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FROM THE

# Editor's desk...

## Torments of Energy Sector

Pakistan's energy sector is facing crippling problems including use of fossil fuel, circular debt, rising tariffs, massive load shedding, electricity theft, transmission and distribution losses, revenue recovery hurdles, and a surge in electricity costs. All these problems have broken the backbones of people and all other sectors of the economy, particularly industrial and agriculture.

This all is due to non-availability of good leadership that can control these problems that are directly causing financial troubles to the masses, business and industries. The government is just making money by raising power tariffs by ignoring hue and cry by the people, businessmen, traders and industrialists. As a result, inflation is rising with each passing day due to the rise in production of goods and services.

The claims by the government have always proved empty, leaving people in despair. There is no solid policy to control power supplying companies from raising power rates by multiples times in a year. Predominantly reliant on imported fossil fuels have disturbed the economy.

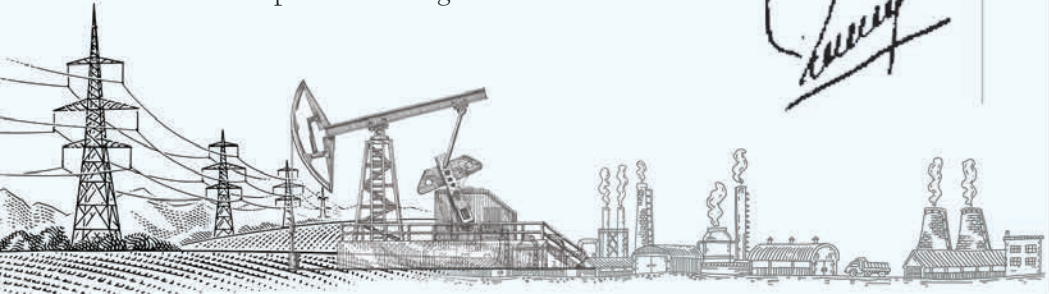
The National Electric Power Regulatory Authority (NEPRA), which regulates tariffs and policies, is allowing power companies to raise tariffs whenever they approach it. Nepra's such moves are a great injustice to the people. The people are also stakeholders in the energy sector, so their demand should also be entertained and met.

The country has failed to meet electricity demand which often outstrips supply, leading to load shedding and power rate hike. The circular debt still remains a significant issue, affecting the liquidity and operations of power companies. Aging infrastructure is leading to inefficiencies and high transmission and distribution losses while the over-reliance on imported fuels has made the sector vulnerable to global price fluctuations. Frequent changes in policy and lack of long-term planning also hinder sustainable development.

The China-Pakistan Economic Corridor (CPEC) has brought significant investments in energy infrastructure, including coal, solar, and wind projects. Hence, there is a need to set ambitious targets to increase the share of renewables in the energy mix. The government needs to generate solar and wind resources from abundant resources for sustainable energy development.

Energy is an integral component of the economy and is considered necessary for nearly all human activities. Recent decades have witnessed a rapid increase in the global energy demand that is primarily derived from the expansion of economic activities, population growth, and rapid technological change. However, energy supply bottlenecks have become a chronic problem for a country's economy.

Initiatives to improve energy efficiency can reduce demand and alleviate some supply pressures. The government must get oil and gas from Iran to reduce the oil and gas import bill. Strategic investments, policy consistency, and a focus on renewable energy can help transform the sector and support the country's economic growth. Solarization of public buildings will help meet a specific portion of the electricity load through clean energy technology, reduce electricity bills of public offices, and relieve electricity utilities/ distribution companies from long-termdues.

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# U-turn on net metering: A blow to solarization

**Moin Fudda**

Writer is Former Consul General of New Zealand and Green Energy Expert

Delivering a powerful speech at a closing Plenary- Rejuvenating Growth of the World Economic Forum on 29th April 2024, Prime Minister Muhammad Shahbaz Sharif said that country is under a debt trap and its Power Sector is in shambles. He vowed to fix it to regain the confidence of foreign investors.

Undoubtedly, the Prime Minister must be concerned about huge Capacity Payments to IPPs even when plants are idle, and demand for electricity is less. In this context though the Committee formed in 2019 on Power Sector Audit headed by former Chairman SECP (Securities and Exchange Commission of Pakistan) and until recently caretaker Energy Minister had successfully re-negotiated the revised tariff with Private Power Producers, but unfortunately Power Division has not made any headway to renegotiate the terms with Solar IPPs.

Therefore, these IPPs continue to receive quarterly increase in tariff and only this year from 12th February to 26th April as given below, Government is purchasing power from seven IPPs as high as Rs. 50 kwh and that too in equivalent in US$.

The orders placed on power regulator NEPRA's website show that each of the above IPP receives O&M Local and Foreign, Return on Equity, Debt Servicing and on the top of it under the head of Sinosure, the Government is also reimbursing insurance cost to foreign IPPs.

All these IPPs have been given licence for the period of 25 years whereas contrary to that, Roof-Top Solar Generators do not have any financial reimbursement component in their licence and are granted 7-year licence to be renewed for a further period of 7 years. Additionally, though they are entitled for a quarterly determination of National Average Power Purchase Price (NAPPP) as per the requirement of Sub Section

(1) of Section 31 of Act XL of 1997, form notification of Net Metering Regulations 2015 only five revisions have taken place.

Given that the NAPPP to Roof-TOP Solar Generators is well below the average tariff of Solar IPPs, instead of renegotiating the lucrative terms agreed with these Solar IPPs, Power Division in its tweet clarified that on one hand there was no plan to levy tax on solar panels, but on the other it was considering reducing the buyback price from present Rs. 22 to Rs, 11 kwh.

Justifying such a move, officials of Power Division are presenting an analogy that the surge in Roof-Top solar Generators having net metering licenses, are causing annual burden of Rs. 110 billion on those who are on Grid- Consumers having no net metering and that Government is compelled to offer Rs. 1.90 per unit subsidy.

They also talk of recovery of investment in 18 months by Roof-Top Solar installers whereas only last year Nepra had mentioned the recovery period of 5 years. If this argument was to be accepted then will Cabinet Members ask the Power Division to provide recovery period of investment by Solar IPPs, some of whom must have already recovered their investment and at the same time will officials explain as to how much burden the Solar IPPs have caused to the on-Grid Consumers and to the Government by way of subsidy? Certainly, the number will be in trillions of Rupees.

This is not the first time that an attempt is being made to discourage renewable energy through Roof Top Solar Generators. In mid-2022, NEPRA through a public notice invited comment on its proposal of replacing the terms National Average Power Purchase Price (NAPPP) with National Average Energy Purchase Price (NAEPP).

Though, it was the responsibility of the Authority to educate the people about the implications this change would have made on their investment, it remained quiet. On the other hand, country's prominent think tank Pakistan Institute of Development Economics took the initiative by hosting a Webinar prior to NEPRA's hearing, which was led by its Dr Nadeem ul Haq, Vice Chancellor of and former Deputy Chair of the Planning Commission.

This writer together with experts Engineer Tahir Bashart Cheema, former MD PEPCP, Waqas Bin Najib, Member Energy Planning and Development, Imtiaz Husain Balouch DG NEPRA, Chartered Accountant Syed Feisal Ali, and Engineer Abdul Jabbar representing FPCC&I, talked about the ills and impediments in Power Policy, wrong location of Solar IPPs such as Quaid-e-Azam Solar Power and benefit of Net Metering and its continuity to meet the AEDB's vision of 2030.

Participants of the Webinar were fully prepared to resist the Nepra's move and on 27th of September 2022, Authority was surprised to see highest ever attendance both physical and via Zoom.

This writer supported by a couple of lawyers advised that the Roof-Top Solar Generators have been given license for a period of 7 years based on Net Metering Regulations 2015 and therefore any move of changing the terms will be challenged in the courts. It was shocking that team of Nepra had overlooked this point and the then Chairman realising the gravity of the situation said that Authority will take a legal opinion on this point.

After months of delay, finally on 10th of February 2023, acknowledging the economic benefits of net metering without involvement of foreign exchange as it is being incurred for payment to IPPs and minimal line loss and more importantly the share of Roof-Top Solar Generators in total Generation being less than 1%, the Authority through an order signed by four of its members decided against any amendment in Net Metering Regulations.

Unfortunately, the mental relief of Root-Top Solar Generators was short lived since the news of reduction in buyback rate surfaced in August 2023 that this time some officials in the Power Division were contemplating to reduce the buyback rate to Rs. 9.

The Caretaker Energy Minister Muhammad Ali being familiar with the subject, his attention was drawn to a table presented by officials of Nepra's in one of its hearings whereby total capacity payment made to the industry in year 2022 was Rs. 721 billion, including Rs. 3.2 billion on account of net- metering and for that too more than two-third was adjusted for off peak versus peak hours leaving balance of only less than Rs. one billion or 0.4% of the total capacity payment.

According to a source in Nepra through from these installations on an average 500mgw is supplied to DISCOS since almost three fourth is self-consumed. Thus, based on the current capacity factor of 17%, only 85mgw is a surplus from Net Metering which is 0.3% of the total lowest transmission of 28,000mgw to the National Grid. Hence Nepra's decision of 10th February 2023 that Roof-Top Solar Generators share of less than 1% in the country's total energy output is still valid.

But despite this meagre figure, regrettably in total disregard to Nepra's decision and the huge positive impact on environment and Prime Minister Shehbaz Sharif earlier directive of solarization of government buildings, Power Division has prevailed upon the Prime Minister, who as reported in the media on 16th of May, has directed NEPRA to amend Net Metering Regulation, which compromises the independence of the Authority.

Surprisingly Ministry of Climate which was ably led by the then Minister Sherry Rehman is silent on the subject. It is hoped that the members of the Cabinet will understand that this move of Power Division is to cover its continued failure to address the core issue of capacity payment and increase the demand of electricity. In this respect, writer would like to make following proposal:

To help small household to install Solar system NEPRA on the one hand direct DISCOS to allow Net Metering on Single Phase Meter and on the other Provinces across the country should facilitate financing of solar infrastructure of up to 3klw.

A sound long-term policy free from flawed as seen in previous power policies be introduced for manufacturing of Solar Panels and Inverters through joint ventures. Countries such as Türkiye, India and Bangladesh are ahead of us, and we need to learn from their experiences.

In conclusion, it is expected that when matter is referred to the NEPRA, instead of bowing before the Power Division, its members will hear all the stakeholders and decide the amendments, if any prospectively. This would save the net metering licence holders from the hassle of going for litigation, after all our courts are already loaded with millions of cases. ■

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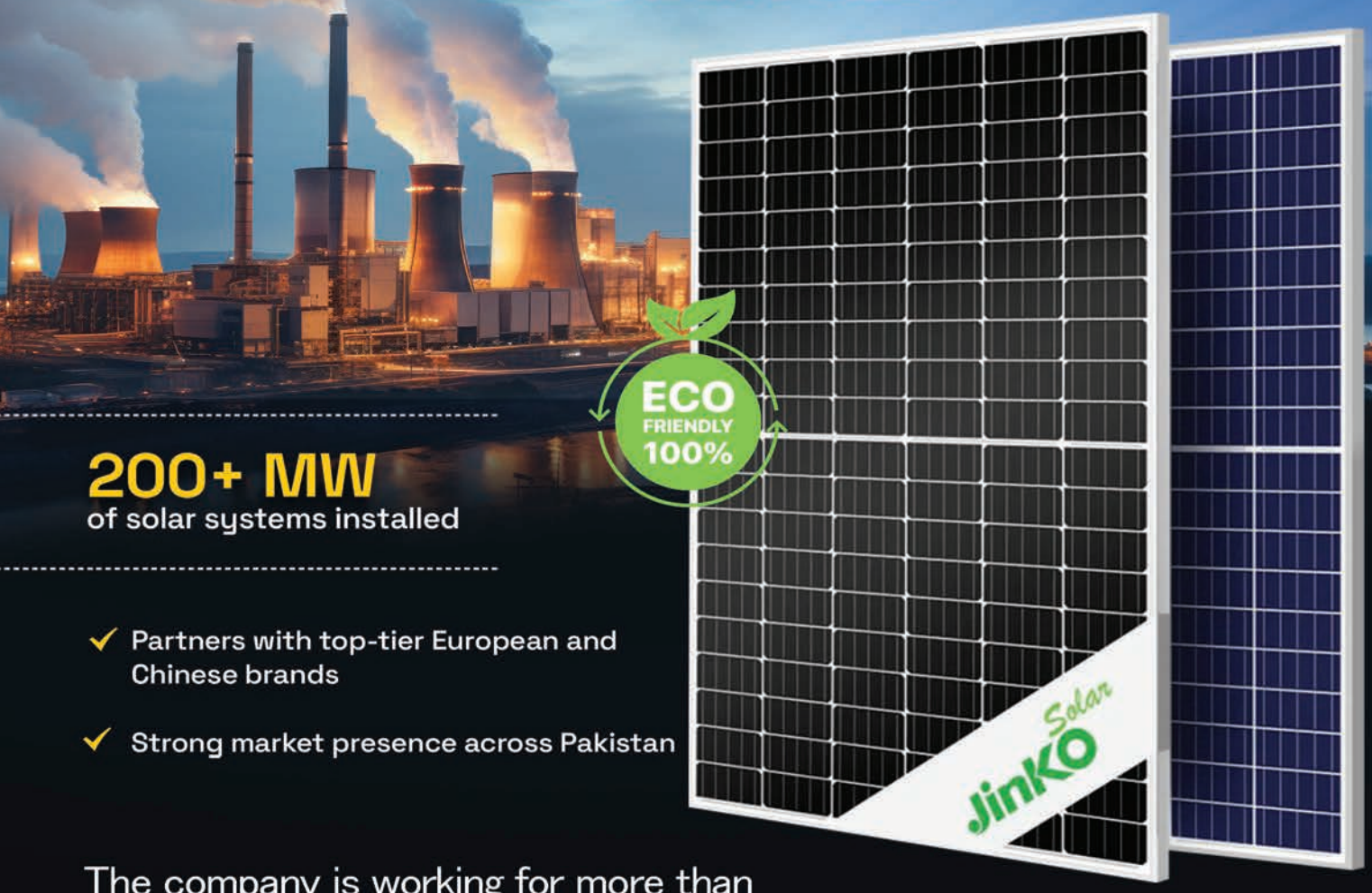


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## Pakistan-Iran gas pipeline project

# Pakistan should disregard US pressure

### Senator Mushahid Hussain Syed

**Muhammad Naeem Qureshi**

We lack courage to make tough decisions and instead, we continue to burden our people with increasing hardships, tells Mushahid in an interview with EU

I believe Pakistan should disregard American pressure and proceed with the construction of the Iran-Pakistan gas pipeline project. This was expressed by Senator Mushahid Hussain Syed, a well-known politician, former federal minister, and foreign affairs expert, during an exclusive interview with Energy Update. Here are the key points from his conversation on national, regional, international, and economic issues for our valued readers:

**Energy Update: Why has Pakistan's economy been struggling for so long?**
**Mushahid Hussain Syed:** The solution to Pakistan's economic problems lies within the country itself. The ongoing issues are a result of dishonesty, incompetence, and corruption within our own ranks. We lack the courage to make tough decisions and instead, we continue to burden our people with increasing hardships. Undoubtedly, the the government must make difficult choices to enhance our economy.

**EU: What should Pakistan's response be to American pressure regarding our cooperation with China under the China Pakistan Economic Corridor regime?**
**Mr Syed:** I believe we should resist American pressure, just like we resisted pressure from the US lobby in the past regarding our nuclear programme and the development of the atomic bomb. We have a history of ignoring American pressure and advice when strengthening our relationship with China during the times of Ayub Khan and Bhutto. Our alliance with China and CPEC is non-negotiable.

I also suggest considering the construction of the Iran-Pakistan gas pipeline project despite American pressure. India maintains friendly relations with the US while also expanding economic ties with Iran through the Chah Bahar port. We should not be intimidated by this situation.

**EU: What is your view on the US warning us about facing consequences if we proceed with the Iran-Pakistan gas pipeline project?**
**Mr Syed:** We need to remind the US to avoid double standards in this matter. If India is allowed to strengthen economic relations with Iran, Pakistan should have the same opportunity. We must stand firm, show courage, and make decisions that benefit Pakistan. We should not be afraid and instead focus on self-reliance in such situations, without waiting for approval from any foreign power.

**EU: What is your opinion on our dealings with the IMF?**
**Mr Syed:** Our people have the potential to address the economic challenge. All we need is a clear vision. I have met diplomats from various nations who have expressed their readiness to strengthen trade ties with Pakistan.

These countries also intend to enhance diplomatic relations with Pakistan, recognizing its strategic importance. Regarding our interactions with the IMF, I sincerely hope that this will be our final IMF-funded aid programme. Previously, we have been part of an IMF programme 23 times. This approach has been proven to be unsuccessful. The solution to our economic issues lies within Pakistan, not with the IMF. It is essential for our leadership from civil, military, media, and research sectors to collaborate and find a resolution. Countries worldwide are willing to invest in Pakistan.

Instead of seeking more financial aid, we should offer investment opportunities to our allies. Eliminating bureaucratic hurdles for foreign investors and ensuring their security are crucial steps. China, Saudi Arabia, the United Arab Emirates, Qatar, and Oman in our region are fully prepared to provide financial assistance to us in this regard.

# The macroeconomics of electricity tariffs

## Inflation in Pakistan has long been a slippery slope, influenced by a plethora of domestic and international factors

**Dr Khalid Waleed**



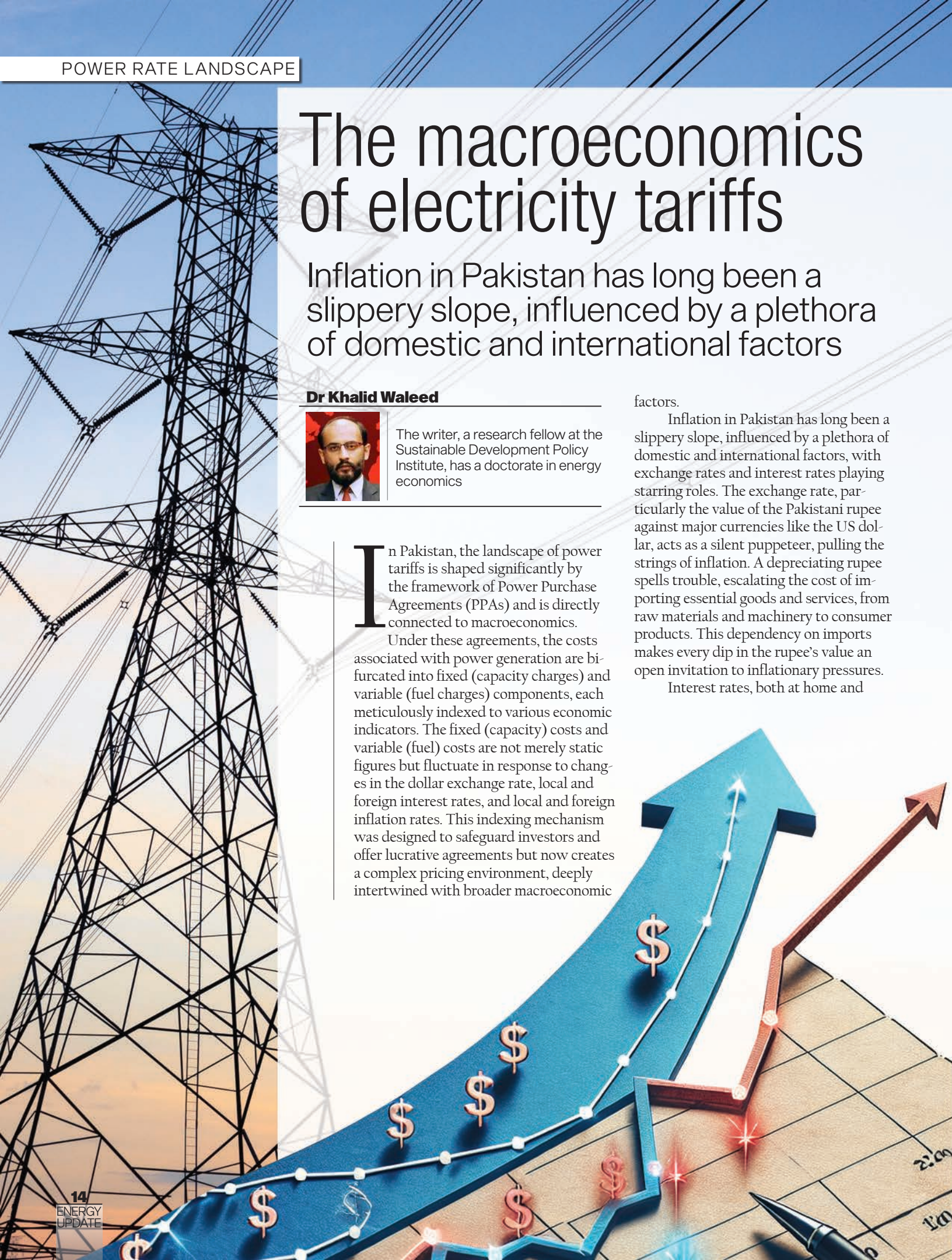
The writer, a research fellow at the Sustainable Development Policy Institute, has a doctorate in energy economics

In Pakistan, the landscape of power tariffs is shaped significantly by the framework of Power Purchase Agreements (PPAs) and is directly connected to macroeconomics.

Under these agreements, the costs associated with power generation are bifurcated into fixed (capacity charges) and variable (fuel charges) components, each meticulously indexed to various economic indicators. The fixed (capacity) costs and variable (fuel) costs are not merely static figures but fluctuate in response to changes in the dollar exchange rate, local and foreign interest rates, and local and foreign inflation rates. This indexing mechanism was designed to safeguard investors and offer lucrative agreements but now creates a complex pricing environment, deeply intertwined with broader macroeconomic factors.

Inflation in Pakistan has long been a slippery slope, influenced by a plethora of domestic and international factors, with exchange rates and interest rates playing starring roles. The exchange rate, particularly the value of the Pakistani rupee against major currencies like the US dollar, acts as a silent puppeteer, pulling the strings of inflation. A depreciating rupee spells trouble, escalating the cost of importing essential goods and services, from raw materials and machinery to consumer products. This dependency on imports makes every dip in the rupee's value an open invitation to inflationary pressures.

Interest rates, both at home and



abroad, are equally significant in this dance of macroeconomic variables. Domestically, the State Bank of Pakistan (SBP) wields interest rates like a double-edged sword. High inflation prompts the SBP to hike interest rates, aiming to dampen borrowing and spending. This, in theory, cools the economy and reins in inflation. However, the dilemma starts in the power sector – the higher interest rates increase the capacity charges of power plants, crippling the effectiveness of these maneuvers.

The interplay between exchange rates and interest rates creates a complex web that influences inflation in Pakistan. For instance, if the SBP raises interest rates to combat inflation, it could attract foreign investment, thereby appreciating the rupee and reducing import costs. However, this must be delicately balanced against potential drawbacks such as slower economic growth and rising unemployment. Additionally, global economic conditions, including commodity price fluctuations and geopolitical shifts, further complicate the picture, affecting both exchange rates and interest rates in multifaceted ways.

The macroeconomic landscape and power tariffs in Pakistan undergo quarterly adjustments, driven by a medley of factors. For instance, data from the Sahiwal coal power plant illustrates how these variables impact electricity generation costs and, consequently, power tariffs. Exchange rates are a linchpin in the power tariff equation, affecting the cost of imported fuels for power generation. From a reference period of 2016 and the exchange rate of Rs104.594/USD, the rupee has depreciated sharply to Rs278.500/USD in the April-June 2024 quarter. The tariff has been indexed to the US dollar and it reflects increases in various costs: fixed operating and maintenance costs have risen by 235 per cent, return on equity has increased by 184 per cent, debt repayment has gone up by 169 per cent, and interest charges have surged by 343 per cent.

Interest rates, both domestic and international, also bear heavily on power tariffs. The three-month KIBOR (Karachi Interbank Offered Rate) surged from 6.150 per cent to 21.990 per cent, while the three-month LIBOR (London Interbank Offered Rate) climbed from 1.380 per cent to 5.560 per cent. These higher rates inflate the cost of borrowing for power generation companies, with the cost of working capital soaring from Rs0.1541/kWh to Rs1.2568/kWh. The interest charge component of the tariff similarly rose from Rs0.3458/kWh to Rs1.5314/kWh, reflecting the escalating costs of servicing local and foreign debt.

This dramatic slide has skyrocketed the cost of imported coal from Rs13,605 per ton to Rs73,901.55 per ton. The ripple effect of this spike in import costs is a steep increase in power generation costs, inevitably passed on to consumers through higher tariffs.

Fluctuating global coal prices and calorific values further compound the issue. The weighted average price of imported coal has shot up, driving overall energy production costs higher. This is reflected in variable O&M costs for foreign components, which rose from Rs0.0763/kWh to Rs0.2554/kWh, and for local components, from Rs0.0628/kWh to Rs0.1246/kWh. The combined effect of these macroeconomic factors is a significant rise in power tariff components. The total capacity charge escalated from Rs3.2696/kWh in the reference period to Rs10.3445/kWh for the April-June 2024 quarter. The variable component of energy purchase price similarly climbed from Rs0.1391/kWh to Rs0.3800/kWh showing 173 per cent increase.

Thus, the macroeconomics of power tariffs in Pakistan is a complex interplay of exchange rates, interest rates, inflation, and global energy import costs. Each factor tugs and pulls, creating a challenging environment for policymakers who must balance the urgent need for affordable electricity with the realities of economic stability. As Pakistan navigates these choppy waters, the stakes are high, and the need for astute, responsive policymaking has never been greater.

A viable road forward for Pakistan involves a strategic focus on industrialization, recognizing the demand pressures of an expansive, imported fuel-powered electricity sector, and increasing the industrial share in power consumption.

First, a concerted push towards industrialization can help balance the scales by generating higher economic value from electricity consumption. This entails fostering an environment conducive to industrial growth through policies that incentivize local manufacturing, attract foreign investment, and support small and medium-sized enterprises. By enhancing industrial capacity, Pakistan can reduce its reliance on imported goods, thereby mitigating the inflationary impact of exchange rate fluctuations on imported fuel costs.

Second, understanding and managing the demand for electricity in an economy heavily reliant on imported fuels is crucial. This requires a multipronged approach: diversifying the energy mix by incorporating renewable energy sources, investing in energy efficiency technologies, and developing infrastructure to support more efficient energy consumption. These steps can help reduce the dependency on imported fuels and cushion the economy against volatile global energy prices.

Third, increasing the industrial share in power consumption can be achieved by designing tariffs that favour industrial users, promoting energy-intensive industries and ensuring a reliable and cost-effective power supply to industrial zones. Special economic zones (SEZs) and industrial parks with dedicated power supplies can also attract investment and boost industrial output.

Lastly, renegotiation of PPAs, and revisiting the indexation. Understanding the vicious cycle of increases in interest rates, exchange rates, and inflation is crucial, as these factors can significantly impact capacity charges and, consequently, local inflation.

In essence, by driving industrialization, carefully managing electricity demand, and increasing industrial power consumption, Pakistan can pave a sustainable path forward, enhancing economic resilience and stability, and bringing down the electricity tariff. In this way, the improvement in macroeconomic indicators can trickle down in the form of microeconomic prosperity. ■

# SIFC: a better role

## SIFC created with a mandate to facilitate much-needed investments from foreign public and private entities into Pakistan

**Aamir Mumtaz**

The writer is the outgoing Chairman of Pakistan Steel Board of Directors

The SIFC was created with a mandate to facilitate much-needed investments from foreign public and private entities into Pakistan. However, the country needs much more. The SIFC does not address the root cause of the country's economic ills – the absence of full-scale reform of the governance and economic structures of the country. Hence the mandate of the SIFC should be expanded to include the setting up of a National Reforms Council to define and implement full scale reforms of Pakistan's economy and governance.

The case for wholesale national reforms of all areas of the economy and governance structures is already well made. To date, no government of any form has been able to conceive a full set of reforms or sustain its implementation. Any reforms that have taken place have been too meagre or implementation has stalled. Most of these reforms were undertaken due to pressure of external bodies. Whereas the reform agenda belongs to the people of Pakistan, needs to be owned by the people of Pakistan and the responsibility to see it implemented also lies with the people of Pakistan.

The people of Pakistan cannot wait for the governing elites to develop consensus, agree to a charter of economy, etc., and develop the will to transform the economy and governance of the country. The reforms process needs to start now with full seriousness and commitment.

An independent National Reform Council (NRC) should be set up within the ambits of the constitution and in a way that it survives changes in governments. All political parties should be asked by the people of Pakistan to ensure its independence and ability to function without interference or pressure of any kind. Political parties should be judged on their commitment to reforms and their track record on implementing these reforms, when in power.

The NRC will be an asset of the people of Pakistan, who will stand behind it and support its agenda. The NRC will focus on reforming all aspects of the economy to deliver a sustainable, independent and developed economy to the people of Pakistan, so that it is permanently and irreversibly freed from resorting to seeking bailouts and assistance from any international organisation or country. The economy will need to undergo a full-scale redesign and transformation; cosmetic or firefighting measures will not be sufficient.

The NRC will be responsible for improving the performance of all functions of the federal and provincial government vastly, and instilling a culture of merit, high performance and delivery in all such units in a permanent and irreversible manner. The reforms programme must begin with the Civil Service to ensure government departments are discharging their responsibilities and delivering to the people of Pakistan as expected and to high standards.

Budgets, fiscal management, industrialization, management of national debt, controlling inflation, increasing employment, increasing exports, expanding the tax base, reforming pensions, energy sector sustainability, food security, environmental protection, education, local government, judicial, police and health reforms will be within the scope of this organization.

Reforms must change the incentive structure of all the stakeholders so that both the public and private sector is performing and working to build and develop the country. The NRC will launch policies and programmes that will mobilize the whole nation to adopt and practice a higher work ethic for the development of the country's economy.

The reforms unit will have three facets or capabilities. A) Subject Matter experts, who are able to consult, design and define the technical set of reforms in the given subject area. B) Implementation arm that will be able to roll out the reforms through new laws, procedures and practices, through proper implementation of existing laws, procedures and practices, using coercive, persuasive or incentive measures, track, measure and report on implementation status, remove obstacles and friction points and create team work and coordination mechanisms. C) Political arm that can negotiate changes that require political solutions, debate, persuasion, cost benefit articulation, highlighting of long-term national interest versus short-term interest, emphasis on collective benefit and equitable development, problem solving, negotiations and tradeoffs discussions with stakeholders.

This will also require media support to mobilize every citizen of the country to play their role in the development of Pakistan and take ownership of this endeavor. Transformation of Pakistan's economy is a national project that must involve and mobilize every citizen in the country; it cannot be top down.

The NRC must be composed of individuals who have a record or desire of selfless service to the country, possessing the required virtues for this task such as integrity, agency, care for all the people of Pakistan and the courage to overcome pressure. They must also have skills such as long-term thinking, technical ability, vision, meticulous planning, analysis, tenacity and problem solving. The unit cannot be staffed with retired bureaucrats. ■

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UN World Water Development Report 2024

# Freshwater use growing by just under 1% per year

Agriculture accounts for 70% of freshwater withdrawals, industrial 20% and domestic 10%; as economies industrialize, populations urbanize and water supply and sanitation systems expand

**Special Report by Mansoor**

Freshwater use has been growing by just under 1% per year, driven by a combination of socio-economic development and related changes in consumption patterns, including diet. While agriculture accounts for roughly 70% of freshwater withdrawals, industrial (20%) and domestic (10%) uses are the main drivers of increasing water demand.

As economies industrialize, populations urbanize and water supply and sanitation systems expand. The effects of population growth are not as prominent, as the places with the fastest-growing populations are often those where per capita water use is the lowest.Roughly half of the world's population currently experiences severe water scarcity for at least part of the year. One quarter of the world's population face 'extremely high' levels of water stress, using over 80% of their annual renewable freshwater supply.In lower-income countries, poor ambient water quality is mainly due to low levels of wastewater treatment, whereas in higher-income countries, runoff from agriculture poses the most serious problem. Unfortunately, water quality data remain sparse worldwide. This is especially true in many of the least developed countries in Asia and Africa, where monitoring and reporting capacity is lowest.

Emerging contaminants of concern include per- and poly-fluoroalkyl substances (PFAS), pharmaceuticals, hormones, industrial chemicals, detergents, cyanotoxins and nanomaterials. High concentrations of antimicrobials, originating from insufficiently treated domestic wastewater, livestock farming and aquaculture, have been found across all regions.Record rainfall extremes have been increasing worldwide, as have the frequency, duration and intensity of meteorological drought. Climate change is projected to intensify the global water cycle, and to further increase the frequency and severity of droughts and floods.

None of the Sustainable Development Goal (SDG) 6 targets appear to be on track. As of 2022, 2.2 billion people were without access to safely managed drinking water. Four out of five people lacking at least basic drinking water services lived in rural areas. The situation with respect to safely managed sanitation remains dire, with 3.5 billion people lacking access to such services. Cities and municipalities have been unable to keep up with the accelerating growth of their urban populations.Deficiencies in monitoring and reporting have made it extremely challenging to generate a thorough analysis of most other SDG 6 target indicators.

Agriculture is a key socio-economic driver of sustainable growth, livelihoods and labourThematic perspectivesAgricultureAgriculture is a key socio-economic driver of sustainable growth, livelihoods and labour. Broad-based rural development and the wide sharing of its benefits are effective means of reducing poverty and food insecurity. Agricultural production is vulnerable to climate-related water risks. In many semi-arid countries, dependence on rainfed agriculture and lack of access to agricultural water for millions of smallholder farmers reduces their production potential.

Irrigation stabilizes production, generating direct benefits (increased profitability and reduced risk of crop failure), as well as indirect benefits (employment, and balanced conditions of food and supply markets). In Sub-Saharan Africa, water is generally available for rural farmers, but capital investment is needed to expand small-scale irrigation. There is a need for

smallholder, people-centred investment as well as large infrastructure-related investments.

## Asia and the Pacific

Large populations in the region still lack access to WASH services, especially in rural areas, and water pollution has worsened in many of the region's most important river basins – eight of the top-10 rivers in the world contributing to marine plastic are located in Asia. Water scarcity and extreme events such as floods and droughts particularly impact less developed economies and vulnerable populations, exacerbating existing vulnerabilities associated with low development outcomes, and threatening peace and security at a national level.Pacific Islands also experience water scarcity and unique impacts from changes in climate. Even where freshwater is relatively abundant, saltwater intrusion due to rising sea levels continually threatens the available freshwater supply. The limited institutional capacity to manage water resources remains a significant challenge.

## Arab region

Transboundary and cross-sectoral cooperation is of crucial importance to the region, where 19 of the 22 states are below the water scarcity threshold. Two thirds of the freshwater resources are transboundary, and 43 transboundary aquifers cover 58% of the region's area. The challenges to fostering this cooperation include lack of data on water resources (especially groundwater) and competing demands for limited water resources among riparian states.In 2021, seven Arab countries were in conflict, including protracted conflict with wide-ranging implications for water supply and infrastructure and for potential cooperation on water-related issues. Cooperation has a key role to play in breaking through climate and conflict crises to ensure safe and secure access to water and sanitation for all. Response optionsGovernanceWater governance involves collective, multi-level action over water allocation and reallocation, contributing to prosperity and peace by addressing competition and resolving disputes. Effective and equitable water allocation encourages investment and benefit-sharing, and ultimately promotes social cohesion.Equitable governance arrangements, designed to manage complex trade-offs, are required to navigate tensions and redress injustices.

We are currently facing a water crisis that can be seen and felt in a multitude of ways. On the one hand, flooding and submersion hazards are growing. On the other, half of the global population is facing grave water shortages.

Between 2002 and 2021, droughts affected more than 1.4 billion people, causing the death of nearly 21,000 individuals. Let us state it clearly: this situation could bring about a systemic crisis in our societies. If humanity goes thirsty, fundamental questions on education, health and sustainable development will be sidelined, eclipsed by the daily struggle for water. This is the crucial dilemma raised by the 2024 United Nations World Water Development Report. The report brings new data to bear on this important debate, underlining – for example – that 50% of jobs in high-income countries depend on water, a figure that increases to 80% in the lowest-income countries. However, faced with these severe hydric challenges, the report also makes proposals – to reinforce water education, step up data collection to guide public policies, and increase private investment to ensure more sustainable management of water resources. For, as our report underlines, universal access to water for drinking, sanitation and hygiene will require an annual investment of around US $114 billion until 2030.

This is indeed a considerable sum – but the cost of inaction will be significantly higher. Finally, our 2024 report puts international cooperation at the heart of proposed solutions – in line with its theme, "Water for Prosperity and Peace". It takes as a starting point a simple fact: rivers, tributaries, lakes and aquifers know no borders. For this reason, over the years, water management has more often been a source of cooperation than one of confrontation. Recognizing well-managed and fairly distributed water resources as a driver of peace, UNESCO, works on a daily basis to strengthen cooperation on water and promote multilateralism as a response to transnational water issues. Firstly, UNESCO works to reinforce cross-border cooperation on water. In December 2022, we launched, with our partners, the Transboundary Water Cooperation Coalition at the first UN-Water summit on groundwater. This ambitious initiative, and the projects it supports, aim to bring together countries around the joint management of aquifers, lakes and river basins.

Extreme eventsIn terms of natural hazards, floods and drought are among the most devastating water-related disasters. Over the period 2002–2021, floods caused nearly 100,000 deaths (with an additional 8,000 in 2022), affected2 another 1.6 billion people (with another 57 million in 2022) and caused US$832 billion in economic losses (US$45 billion in 2022). Over the same period, droughts affected over 1.4 billion people, killed over 21,000 more and triggered US$170 billion in economic losses (CRED, 2023).Record rainfall extremes have been increasing worldwide, with tropical regions experiencing the strongest increase in extremes. One study estimated that, over the decade 2011–2020, one in four record-breaking rainfall events can be attributed to human-induced climate change (Robinson et al., 2021).Droughts can be characterized in terms of their severity, location, duration and timing. They are slow-onset phenomena that gradually intensify and whose impacts accrete over time.

Positive correlations have been detected in meteorological drought frequency, duration and intensity in Western Africa, East Asia, Central America, the Amazon and the Mediterranean between 1951 and 2010 (Chiang at al., 2021). Drought vulnerability is particularly complex to measure. To assess it, multiple economic sectors need to be taken into account, as well as social and environmental factors that vary across different geographical contexts

## Climate change

Continued global warming is projected to intensify the global water cycle, and to further increase the frequency and severity of droughts and floods, with more very wet and very dry weather and climate events, and seasons. The incidence of climate-related water- and vector-borne diseases is expected to rise across all regions, and there will be a higher frequency of substantial damages, and increasingly irreversible losses, in freshwater ecosystems.

Some of the most severe impacts will be felt in the least developed countries, small islands and the Arctic, particularly affecting indigenous communities, small-scale food producers and low-income households. Sustainable Development Goal (SDG) 6 seeks to ensure the availability and sustainable management of water and sanitation for all, focusing on drinking water and sanitation, the sustainable management of water resources, water quality, integrated water resources management (IWRM), water-related ecosystems, and the enabling environment. None of the SDG 6 targets appear to be on track. However, progress has been very difficult to measure. With the exception of drinking water and sanitation, deficiencies in monitoring and reporting have made it extremely challenging to generate a comprehensive analysis of most SDG 6 target indicators. ■

# Restructuring electricity tariffs

**Ammar Habib Khan**

The writer is an assistant professor of practice at the School of Business Studies, IBA, Karachi

Through a structure that reduces variable costs, it is possible to incentivize more consumption

The power value chain is a labyrinth, where an intervention at one end can result in a mix of intended and unintended consequences at the other. Electricity tariffs at the consumer level are largely determined through a cost-plus mechanism – wherein all costs associated with generation, transmission, and distribution of electricity are added together, and are a function of various factors, including fuel prices, interest rates, exchange rates, expected consumption, etc. These costs can be further broken down into variable costs and fixed costs.

The variable costs (or energy costs) in this case are largely fuel prices – wherein if electricity is generated, more fuel is consumed, and the variable cost incurred remains a function of prevalent price of respective fuel in the market. The fixed costs in this case are effectively capacity costs. These are the costs that are incurred to establish generation and transmission capacity, such that necessary generation and transmission capabilities are in place to generate and dispatch electricity as per demand.

The variability of temperature in the country entails that electricity demand peaks during the summer, thereby entailing the presence of incremental capacity to support peak demand during summer. It is estimated that peak demand is almost three times the demand for electricity during winter. Such significant variance in demand, which is a function of cooling necessitates the presence of incremental capacity such that uninterrupted supply of electricity is available during summer. Such incremental capacity comes at a cost, which is covered through incremental capital through a mix of equity, and debt. To pay a fair market return on equity, and to repay debt, and associated interest payments, necessary capacity costs are incurred.

As additional capacity has started generating electricity in the last few years, capacity costs associated with the same continue to increase, largely as a function of interest and principal repayment of debt associated with establishing these projects. Since most of this debt was in US dollars, any depreciation of the Pak rupee against the US dollar further increases these capacity costs. A contractionary monetary policy post-pandemic led to increase in interest rates in dollar terms from near-zero to more than five per cent – this led to significant increase in

debt servicing costs.

It is estimated that more than 95 per cent of consumer tariff is variable in nature, while the cost to generate, transmit, and distribute the same electricity has a 75 per cent fixed cost component. The sheer discrepancy in cost allocation has led to a situation where revenue collection (due to higher consumption) peaks during summer, while plateauing during winter.

Meanwhile, the high fixed orientation of costs ensures that costs are incurred uniformly throughout the year. This leads to higher cost of service, and all sorts of unintended consequences that are a function of severe cash flow mismatch. Even at the consumer level, the volatility in electricity bills (due to its highly variable nature) distorts household cash flows, since there is a significant cash outflow during summer, relative to winter.

There exists a case where consumer tariffs can be restructured, such that a fixed component is introduced, concurrently with lower variable costs, to institutionalize cash-flow smoothing. Such a structure can potentially reduce electricity bills during summer, while increasing them slightly during winter. Lower variable costs can also incentivize growth in electricity consumption, which is critical given a steady drop in consumption that has been witnessed over the last five years. Even though electricity consumption is largely inelastic, consistently high prices has led to a drop in usage through a mix of both lower utilization, and an exodus towards distributed solar generation.

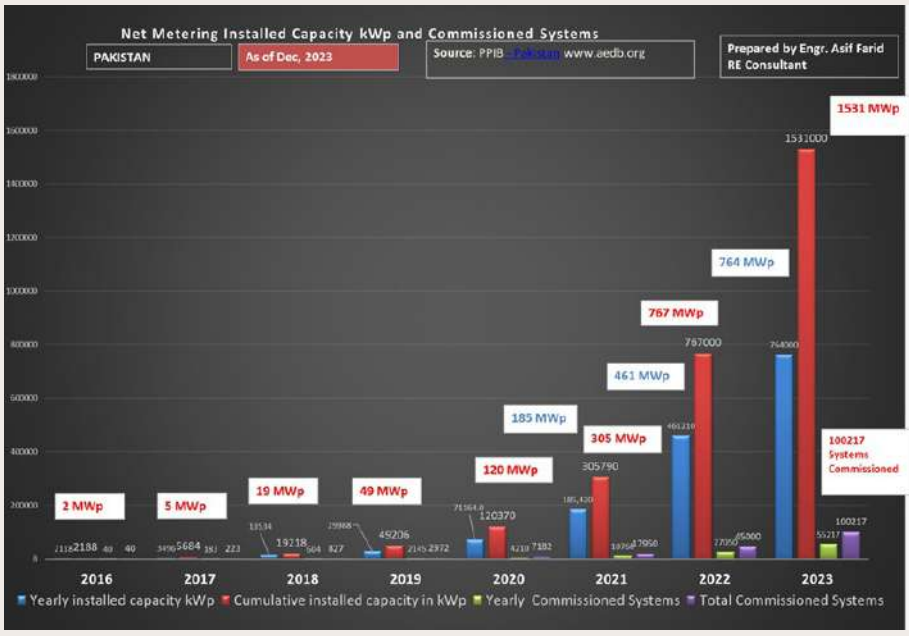
Through a structure that reduces variable costs, it is possible to incentivize more consumption. Having in place fixed costs (that closely mimic the actual cost of service) can considerably solve cash flow problems associated with the power value chain.

The quantum of fixed costs that are introduced should be such that the net increase in annual electricity bills does not change much, while making distribution of electricity bill more equitable throughout the year, rather than peaking during summer. Such costs must also take into consideration that updated electricity bills must not exceed a certain threshold of monthly household income for the more vulnerable segments.

There are no cookie-cutter solutions nor a magic pill to fix it all. It is only through unraveling one knot after another that we can reform the power sector. Restructuring tariff is one such knot – and a low-hanging fruit that can have a high multiplier effect which then positively impacts both businesses and households alike. ■



# Solar PV Distributed Generation Net Metering




**Engr. Asif Farid**

Renewable Energy Expert-Consultant

Net-Metering has taken off in the Pakistan and an exponential growth has been observed during the last few year. Due to current Government's "Ease of Doing Business" policy, simplification in the PPIB/AEDB certification regulations the number of business entities working in the net-metering framework are growing steadily.

As of Dec,2023, total net metering-based system commissioned approved by regulator stands more than 100,212 with the cumulative capacity of 1531 MWp contributed by more than 350 AEDB certified installer/vendors. While amazingly 764 MWp out of this capacity (with an increase of 55,000 commissioned project) have been added only within the year 2023 only, while the rest 767 MWp took six years to materialize since first net-metering installation in early 2016. The average system size is approximately 15.3 kWp per prosumer.

GIZ REEE II Project implemented by INTEGRATION (PVT) Ltd has supported PPIB/AEDB util Dec2023 and other stakeholders promoting the net metering in Pakistan. About 67 MWp capacity (4500 systems) are being adding on monthly basis by taking average value of the year 2023.

At one end we are promoting penetration of net metering based SolarPV into the system while other end there are concerns from the DISCOs with respect to revenue losses therefore officials are already in discussions to introduce new policies. The question remains what will be impact to existing or new consumer? Other reason is price reduction in the PV panels. It has been observed substantial increase in number of certified vendors under PPIB regulations more than 400 companies are registered and eligible to clear their Solar panels products easily while importing into to Pakistan from port. This not only creating the competition but also is increasing organizational/documentation work for PPIB to certified new vendors.

What is your expert opinion where this capacity will reach by end of 2024? and what will be expected value by 2025? will any other factors influence for increase or decrease of net metering in Pakistan? will growth remains steady? or sudden change can happen? Although very limited financing of 6% markup available from commercial banks as per SBP RE financing schemes. What will happen if more consumers are having access to SBP RE financing schemes? ■

# LONGi hosts Renewable Energy Forum

James Jin says LONGi hasdeveloped first Lighthouse Factory in PV Industry in Jiaxing in China; Tessori states promoting renewable energy sector is a commendable and necessary step; Shah claims solar panels will be provided to consumers who use up to 300 units of electricity

**Group Photo of Team LONGI headed by President James Jin with Governor Sindh Kamran Tessori and Minister Energy Sindh Syed Nasir Hussain Shah.**

**Mustafa Tahir**

LONGi, the global pioneer in green power and green hydrogen solutions, hosted LONGi's Renewable Energy Forum on May 20, 2024 in Karachi. The event brought together key industry leaders, government officials, and visionaries belonging to renewable energy field.

The event kicked off with a warm welcome session, followed by an inspiring welcome speech by James Jin, President of LONGi MEA&CA. He underscored LONGi's commitment to supporting Pakistan's energy transition, emphasizing the significance of LONGi's green power + green hydrogen capability, differentiated products and solutions, reliable lifecycle quality, value-added services, and LONGi's bankability in the region. Mr James also shared LONGi's dedication to innovative technology and its contribution to reducing the Levelized Cost of Energy (LCOE). Furthermore, he announced a new milestone: a record-breaking silicon heterojunction back-contact solar cell efficiency of 27.30%, marking LONGi's 17th world-record achievement in solar cell efficiency since April 2021, solidifying its leadership in the global solar energy industry.

Besides, he shared that LONGi had developed the first Lighthouse Factory in the PV Industry in Jiaxing, China, which significantly increased the manufacturing efficiency with more than 30 digital cases, while managing to produce 1 PV Module every 18 seconds.

Closing out his speech, he mentioned "The discussions made at this forum will significantly contribute to advancing Pakistan's clean energy transition. We look forward to continuing our collaboration with the Government of Sindh and other key stakeholders to drive sustainable energy solutions in the region."

Speaking at the event, Sindh Energy Minister Syed Nasir Hussain Shah stated that the Sindh government was working on green energy and would provide full support to everyone in this sector.

He emphasized the desire to set up plants for manufacturing solar panels and other equipment locally, with complete cooperation from the Sindh government. Shah mentioned that Chairman Bilawal Bhutto Zardari was working on promoting green energy and providing relief to the public, and in the near future, the government

plans to start distributing solar panels for free to the public. Solar panels would be provided to consumers who use up to 300 units of electricity, he said.

Sindh Governor Kamran Tessori stated that the energy crisis in Pakistan was acute. He warmly welcomed companies in the renewable energy sector to address this pressing issue. He said that given the high cost of electricity, solar energy had become indispensable, and it was high time we embraced it on a larger scale. The governor said: "Promoting the renewable energy sector is a commendable and necessary step. Pakistan has vast opportunities in the energy sector, with coastal areas being particularly significant."

The agenda included a technical presentation on LONGi's advanced products and solutions by Zubair Anwer Khan, Production and Solutions Manager, LONGi MEA&CA. After briefing the audience about LONGi Solar Cell technology roadmap, he presented technical insights for LONGi's cutting edge Hi-MO 7 Module. Moving on, he introduced and informed the audience about LONGi's recently launched Hi-MO 9 Module which delivers efficiency of up to 24.43%.

The event also contained an insightful and engaging panel discussion on "How Green Power + Green Hydrogen can Shape Pakistan's Energy Future". Alongside industry leaders, Charles Cheng, Head of Product and Solutions LONGi MEA&CA provided insightful perspectives on the potential and challenges of renewable energy in the region. He spoke about latest technologies in the Global Solar Industry and how Green Power + Green Hydrogen can help achieve Zero Carbon in Pakistan.

Sandy Jia, Head of LONGi Pakistan and Central Asia Branch, delivered the closing speech, expressing gratitude to all participants for their invaluable contributions to the forum. The evening concluded with a gala dinner, offering attendees an opportunity to network and discuss potential collaborations. ■


# Securing Energy for Pakistan

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# Govt should regulate solar energy industry:

## CEO Amica Energy

**Naeem Ahmed** says only PEC and AED-registered companies can import solar equipment, but unfortunately, govt has failed to enforce these prerequisites; describes taxing solar power equipment or products illogical; informs there is no tax on solar products worldwide; states we have completed installation of over 500 solar energy projects in a year

**Muhammad Naeem Qureshi**

"It is high time for the government to intervene and effectively regulate the solar energy sector in Pakistan to ensure that clean power systems do not pose risks to consumers' safety in our market."

This was stated by Naeem Ahmed, the CEO of Amica Energy, a rapidly expanding renewable energy company in Pakistan, during an exclusive interview with Energy Update. During the interview, he discussed the current status of the solar industry in Pakistan and its key challenges. Here are the significant highlights from his interview:

**Energy Update: Can you share your involvement in the Pakistani solar industry with our readers?**

**Mr Naeem Ahmed:** We have been active in the solar power sector for a decade, putting in significant effort to develop it. Our hard work has transformed this industry into a well-established market. Initially, the concept of rooftop solar systems for residential users did not receive adequate attention. However, our efforts have inspired many individuals to enter this field, leading to the establishment of numerous companies and EPC contractors.

**EU: How would you describe the current regulatory environment of the Pakistani solar industry?**

**Mr Ahmed:** The regulatory framework for the solar

power sector in Pakistan is currently lacking. Unlike in other countries, there is no stringent process for registration and licensing of emerging solar companies. To operate legally, an EPC contractor must employ with a minimum of 10 to 15 qualified engineers with relevant experience before obtaining the necessary licenses and permits. Given the technical nature of this industry and the intricacies of the products involved, it is crucial to engage only skilled engineers and technicians to ensure the proper functioning of solar systems post-installation. Unfortunately, many new solar enterprises in Pakistan do not have qualified engineers on their staff and often rely on external vendors for their projects. Consequently, the systems they install frequently fail to meet the global quality standards for the solar industry.

**EU: How crucial are safety protocols in the solar energy industry?**
**Mr Ahmed:** It is essential to consider safety protocols when installing a solar system, as it essentially involves setting up a full-fledged power plant on your rooftop. Unfortunately, vendors and installers in Pakistan often neglect the global safety standards required for this industry. Due to their negligence, these solar power projects can pose safety risks. Using a lithium-ion battery without proper safety protocols can lead to a serious hazard.

**EU: How significant is the government's role in enforcing safety protocols in the solar industry?**
**Mr Ahmed:** From my perspective, the government plays a vital role in ensuring that future companies comply with safety standards when seeking registration from the industry regulator. The recent restrictions imposed by the State Bank of Pakistan on imports mandated that only companies registered with the Pakistan Engineering Council and licensed by the Alternative Energy Development Board could import solar equipment. Unfortunately, the government failed to enforce these prerequisites. Currently, traders from other sectors are actively involved in importing solar equipment, leading to unregulated practices in our industry. It is crucial to adhere to global quality certifications and regulate the import of solar equipment based on these standards to prevent any hazardous situations for end customers.

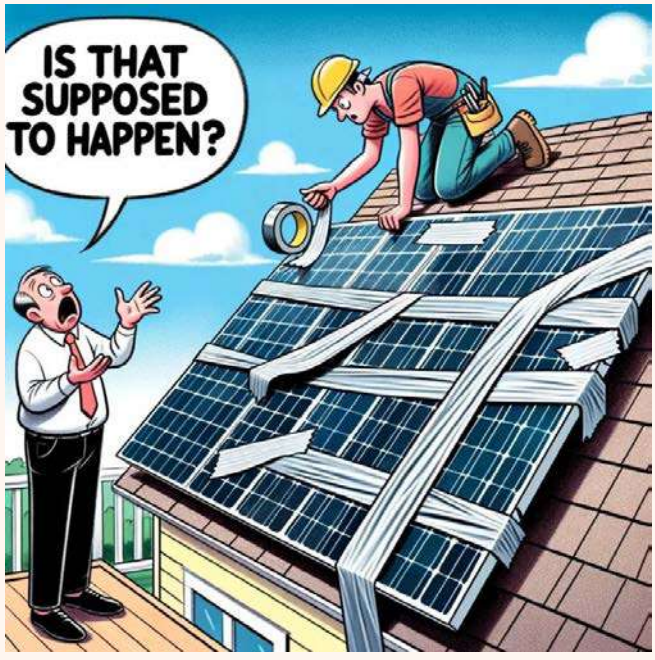
**EU: What is the future of most solar industry companies in Pakistan?**
**Mr Ahmed:** The end-consumers have been the main victims of this situation. Many companies in this sector may not be able to sustain their business in the future. Only companies with proper industry experience can ensure market sustainability. Only three to four companies are excelling in our market, ensuring services that meet global quality standards. Although there are another 100 to 150 companies in the market, none of them meet these standards. There is an urgent need to regulate this industry.

**EU: What is your view on the government's potential decision to tax solar products and reduce purchasing rates of electricity from consumers with rooftop solar systems?**
**Mr Ahmed:** Increasing solar power generation is beneficial to the national economy and the environment. Relying less on fossil fuels for power generation and increasing the use of this clean energy source in the country is crucial; therefore, taxing solar power equipment or products seems illogical to me. There is no tax on solar products worldwide. We should follow global best practices to promote solar energy. DISCOs have already been buying clean power from consumers with rooftop solar systems at rates three to four times lower than their own electricity rates. There is no need to further reduce these rates. DISCOs should actually increase these rates to incentivize customers to install rooftop solar systems. NEPRA, as the industry regulator, should increase these purchasing rates to encourage more consumers to adopt solar energy. The governments worldwide understand that they would benefit greatly from the increased consumption of renewable energy sources. Therefore, these governments subsidize the installation of new solar power plants in their respective countries.

**EU: How can solar system prices in Pakistan be significantly reduced to benefit the general power consumers?**
**Mr Ahmed:** Setting up assembly plants in Pakistan for the local production of solar panels and inverters would lead to a substantial decrease in the cost of solar power systems, making clean energy more affordable for all electricity consumers in the country.

**EU: Can you share information about your latest venture in the Pakistani solar industry?**
**Mr Ahmed:** We are a rapidly growing company in Pakistan's solar sector. Within just one year, we have completed the installation of over 500 solar energy projects, all of which are now operational. We prioritize quality and ensure full compliance with tax regulations by paying all dues to the government, regardless of our income. Our customers have expressed complete satisfaction with our services, often recommending us to potential clients interested in installing solar power systems.

**EU: Can you share information about the CSR initiatives of your new business?**
**Mr Ahmed:** We provide solar power systems to mosques and religious seminaries at discounted rates as part of our CSR commitments. Our solar systems have been installed in 100 major religious seminaries across the country following the same approach. ■



# A crisis of power in Pakistan

## Power sector faces rising electricity costs, inefficiencies across generation, transmission, distribution

**Anam Shoaib**

The writer is an associate director at CERP

Temperatures are soaring in Pakistan, as we edge into summer. This means our energy consumption is going to shoot up to over 29,000 MW. It also means that we're looking at more power cuts, planning our chores, work, and rest around unpredictable and unannounced load-shedding. As our air conditioners hum louder and fans whirl faster (when there is electricity), the strain on our fragile energy infrastructure becomes palpable.

Yet, the ramifications extend far beyond our homes. Our economic development is strangled, bound as it is by downtime and rising fuel costs. Manufacturing remains imperilled, as does agriculture, threatening livelihoods and food security. In October 2023, Pakistan had an energy deficit of 6,000 MW, incurring an import bill of $7 billion.

According to the National Electric Power Regulatory Authority's 2022 annual report Pakistan's installed generation capacity adds up to 43,775 MW, of which a paltry seven per cent comes from renewable energy sources.

Making an energy transition towards a sustainable future is critical.

Over the years, Pakistan's power sector has grappled with rising electricity costs, inefficiencies across generation, transmission, distribution, transmission limitations, underutilisation of efficient plants, mounting circular debt, and governance issues. These problems have persisted during the last fiscal year and show no signs of abating as we begin the next.

The liquidity of the power sector and electricity affordability for consumers has worsened, driven by heightened prices of essential primary energy sources such as coal, oil, and gas in the international market, compounded by the drastic devaluation of the Pakistani rupee. These factors intensified the financial burden on both the power sector and consumers, many of whom took to the streets last year, staging demonstrations and burning electricity bills they could neither reconcile with their scant consumption nor pay.

The shortfall in our energy supply is woefully inadequate to cater to the exponentially rising demand, driven by unimpeded population growth, industrial expansion and rapid urbanisation. Combined with the crippling climate crisis, and the need to make an energy transition towards a sustainable future becomes critical.

The appetite for change is theoretically always ripe. But to implement those changes requires a strong stomach.

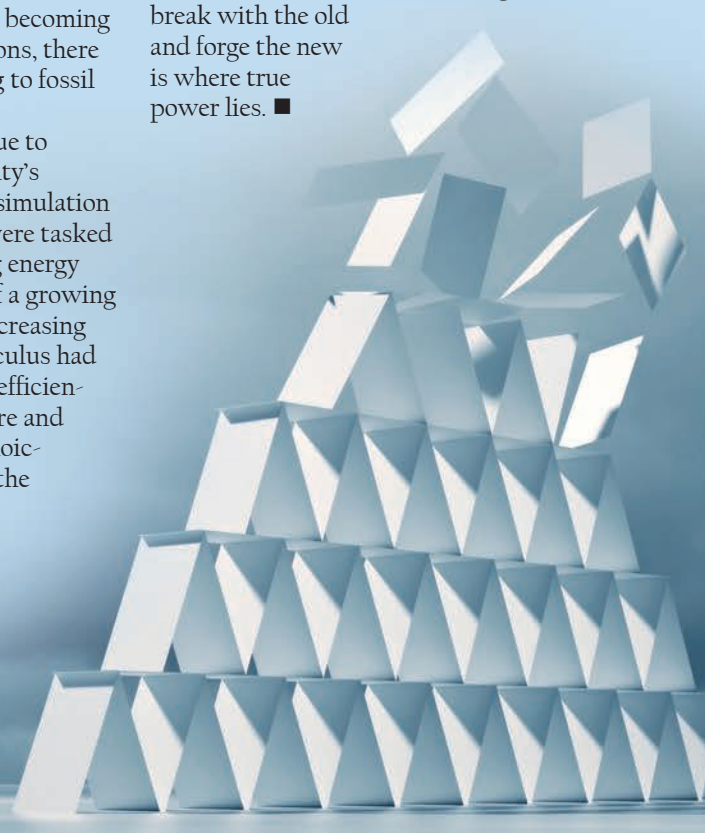
Pakistan has been vocal about its desire to invest in low-carbon energy but lacks the infrastructure to fully realise its benefits. There is no consensus among stakeholders and significant financial constraints. And with a population becoming more conscious of rising emissions, there is a reputational cost of sticking to fossil fuels.

This challenge is not unique to Pakistan. At Princeton University's Andlinger Centre for Energy, a simulation was conducted. Professionals were tasked with the challenge of increasing energy production to meet the needs of a growing population by 2050, without increasing net carbon emissions. Their calculus had to include clean energy, energy efficiency, net-zero fuels, carbon capture and sequestration. They fed their choices into a software that showed the consequences of every choice made. If they favoured renewable power heavily, they compromised affordability. If they tipped the scale and went with fossil fuels, they provoked a backlash. So how does one create cost-effective, socially acceptable and reliable sources of energy that do not heighten the risk of natural disasters or opposition from the energy industrial complex?

The answer lies in balancing Pakistan's short-term energy requirements to drive growth, with its long-term goal of transitioning to a more sustainable, efficient, and affordable power sector. A first step is to accurately forecast consumption and demand and develop a planning framework based on those figures. Experts in the field must evaluate alternative low-carbon energy investments, remedy the political economy challenges it presents and leverage synergies across different industries.

The vulnerabilities of the country's energy supply value chain offer insight into what needs to be addressed to absorb pricing shocks. Depleting natural reserves must lead to a rethink, not an overdependence on imported energy sources. Upfront costs of efficiency measures are a means to generate savings that will only bring benefits such as reduced imports, improved competitiveness and progress towards environmental goals.

None of this is easy, and there are no quick fixes. This is a long painstaking journey, the results of which may not bear fruit in time for the next election. But the price of the status quo, ineffective subsidies, delaying policy shifts and not including those most affected by the power crisis is one we cannot afford. Knowing when to break with the old and forge the new is where true power lies. ■



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# Impact of rising power sector debt on economy

**Mustafa Tahir**

The Writer is Deputy Editor of Energy Update

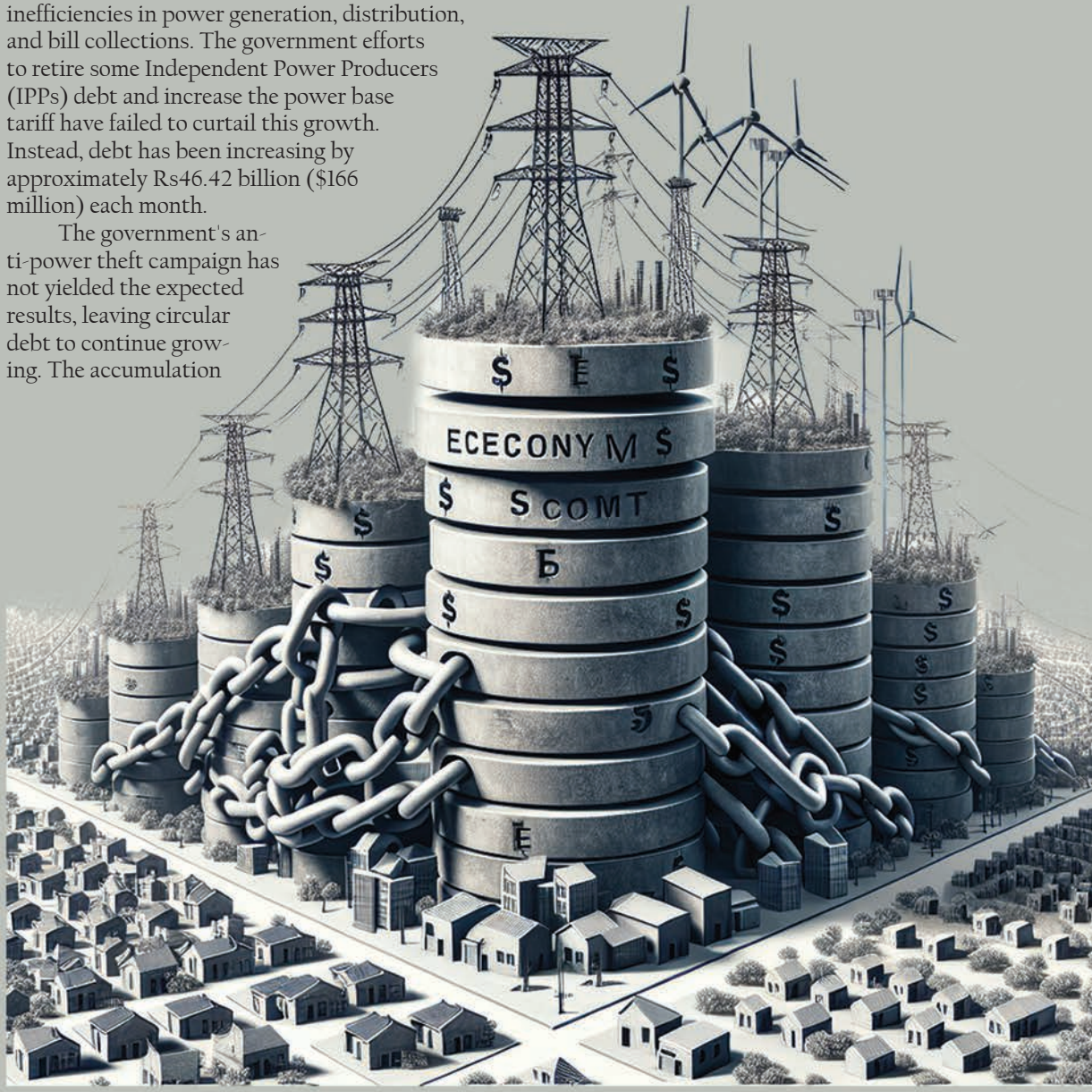
The debt surge reflects escalating inefficiencies in power generation, distribution, and bill collections; govt efforts to retire some IPPs debt and increase power base tariff have failed

Pakistan's power sector faces significant challenges as its debt ballooned to Rs2.635 trillion between July 2023 and January 2024, marking a 14 percent increase from the previous year. This troubling trend threatens the country's economic stability and highlights systemic inefficiencies within the energy sector.

The debt surge from Rs2.31 trillion at the end of the fiscal year 2022-23 to Rs2.635 trillion in just seven months reflects the escalating inefficiencies in power generation, distribution, and bill collections. The government efforts to retire some Independent Power Producers (IPPs) debt and increase the power base tariff have failed to curtail this growth. Instead, debt has been increasing by approximately Rs46.42 billion ($166 million) each month.

The government's anti-power theft campaign has not yielded the expected results, leaving circular debt to continue growing. The accumulation of payables to power producers, which surged by Rs326 billion to Rs1.76 trillion in seven months, underscores these inefficiencies. State-owned generation companies (GENCOs) also saw their payables to fuel suppliers rise to Rs111 billion.

The inefficiencies of power distribution companies (DISCOs) pose a significant burden on the financial health of the power sector. High losses and low bill recoveries impede the sustainable provision of energy services, resulting in elevated energy prices and increased business costs. From July to January 2023-24, DISCOs contributed Rs284 billion to the circular debt through losses, inefficiencies, and non-recovery of bills. This accounted for over 87% of the total addition of



Rs325 billion to the overall debt stock. Furthermore, Rs72 billion was due to interest payments on delayed payments to power producers.

Delays in recovering generation costs through quarterly and monthly fuel charge adjustments added Rs214 billion to the circular debt. Additionally, Rs11 billion was added due to non-payment by K-Electric, with the government noting Rs356.9 billion is receivable from K-Electric as of January 2024, pending resolution of a subsidy dispute.

The power sector's current trajectory suggests a continued increase in debt and inefficiencies unless substantial reforms are implemented. The sector's financial instability is exacerbating the country's economic challenges, including energy price inflation and the high cost of doing business. This situation deters investment and undermines economic growth, posing long-term threats to Pakistan's development.

To address these challenges, Pakistan must undertake comprehensive reforms in its power sector. Key steps include:

Enhancing Efficiency: Improving the efficiency of power generation, transmission, and distribution systems is crucial. Investing in modern infrastructure and adopting advanced technologies can help reduce losses and increase operational efficiency.

Strengthening Regulatory Framework: A robust regulatory framework is essential for ensuring transparency and accountability within the power sector. Strengthening the role of regulatory bodies can help enforce compliance and reduce inefficiencies.

Improving Bill Collection: Addressing the issue of low bill recoveries requires a multifaceted approach. This includes improving billing systems, implementing stricter penalties for non-payment, and enhancing consumer awareness about the importance of timely bill payments.

Reducing Dependence on Expensive Fuels: Diversifying the energy mix by increasing the share of renewable energy sources such as solar, wind, and hydropower can reduce reliance on expensive fuels like RLNG. This can help lower the cost of power generation and stabilize electricity prices.

Addressing Circular Debt: The government must prioritize the resolution of circular debt by developing a clear strategy for debt settlement and prevention. This includes timely payments to power producers, reducing subsidies, and improving financial management within the sector.

Promoting Private Investment: Encouraging private investment in the power sector can help bridge the financing gap and bring in expertise and efficiency. Creating a conducive investment climate through policy incentives and regulatory support is essential.

By implementing these measures, Pakistan can steer its power sector towards sustainability, reduce the economic burden of rising debt, and ensure a stable and affordable energy supply for its citizens and businesses. ■

NEWS ITEM

# Solar Tech Pvt Ltd and TOPAK International Inaugurate TOPAK PAKISTAN's Launch Event


Solar Tech Pvt Ltd, in collaboration with TOPAK International, proudly inaugurated the launch event of TOPAK PAKISTAN, marking a historic milestone as the first manufacturing venture for Lithium-ion batteries in Pakistan. This groundbreaking occasion signifies a new era in sustainable energy solutions for the country. The event was graced by distinguished attendees, including Mr. Peter Ko, CEO of TOPAK CHINA; Mr. Shahid Awan, CEO of Solar Tech & TOPAK Pakistan; Mr. Jun Wang, Director of International Marketing and Sales at TOPAK China; and Mr. Asfand Tariq, Country Head Sales at Solar Tech Commercial. Their presence highlighted the significance of this venture in advancing Pakistan's energy sector.

# UAE introduces Blue Visa


The United Arab Emirates (UAE) has unveiled the Blue Visa, a special ten-year residency permit designed specifically for environmental experts. This decision was made by the UAE cabinet, showing the government's commitment to environmental conservation. The Blue Visa is targeted towards individuals actively engaged in improving the environment, whether it's through research, advocacy, conservation efforts, or other initiatives. It's a recognition of the importance of their work in preserving the natural world, according to the UAE authorities. UAE Vice President, Prime Minister and Ruler of Dubai Sheikh Mohammed bin Rashid Al Maktoum announced the introduction of the Blue Visa via social media channels.

HUAWEI

Huawei Fusion Solar achieves breakthrough in Industrial Scale Energy Storage solutions through an agreement signed between Liberty Mills Limited and Huawei VAP Partner Bahum Associates.

The 4 MWh BESS will be deployed as part of a unique, first of its kind Microgrid in Pakistan, powered by both Renewable and Conventional Power Sources including Solar, Wind, Gas Powered Gensets and Utility Grid.

The BESS will be utilized for providing backup power, minimizing production losses by preventing tripping of critical loads and providing ancillary services for short-term Grid Stability.



# NFEH Celebrates World Environment Day:
# Sindh Government Strengthens Environmental Regulations


The Sindh government has pledged to reinforce the operations of the provincial environmental watchdog to ensure strict adherence to the conditions set in clearance and no-objection certificates issued to industries and institutions, aiming to reduce pollution instances. This assurance was given by Sindh Environment Minister Dost Muhammad Rahimoon while addressing an interactive dialogue organized by the National Forum for Environment and Health (NFEH) on World Environment Day. The dialogue focused on "SDG no. 15 - Life on Land."

Minister Rahimoon acknowledged the need for the Sindh Environmental Protection Agency to enforce environmental laws and regulations more stringently, particularly within the industrial and transport sectors, to minimize urban pollution. He also committed the Sindh government's support for the installation of combined effluent treatment plants in Karachi's industrial zones. Additionally, Rahimoon stressed the importance of municipal bodies adhering to environmental by-laws to curb solid waste discharge into the sea.

Highlighting the financial commitment, Rahimoon revealed that Rs 29 billion is spent annually by the Sindh Solid Waste Management Board to maintain cleanliness in Karachi and Hyderabad. He urged other municipal agencies to contribute effectively to solid waste management within their jurisdictions.

The Minister reiterated the Sindh government's solidarity with NGOs and activists working towards environmental improvement, including tree plantation drives.

In his keynote address, Prof. Dr. Noman Ahmed, Dean of the Faculty of Architecture and Planning at NED University, emphasized the alarming rise in maximum summer temperatures in urban areas, citing a 0.5-degree Centigrade annual increase. He attributed this trend to flawed urban planning and the construction of tall buildings on small residential plots. Dr. Ahmed also noted the adverse impacts of expensive gated communities encroaching on farmlands and wildlife sanctuaries.

Senior environmentalist Saqib Ejaz Hussain pointed out the critical decline in Karachi's green cover, which has reduced to just one percent. He called for concerted efforts to increase tree plantation to cover at least 25 percent of the area, as per international standards. Hussain praised the Sindh government's mangrove plantation initiatives aimed at enhancing the coastal marine environment.

Gulzar Feroze, Convener of the FPCCI Standing Committee on Environment, recommended the construction of at least five combined effluent treatment plants to manage industrial waste from Karachi's seven industrial zones. He also urged a ban on polythene shopping bags to prevent drainage system blockages.

Senior environmental journalist Shabina Faraz linked the lack of environmental regulation enforcement to prevailing political instability. Naeem Qureshi, President of NFEH, advocated for expanding environmental mitigation and urban planning initiatives across all cities in Sindh. He announced NFEH's ongoing commitment to tree plantation drives in collaboration with government agencies and NGOs. Ruqiya Naeem, Secretary-General of NFEH, emphasized the collective responsibility of all stakeholders in improving the country's environmental conditions.

This report highlights the Sindh government's renewed commitment to environmental regulations, reflecting the collaborative efforts required for sustainable urban development. ■

## Tree Plantation at Naya Nazimabad


# Hopewind's seminar on net metering, distributed generation policies held

## Well-off consumers with rooftop solar systems should have the opportunity to donate excess clean energy to charitable causes, says Moin M Fudda

**Khalid Iqbal**

Well-off consumers with rooftop solar systems should have the opportunity to donate excess clean energy to charitable causes, benefiting deserving segments of society.

Moin M Fudda, former managing director of the Karachi Stock Exchange and ex-chairman of Central Depository Company of Pakistan, suggested this to the government regarding the potential revision in net metering policy in the country. Fudda, a prominent figure in the Pakistani and foreign insurance industry, made these remarks at a seminar on net metering and distributed generation policies organized by Hopewind.

He emphasized that incorporating philanthropy into the net metering system would allow generous consumers to support deprived communities and institutions by donating surplus electricity. Specifically, he highlighted the potential benefits for underprivileged areas in Karachi, such as Lines Area and Lyari, where residents struggle to pay their electricity bills, especially during peak summer months.

Fudda also stressed the positive impact of such a donation program on mosques, seminaries, and charities that face challenges in meeting their electricity requirements due to financial constraints. Furthermore, he urged the government not to impede industrialists and businessmen planning to install large off-grid solar power systems with significant generation capacity, as this would help them avoid costly grid electricity purchases for their operations.

Syed Salman Mohiuddin, Hopewind Regional Head, stated that only 5.4% of the country's 40,000 MW installed power generation capacity is based on renewable energy sources like wind and solar power. He highlighted that hydropower contributes around 25% to Pakistan's power mix.

He emphasized that Pakistan must achieve the goal of generating 60% of its electricity from renewable energy sources, including hydropower, by 2030, as achieving this target in the next six years is highly unlikely.

**Syed Salman Mohiuddin, Regional Head Hopewind**

**Moin Fudda, Green Energy Expert, Engr. Mehfooz Qazi Director Sindh Solar Energy Projects, Raza Zaidi Country Manager Hopewind, M. Naeem Qureshi Managing Editor Energy Update and Engr. Irfan Ahmed Energy Expert Addressing at Seminar**


**Group Photo of Hopewind Team with Guest and Speakers**

**Syed Salman Mohiuddin, Regional Head Hopewind presenting memento to Moin Fudda**

**Syed Salman Mohiuddin, Regional Head Hopewind presenting memento to Engr. Mehfooz Qazi**

**Syed Salman Mohiuddin, Regional Head Hopewind presenting memento to Engr. Irfan Ahmed**

He suggested that the government should promote the installation of rooftop solar systems to meet its clean energy generation targets.

He advocated for the implementation of an inclusive policy for a net metering system in the country, with specific provisions for domestic, commercial, and industrial consumers.

He opposed any proposal by the government to introduce a gross metering system for the domestic sector, which accounts for approximately 50% of total power consumers in the country.

Mohiuddin believed that implementing gross metering for domestic consumers with rooftop solar systems would not be a viable option as it could hinder the further growth of the clean energy market in the country.

Clean energy expert Irfan Ahmed, speaking at the seminar, proposed that provinces should be given the authority to oversee wind and solar power projects since renewable electricity is a distributed generation resource.

He recommended that wind or solar power generated in Sindh be consumed within the province rather than being transmitted to other regions through the NTDC transmission system, which has significant technical limitations.

He revealed that net metering systems in Pakistan had a total generation capacity of no more than half a gigawatt of electricity, while in Germany, the same systems had an installed capacity of 45 GWs. He suggested that smaller grid companies should be established, similar to Germany, to address net metering issues instead of involving large power distribution companies that are not equipped to handle such micro-level power generation systems.

Mehfooz A Qazi, Director of the Sindh Solar Energy Project (SEEP), stated that federal authorities had informed top Sindh government officials that no taxes would be imposed on solar power equipment, and the policy for power consumers who have already installed net metering systems would remain unchanged.

He emphasized that the installation of rooftop solar systems aligns perfectly with the government's policy to maximize clean energy production in the country to address the challenge of climate change.

He mentioned that the SEEP had utilized rooftop space in public sector buildings in Sindh to install solar power systems with a total generation capacity of 50 MWs, out of which 21 MWs were installed in government-run hospitals. ■

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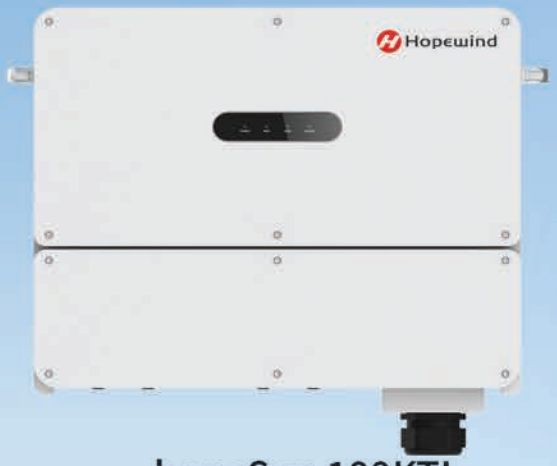


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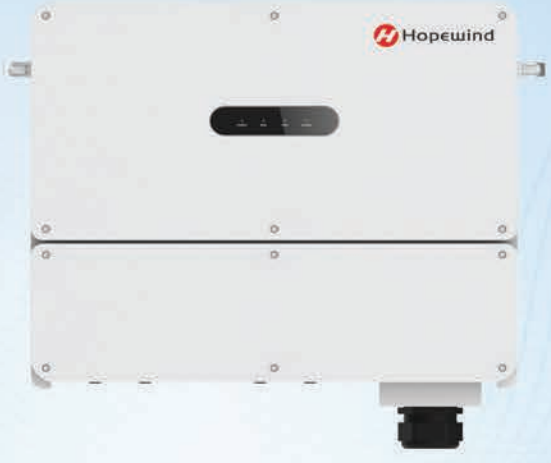


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OIL & GAS
CONFERENCE PAKISTAN

# Discussion held on deregulation, challenges, growth of fossil fuel industry

At a critical juncture when there is a worldwide movement towards rapidly shifting from fossil fuels to green energy sources to sustainably power homes, factories, and markets; a conference took place in Islamabad at the end of May 2024 to delve into the history, current state, and future prospects of the Pakistani oil and gas sectors.

The Monthly Energy Update, continuing its tradition of hosting interactive forums and dialogues on various aspects of alternative and conventional energy sources for powering our homes and workplaces, organized this conference at Serena Hotel in the federal capital.

The Energy Update collaborated with the Ministry of Energy (Petroleum Division) and Oil and Gas Regulatory Authority (OGRA) in Pakistan to organize the Oil & Gas Conference Pakistan-2024. The aim was to bring together all key stakeholders of the Pakistani fossil fuel market for an interactive dialogue.

Former Prime Minister Shahid Khaqan Abbasi, who previously served as the Federal Petroleum and Natural Resources Minister, and the current OGRA Chairman, Masroor Khan, were the keynote speakers at the event. They, along with other representatives from the Pakistani oil and gas industries, discussed in detail the issues, challenges, and prospects for the growth of the fossil fuels sector. Among the topics covered were the measures needed to ensure the sustainable operations of Pakistani fuel industries, minimizing harm to the national economy and environment. They also explored the technological advancements that oil and gas companies should implement to enhance their operations.


**Group Photo of Inaugural session of Former PM Shahid Khaqan Abbasi, Chairman OGRA Masroor Khan and others**

Other topics addressed during the event included the overdue deregulation and privatization of the Pakistani energy sector, safety protocols for the oil and gas industries, as well as the widespread issue of smuggling and illegal sale of petroleum products in Pakistan.

Speakers at the conference emphasized the significance of deregulating the petroleum sector and underscored the necessity of eliminating obstacles to the development of the oil and gas industries in the country.

They were of the view that all stakeholders, including the government and regulators, should sit together and devise a concrete strategy in the larger national interest to counter various mafias creating

**Former PM Shahid Khaqan Abbasi presenting shields to sponsors of oil and gas conference 2024**

**Former PM Shahid Khaqan Abbasi, Chairman OGRA Masroor Khan, Chairman OCAC & CEO ARL Adil Khattak, EDHR OGDCL Shahzad Safdar, Barrister Sarah Kazmi, Sarmad H. Sharif (PEL), Naeem Qureshi ME Energy Update, Halima Khan & Engr. Nadeem Ashraf addressing at Oil and Gas Conference 2024 Islamabad**

hurdles in the promotion of this important sector

Speaking as the keynote speaker, the OGRA Chairman Masroor Khan said that OGRA was providing facilities to the industry through its regulatory framework. The OGRA was also assisting the industry to cope with the emerging challenges, he said.

He said there were 180 oil terminals in the country and petroleum stock for 20 days was available. There were also 3000 illegal petrol stations for which necessary steps were required to eliminate such fuel pumps.

Despite the dying state of the CNG sector, the regulator has received several applications for setting up new CNG pumping stations in the country, he said.

He said that currently there were two LNG terminals, and the process for setting up three additional terminals was under progress, while 10 more applications have been received for setting up virtual LNG terminals.

The OGRA Chairman said that the current share of LPG in the energy mix stood at 1.3 per cent with 5000 metric tonnes per day of consumption. He, however, said the LPG share would likely touch 6 to 8 per cent in the next seven to eight years with 10,000 metric tonnes per day consumption in the country.

He said there was a huge opportunity to make an investment in setting up LPG storage, transportation, and standard cylinders in the country, adding that OGRA was ready to provide full cooperation to the investors in this regard.

Speaking on the occasion, former prime minister Shahid Khaqan Abbasi said that there was a huge potential in the energy sector of the country. Due to depleting gas reserves, the use of LPG is increasing as serious efforts are required to resolve the energy crisis.

He went on to say that despite awareness of the grave energy crisis, timely decisions were not taken to address this problem. "Everyone knows the problems being confronted in the energy sector, and now is the time to take decisions to resolve them," he said.

Abbasi said the cabinet had decided to deregulate the petroleum sector in 2018, but unfortunately, it was not yet deregulated. The petroleum sector in the entire world had been deregulated but in Pakistan, it was partially deregulated, he said. Let the private sector take over the petroleum sector, he added.

He said the petroleum sector could not flourish in the country due to a lack of timely decisions.

He said that Pakistan in the present day has various effective forums, including the Special Investment Facilitation Council, for making solid and timely decisions in this regard.

The former PM said it took three years to set up a petrol pump in Pakistan. The refinery policy has been delayed for

**Former PM Shahid Khaqan Abbasi presenting shields to sponsors**

**A Glimpse of Audience**




eight years, and everyone was aware of the issue, he said.

Chairman of Associated Group, Iqbal Z Ahmed, stressed the need to remove bureaucratic hurdles to bring improvement to the energy sector. He also called for innovative decisions to flourish the energy sector in the country.

He also stressed the need for the promotion of local production of LPG rather than focusing on importing it.

MD Attock Refinery Limited Adil Khattak urged the government to take strict measures to control the smuggling of oil as it caused huge losses to the national exchequer. He said that although some measures were taken to curtail the smuggling of oil, more efforts should be made in this regard.

He went on to say that unfortunately, in the last several years, no new oil refinery has been set up in the country. He added that a high level of capital investment was also needed to upgrade the oil refinery.

In his welcome address, the Chairman of the Organising Committee, Muhammad Naeem Qureshi, said that the conference aimed to showcase Pakistan's potential in the energy sector, focusing on advancements in domestic production, exploration, and sustainable practices.

He said the conference would explore strategies for enhancing energy security, reducing import reliance, and promoting local energy resources. The event would feature a diverse range of sessions covering key themes such as exploration and production strategies, renewable energy integration, regulatory frameworks, technological advancements, and investment opportunities, he added.

Other speakers including Senior ED OGDCL Shahzad Safdar, Ali Talha Tamimi , Andrzej M Kaczorowski, Arshad Hussain Partner at Energy Resource Managemen,t Barrister Sarah Kazmi, Halima Khan, Sarmad Hassan Shareef, PEPL; Razi Uddin Razi; Shahid Karim, Firsat Shah , Dr. Saeed Jadoon and others also spoke on the occasion.

Later mementoes were distributed among the speakers and sponsors of the event.


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# Growatt hosts seminar on clean energy

**Mustafa Tahir**

Growatt recently hosted a highly seminar in Peshawar, focusing on renewable energy solutions. The event marked a significant milestone for the solar energy sector in the region, drawing an impressive array of attendees including high-ranking government officials and influential figures from the private energy sector.

This seminar highlighted Growatt's commitment to promoting sustainable energy practices in Pakistan. Growatt, renowned for its exceptional quality and reliability, has built a strong reputation throughout the region. Their inverters are widely recognized for their advanced technology and efficiency, making them a preferred choice for both residential and commercial applications. During the seminar, Mr. Mian, the Country Head - Pakistan, delivered an insightful presentation on the importance of renewable energy in the country. He emphasized Growatt's impressive track record, detailing the company's innovative products and ambitious future goals. Among the key products showcased were Growatt's hybrid inverters, which seamlessly integrate solar power with battery storage, providing a reliable energy solution even during power outages.

The Max series of inverters, designed for large-scale solar installations, offer high efficiency and robust performance, making them ideal for industrial use. Additionally, Growatt's battery-ready solutions allow for easy upgrades to existing solar systems, enhancing their versatility and longevity.

This seminar not only reinforced Growatt's leadership in the renewable energy market but also underscored the growing importance of sustainable energy solutions in Pakistan's energy landscape. The event was a resounding success, reflecting the strong interest and commitment of both public and private sectors towards a greener future.

Glimpses of Audience


Group Photo of Participants, Speakers with Country Head Growatt Mian Fahad


Country Head Growatt Mian Fahad addressing the seminar


Marketing Manager Growatt Hassam Aziz addressing the seminar


Country Head Growatt Mian Fahad with respective participants

Country Head Growatt Mian Fahad with respective participants

# Understanding Net Metering:

# Regulations and Implementation


**Chaudry Ali Ghafoor**

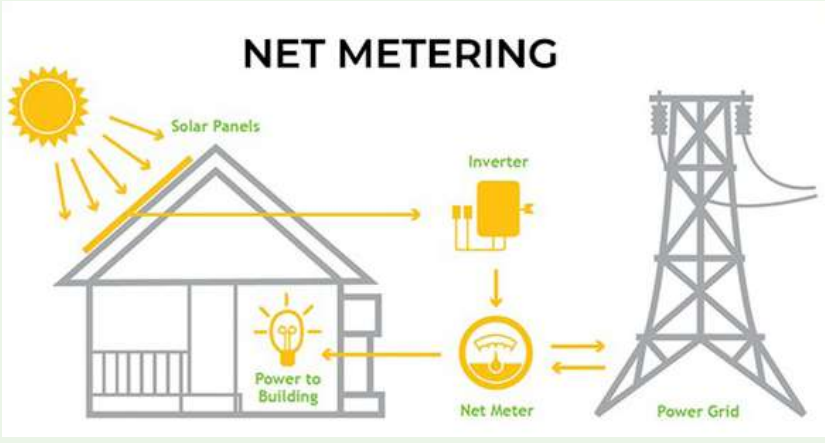
(CEO of Arzachel)

Net metering serves as an incentivizing program for distributed generation; a consumer has the opportunity to install an on-site renewable energy power plan

Net metering serves as an incentivizing program for distributed generation, commonly utilizing renewable energy sources. Within the framework of net metering, a consumer has the opportunity to install an on-site renewable energy power plant primarily aimed at reducing their reliance on the grid. Simultaneously, the consumer gains permission to interconnect with the grid and is permitted to supply any excess energy units generated by their installation to the electricity grid. These surplus units are meticulously recorded and subsequently deducted from the total units consumed from the grid, a process known as "netting-off." Through this mechanism, net metering effectively encourages consumers to invest in decentralized renewable energy systems.

The Government of Pakistan actively promotes and facilitates the utilization of renewable energy (RE) sources across the nation, with the Alternative Energy Development Board (AEDB), now merged into the Private Power & Infrastructure Board (PPIB), spearheading these efforts. Distributed Generation and Net Metering constitute integral components of the overarching RE policy.

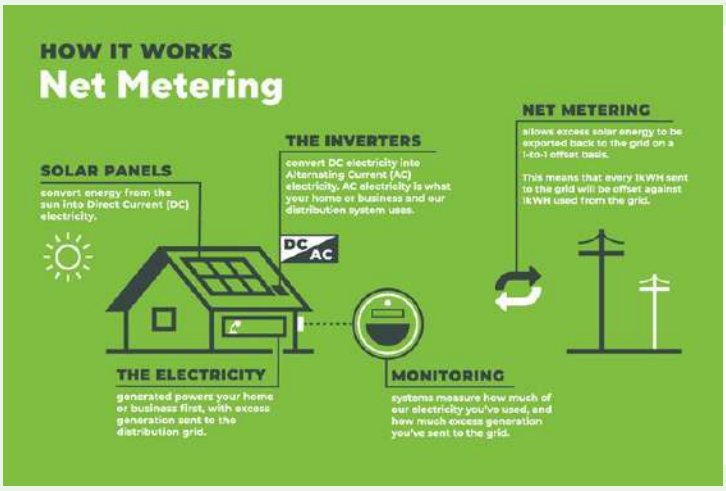
On September 1st, 2015, the NEPRA - National Electric Power Regulatory Authority officially unveiled the Distributed Generation and Net Metering Regulations. These regulations empower any customer of the electric grid, including those with three-phase connections, to obtain grid connectivity and enter into a net metering agreement for on-site small-scale renewable energy installations of up to 1 MW capacity.

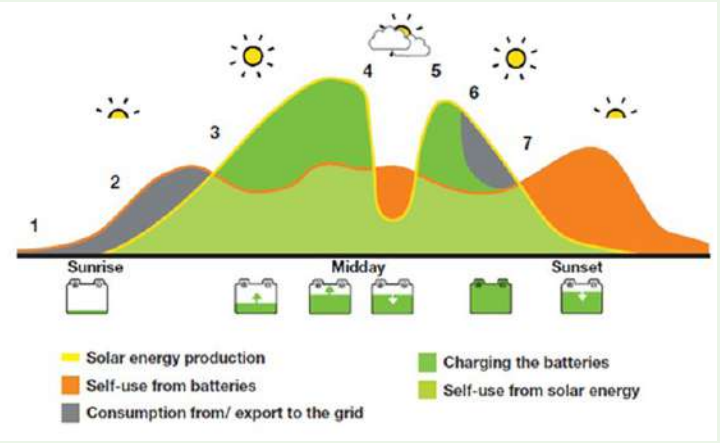



procedure, licensing, rights and obligations, terms and agreements, protection requirements, interconnection protocols, metering procedures, and billing processes. Additionally, the Alternative Energy Development Board (AEDB) has issued comprehensive reference guides for both Distribution Companies (DISCOs) and consumers. These guides meticulously outlines interconnection prerequisites, protection standards, load flow studies, and other detailed requirements.

Pakistan, as a signatory to the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC), is committed to transitioning to 60% renewable energy (including hydropower) and achieving 30% electric vehicle adoption by 2030, alongside a complete ban on imported coal. These targets are outlined in Pakistan's Nationally Determined Contributions (NDC).

The Government of Pakistan (GoP) has established ambitious targets to increase the




share of renewable energy to 20% by 2025 and 30% by 2030, as stipulated in the Alternate & Renewable Energy (ARE) Policy of 2019 and the National Electricity Policy (NEP) of 2021.

Escalating grid electricity prices have compelled consumers to explore alternative resources, particularly solar energy, as a more cost-effective option. Advancements in solar panel technology and cost reductions have made distributed energy resources (DER) increasingly viable, with shorter payback periods, thus enhancing their attractiveness for adoption.

The European Union's Carbon Border Adjustment Mechanism (CBAM) is set to impose carbon fees on imports into the EU from non-member countries. This means that by 2030, Pakistan's largest export destination will prioritize renewable energy sources as a trade requirement. The CBAM regime will extend to all industries, including textiles, which form a significant portion of Pakistan's exports.

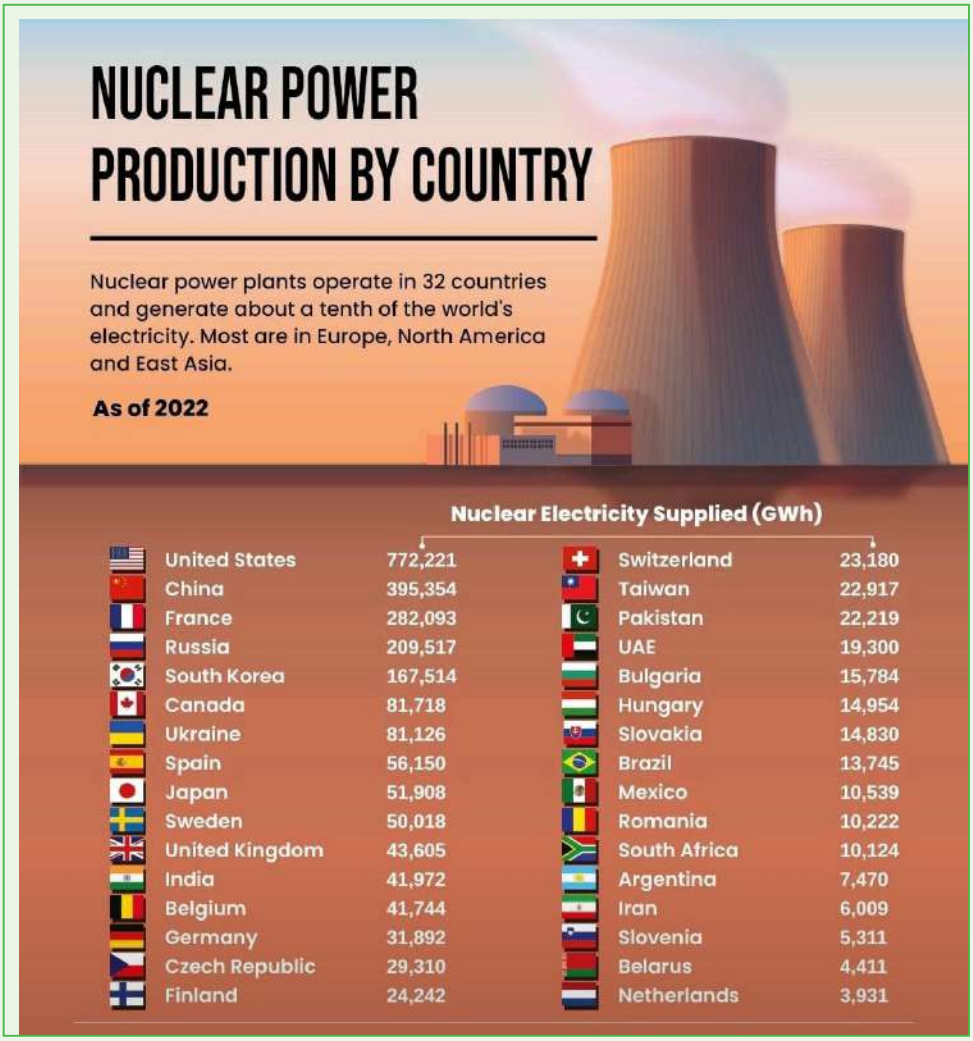
Net Metering is only allowed on 3 Phase connections as time of use (TOU) billing is not applicable on a single-phase load.

First let's understand how Time of use (TOU) billing works – The idea behind TOU rates is to encourage customers to use energy during off-peak hours when demand is lower, which reduces the pressure on the power grid and helps keep costs down for everyone. TOU helps align consumers' costs with the actual cost of electricity production and incentivizes them to adjust their power consumption habits to lower their overall electric bill.

In Pakistan, TOU rates are divided into two different pricing periods: off-peak, and on-peak with peak hours spanning a 4 Hours duration in the evening from Sun Set onwards with slight changes based on the seasons within a year. Each pricing period has a different rate and normally Peak time tariff is almost 6 to 7 Rupees higher than ff Peak rates.

So the meter installed is smart enough to record energy usage in that specific hours and distinguish between Peak and Off Peak Energy Usage.

In this mechanism, the exported electricity is credited to the prosumer's account and is allowed to be imported at any time within a defined credit period (month in Pakistan case). The net electricity consumed in a billing cycle is billed at prevailing retail tariffs. If in a given month, accumulated credit is higher than the consumption, the variable electricity tariff in the bill is charged as zero and the net balance is carried forward and exported electricity is purchased by utilities at certain benchmark price (NAPPP in Pakistan Case). ■



# Advanced energy storage solutions


**EU Report**

The integration of "new energy + energy storage" is crucial in achieving carbon peaking and carbon neutrality targets within the energy sector. This combination not only enhances energy utilization but also ensures economic efficiency. The demand for energy storage solutions has particularly surged in overseas markets such as North America and Europe. These regions have adopted the "new energy + energy storage" plan to optimize energy use. Customers in these areas prioritize customized solutions tailored to specific needs, like the United Kingdom's requirement for a 60kW/500kWh system.

In contrast, markets in Asia face significant challenges related to stable power supply.For example, in recent years, with the sustained and rapid economic growth and the continuous improvement of people's living standards, the problem of insufficient power supply in Pakistan has become more and more prominent, and the pulling of gates and limiting of power supply has occurred from time to time, which has brought about a great impact on the normal production of enterprises and the daily life of the people. In these regions, low-cost photovoltaic (PV) energy storage solutions are essential to meet daily electricity needs and address the core demand for affordable and reliable power.

To cater to these diverse requirements, SolaX has introduced a split solution for industrial and commercial energy storage. This solution is designed to meet customers' needs for customized, low-cost products. Customers can build prefabricated houses or purchase containers to integrate split products with inverters, batteries, and Energy Management Systems (EMS) at the core. This approach optimizes power management and ensures seamless grid integration.

At the heart of this solution are the X3-AELIO series inverters, available in 50kW, 60kW, and 49.9kW power range. These inverters provide the flexibility required to meet varying energy demands. Enhanced connectivity is achieved through EMS1000 or pocket Wi-Fi, enabling real-time data access and remote management via the cloud platform. The system supports advanced option both TB-HR140 and HS51 batteries, offering robust storage capabilities. Additionally, the combiner box configuration allows for rapid on-grid and off-grid switching within 6-8 seconds, accommodating up to six units in parallel to increase reliability. For expanded storage needs, the TCBox70 battery parallel box facilitates the integration of additional HS51 batteries.

One of the primary configurations, the X3-AELIO with TB-HR140, supports 100kWh clusters with efficient air cooling. However, due to its IP20 rating, customers must provide their own waterproof, dustproof, and fire protection measures. This comprehensive approach ensures efficient, scalable, and reliable energy storage and management.

SolaX's advanced energy storage solutions address the diverse needs of global markets by providing flexible, scalable, and efficient systems. By integrating state-of-the-art inverters and robust battery configurations, SolaX is at the forefront of the transition towards a more sustainable and reliable energy future. ■

## 'Roshan Pakistan programme to end energy crisis'

Federal Minister for Power Division Sardar Awais Leghari has said that the 'Roshan Pakistan Programme' will end the energy crisis in the country. Addressing a press conference in Islamabad along with Minister of State Ali Pervaiz Malik, he said that the electricity demand had reached 25,820 megawatts while the supply was 21,588 megawatts. There was a shortfall of 4,232 megawatts, he added. He also directed the power distribution companies to improve their overall performance and minimise the loadshedding duration. He instructed the distribution companies to present the detail of demand and supply on daily basis before the public.

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# Solar net metering policy discontent

**Ammar H Khan**

Writer is an Assistant Professor of Practice at the Institute of Business Administration, Karachi

It is estimated that there are around 113,000 residential units with solar generation equipment installed on their rooftops, along with a net metering connection. We may call these 'distributed generators'. This is only 0.3 per cent of total households in the country. Most units availing net metering facilities have installed capacity greater than five kilowatts, putting them among the more privileged segment of society in the top two electricity consumption slabs.

Lately, there has been noise regarding a change in net metering price — the price at which an electricity distribution company swaps out the unit generated by a distributed solar generator. Such a revision in price is being taken as an attack on the country's middle class.

For a lower to lower-middle-income economy like Pakistan, 0.3pc of households with net metering connections certainly do not constitute the middle class but are essentially the upper class. Those belonging to such an economic strata may not feel like it, but the country's overall distribution of wealth and income says otherwise.

The current net metering price is around Rs22 per kilowatt hour, which is basically higher than the weighted average fuel cost of roughly Rs9 per kilowatt hour. In a scenario where excess generation capacity is available, it makes little sense to generate electricity via distributed solar at such a high cost. It also doesn't make sense to add more utility-scale solar, where the price is higher than the average generation cost.

Current electricity pricing regime subsidises wealthy, solar power generating households while shifting cost burden on the grid-dependent citizens

The final tariff paid by a household is high and is a function of variable costs, capacity costs, transmission and distribution costs, losses, and a plethora of taxes. This has led to demand destruction, compounding problems in the process. A uniform tariff that socialises losses is a bad policy regardless. Similarly, a policy subsidising the upper class at the cost of everyone else is also bad.

The current electricity pricing regime is on a cost-plus basis, which means capacity charges for generation and transmission assets are essentially spread over generated electricity units. It is suboptimal at best and needs to be amended on a priority basis.

As net metering results in reduced demand from the grid, the residual units of electricity generated have a higher capacity cost component, which is paid by the

remaining users on the grid.

A contrarian argument here is that households that generate electricity through rooftop solar also carry the burden of capacity costs of the grid since the same households use electricity from the grid when the sun sets or when solar generation declines. The grid acts as a backup or secondary source of power for such households, and hence, a fair price must be paid for having access to a backup.

An argument that is given by proponents of a high net metering price (that benefits solar-generating households) is that households had invested in solar generation equipment. Hence, they should be allowed to recover their investment.

The current net metering price is around Rs22 per kilowatt hour, much higher than the weighted average fuel cost of roughly Rs9 per kilowatt hour

There is no reason why a government should backstop losses or guarantee paybacks when no such explicit contract is in place. Even the distributed generation concurrence that is executed between the household and distribution company clearly states that the net metering tariff is bound to revision. Such revision should reflect economic realities rather than backstopping payback periods for a few thousand households.

Any policy intervention to adjust net metering prices must be designed carefully, and socio-economic realities must also be considered. As net metering users rely on the grid as a secondary generation source, they also should contribute towards capacity payments on a pro-rata basis. The same can be achieved by having a fixed cost corresponding to kilowatts installed by each household.

Only those households that have solar generation units of five kilowatts and above can be covered within such a structure, wherein a fixed component of tariff can be introduced linked to installed capacity. Similarly, the net metering price can be linked with the average generation cost, which can be adjusted as overall pooled costs change.

Through such a manoeuvre, it will be possible to reduce losses the grid has to suffer, and the excess cost that has to be absorbed by the more vulnerable and protected segments. As protected segments, and other consumer categories also benefit from a cross-subsidy provided by commercial and industrial users, this can also reduce the same in the process.

The policy needs to be designed to discourage investment in distributed energy and not burden other users solely by relying on the grid. Given a global surplus capacity, as the price of solar panels continues to decline, the market will continue to gravitate towards the addition of more solar generation.

Similarly, as the storage cost rapidly declines, it will get increasingly cheaper to move completely off-grid. Any policy that does not consider the changing economic realities of reducing storage and generation costs will compound losses for the grid in the future. The policy needs to be future-oriented, where distributed generation is fairly priced rather than serving the interests of a few thousand households to the detriment of millions.

*Courtesy Dawn*

# Oil companies demand urgent payment of Rs90bn dues to alleviate liquidity crisis

**Khaleeq Kiani**

Facing severe liquidity challenges due to a surge in smuggled products, Pakistan's oil industry has urged the government to expedite the clearance of over Rs90 billion stuck in foreign exchange adjustments and tax refunds.

In a recent communication to the federal government, the Oil Marketing Association of Pakistan (OMAP) has appealed to Finance Minister Muhammad Aurangzeb for immediate intervention. They requested the smooth availability of foreign exchange to secure oil imports and a reduction in the turnover tax in the forthcoming budget to ease cash flow issues hindering industry operations.

OMAP Chairman Tariq Wazir Ali highlighted the industry's liquidity crisis, exacerbated by substantial foreign exchange adjustment losses, sales tax adjustments, smuggling of Iranian petroleum products, and an unfair turnover tax. He noted that oil marketing companies (OMCs) face approximately Rs26 billion in foreign exchange adjustment losses, despite acknowledged flaws in the mechanism by the Energy Ministry and the Oil and Gas Regulatory Authority (Ogra). "The slow rectification process is impeding our operational capabilities and hindering our ability to function effectively," he stated.

Additionally, Rs65 billion in sales tax refunds are currently held up, causing significant cash flow disruptions for oil companies. This delay burdens the industry, making it increasingly difficult for OMCs to operate efficiently.

The rampant smuggling of Iranian petroleum products into Pakistan poses a significant threat to legitimate OMC operations, undermining the national economy and creating an uneven playing field. "This illegal activity results in an annual loss of approximately Rs400 billion to the national economy, translating to over Rs1 billion per day," Wazir reported.

Moreover, OMCs face significant challenges due to liquidity crises, with substantial amounts tied up in foreign exchange losses and sales tax adjustments. "In these adverse conditions, financial institutions are increasingly hesitant to extend credit lines to OMCs. Consequently, OMCs are struggling to open letters of credit and fulfill other essential financial requirements, further exacerbating their predicament," he informed the finance minister and other key figures.

The cumulative effect of these challenges has led to prohibitively high business costs, posing a significant existential threat to OMCs. This situation is further aggravated by the turnover tax, which imposes an additional financial burden, severely impacting the profitability and sustainability of OMCs.

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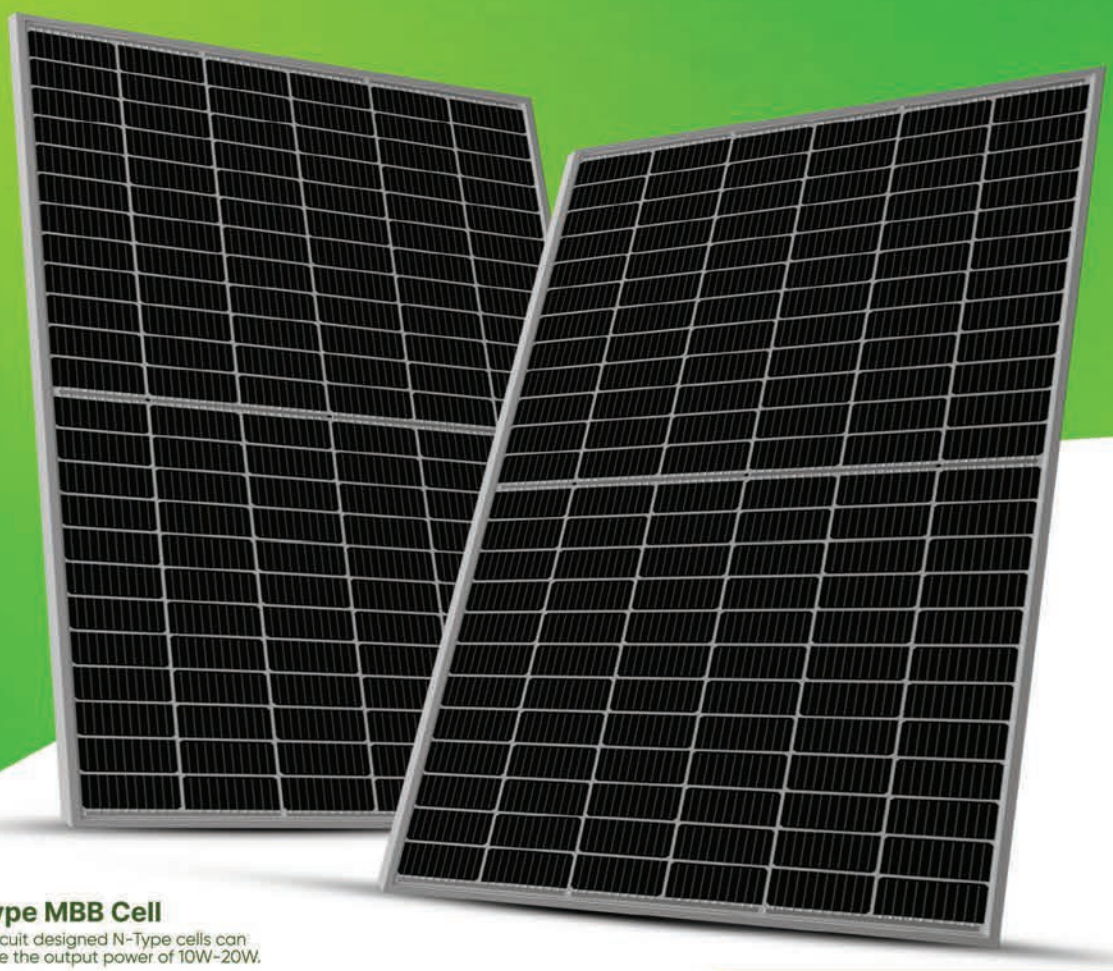

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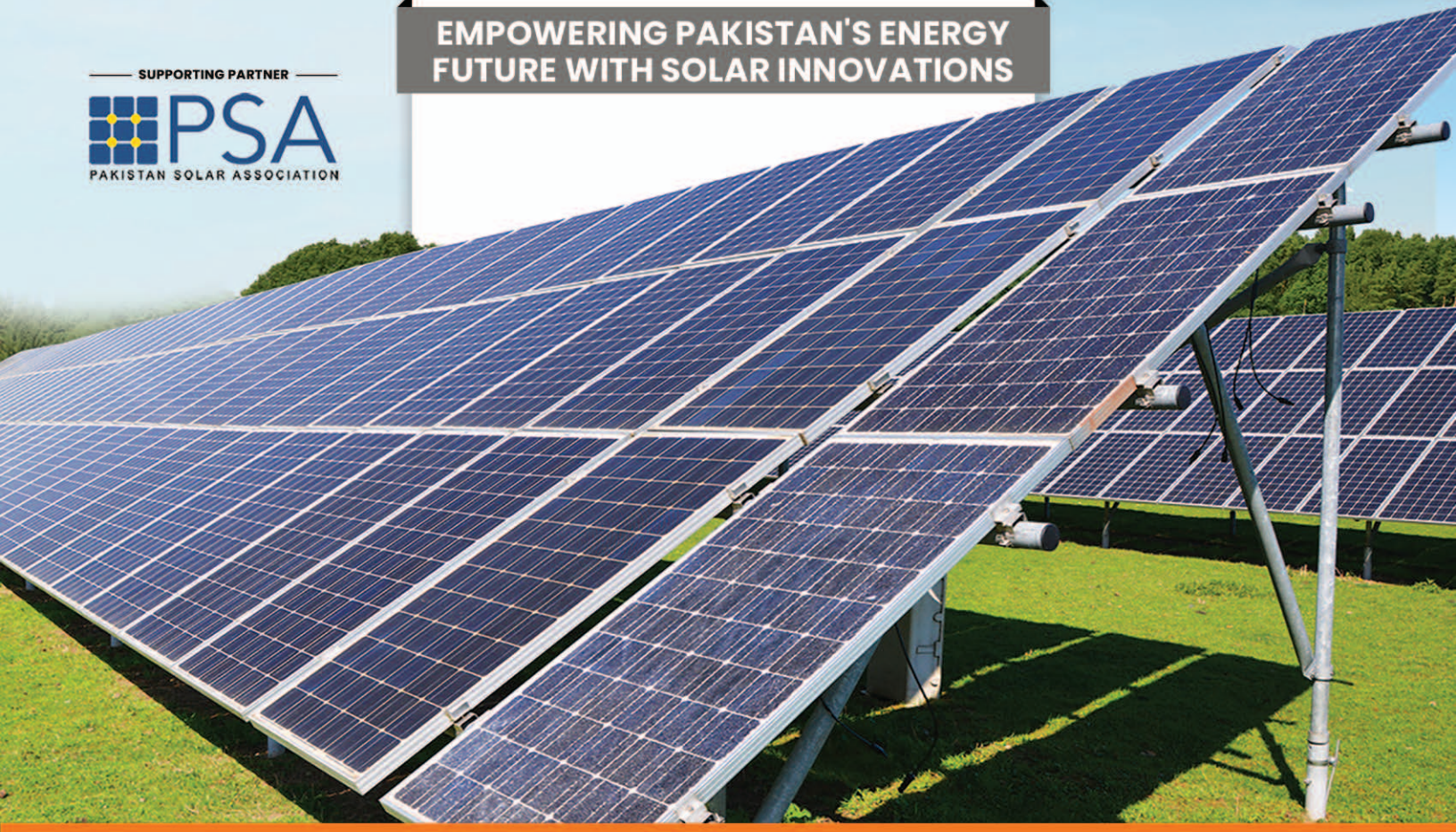

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# Climate governance in Pakistan is flawed

**Ali Tauqeer Sheikh**

The writer is an Islamabad-based climate change and sustainable development expert

After signing of Paris Agreement, Pakistan passed Climate Change Act but sadly, it could still not be implemented

Climate governance in Pakistan is flawed. It is ineffective and unresponsive to climate threats. Its ability to deliver climate actions to communities across the provinces is limited. In its present shape, it cannot help turn around the economy in various sectors. The Supreme Court's recent suo motu notice and the constitution of an inter-ministerial committee by the prime minister have rekindled hopes that some institutional ills — fragmented legislations, unclear institutional mandates, and archaic rules and regulations — may be rectified.

After the Paris Agreement was signed, the Nawaz Sharif government passed the Climate Change Act, 2017, primarily to enable the implementation of the global climate agreement through the creation of three interrelated institutions: the Climate Change Council (CCC), the Climate Change Authority (CCA), and the Climate Change Fund (CCF).

Zahid Hamid, the minister concerned at the time, championed the Act, but it was never implemented on account of two factors causing unease: a) it would undermine the 18th Amendment and provincial powers would be recentralised by the federal government; b) since almost all functions of the climate ministry were assigned to the CCA, there were fears that it faced the prospects of dissolution. The Act has since languished in a bureaucratic maze. Neither the Supreme Court nor the government can move forward meaningfully without addressing these lingering apprehensions.

Successive governments have sidestepped these misgivings. Parliamentary interest, let alone oversight, has remained weak, and momentum on the initial intent has been lost. Imran Khan's government did not set up the CCA or CCF. Led by Malik Amin Aslam, his maverick climate adviser, the CCC was created but its meeting couldn't be convened. The provinces were alienated as the documents approved during the period, including the national climate change policy and the Nationally Determined Contributions, were approved by the cabinet committee on climate change instead of the mandated CCC or the well-established policy forums where the provinces are represented — CDWP, ECNEC, and NEC.

The Climate Act and associated legislation will need consolidation. The CCC has since met twice, first under the Shehbaz Sharif-led PDM government and then Anwaar-ul-Haq Kakar's interim government. For that, the credit must go to their dynamic climate ministers, Senator Sherry Rehman and Ahmad Irfan Aslam. However, neither could prioritise the creation of the CCA or that of the proposed CCF. Hence, the present government has inherited the doubts regarding the Act and the CCA's future role vis-à-vis the provinces.

The CCA, if established without revisiting its role, will violate the principles of good governance as it combines regulatory and policy functions. The only organic link between the climate division and the ministry is the person of the secretary, who will also serve as secretary of the proposed authority. But he will not formally be part of any federal forum where the provinces are also represented.

The CCA will manage the proposed CCF by allocating funds and monitoring the implementation of adaptation and mitigation projects, otherwise provincial subjects. The Act has not specified its guiding principles for this function. Should we have one mega fund or create multiple special purpose vehicles to address specific needs at different tiers of governance? Why do we need it at the federal level if all climate action will be in the provinces?

The fund is based on the assumption that there will be sufficient donations, endowments, grants, and gifts. Except for charging a processing fee, there is no mention of any national or provincial equity, not even of 0.5 per cent of GDP that could have served as a credible source of replenishment. Will the existence of a legal entity enable the flow of international climate finance? Several funds and mechanisms already exist in the country to enable international financial flows. What is lacking is clarity of purpose, autonomy, and firewalling from governmental controls.

Further, international climate finance has also evolved into specialised functions often involving the State Bank, the Securities & Exchange Commission of Pakistan, commercial banks, insurance companies and the private sector for such instruments as green bonds, debt swaps, hybrid financing, and derisking financing. For all this, the country will need to develop its national climate finance strategy before the structure of the fund is determined.

The complexity, in fact, runs deeper. The Climate Act does not supersede the Pakistan Environment Protection Act. Pepa continues to govern the Environment Protection Agency at the climate ministry, while all the four provinces have essentially copy-pasted Pepa in their provincial contexts. All provinces, except Sindh, have also adopted 14 multilateral environmental agreements mentioned in Pepa. Compared to 1997, when Pepa was adopted, Pakistan has signed several more multilateral environmental agreements, including those specifically dealing with external trade and emerging trade-related environmental barriers under the WTO. But the Act has neither updated the list, nor removed the confusion about who would be responsible for the MEAs.

The creation of the Ministry of Climate Change is in its fifth reincarnation, but the Establishment Division has perhaps not reviewed the Rules of Business for the ministry in the last 50 years when it was first set up as the Urban Affairs Division. The Rules of Business oddly still carry its previous mandates. Climate change is mentioned only cursorily. The Rules of Business need to be climate-proofed for the climate ministry and other sectoral ministries.

The Act and associated legislation will therefore need consolidation in order to give a clear vision and direction for climate action at the local government, provincial and national levels. Mansoor Awan, the attorney general, is fortunately known for his commitment to climate justice and he can serve as a bridge between the judiciary and executive.

Going forward, it is clear that the CCA should undertake only regulatory functions, and the climate ministry should take up the policy development work. The projects must be developed and implemented by the provinces. The CCF has still to develop principles for its financing and replenishment, and accords for apportionments to the provinces.

In this ecosystem, the Planning Commission needs to be reinvented to take the lead on embedding climate change in policy planning, together with its provincial counterpart planning departments, and in mainstreaming climate change in sectoral policies. ■

# Huasun Leads the Charge in Hetero-junction Technology, Revolutionizing Pakistan's Solar Industry

In a rapidly evolving solar industry landscape, heterojunction (HJT) technology has emerged as a frontrunner, showcasing remarkable advancements in recent years. As projections indicate a substantial increase in HJT production capacity, Huasun, a leading manufacturer in the field, stands at the forefront of this transformative wave. The significant advantage of lowest temperature coefficient makes HJT preferred choice for Utility scale projects.

With over 60GW of HJT production capacity projected to be operational by 2024, the solar energy sector is witnessing a paradigm shift. Huasun takes pride in spearheading this transformation with its proven track record and cutting-edge innovations that have garnered attention from Chinese state-owned enterprises, international investors, and project developers alike.

In Pakistan, Huasun has swiftly become the preferred choice for the industry, thanks to its commitment to delivering the most advanced product features and technology benefits. The introduction of Huasun's HJT modules series, including the G10/G12 and G12R, has revolutionized the market, offering higher conversion efficiency, enhanced reliability, and lower Levelized Cost of Electricity (LCOE) for PV projects.

Huasun's dedication to research and development in HJT technology has positioned it as an innovator in the field. By focusing on industrialization and continuous improvement, Huasun remains at the forefront of technological advancements, ensuring that its modules meet the evolving needs of the solar industry.

As global demand for HJT modules continues to surge, Huasun's commitment to excellence and innovation solidifies its position as a key player in shaping the future of solar energy. With a track record of success and a vision for a sustainable future, Huasun leads the charge towards a brighter, c


## Enercap Holdings, Dewan Motors, and Burj Energy Sign MOU

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Enercap Holdings, Dewan Motors, and Burj Energy have signed a Memorandum of Understanding (MOU) to introduce supercapacitor-based batteries for electric motorcycles and rickshaws in Pakistan. This groundbreaking partnership marks a significant step towards achieving Pakistan's Environmental Development Goals (EDGs) by advancing clean energy and promoting electric vehicle adoption. The signing ceremony featured Mr. Waseem Ashraf Qureshi, CEO of Enercap Power Industries LLC, Mr. Yousaf Dewan, Chairman of Dewan Motors, and Mr. Saad Zaman, CEO of Burj Energy. The collaboration aims to revolutionize the transport sector with innovative, eco-friendly solutions, underscoring Pakistan's commitment to sustainable development.

# No change in net metering policy:

## Awais Ahmad Leghari

Federal energy minister

Federal Energy Minister, Awais Ahmad Leghari, provided a clarification regarding net metering during an appearance on the podcast hosted by senior TV anchorperson, Mansoor Ali Khan. Here are the key highlights from his interview for our readers:

**Podcast host: When was the net metering regime introduced in Pakistan?**

**Awais Ahmed Leghari:** The net metering regime was initiated during my tenure as the Federal Energy Minister in 2017-18 under the government of Prime Minister Shahid Khaqan Abbasi. Prior to this, net metering connections were not permitted in Pakistan. The relevant regulator and bureaucracy were initially opposed to this system. However, with a significant decrease in the prices of solar panels, there was a widespread adoption of this technology in our country.

Solar power systems were implemented across various sectors, marking a positive development. Those who opted for net metering systems shared the electricity load burden on the national grid with the state. Initially, consumers were hesitant to adopt this system for the first four to five years. Subsequently, there was a surge in installations after an abundance of solar panels flooded the international market. Consumers also secured loans from banks to facilitate the installation of solar panels.

**Host: What is the total number of consumers with net metering connections in Pakistan?**

**Mr Leghari:** Currently, there are 115,000 power consumers in the country with net metering systems. They are collectively generating approximately 1,550 MW to 1,600 MW of clean electricity. These consumers do not sell the entire generated capacity to the power distribution companies, as only the surplus power is supplied to the national grid after meeting their own energy requirements.

**Host: What is the cost of electricity purchased from consumers with net metering systems?**

**Mr Leghari:** The power distribution companies have been buying electricity from these consumers with net metering systems at a rate of 20 cents per unit. The cost will decrease to just four cents per unit if a utility-scale solar power project with a generation capacity of 100 MW to 1,000 MW is installed. Initially, we offered an attractive tariff to consumers interested in installing solar systems under the net metering scheme.

Due to a significant drop in solar panel prices, consumers with net metering systems can now recoup their investment in just two years, compared to the previous four years. The electricity bought at a higher rate is fed into our national grid, similar to the expensive electricity generated by our IPPs in the past. This leads to an increase in electricity tariffs for the general consumers. The current system benefits consumers from the affluent class with net metering connections, while underprivileged individuals have to bear the additional electricity costs.

**EU: What is the expected policy change for current consumers with net metering systems?**

**Mr Leghari:** Individuals utilizing the net metering facility have obtained a valid license from NEPRA for a period of five to seven years. The terms and conditions of these licenses will remain unchanged throughout their validity period. We are not authorized to modify these terms until the licenses expire.

The renewed licenses offered to consumers may have revised rates for electricity purchased by distribution companies if the government decides to revise the net metering policy. Currently, the initial net metering policy established by the government remains valid. Any changes to this policy will be formally announced by the government.

**Host: Should a consumer with sufficient savings consider purchasing a rooftop solar system in the current scenario?**

**Mr Leghari:** If you have enough money, you should invest in this system to utilize the rooftop of your home for installing the solar system. The government will not discourage consumers who want to use rooftop solar systems to generate their own electricity. Importantly, there are no transmission and distribution losses in this generation mechanism, as the electricity is consumed at the same place where it is generated. We are the architects of this policy and could never oppose it.

However, we must remember that the government needs to invest in upgrading electricity transmission and distribution systems to ensure stability after additional electricity produced by these solar systems is added to the national grid. Solar panels with a generation capacity of 6,800 MW were imported into the country in the last nine months. Out of these, solar panels with a production capacity of 900 MW were installed under the net metering regime. We need to maintain a balance and proceed in this area in a controlled manner to ensure the stability of our system. We will announce our new net metering policy only after consulting all the relevant stakeholders in the green energy market.

# Barriers to green transformation: How to make progress?

## Banks' reluctance to finance green loans and wariness towards EVs is stalling the sustainability drive

**Nasir Jamal**

The financial sector plays a crucial role in promoting environmentally sustainable and socially responsible investment. Pakistan has set a target of a 50 per cent reduction in its projected greenhouse gas (GHG) emissions by 2030 — 15pc from the country's resources and 35pc subject to the provision of international finance amounting to $101 billion for the clean energy transition.

This requires the country to increase the share of clean, renewable energy to 60pc in its total energy mix and boost electric vehicle (EV) adoption to 30pc of the total vehicles sold by 2030.

However, new explorative research on 'Facilitating Green Loans for Sustainable Energy Transition: The Case of Distributed Solar PV (DSPV) and EV Lending in Pakistan' finds that green financing is in its infancy due to various barriers.

The study, co-authored by Rimsha Rehan of the Policy Research Institute for Equitable Development (PRIED) and Naila Saleh of Agora Energiewende, highlights that the uptake of green loans for solar energy and EVs remains weak due to several policy, regulatory and market barriers, as well as risks for banks associated with this kind of financing.

Banks' reluctance to finance green loans and wariness towards EVs is stalling the sustainability drive.

The study highlights that the tailored concessionary financing scheme introduced by the State Bank of Pakistan (SBP) in 2016 to encourage the adoption of solar energy has not had much of an impact because banks have shown little interest — only 41pc banks actually participated in the scheme.

The SBP also discontinued allocations to banks under this facility in 2021 owing to restrictions imposed by the amended SBP Act Section 20(5A), prohibiting quasi-fiscal operations. Many banks have already utilised their quotas for renewable energy financing, resulting in the cessation of financing under this facility. The study notes that restricted public access to data on the scheme's disbursement hampers a clear understanding of its overall impact and effectiveness.

Likewise, the National Electric Vehicle Policy developed in June 2021 to propel faster adoption of EVs remains unimplemented. Last year, the industries ministry developed a tailored concessionary financing scheme for e-bikes and e-rickshaws to push their adoption. Unfortunately, the scheme was never implemented despite the approval of a subsidy for up to 15,000 e-bikes/e-rickshaws.

The study contends that challenges like implementation lags, regulatory shortcomings, and complex bureaucratic processes have prevented the adoption of green products despite the introduction of tailored financing facilities. The majority of banks' reluctance to extend financing for EVs and solar energy indicates a large delivery gap in the market. Green lending options are available, but execution and access issues persist.

"According to most banks, green lending entails high risk and offers low returns. This apprehension stems largely from concerns about default risk, the absence of secondary markets for resale value, and the high transaction cost of processing loans. These concerns act as significant barriers, limiting the widespread adoption of the scheme," the study highlights.

Zafar Masud, President and CEO of Bank of Punjab, agrees that green finance is critical to the effective adoption of environmentally friendly technologies in any economy. "The massive funding requirement for this can't be met by the public sector alone. The private sector needs to play its due role in this endeavour. Climate mitigation technologies require a larger upfront capital outlay with the benefit of reduced operating costs," he says. But, according to him, the financing issues in solar systems and EVs arise due to reluctance from both the lenders and the borrowers. "Initially, consumers are reluctant to acquire solar and EV financing due to high initial cost, lack of knowledge, battery insurance issues, lack of charging infrastructure, under-developed local allied industries, concerns over maintenance and resale in the case of EV vehicles and so on."

Furthermore, Rimsha Rehan explains that effective risk-sharing mechanisms and formal secondary markets for renewable energy products must be established to address banks' concerns regarding the risks of defaults in renewable energy financing. A vibrant secondary market for green assets is paramount to mitigate banks' risk.

She points out that Pakistan can explore innovative financing mechanisms such as green bonds, revolving funds, and specialised financing models with favourable terms to encourage participation like other nations.

"Bangladesh's solar home system programme employs a public-private partnership model with a dedicated credit line from international financial institutions and extending social collateral to consumers as a risk mitigation tool. In India, the Surya Shakti Scheme and the Grid Connected Solar Rooftop Programme exemplify effective public-private partnerships and a balanced approach, offering practical models for sustainable development."

Dr Naveed Arshad, an associate professor at the Lahore University of Management Science, laments that Pakistan has so far been able to tap just $179 million in global climate finance. Even the Maldives, despite its small size, have garnered $152m in global climate finance. "We can leverage global concessional climate finance to meet targets for emissions reduction, but that requires an innovative strategy and a convincing business plan to finance the energy transition," he says.

*Courtesy Dawn*



# Controversy over net metering financial rules

**Syed Akhtar Ali**

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

Net metering (solar photovoltaic – PV) is a hot topic these days having invited a lot of attention and even controversy. The government wants to change mostly the financial rules, while the net metering users would like to continue with the existing rules. Undoubtedly, attractive incentives have been given in many countries for rooftop solar and have been gradually withdrawn as well.

There are problems as well as benefits of solar energy, especially the rooftop solar PV. Firstly, it is a green, non-polluting source; secondly, it brings in technology. It is the rooftop solar which has made people aware, has expanded the economy and employment and has even fostered a class of technical people which has long-term consequences. In the long run, grid dependence will be reduced and investment requirements will decrease, not only in transmission and distribution but also in generation. There are problems being faced by distribution companies (DISCOs) as well as the government, which holds the purse. There are technical problems of overloading the distribution transformers and generation of bad electricity to put it in simple non-technical language; low power factor and harmonics, technically speaking. People take approval of smaller capacity but then add more capacity, etc.

However, the main issue is financial. The issue is that solar works during the day hours only. In that sense, it is an add-on capacity, making the existing grid capacity redundant. In other words, additional grid and generation capacity has to be added. Solar does not relieve DISCOs of the responsibility to provide electricity to the net metering users called "prosumers" (producers + consumers). This translates into an extra financial load on DISCOs as additional capacity charges, which finally reflects in higher average tariff or losses to DISCOs. This is interpreted as cross-subsidy to solar prosumers. The problem magnifies socially, when it is argued that the net metering subsidy goes to the richer segment of society from the average or low-income group.

Net metering prosumers are normally the ones who have invested from Rs500,000 to Rs3-4 million. Certainly, they would be classed among the well-to-do, even if they hide behind loans, which are also given to the well-to-do, keeping in view the collateral, guarantees and other documentation requirements. Thus, there appears to be a case for reducing, if not, totally eliminating this subsidy.

However, there is a moral and quasi-legal issue as well, which can result in litigations by the prosumers. There is a kind of contract among the prosumers and DISCOs regarding the terms and conditions. People have invested their money or borrowed capital based on such terms. Hence, any change in rules may have to keep in view this aspect. Also, significantly reducing the incentives abruptly may affect the market and the economy. Traders have, reportedly, imported 5 gigawatts (GW) of solar panels and the associated equipment in the last six months alone. Any reduction in the solar market will send off negative ripples. In the construction industry, it is only the solar sector that is working.

Keeping the aforementioned in perspective, one would like to recommend the following: 1-New rules and terms and conditions be applied to those who have completed installations for five years; 2-Attractive solar net metering tariff be maintained for prosumers of up to 10 kilowatts; 3-Less attractive tariff may be allowed to prosumers of 11-15 kW; 4-net metering be limited to 15 kW; 5-Net metering exports to grid be limited to 30% of the installed or generation capacity of the prosumer; 6-Those installing battery storage of four hours be awarded higher export tariff as afforded to 10 kW category; 7-Approval of net metering be awarded to consumers where the distribution transformer capacity exists, although it may give arbitrary powers to DISCO's personnel and may open doors for corruption. All rules benefit those who enforce the rules. What can be done, otherwise?

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# Addressing climate change locally

## Community-based and locally-led adaptation strategies are required to address climate change

**Omar Draz**

The writer has a master's in climate change, development and policy from Sussex University, UK

Climate change, often perceived primarily as an environmental issue, has become a catalyst for a broad range of security threats, exacerbating existing socioeconomic vulnerabilities and creating new ones.

The combined effects of rising temperatures, changing rainfall patterns and extreme weather events amplify vulnerabilities of local communities. These climatic shocks have cascading impacts on human security, as they directly affect livelihoods, health, food and water security, particularly for the most vulnerable communities.

According to the Global Climate Risk Index 2023, Pakistan ranks 8th among countries most affected by climate change over two decades. The floods in 2022 resulted in $14.9 billion in property destruction and $15.2 billion in economic losses. According to the post-disaster needs assessment, at least $16.3 billion is required to recover and repair the damage. Apart from the global and national response to the crisis, community-based and locally-led adaptation strategies are required to address this catastrophe.

These are two increasingly popular approaches to addressing the impacts of climate change at the grassroots level. These approaches empower local communities to develop and implement adaptation strategies tailored to their unique context, ensuring their effectiveness and sustainability.

Community-based adaptation is a bottom-up approach involving local stakeholders in identifying, designing, implementing and evaluating climate change adaptation measures. It emphasises the active participation of communities, particularly vulnerable groups, in

decision-making and prioritises local knowledge and capacities. According to a study, CBA projects have been implemented in more than 70 countries, showcasing the growing global interest in this approach.

Locally-led adaptation refers to initiatives driven by local actors, such as community organisations, local governments or indigenous groups, who understand the local context and needs. LLA seeks to shift the power dynamics within the climate adaptation landscape, giving more decision-making authority and resources to those directly affected by climate change.

Despite their increasing popularity, CBA and LLA approaches face several political, economic and social constraints that hinder their effectiveness. These constraints may limit the scope of adaptation projects, create dependency on external funding and exclude marginalised groups from decision-making. Therefore, it is crucial to address these constraints to unlock the full potential of CBA and LLA strategies in mitigating the impacts of climate change, especially in countries like Pakistan.

Pakistan can learn from the successful outcome of community involvement to combat the impacts of climate change at the local level from countries like Bangladesh and the Philippines.

CBA has proven effective in enhancing resilience and preparedness in the Philippines, which is highly vulnerable to climate-related hazards including typhoons, flooding and sea-level rise. One such example is the innovative Purok system in the Albay province, which was introduced in 2009. The Purok system is a community-based disaster risk reduction and management programme designed to reduce disaster risks and build the resilience of local communities.

The Purok system comprises six key components: hazard mapping, vulnerability assessments, local early warning systems, capacity building, evacuation planning and relief distribution. In this programme, community members identify hazards and vulnerabilities, create early warning systems and prepare comprehensive evacuation plans. A major factor in the Purok system's success is its emphasis on local knowledge and community involvement. The programme ensures that the community's unique needs and perspectives are considered by engaging residents in decision-making.

This bottom-up approach empowers community members and fosters a sense of ownership over the adaptation measures, leading to more sustainable and effective outcomes.

The success of the Purok system was evident during Typhoon Haiyan in 2013, one of the strongest tropical cyclones ever recorded. Despite the catastrophic impacts of the typhoon, the Purok system significantly reduced casualties in the Albay province. In the aftermath of the disaster, the province was lauded for its effective disaster preparedness and response, primarily attributed to the Purok system's community-based approach as highlighted by Global Commission on Adaptation, 2021. This case study highlights the potential of CBA strategies in building resilience to climate-related hazards.

By prioritising local knowledge and community involvement, the Purok system has demonstrated the effectiveness of a bottom-up approach in addressing the unique vulnerabilities and needs of communities exposed to climate change.

Similarly, LLA and Resilience Building in Bangladesh is also a key example for other regional countries including Pakistan. Bangladesh is one of the most climate-vulnerable countries globally, frequently facing flooding, cyclones and other climate-related disasters. To address these challenges, the government of Bangladesh, with support from international partners such as the USAID, initiated the Climate-Resilient Ecosystems and Livelihoods project in 2012. The project's primary objective was to enhance the resilience of local communities and ecosystems through LLA measures.

The CREL project focused on empowering local communities to manage natural resources, develop CBA plans and implement context-specific adaptation measures. Key components of the project included capacity building, participatory decision-making and promoting sustainable livelihoods.

One of the project's most notable successes was the establishment of community-based mangrove plantations. Local communities were planting and managing these mangroves, serving multiple purposes. The mangroves provided crucial protection against storm surges and coastal erosion by acting as a natural barrier, reducing the impact of climate-related disasters on vulnerable coastal communities. In addition to their protective function, the mangroves also offered livelihood opportunities for residents. Harvesting mangrove products, such as wood and honey, provided an additional source of income for community members, contributing to their overall resilience.

This bottom-up approach empowers community members and fosters a sense of ownership over the adaptation measures, leading to more sustainable and effective outcomes.

The CREL project's achievements demonstrate the potential of LLA measures in building resilience and enhancing the adaptive capacity of climate-vulnerable communities. By prioritising local knowledge and community participation, the project could implement context-specific solutions that addressed immediate climate risks and contributed to long-term sustainable development. This case study underscores the importance of locally-led adaptation in addressing climate-vulnerable communities' unique challenges.

The CREL project's success in Bangladesh is an example of how empowering local communities to take the lead in adaptation efforts can result in more effective, sustainable and resilient outcomes.

CBA and LLA projects are critical in building resilience and addressing the impacts of climate change on vulnerable communities. These initiatives can be more responsive, equitable and sustainable by overcoming power dynamics, financial barriers and social exclusion. Knowledge sharing and cooperation among communities, practitioners and policymakers can contribute to developing innovative solutions and scaling-up successful adaptation measures. The exchange of experiences and lessons learned can help strengthen CBA and LLA efforts, ensuring that vulnerable communities are better prepared to face the impacts of climate changes.

Pakistan – a country with many resource constraints – can better cope with the emerging threat of climate change by strengthening the local communities to better withstand the climatic calamity. ■

# 172 buildings will be solarized

**EU Report**

Sindh Energy Minister Syed Nasir Hussain Shah has said that 172 public sector buildings would initially be provided with 47 MW of electricity through solarization in three different phases.

This he informed during a meeting with a delegation of the World Bank's technical mission at the Energy Department. The World Bank mission was led by Senior Energy Specialist/Task Team Leader Dmytro Glazkov while Project Director Sindh Solar Energy Mahfooz Qazi and others were also present on the occasion.

The minister energy gave more details and said that in the first phase of solarization, 21.7MW of electricity was being provided through the solar panels of 34 public sector buildings,

while in the second phase, 3.30 MW would be completed by 2024 while 23 government buildings would be provided with 10 MW of electricity through solar panels.

Similarly, in the third phase, there is a plan to provide 15MW electricity to 100 government buildings through solarization from July 2024. The minister added that 4MW floating solar would be installed at Hyderabad's Qasimabad treatment plant.

# Aramco achieves acquisition in Gas & Oil Pakistan

Aramco, one of the world's leading integrated energy and chemicals companies, has made further progress in its global retail expansion by completing the acquisition of a 40% equity stake in Gas & Oil Pakistan Ltd. ("GO"). GO is a diversified downstream fuels, lubricants and retail store operator in Pakistan with a network of more than 1,200 retail fuel stations. The acquisition, first announced in December 2023, represents Aramco's first Downstream retail investment in Pakistan and signals the Company's growing retail presence in high-value markets. In March, Aramco also acquired a 100% equity stake in Esmax Distribución SpA ("Esmax"), a leading diversified downstream fuels and lubricants retailer in Chile. Yasser Mufti, Aramco Executive Vice President of Products & Customers, said: "Our global retail expansion is gaining pace and this acquisition is an important next step on our journey. Through our strategic partnership with GO, we look forward to supplying Aramco's high-quality products and services to valued customers in Pakistan. We are also delighted to welcome another high-caliber addition to Aramco's growing network of global partners, and look forward to combining our resources and expertise to unlock new opportunities and further grow the Aramco brand overseas." ■

# Pakistan, Kuwait to sign $25m loan pact for Mohmand Dam

**EU Report**

Pakistan and Kuwait have signed a $25 million loan agreement aimed at funding the Mohmand Dam during the 5th session of the Pakistan-Kuwait Joint Ministerial Commission (JMC) in Kuwait, held from May 28 to May 30, 2024. The formal signing of the loan agreement will take place on June 3. This session marked significant progress in strengthening bilateral ties, with assurances from the Kuwait Fund to engage the Arab Coordination Group in financing the Diamer Bhasha Dam. The session was chaired by Abdul Aleem Khan, Pakistan's Minister for Privatisation, and Omar Saud Al-Omar, Kuwait's Minister for Commerce and Industry.

Ziad Abdullah Al-Najem, Undersecretary of the Ministry of Trade and Industry, welcomed Pakistan's delegation, emphasizing the session's importance in advancing bilateral relations. The Kuwait Fund also showed interest in considering Pakistan's request for financing the Kachhi Canal project.

# Commissioning of 2MW on grid solar plant

**EU Report**

Pakistan Cables, the nation's pioneer wires and cables manufacturer, has completed the successful commissioning of its 2MW captive solar power plant located at its new manufacturing facility in Nooriabad, Sindh.

The project was executed by Atlas Energy Limited for Pakistan Cables within stipulated timelines and has commenced operations. The installed capacity of solar power plants is an investment in renewable energy initiatives by the Company. "We are committed to pursuing environmentally friendly initiatives in the future at our state-of-the-art manufacturing facility at Nooriabad, Sindh.

We actively advocate use of renewable energy sources that save cost and contribute to the circular economy", said Fahd K. Chinoy, Chief Executive Officer – Pakistan Cables Ltd. Pakistan Cables is the first and only building material Company in Pakistan to have science-based emission reduction targets validated by SBTi. The Company's new state of the art manufacturing facility spread across 42 acres of land in Pakistan, is equipped with cutting edge technology and equipment, set to transform the industry.

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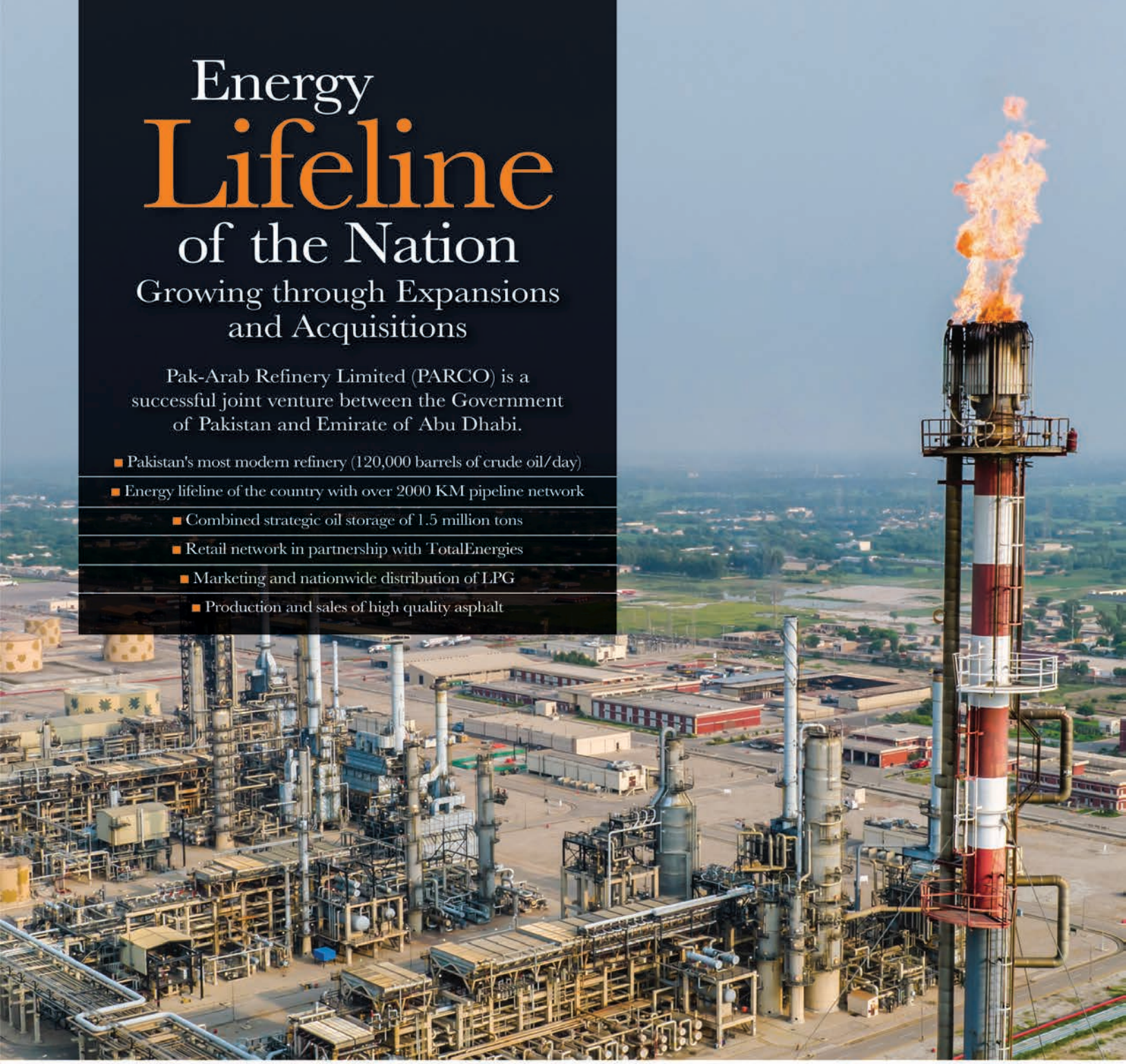




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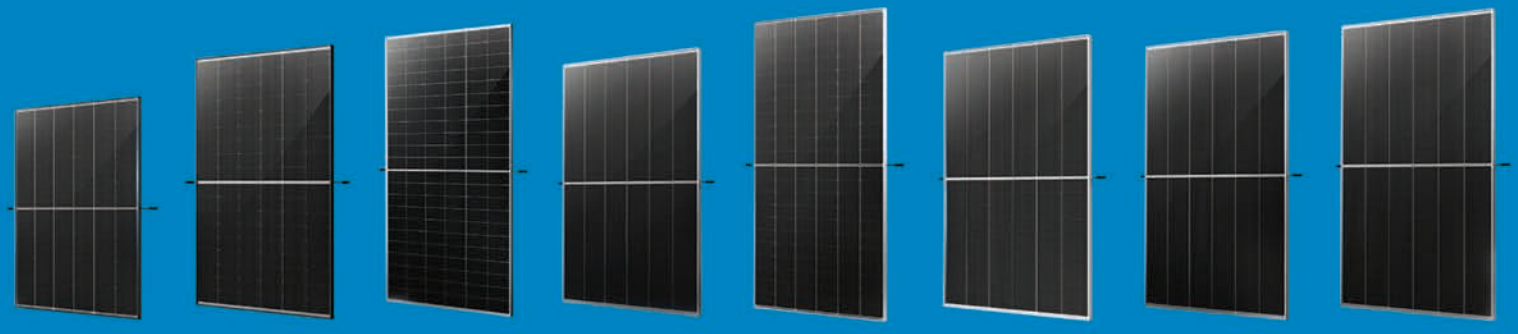

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