafa Tahir

Writer is Deputy Editor of Energy Update

Plastic waste has quietly grown into one of Pakistan's most pressing environmental and economic threats. From choked drains in major cities to ever-expanding landfill sites on urban fringes, the country is struggling to cope with a waste stream that its systems were never designed to manage. Plastic packaging, in particular, has become ubiquitous in daily life, yet its disposal and recycling remain dangerously fragmented. While individual provinces have introduced policies and pilot projects, the absence of a unified national framework has left Pakistan fighting a rising tide with scattered tools. It is against this backdrop that a growing chorus of policymakers, industry leaders and environmental experts is calling for a nationally aligned Extended Producer Responsibility (EPR) system—one that could fundamentally transform how

Pakistan manages plastic waste.

This urgent debate took centre stage at a two-day national convening titled "Turning the Tide: Extended Producer Responsibility and Plastics Circularity," organised by the CoRe Alliance. The forum brought together

more than eighty stakeholders from across the public and private sectors, including federal and provincial government representatives, waste management authorities, environmental protection agencies, major fast-moving consumer goods companies, recyclers, packaging manufacturers, financial institutions, development partners, UN agencies, academics and the media. Their shared concern was unmistakable: without harmonised national action, Pakistan's plastic waste crisis will continue to deepen, undermining both environmental sustainability and economic resilience.

Opening the conference, Federal Minister for Climate Change and Environmental Coordination Senator Dr Musadik Masood Malik delivered a sobering assessment of the challenge. He stressed that Pakistan's waste problem could not be solved through isolated provincial regulations or short-term interventions. According to him, harmonisation across provinces is essential to building a waste management ecosystem that is resilient to climate shocks, economically viable and fair to all stakeholders. A unified EPR system, he argued, would strengthen enforcement, create clear incentives for producers, encourage innovation in packaging and recycling, and enable businesses to meet their obligations transparently and efficiently.

The importance of Extended Producer Responsibility was echoed by Romina Khurshid Alam, Member of the National Assembly and Coordinator to the Prime Minister on Climate Change, and Aisha Humera, Federal Secretary at the Ministry of Climate Change. Both emphasised that EPR aligns closely with Pakistan's climate commitments and economic reform agenda. By shifting responsibility for post-consumer waste onto producers, EPR has the potential to reduce landfill pressure, improve recycling rates, and create thousands of green jobs. More importantly, they noted, a functional circular economy could position Pakistan to attract international climate finance at a time when funding for climate adaptation and mitigation is becoming increasingly critical.

The role of policy stability was further underlined by members of the Senate's standing committees. Senator Bushra Anjum Butt and Senator Dr Afnan Ullah Khan both highlighted that successful EPR models across the world are built on predictable, long-term regulation. Countries that have made real progress in circularity, they observed, did so by maintaining regulatory continuity and extending responsibility beyond plastics to other high-impact sectors such as textiles, fertilisers, electronic waste and telecommunications. Their message was clear: without sustained political backing and inclusive policies, EPR risks remaining an unfulfilled promise.

As the convening drew to a close, CoRe board member and Unilever's Head of External Affairs, Hussain Talib, announced that the discussions had been consolidated into a comprehensive set of policy recommendations. These will be submitted to the Ministry of Climate Change and Environmental Coordination as well as the Ministry of Finance, with the aim of translating dialogue into action. Participants broadly agreed that Pakistan's transition to a circular economy will depend on harmonised legislation, realistic compliance timelines, fiscal incentives for recycling, digital monitoring systems and, crucially, the inclusion of informal waste workers who currently sustain the recycling ecosystem. ■

Asif Inam Appointed Chairman of SSGC Board

Sui Southern Gas Company Limited (SSGC) has appointed Asif Inam as the Chairman of its Board of Directors, with effect from January 5, 2026.

According to information available on the SSGC website, Asif Inam is a prominent Pakistani businessman and industrialist with a well-established reputation in the textile sector.

He currently serves as Chairman and Chief Executive Officer of Diamond International Corporation Limited.

Last month, SSGC shareholders elected a new Board of Directors for a three-year term, effective from December 24, 2025. The newly elected board members include Zuhair Siddiqui, Asif Inam, Saira Najeeb Ahmed, Usman Ahmed Chaudhry, Muhammad Dawood Bazai, Muhammad Akram, Muhammad Rehan Hashmi, Mohammad Ali Khan, Khalid Rahman, Salima Feerasta and Navaid Malik.

Sindh cabinet orders probe into solar energy project

EU Report

The provincial cabinet has ordered thorough investigations and an audit into the Rs28 billion World Bank-funded Sindh Solar Energy Project (SSEP), as well as the blacklisting of companies involved, to protect public money and enforce accountability.

The Sindh government had planned to provide each of the 250,000 families with a solar panel, battery, one DC fan, three LED bulbs and a mobile phone charging facility with an estimated cost of Rs55,000. It signed a contract with a foreign company at $151 per solar kit, despite import records showing their actual value was under $50 per unit. Chief Minister Syed Murad Ali Shah while presiding over the meeting of the provincial cabinet directed comprehensive audits, recovery actions and accountability measures against involved firms and officials.

According to a statement issued by the CM House after the cabinet meeting, the SSEP has encountered major problems despite nearly full use of its allocated budget. The cabinet was informed that many core goals, such as building solar parks, installing rooftop systems and distributing home solar kits, had not been met.

Originally, the Karachi Water and Sewerage Corporation had set a water sale rate of 85 paise per gallon for supply to DHA, as approved by the cabinet and made a condition precedent for the Sindh government's loan assistance of Rs10.5 bn towards the project's completion. Following negotiations with DHA, the KWSC proposed revising the water sale rate while retaining the payment schedule of 10 years.

The revised rate seeks to balance affordability for DHA, which is already getting water at 75 paise per gallon through bowsers. This project, led by the Board of Revenue, assigned Sukkur IBA University the task of developing and implementing a digital land record system. In its pilot phase, data entry work is nearly complete, and there is a clear plan to extend this digitisation effort to every district within three years. ■

WAPDA Generates 33.12 Billion Units of Hydel Power in 2025, Strengthening Pakistan's Clean Energy Supply

The year 2025 proved to be a milestone for Pakistan's hydropower sector as WAPDA consistently delivered clean, green, and low-cost hydel electricity to the national grid, overcoming multiple operational and environmental challenges.

According to WAPDA, its 22 hydel power stations collectively generated 33.12 billion units of electricity in 2025, contributing nearly 30 percent of the country's total power generation. With an average tariff of just Rs 3.83 per unit, WAPDA's hydel electricity remained the most affordable energy source, supporting economic stability and social development.

Hydropower continues to be the most environmentally friendly source of electricity in Pakistan, producing zero carbon emissions, a critical factor amid global climate concerns.

Detailed generation statistics for 2025 include:

- Tarbela Hydel Power Station: 14.3 billion units
- Tarbela 4th Extension: 5.6 billion units
- Ghazi Barotha Hydel Power Station: 6.5 billion units
- Mangla Hydel Power Station: 3.6 billion units
- Warsak Hydel Power Station: 0.77 billion units
- Chashma Hydel Power Station: 0.79 billion units
- Other small/high-head stations (including Jinnah Hydel): 1.56 billion units

Meanwhile, WAPDA made significant progress on eight under-construction projects, including the Diamer Basha Dam, Mohmand Dam, Dasu Hydropower Project, Tarbela 5th Extension, and the Greater Karachi Bulk Water Supply Scheme (K-IV), reflecting the authority's ongoing commitment to Pakistan's sustainable energy and water infrastructure development.

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HVACR Trends 5.0

Charts Pakistan's Path Toward Smart Decarbonization of the Built Environment

M. Naeem Qureshi

HVACR Trends 5.0, held at the Marriott Hotel Karachi, marked a decisive shift in Pakistan's HVACR narrative — moving beyond isolated energy-efficiency measures toward Smart Decarbonization as a system-level transformation of the built environment.

Under the theme "Smart Decarbonization: Integrating AI, Innovation and Sustainability in Pakistan," the two-day technical conference convened engineers, policymakers, academics, and industry leaders to explore how artificial intelligence, operational intelligence, and sustainable design can collectively respond to Pakistan's escalating climate and energy challenges.

From Climate Reality to Engineering Responsibility

The conference opened with a compelling keynote by Mr. Farooq Mehboob, Presidential Member of ASHRAE, who positioned decarbonization not as a future ambition but as an immediate professional obligation. Referencing global climate indicators, urbanization trends, and building growth projections, he noted that nearly 90% of building-related carbon emissions stem from operational energy use, placing HVACR systems at the heart of climate mitigation efforts.

The keynote emphasized that technology alone cannot deliver decarbonization. Effective governance, skilled human capital, robust building performance standards, and public awareness must evolve in parallel — particularly in emerging economies like Pakistan.

A Structured Technical Dialogue

Day 1: Focused on strategic pathways and global perspectives. Technical sessions examined decarbonization frameworks, bio-based materials for healthier indoor environments, AI-enabled collaboration across building portfolios, and the shift from aspirational net-zero targets to measurable carbon reduction outcomes.

International experts and ASHRAE Distinguished Lecturers highlighted how human expertise augmented by artificial intelligence can optimize building performance at scale, transforming net-zero from a concept into an operational reality.

Day 2: Pivoted toward applied intelligence, manufacturing decarbonization, and institutional capacity building. Presentations addressed AI-driven energy management systems, next-generation air-conditioning efficiencies, and decarbonization pathways for Pakistan's manufacturing sector — a major contributor to

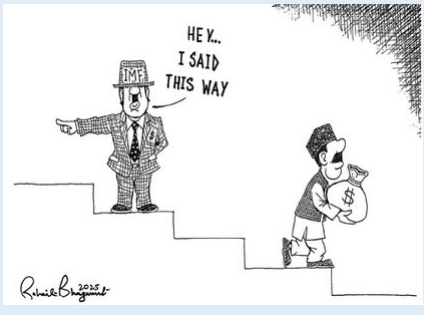
national emissions.

Academic sessions underscored the role of universities and research institutions in developing indigenous solutions, while policy discussions stressed alignment with Pakistan's SDG commitments and national climate strategies.

A Platform, Not Just an Event

More than a standalone conference, HVACR Trends 5.0 emerged as a continuing knowledge platform, bridging professional engineering practice, policy dialogue, academic research, and industrial innovation. By integrating AI, sustainability, and decarbonization into a unified narrative, the event reinforced the growing recognition that HVACR professionals will play a decisive role in shaping Pakistan's low-carbon future.

As the country faces rising cooling demand, water stress, and increasing climate vulnerability, forums such as HVACR Trends 5.0 provide critical spaces for informed, evidence-based dialogue — transforming global climate objectives into actionable engineering solutions for Pakistan. ■



Forced Exits Loom for Pakistan's Oil Marketing Sector, Warns Report

EU Report

Pakistan's oil marketing sector could face forced exits and disorderly consolidation if long-standing structural fragmentation is not addressed in time, according to a new report by Dubai-based energy and technology advisory firm Mountain Ventures.

In its report titled Pakistan OMCs Review 2025, Mountain Ventures warned that the sector is showing warning signs similar to those once seen in the US airline industry, which suffered from collapsing margins, underinvestment, repeated bankruptcies and eventual forced mergers. "Pakistan's OMC sector now exhibits the same structural warning signs," the report noted.

Despite having 44 licensed oil marketing companies (OMCs), market concentration remains extremely high. Around 60% of total volumes are controlled by just three players, 95% by ten, and nearly 98.5% by twenty companies. The remaining smaller players lack scale and compete largely through aggressive discounting, which has eroded margins across the industry and weakened incentives to invest in compliance, systems and retail infrastructure.

"Consolidation will happen regardless. The only question is whether it occurs early and orderly, or later through financial stress, exits, and market disruption," the report warned. The sector recorded healthy volume growth in 2025, with sales of gasoline, gasoil and hi-octane rising by about 10% year-on-year, from 14.0 million metric tonnes to 15.4 million metric tonnes, driven by vehicle growth and stable demand. However, the report noted that industry economics continued to tighten due to regulated pricing, persistent discounting and rising capital requirements.

It further highlighted that uncertainty around the Infrastructure Development Cess and sales tax recoverability has increased working-capital pressures.

At the same time, greater regulatory focus on digitisation and enforcement suggests a shift toward compliance-linked margin relief rather than across-the-board adjustments.

Operationally, the report identified owned storage capacity and the quality of retail networks as major constraints on sustainable growth. Limited gasoline storage capacity is restricting outlet expansion, increasing the importance of optimising existing networks rather than expanding footprints. ■

Pakistan to Showcase 'Mineral Marvel' at Future Minerals Forum in Riyadh

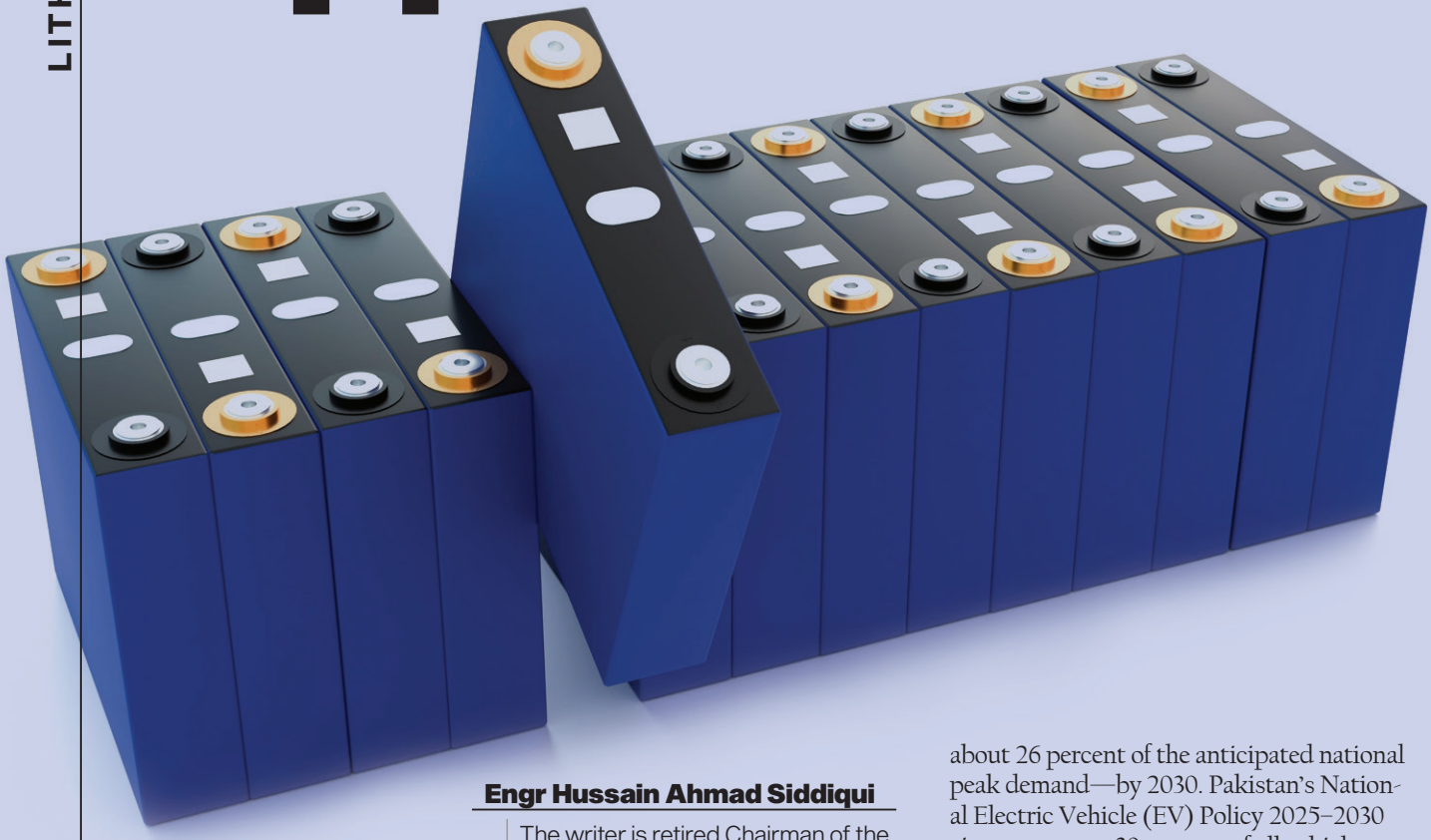
EU Report

Federal Minister for Petroleum Ali Pervaiz Malik held discussions with Saudi Arabia's Ambassador to Pakistan, Nawaf bin Saeed Ahmad Al-Malkiy, on strengthening cooperation in the minerals and energy sectors, with a particular focus on Pakistan's participation in the upcoming Future Minerals Forum in Riyadh.

According to an official statement, the minister informed the ambassador that Pakistan would actively participate in the forum later this month following an invitation from the Saudi government. He said a dedicated pavilion titled "Pakistan – The Mineral Marvel" would be set up to highlight the country's vast geological and mineral potential before the global mining community.

The Pakistani delegation, led by Malik, will comprise representatives from 13 state-owned and private-sector mineral companies. In addition, a 90-minute Country Showcase Session will be held, featuring the petroleum minister, chief executives of participating companies, foreign investors and international experts. The session will focus on accelerating development in Pakistan's mineral sector. Malik noted that the pavilion would also serve as a curtain-raiser for the Pakistan Mineral Investment Forum 2026, scheduled to take place in April in Islamabad, and would be used to attract international participation for the event. ■

Pakistan's emerging lithium market: challenges and opportunities



Engr Hussain Ahmad Siddiqui

The writer is retired Chairman of the State Engineering Corporation and former Chairman of the Institution of Engineers, Pakistan

Surge in lithium-ion battery imports driven by rising demand for solar energy storage systems, electric vehicles

In 2025, Pakistan's lithium market is marked by a surge in lithium-ion battery imports—primarily from China—driven by rising demand for solar energy storage systems and electric vehicles (EVs). While this import trend is fuelling growth, it has also spurred local manufacturers to diversify into lithium-ion technology.

According to the Institute for Energy Economics and Financial Analysis (IEEFA) of the USA, Pakistan imported about 1.25 gigawatt-hours (GWh) of lithium-ion battery packs in 2024, with an additional 400 megawatt-hours (MWh) arriving during the first two months of 2025.

The report projects that demand could grow to 8.75 GWh—representing about 26 percent of the anticipated national peak demand—by 2030. Pakistan's National Electric Vehicle (EV) Policy 2025–2030 aims to convert 30 percent of all vehicles to EVs by 2030. With major EV producers such as China's BYD planning local assembly by 2026, competition for limited battery supplies is expected to intensify.

In this context, it is encouraging that the cooperative framework agreement signed three years ago between the Islamabad-based China–Pakistan Joint Research Centre on Earth Sciences (CPJRC) and Tianqi Lithium Corporation of China is progressing well. Tianqi Lithium, a global leader in lithium development and manufacturing, is collaborating with CPJRC to advance lithium resource research, energy storage systems, and emerging battery technologies in Pakistan.

The partnership focuses on applying lithium in EVs and other energy storage technologies, alongside joint research and patent development to safeguard innovation. Its core objective is to deepen understanding of Pakistan's lithium reserves and

promote their use as raw materials for EV batteries—reducing dependence on imported lithium products.

Lithium, often described as "white gold," is a strategic metal with wide-ranging industrial uses and promising economic prospects for Pakistan. Substantial lithium deposits have been identified in several regions, including Balochistan (Hamun-e-Mashkel, Chagai District), Gilgit-Baltistan (Shigar Valley and Skardu), Khyber Pakhtunkhwa (Chitral District and Waziristan region), Azad Jammu & Kashmir (Neelum Valley), and the Cholistan–Thar deserts spanning Punjab and Sindh. The Geological Survey of Pakistan is conducting geochemical exploration and feasibility studies in areas such as Chitral, Shigar Valley, and Skardu.

Geological and geochemical mapping is also under way in Dasu and Gilgit to assess lithium and associated metals. In mineral-rich Balochistan, preliminary mining activities have begun in Saindak and Dasht-e-Kun (Dasht-e-Kain) in Chagai District, led by Chinese and Canadian companies exploring copper, gold, silver, and lithium.

According to the United States Geological Survey, global lithium mine production rose sharply to 240,000 tons in 2024 from 146,450 tons in 2023, while consumption remained above 100,000 tons annually. Australia, Chile, and China together accounted for about 75 percent of total output, producing 88,000 tons, 49,000 tons, and 41,000 tons, respectively. Lithium compounds—including carbonate, oxide, hydroxide, and chloride—are widely used in industrial applications, and global output of lithium carbonate, a key component in lithium-ion batteries, has nearly doubled in five years. After recent volatility, lithium prices stabilized at around USD 40,000 per ton in 2024.

Lithium-ion battery imports in Pakistan have risen sharply, a trend expected to continue as solar and electric mobility solutions expand. Local firms are taking strategic steps into the lithium market: Treet Battery Ltd has partnered with a Chinese company to introduce lithium-ion technology, while Hub Power Company (HUBCO) is exploring lithium reserves and collaborating with a Chinese partner on EV manufacturing. Yet, the market's expansion faces regulatory and policy gaps.

Pakistan still lacks comprehensive national frameworks for battery recycling, product quality standards, and safe installation practices. High upfront costs of lithium systems restrict adoption among lower-income households, risking an unequal energy transition. With Pakistan's e-waste collection rate effectively zero, most discarded batteries end up in landfills, posing serious environmental and health hazards. Since lithium is infinitely recyclable, establishing a lithium-ion battery recycling network is critical for sustainable growth.

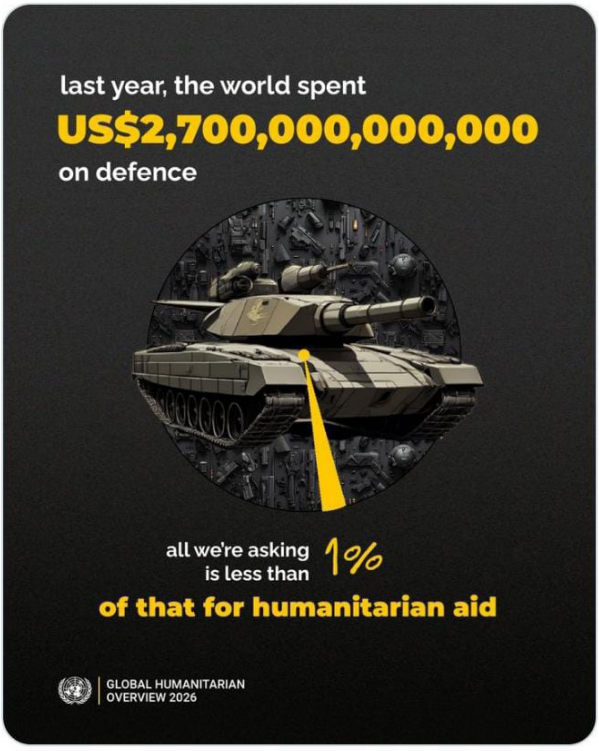
Experts also emphasize the need for advanced Battery Energy Storage Systems (BESS) to stabilize the national grid and mitigate load-shedding. To expedite the development of this critical mineral, the government could integrate lithium exploration and processing within its investment portfolio. Accelerating resource development, processing, and refining would complement national goals of promoting green transportation and renewable energy.

Rapid progress in lithium extraction could reduce Pakistan's import bill, strengthen energy security, and stimulate industrial growth. The initiative promises wide-ranging benefits—job creation, technological competitiveness, and expanded exports. ■

Danish Ambassador Visits Karachi

EU Report

Recognising Karachi as Pakistan's business hub and a key center where many Danish companies and their partners operate, Denmark's new Ambassador, Maja Derrous Mortensen, visited the city to gain firsthand insights into their work and impact.The visit began at the head office of leading Danish healthcare company Novo Nordisk Pakistan, where the Ambassador learned about Pakistan's evolving healthcare landscape and the growing burden of chronic diseases. The discussion highlighted Novo Nordisk's role in Pakistan, which extends beyond treatment to include awareness, prevention, and initiatives aimed at strengthening the healthcare system. The visit underscored the strong collaboration between Denmark and Pakistan and a shared commitment to innovation and improved health outcomes



When Money Goes Digital, Energy Pays the Bill

Waqar Khan

Recently, Bitcoin MENA 2025, held at the Abu Dhabi National Exhibition Center (UAE) brought together policymakers and industry leaders from across the globe. From Pakistan, Mr Bilal Saqib serving as the Prime Minister's Special Assistant on blockchain and digital assets was part of the broader dialogue, highlighting Pakistan's engagement with the evolving crypto landscape.

The event also featured global companies showcasing e-wallets, mining technologies, energy-efficient turbines, and digital infrastructure, underscoring the close link between digital finance and energy systems.

As a result, the global conversation around digital currency has shifted. The future of crypto is no longer just about innovation, speed, or financial returns. It is now inseparable from questions of renewable energy integration, green mining initiatives, carbon accountability, and regulatory oversight. Some regions are experimenting with solar powered mining farms, others with surplus hydro or wind energy, but the transition remains uneven and complex. Events like Bitcoin MENA make one thing clear the future economy will undoubtedly be digital. However, sustaining that future will depend on how responsibly energy is produced, consumed, and managed. The real challenge lies in balancing technological progress with environmental responsibility and long term energy resilience. The question, therefore, is not whether digital currency will arrive it already has. The deeper question is where we will stand when it fully takes over. When all our wealth exists only on a mobile screen, with no physical form, no paper trail, and no tangible backup, what happens if the system falters? A cyberattack, a prolonged outage, or a large scale digital disruption could leave people staring at silent screens, holding nothing but numbers that once represented security. ■

Solar Imports Slow in Nov, But Demand Outlook Still Persists

Slowdown has been partly linked to ongoing govt discussions on net metering rules

Mustafa Tahir

The Writer is Deputy Editor of Energy Update

Pakistan's solar sector has experienced a temporary slowdown in imports, prompting questions about whether the country's solar boom has peaked. According to Pakistan Single Window data, imports of solar panels' cost in the first five months of FY26 totaled $442 million—a 29 percent drop from $622 million in the same period last year. November 2025 recorded the lowest monthly import tally in years, at just $20 million, and for the first time this fiscal year, imported wattage fell below the 1,000 MW mark, standing at only 200 MW.

Understanding the Dip

The slowdown has been partly linked to ongoing government discussions on net metering rules. Proposed changes to buyback rates and metering specifications, aimed at lengthening payback periods for rooftop solar systems, have added uncertainty to the market. Critics quickly interpreted the decline as a sign of weakening demand.

However, experts stress that rooftop solar remains economically viable. Even under revised assumptions, high grid tariffs ensure that self-consumption-based solar systems continue to offer strong financial benefits.

The Bigger Picture

While imports in November appear low, the broader data tells a different story. On a megawatt basis, the year-on-year decline for the first five months is just 12 percent. Total imports of 4,770 MW are still 60 percent higher than the same period in FY24. Cumulatively, Pakistan has imported close to 50 GW of solar panels, with nearly a third of that stock yet to be deployed.

Global module prices have also stabilized around 9 cents per watt, reducing the need for aggressive stockpiling by importers. Many companies are now pacing orders to digest existing inventories rather than reacting to falling demand.

Looking Ahead

The solar sector's fundamentals remain strong. Strong demand drivers persist across households, commercial enterprises, and farms. Regulatory debates may cause temporary market fluctuations, but the long-term economics of solar in Pakistan are intact.

A single month's dip in imports should not overshadow the broader trajectory. With ample capacity ready for installation and continued government and private sector support, Pakistan's solar momentum is likely to continue. The sun is still shining bright on the country's renewable energy future. ■

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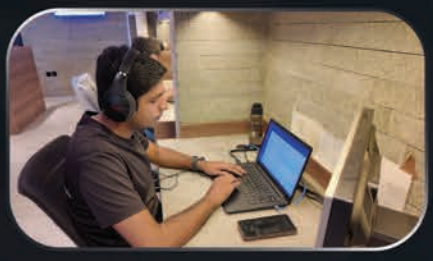


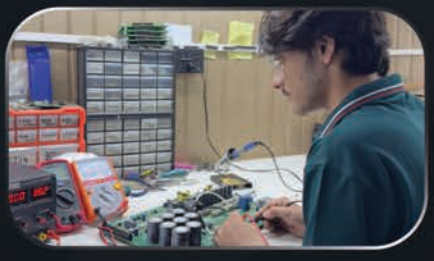


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Simple

Hot swappable power module, bypass module and control module simplify maintenance and expansion in 5 minutes. Top bus way prefabricated design, reducing on-site installation time by 60%

Green

1 MW, 1 rack, saving the footprint by 50%. Online mode: 97% system efficiency, high efficiency at light-load. S-ECO mode: 99.1% system efficiency

Smart

iPower pre-warnings for key components by AI method. Source sharing of main input and battery achieves intelligent peak shaving

Reliable

Redundant architecture eliminates single point of failure. 0ms mode transferring between. S-ECO and other modes S-ECO mode active filtering, optimal power quality

Huawei FusionPower UPS2000-G Series

Scan the code for more information

Simple

Compatible with rack/tower installation, adapting to different installation environments

Green

Higher density and higher efficiency, green and reliable

Smart

The NetEco implements centralized and remote management

Reliable

The ultra-wide voltage input range effectively reduces the number of times that the battery mode is switched, and prolongs the battery life

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