MONTHLY SEPTEMBER 2024 ISSN 2309-6578

ENERGY UPDATE

SPECIAL REPORT ON SOLAR CONCLAVE
AND TECHNOLOGY AWARDS 2024

SOLAR REVOLUTION
HAPPENING IN PAKISTAN

POWER SECTOR
PLAGUED

PRIVATIZATION WITHOUT
DEREGULATION

solis

Solis Global NO.1
Leader of the Single-Phase String Inverter Market

S6-EH1P(12-16)K03-NV-YD-L

PAKISTAN SUSTAINABILITY WEEK

26th - 28th September 2024
Expo Center, Karachi, Pakistan

Solis Booth:
Hall 03, B-3-01

Scan the QR code to become
Solis Certified Installers

e: sales@ginlong.com (Sales) | service@ginlong.com (Service)

www.solisinverters.com Solis Pakistan

SOGO®

TURNING SUNLIGHT INTO

POWER SINCE 2008

RESIDENTIAL COMMERCIAL INDUSTRIAL

No.1 Energy Choice Of Pakistan

Clean Energy Council

IEC

ISO

SGS TÜV SAAR

CQC

www.sogo.com.pk facebook.com/SOGOGroupOfCompanies instagram.com/sogo.group

Sales Contact:
sales@ginlong.com
+86 574 6580 2188 (sales)

Service Contact:
service@ginlong.com
+92 304 1119118 (Helpline)
+92 334 1171144 (WhatsApp)

Plot # 07, Opposite Usman Carpet, Defence Road, Lahore

Solis Global NO.1

Leader of the Single-Phase String Inverter Market

Solis 48V High Power Energy Storage Inverters

S6-EH3P(8-15)K-L
Solis Three Phase Low Voltage Energy Storage Inverters

S6-EH1P(5-8)K-L-PLUS
Solis Single Phase Low Voltage Energy Storage Inverters

EUPD RESEARCH
TOP BRAND PV
INVERTERS
PAKISTAN
2024

Scan the QR code to become
Solis Certified Installers

Solis 125kW Commercial Inverters

S6-GC(80-125)K
Solis Three Phase Grid-Tied Inverters

LinkedIn

facebook

INVEREX
SOLAR ENERGY

JOLYWOOD
N-type Bifacial Mono Module 565-590W

CHANGING LIVES,
ENERGIZING FUTURES.

10-30% Additional Power Generation
30 years lifespan brings 10-30% additional power generation comparing with conventional P-type module

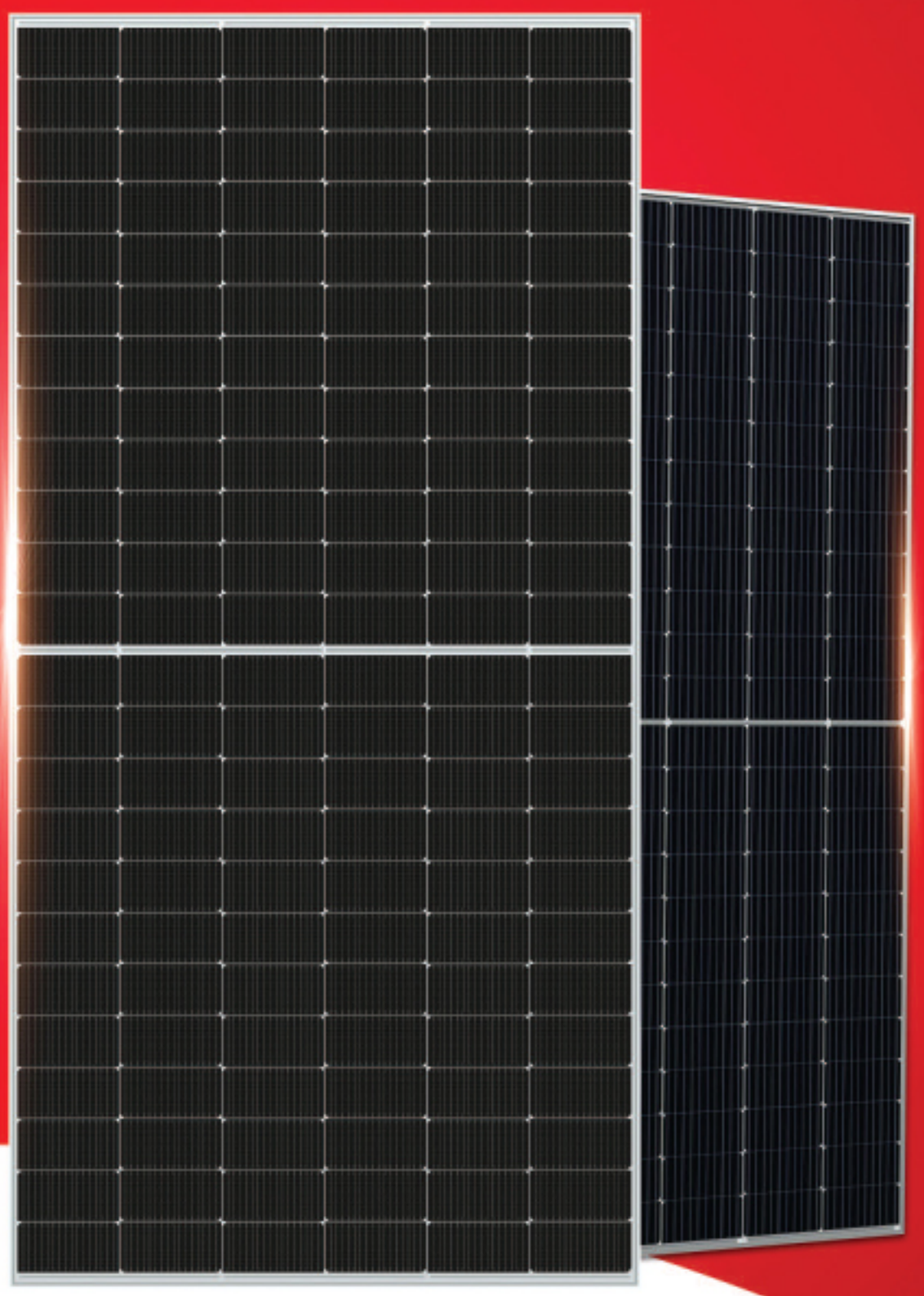
Better Weak Illumination Response
Higher power output even under low-light environments like on cloudy or foggy days

ZERO LID (Light Induced Degradation)
N-type solar cell has no LID naturally which can increase power generation

Better Temperature Coefficient
Higher power generation under working conditions, thanks to passivating contact cell technology

Lower LCOE
Higher bifaciality, higher power output and lower BOS cost

Wider Applicability
More application scenes like BIPV, vertical installation, snowfield, high-humid, windy and dusty area



590W	22.84%	0~+5W
Maximum Power Output	Maximum Module Efficiency	Power Output Tolerance

+92-21-111-209-988 InverexSolarEnergy apt_inverex/ company/inverex-solar-energy/ www.aptinverex.com

GROWATT

All Your Needs for Solar and Energy Storage

- UPS function, 10ms transition
- Support charge from diesel generator
- Up to 200A charging discharging current
- 1.5 DC/AC Ratio with 3 Mppts
- Support DC-coupled, AC-coupled, AC-retrofit applications

SPH 10000TL-HU

Growatt New Energy

SHENZHEN GROWATT NEW ENERGY CO., LTD.
en.growatt.com
info@ginverter.com
+92-300-404-5884

JinKO Solar LONGi Trinasolar ASTRONERGY HUAWEI TW SOLAR LEOCH LEOCH BATTERY CHINT

DIWAN® INTERNATIONAL (PVT) LTD

BYD Battery Box

BatteryBox-LV5.0

BYD, World's Largest Battery Manufacturer

Powering Pakistan

NOW AVAILABLE

7 YEARS WARRANTY

Maximum capacity of **160** kWh

Office No 1018, 10th Floor Al-Najeebi Electronic Market Abdullah Haroon Road Saddar Karachi - Pakistan

021-111-333-926 | 0300 0222104 | 0309 5589559 | 0332 3318888
Karachi Lahore Peshawar

info@diwanit.com

Diwan -w: diwanit.com

DiwanitPvtLtd

Shop Online

HUAWEI

Building a Fully Connected, Intelligent world

FUSIONSOLAR FOR A SUSTAINABLE BUSINESS

Optimal Electricity Cost | Active Safety | Better Experience | Intelligent Assistant

✓ SMART ENERGY CONTROLLER

SUN2000-5/10KTL-M1

The most resilient and convenient smart on-grid inverter is easy to install

✓ SMART ENERGY CONTROLLER

SUN2000-12/15/20/25KTL-M5

Energy storage systems store solar energy for the night or a rainy day without wasting any power your PV generated

✓ SMART PV CONTROLLER

SUN2000-115KTL-M2

Solar inverter for large-scale installations, evvnsuring efficient energy conversion and smart features for optimal performance.

✓ SMART PV CONTROLLER

SUN2000-30/50KTL-M3

Smart PV Controllers protect the safety of your life and property

Office No 1018, 10th Floor Al-Najeebi
Electronic Market Abdullah Haroon Road
Saddar Karachi - Pakistan - 74400

(UAN) 021-111-333-926 +92 300-0222-710

@ info@diwanit.com Diwanit.com

DiwanitPvtLtd

Trinasolar

World's No. 1 210mm module supplier

Residential | Commercial and Industrial | Utility

455W 505W 585W 610W 625W 645W 675W 720W

Wide range of 210mm ultra-high power modules designed for all applications

www.trinasolar.com

CONTENT

SPECIAL REPORT ON
SOLAR CONCLAVE AND TECHNOLOGY AWARDS 2024

Disclaimer: No reliance should be placed on the (information provided in the magazine) by any one for making any financial, investment and business decision. The information is general in nature and has not been prepared for any specific decision making process. Energy Update has not independently verified all of the (information provided in the magazine) and has relied on sources that have been deemed reliable in the past. Accordingly, Energy Update or any its staff or sources of information do not bear any liability or responsibility of any consequences for decisions or actions based on the provided information.

ConsTech

IP68
IP67
IP66
IP65
CE

ConsTech deals in LED Lights, Junction Boxes JBs, Local Control Stations LCS
Distribution Boards DBs, Cable Glands, Plug Receptacles, Fuses, Surge Protection
Devices, Cable Lugs & Smart LED Lighting Products with the brand name of CrystaLED

Chalmit
VENAS™
CMP PRODUCTS
HUBBELL KILLARK.
CrystaLED
ABTECH Limited
VYRTYCH
Ansell LIGHTING
FERRAZ SHAWMUT IS NOW MERSEN
MERSEN
MARECHAL ELECTRIC
MARECHAL® MELTRIC® RETTBOX® TECHNOR®

Office: 123-B1, Punjab Govt. Employees Coopertive Housing Society (PGECHS), Lahore
Postal Address: First Floor, 94-D3 Block, Wapda Town, Lahore Pakistan P.Code 57000
Mob: +92-321-842-9691
Tel: +92-42-378-99-555
Email: info@constech.com.pk
Website: www.constech.com.pk

FROM THE

Editor's desk...

Unending gas crisis

Gas crisis continues to haunt common people and businessmen across Pakistan including Karachi, Lahore, Peshawar and Quetta as demand is rising gradually compared to the supply. Natural gas and imported LNG contribute more than 40 per cent to the country's current energy mix, including gas resources used in electricity generation. In recent years, the demand for gas has increased rapidly in Pakistan. However, gas exploration and production have declined, and the LNG operational and regulatory framework is weak, leading to a nationwide shortage and increased supply costs.

The gas crisis is badly affecting households, industries, and transportation across the nation. This crisis has been brewing gradually for the last 10 years, but recent data highlights the urgency of the situation and the call for finding immediate and comprehensive solutions by devising effective and efficient policies.

The residential sector is the largest consumer of natural gas in Pakistan, accounting for approximately 43% of the total gas usage. With around 9 million households relying on natural gas for cooking and heating, the sector is facing severe shortages. The shortage has led to significant disruptions, with many households experiencing erratic gas supply and forced reliance on alternative fuels.

The transport sector, which relies heavily on compressed natural gas (CNG), consumes around 15% of the total gas supply. CNG is a popular alternative to gasoline due to its lower cost, but the sector has been hit hard by the gas shortages. This has led to long queues at CNG stations and a rise in fuel prices, impacting daily commuters and the logistics industry.

Other sectors, including power generation and commercial enterprises, make up the remaining 11% of gas usage. Power plants that depend on natural gas for electricity generation are particularly vulnerable, leading to increased electricity outages and load-shedding. The country's gas infrastructure is outdated and cannot meet the growing demand. The reliance on imported liquefied natural gas (LNG) is costly and exposes Pakistan to volatile international markets. Inefficient management and corruption within the gas sector exacerbate the supply issues.

The gas crisis has far-reaching implications. Households are struggling with intermittent gas supplies, industries are facing reduced productivity and increased costs, and the transport sector is experiencing disruptions that affect both daily commuters and the broader economy.

Resolving the gas crisis in Pakistan requires a multi-faceted approach, including investing in gas exploration and infrastructure, improving management practices, and exploring alternative energy sources. There is also dire need to take decisive actions to get required outcomes. There is no need to beat about the bush.

ENERGY UPDATE

Managing Editor
M. Naeem Qureshi
info@energyupdate.com.pk
energyupdate@gmail.com

Editor
Sajid Aziz
saziz75@gmail.com

Chief Financial Officer
Ruqiya Naeem
ruqiya.nfeh@gmail.com

Chief Marketing Officer
Engr. Nadeem Ashraf
marketing@energyupdate.com.pk
nadeem.event@gmail.com

Marketing Consultant
Khalid Iqbal
hikhalid@live.com

Deputy Editor
Mustafa Tahir
mtmustafa92@gmail.com
mustafa@energyupdate.com.pk

Head of corporate Affairs and Sustainability
Halima Khan
mccm.energyupdate@gmail.com

Coordinator Lahore
Mohammad Asif

Art Director
Rizwan Ahmad
rizwanahmed55@gmail.com

Advisors
Zafar Sobani
Kalim. A. Saddiqui
Sohail Butt
Anwar Shahid Khan
Raziuddin Razi
Engr. Irfan Ahmed

Circulation & Subscription
Zahid Ali
Alizahid210@gmail.com
Shakeel Qureshi

Overseas Correspondents
Arif Afzal - USA
Kazim Wasti - Canada

Legal Advisors
M. Nadeem Sheikh Adocate

Monthly Energy Update
#309, Al-Sehat Centre, Hotel Regent Plaza,
Shahrah-e-Faisal, Karachi-Pakistan.
Tel: 021-3565 3676, 3521 3853, 35674570
Email: info@energyupdate.com.pk
Web: www.energyupdate.com.pk

REGISTRATION # DCO/DDO/LAW/CDGK-41/2006
Published by M. Naeem Qureshi for Energy Update
& Printed at Print Vision, Karachi Cell: 0333-2244586

A blueprint for a brighter grid

Decentralized energy models needed to support industrial growth in regions; promoting solar rooftop installations and net-metering is another strategy that could lead to productive industrial loads

Dr Khalid Waleed

Given the gruesome challenges of Pakistan's power sector – high tariffs, inability to offer subsidies due to IMF constraints, excess installed capacity, and inadequate transmission capacity – a sophisticated and innovative power tariff structure is essential for boosting industrial electricity demand.

Drawing from international best practices and conducting a thorough cost-benefit analysis can help design a tariff structure that balances affordability with sustainability and industrial competitiveness, while also considering Pakistan's unique context.

One effective approach to managing electricity demand and enhancing grid efficiency is the implementation of time-of-use (TOU) and seasonal tariffs. These tariffs incentivize industries to shift their electricity consumption to off-peak hours when the transmission system has greater available capacity, particularly in winter season. Pakistan has already done a successful experiment in this regard, where an innovative tariff scheme in winter for industries increased the winter demand. Likewise, the UK and parts of the European Union have successfully implemented TOU tariffs, offering electricity at significantly lower rates during periods of low demand.

Here in Pakistan, where transmission capacity is only about half of the installed generation capacity, this approach could significantly alleviate stress on the transmission system while encouraging better utilization of existing infrastructure. The costs associated with TOU/seasonal tariffs primarily involve upgrading metering infrastructure and educating consumers, while the benefits include reduced peak load stress, deferred investments in transmission upgrades, and lower overall electricity costs for industries.

While peak shaving is a critical goal, interruptible load programmes may not be feasible for Pakistan at this time. These programmes, which offer industries financial incentives to reduce or shift their demand during peak periods, require a high level of grid stability and consumer trust. South Korea, for example, has successfully implemented such programmes, but the success hinges on a highly reliable grid and a well-established relationship between utilities and industries.

In Pakistan, the existing challenges of grid reliability, along with potential resistance from industries wary of operational disruptions, make interruptible load programs less practical. The costs and risks associated with these programs in the Pakistani context likely outweigh the benefits, suggesting that alternative strategies for peak management may be

more effective.

A more viable solution for Pakistan's context is the development of a capacity auction market. Capacity markets have been effectively utilized in the US, particularly in PJM Interconnection, where industrial consumers bid for capacity, ensuring they secure electricity at competitive rates during periods of surplus capacity. In Pakistan, where there is significant excess installed capacity but limited transmission capacity, a capacity auction market could allow industries to access cheaper electricity during off-peak times, thereby optimizing the use of existing generation resources.

The cost of establishing such a market involves the design of a robust regulatory framework, IT infrastructure for market operations, and capacity-building efforts for market participants. However, the benefits are substantial, including better alignment of supply and demand, reduced capacity payments by making more efficient use of available capacity, and a more transparent and competitive market environment. Additionally, such a market could serve as a platform for attracting foreign investment, as it introduces a level of predictability and efficiency that international investors often seek. The upcoming CTBCM regulations will truly pave the way for the capacity market in Pakistan, however, deregulation of the market should be tagged with competitive market principles and a forward-looking horizon.

To further encourage industrial growth and efficiency, the introduction of performance-based tariffs can play a significant role. Instead of the traditional approach where tariffs are linked to energy efficiency improvements alone, this model would reduce tariffs for industries that demonstrate an increase in production and corresponding electricity consumption, hence enhancing the productive demand of electricity. This concept is similar to the mechanisms seen in countries like Germany, where industries that achieve higher production levels benefit from lower marginal electricity rates, thereby encouraging them to expand operations.

In Pakistan, implementing this model would require establishing clear criteria for measuring production increases and ensuring that the tariff reductions are substantial enough to incentivize higher energy use. In the past, we have experienced distortive subsidies for industries resulting in dead-weight loss. The upfront costs would include setting up monitoring systems and revising tariff structures, but the long-term benefits would include increased industrial productivity, higher electricity demand, and a more vibrant economy. This approach also aligns well with the goal of utilizing excess installed capacity, as industries would be motivated to ramp up production to take advantage of lower tariffs.

Decentralized energy solutions, such as microgrids and community grids within industrial zones, can help bypass the limitations of the central transmission grid. Countries like India and China have successfully adopted decentralized energy models to support industrial growth in regions with inadequate grid infrastructure.

The cost of setting up microgrids or captive plants in Pakistan could be shared between public and private sectors through public-private partnerships, with the government providing regulatory support and initial capital investment incentives. The benefits of this approach include reduced transmission and distribution losses, enhanced energy security for industries, and the potential to integrate renewable energy sources more effectively. Moreover, decentralized solutions could lead to lower electricity costs for industries, further boosting industrial competitiveness.

Special tariff packages for Special Economic Zones (SEZs) could serve as a targeted strategy to encourage industrial growth in specific regions. China's SEZs have benefitted from preferential tariffs that attract investment by offering lower electricity rates and direct grid connections, which in turn have fueled economic development. For Pakistan, designing such tariff packages would involve close collaboration with industrial stakeholders to ensure that the tariffs are competitive and aligned with national energy policies. The cost of implementing these tariffs could be offset by the economic benefits of increased industrial activity, job creation, and export growth.

To further enhance electricity consumption, particularly for residential consumers, revising the slab-based tariff structure could prove effective. Currently, slab-based tariffs in Pakistan tend to penalize higher consumption with progressively higher rates, which discourages larger energy users from increasing their electricity usage. By reversing this structure, with lower rates for higher consumption slabs, industries would be incentivized to expand production and increase their electricity usage. This approach could be particularly beneficial in utilizing the country's excess generation capacity.

Internationally, countries like South Korea have successfully used a similar approach, offering lower tariffs for bulk users to stimulate industrial growth. In Pakistan, implementing such a revised slab-based structure would involve recalibrating the existing tariff model to balance affordability with revenue sufficiency for distribution utilities.

Promoting solar rooftop installations and net-metering is another strategy that could shift electricity consumption patterns from non-productive residential loads to productive industrial loads. Solar rooftop systems allow residential consumers to generate their own electricity, potentially reducing their reliance on the grid during peak hours.

Finally, encouraging sector coupling initiatives such as Power-to-X (PtX), particularly Power-to-Gas (PtG), presents an innovative solution for managing excess renewable energy during periods of curtailment. In Pakistan's Thatta region, near the wind corridor, excess wind energy that cannot be transmitted due to grid limitations could be used to produce green hydrogen through electrolysis. This green hydrogen can then be stored and later used in various sectors, including industry and transportation, or even exported.

Germany has been a leader in PtG initiatives, using surplus renewable energy to produce hydrogen and other synthetic fuels, which helps stabilize the grid while promoting renewable energy integration. For Pakistan, investing in PtG infrastructure in wind-rich areas like Thatta could not only provide use for otherwise curtailed wind energy but also position the country as a leader in green hydrogen production, with significant potential for both domestic use and export.

A comprehensive cost-benefit analysis of these proposed strategies reveals a clear path forward for Pakistan's power sector. The costs, including infrastructure upgrades, market design and incentive programmes, are outweighed by the long-term benefits of enhanced grid efficiency, reduced peak demand, lower capacity payments, and increased industrial competitiveness.

The proposed innovative power tariff structure, informed by international examples and grounded in a detailed cost-benefit analysis, offers a viable solution to the challenges facing Pakistan's power sector. By implementing these strategies, Pakistan can increase electricity demand in the industrial sector, optimize the use of existing infrastructure, and set the stage for sustainable economic growth. ■

SEPRA to ensure most affordable power rates

Provincial Energy Minister **Nasir Shah** in interview assures to reduce operational costs, minimize losses, improve recoveries, and reduce electricity theft in Sindh and its capital Karachi; says STDC will work closely with SEPRA for effective transmission of clean energy

Naeem Qureshi

Energy Update magazine conducted an Interview with Sindh Energy Minister Syed Nasir Hussain Shah. Some excerpts of the interview are: Nasir Shah said that by enacting the Sindh Regulation of Electric Power Services Act 2023, we aimed to establish regulatory control within our territory, enabling Sindh to fully capitalize on its energy resources, support industrial growth, and ensure sustainable development for our people.

This step reaffirms our commitment to taking control of our energy destiny and ensuring that the people of Sindh benefit from our vast energy resources, he added.

Shah said that they were committed to improving the electricity supply, making it more reliable and affordable. SEPRA is central to our strategy, and through innovative market-based solutions, we anticipate significant improvements that will benefit all consumers throughout the Province.

Question: Why did the Sindh government deem it necessary to establish Pakistan's first-ever provincial power sector regulator in line with the 18th Constitutional Amendment?

Answer: We established Pakistan's first-ever provincial power sector regulator in line with the 18th Constitutional Amendment to assert Sindh's constitutional rights under Article 157(2), which remained intact even after the Amendment. This article empowers us to construct powerhouses, lay transmission lines, and manage the distribution and supply of electricity within the provincial territory.

Additionally, Section 7(4) of the NEPRA Act 1997 also supports provincial autonomy in managing electricity-related matters. The National Electricity Policy (NEP) 2021, which is duly approved by the Council of Common Interest (CCI), also recognizes provincial rights over the provision of electric services by a provincial government within its territory.

Our decision was also driven by several challenges, including the exclusion of key renewable energy projects from the federal government's Indicative Generation Capacity Expansion Plan (IGCEP)

during its first iteration in 2020-21 and NEPRA's refusal to grant tariffs to renewable energy developers in Sindh who were duly issued LoIs by the provincial government.

These federal government decisions severely impacted our efforts to harness Sindh's renewable energy potential, particularly in the Jhimpir-Gharo Wind Corridor, and threatened our economic growth, especially in the textile sector under global pressures like the Paris Agreement and Carbon Border Adjustment Mechanism.

By enacting the Sindh Regulation of Electric Power Services Act 2023, we aimed to establish regulatory control within our territory, enabling Sindh to fully capitalize on its energy resources, support industrial growth, and ensure sustainable development for our people.

I'm pleased to inform you that recently, the Provincial Cabinet has approved the establishment of SEPRA by appointing its Chairman and Members. Additionally, we have allocated a budget of Rs200 million for its establishment. This step reaffirms our commitment to taking control of our energy destiny and ensuring that the people of Sindh benefit from our vast energy resources.

Q: To what extent the setting up of SEPRA will serve the cause of ensuring uninterrupted power supply to residential, commercial, and industrial consumers in Sindh at the most affordable rates?

A: The establishment of SEPRA is a vital step in our ongoing efforts to ensure that all consumers in Sindh—residential, commercial, and industrial—receive a reliable power supply at the most affordable rates. While the Federal Government currently manages energy procurement, transmission, and distribution across most of the country, except in Karachi where K-Electric (KE) operates, we see SEPRA as a key player in complementing these efforts.

Our goal with SEPRA is to work closely with both federally owned distribution companies ie HESCO, SEPCO, and KE to develop effective mechanisms that enhance the consistency of power supply. We are particularly focused on reducing operational costs, minimizing losses, improving recoveries, and reducing electricity theft as these factors are crucial for keeping electricity affordable. Additionally, we plan to engage with the federal government to explore ways to reduce taxation on electricity, which would help lower the overall cost for consumers. We will also advocate for electricity to be priced closer to the actual cost of service, which would further alleviate the financial burden on consumers.

In Karachi, SEPRA will have a significant role to play. By promoting innovative models such as Business-to-Business (B2B), Business-to-Consumer (B2C), and Public-Private Partnerships (PPP), we aim to provide more affordable electricity options for both businesses and households. These models are designed to encourage competition and private sector participation, leading to more efficient and cost-effective electricity distribution.

Moreover, we are committed to promoting the use of renewable energy sources for households across Sindh. By encouraging the adoption of solar and other renewable energy solutions, especially in off-grid and remote areas, we hope to offer a sustainable and cost-effective alternative to conventional power. This not only reduces our dependency on the national grid but also helps lower electricity costs for consumers while contributing to environmental sustainability.

Ultimately, SEPRA is about collaboration. We are committed to working with all stakeholders, including the Federal Government, to ensure that Sindh's electricity needs are met in a manner that is both reliable and affordable. Our aim is to create a more efficient, sustainable, and consumer-friendly electricity sector that truly benefits everyone in the province.

Q: Will the setting up of SEPRA be helpful for the cause of tapping the massive clean energy generation potential of Sindh in the form of solar and wind power?

A: The establishment of SEPRA is indeed a significant step towards harnessing Sindh's massive clean energy potential, particularly in the form of solar and wind power. Renewable energy development is a key priority for us, and this is reflected in the draft Sindh Electricity Policy 2024, which the Energy Department has currently circulated for comments and feedback from stakeholders. Once we receive and incorporate any comments, the revised draft will be presented before the Provincial Cabinet for approval and implementation.

We have vast wind corridors, particularly in the Jhimpir-Gharo regions, and significant solar energy potential that remains largely untapped. Through SEPRA, I aim to streamline the regulatory processes, making it easier for investors and developers to initiate and complete solar and wind projects. SEPRA will provide a structured framework that ensures these projects are developed efficiently and are integrated into the broader energy network of the Province.

A critical component of this effort is the role of the Sindh Transmission and Dispatch Company (STDC), which is mandated to provide transmission services through wheeling. The STDC will work closely with SEPRA to ensure that the electricity generated from renewable sources is effectively transmitted to where it is needed most. This collaboration will facilitate the efficient transfer of power from solar and wind projects to the grid, thereby maximizing the use of renewable energy and ensuring that it reaches consumers across Sindh.

Moreover, SEPRA's role in promoting competitive market mechanisms will attract private sector investment in renewable energy. By enabling Business-to-Business (B2B) and Business-to-Consumer (B2C) models, as well as Public-Private Partnerships (PPP), I believe we will encourage a more dynamic and responsive energy sector that can meet the growing demand for clean energy.

Q: Will the establishment of SEPRA be beneficial to promote B2B arrangements for greater involvement of the private sector to energize industries and commercial buildings in urban centers in Sindh?

A: Yes, as I mentioned earlier, the establishment of SEPRA will indeed be highly beneficial in promoting Business-to-Business (B2B) arrangements, along with Business-to-Consumer (B2C) and Public-Private Partnership (PPP) models. These mechanisms will facilitate greater involvement of the private sector in energizing industries and commercial buildings in urban centers across Sindh.

The draft Sindh Electricity Policy 2024 places a strong emphasis on creating a competitive and dynamic energy market that encourages private sector participation. With SEPRA in place, we will have the necessary regulatory framework to streamline and facilitate these B2B transactions, allowing industries and commercial entities to directly engage with power producers. This will not only provide

them with more reliable and tailored energy solutions but also help in reducing costs by fostering competition among power providers.

Furthermore, SEPRA's oversight will ensure that these arrangements are conducted transparently and fairly, with clear guidelines and standards that protect the interests of all parties involved. By empowering the private sector through these mechanisms, I am confident that SEPRA will significantly contribute to the economic growth and industrial development of Sindh's urban centers, making them more competitive and sustainable.

We are fully committed to implementing these models effectively, ensuring that they bring the intended benefits to our industries and communities.

Q: To what extent will the power consumers in Karachi, who have been enduring prolonged power load shedding despite paying inflated power bills every month, benefit from the establishment of SEPRA?

A: The establishment of SEPRA offers a significant opportunity for power consumers in Karachi, who have unfortunately been enduring prolonged power load shedding despite paying inflated bills. I understand the frustrations that come with this situation, and I want to assure you that we are fully committed to addressing these issues.

While K-Electric currently operates under the regulatory domain of the federal regulator NEPRA and procures a substantial amount of electricity from the national grid, I believe that SEPRA can complement these efforts and play a crucial role in enhancing the overall electricity landscape in Karachi. Our aim with SEPRA is to create a more competitive and efficient electricity market that benefits all consumers, not just in Karachi, but across the entire. We are fully committed to improving the electricity supply, making it more reliable and affordable. SEPRA is central to our strategy, and through innovative market-based solutions, we anticipate significant improvements that will benefit all consumers throughout the province.

To achieve this, we are exploring the potential introduction of multiple distribution companies within KE's service territory under the SEPRA Act 2023. This could enhance service quality and reliability by fostering competition, though it presents certain complexities that we would need to manage carefully. I understand that bringing KE under SEPRA's regulatory domain would be a significant move, and I am fully aware of the delicate and thoughtful approach required to make this happen.

At the same time, I am confident that SEPRA will provide immediate relief to industrial, bulk consumers, and large housing societies through B2B and B2C arrangements under the market mechanism. These arrangements will allow these consumer segments to engage directly with power producers, potentially bypassing some of the issues associated with the existing distribution framework. This initiative is an invitation for the private sector to step forward and contribute to more reliable and cost-effective power solutions.

I want to assure everyone in Sindh, including Karachi, that we are fully committed to improving the electricity supply and making it more reliable and affordable. SEPRA is central to our strategy, and through innovative market-based solutions, we anticipate significant improvements that will benefit all consumers throughout the province. ■

PPIB celebrates completion of Suki Kinari Hydropower Project

The Private Power & Infrastructure Board (PPIB), acting as the primary facilitator for private power sector investments on behalf of the Government of Pakistan, proudly announces the successful commissioning of the 884 MW Suki Kinari Hydropower Project under the China-Pakistan Economic Corridor (CPEC). This milestone represents a remarkable investment of USD 1.7 billion.

PPIB's Managing Director, Shah Jahan Mirza, extended his heartfelt congratulations to the project's Chinese sponsors, Energy China, as well as to the governments of China and Pakistan, Chinese financial institutions, and Pakistani organizations involved. "This project stands as a symbol of collaborative efforts between both nations and their teams, ensuring its timely completion," Mirza noted.

The Suki Kinari project, which generates approximately 3 billion units of clean and renewable energy annually, will provide sustainable power to homes, industries, and infrastructure across Pakistan. Despite numerous challenges, the project's success highlights PPIB's dedicated facilitation and the unwavering support of all stakeholders.

This achievement marks a major step forward in Pakistan's clean energy journey, driving growth and reducing environmental impacts. ■

TARIQ
ELECTRIC PVT LTD

Our **KIOSK substation & Solar Solutions** including LV, MV, Transformer provides economical solution to meet the large scale commercial and industrial solar project requirements.

ADVANTAGES

- LV SIDE : FROM 400VAC UPTO 1150 VAC
- MV SIDE: 6.6 KV UPTO 33 KV
- REDUCED PROJECT COST AND TIME
- REDUCED EQUIPMENT AND CABLE SIZES
- ABB- TIER-1 EUROPE BRAND BREAKERS
- ABB TOUCH SCREEN DISPLAY

FOR QUICK DELIVERY, CONTACT US AT
info@tariqelectric.com

ABB 800-1150VAC CIRCUIT BREAKERS

Authorized Channel Partner ABB

License Manufacturer ABB

www.tariqelectric.com

ISO 9001: 2015 Certified

SAP Business One

Climate change causes food insecurity in Pakistan

Lower agricultural productivity and crop failures caused by climate change lead to higher food prices and food insecurity; there is a dire need to develop and promote climate-resilient crop varieties

Naeem Qureshi

The Writer is Managing Editor of Energy Update and Environment Activist

The food security's international definition as per UN standard is: 'food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. But when we compare this international standard of food security to Pakistan's food security condition, we will find the worst food insecurity situation.

Climate change is badly affecting agriculture crops in Pakistan, with significant implications for food security, rural livelihoods, and the overall economy. The climate change brings extreme warming, severe colds, droughts, rains, and floods that directly damage crops, resulting in lower productivity. In the warming season, glaciers melt fast and cause massive floods that destroy standing crops in riverine areas while rain-induced flash floods in the winter season also damage crops. The medium flood of August 2024 in the Indus River has also damaged standing crops in riverine areas.

The major proof of huge climate-induced losses to agriculture was recorded in the 2022, 2011, and 2010 floods. In 2022 floods, about 4.4 million acres of crops were damaged and around 1 million animals were lost. Total damages and losses amounted to US$ 30.13 billion.

In the 2011 floods, the agricultural damage reached more than 2.9 billion dollars while in the 2010 floods, the overall damages and losses to the agriculture sector of the country were estimated at around Rs429 billion.

Climate change is actively impacting Pakistan through the increased occurrence of extreme climatic hazards that affect crops. Prolonged and severe drought episodes between 1999 and 2002 affected up to 60% of Pakistan's land area.

The agricultural sector, which employs a large portion of the Pakistani workforce, is suffering from economic losses due to crop failures and reduced productivity. As farming becomes less viable, many rural inhabitants are migrating to urban areas in search of better opportunities, leading to increased urbanization and associated challenges.

Lower agricultural productivity and

crop failures are leading to higher food prices, making it difficult for low-income households to afford basic food items. The combined effects of temperature extremes, water scarcity, and soil degradation are leading to reduced crop yields. This poses a threat to food security in Pakistan, where a significant portion of the population is already food insecure.

Rising temperatures are leading to heat stress on crops, reducing their productivity. Wheat and rice, the staple crops in Pakistan, are particularly vulnerable to heat stress, which can lead to reduced yields. Frequent and intense heatwaves are damaging crops, especially during critical growth stages. This is also affecting livestock, leading to lower milk production and higher mortality rates. Increased frequency of extreme weather events, such as floods and droughts, is causing significant damage to crops. Floods can wash away fields, while droughts lead to water shortages, affecting crop growth.

The increased intensity of rainfall and floods contributes to soil erosion, which depletes the soil's nutrient content and reduces agricultural productivity. Decreased Fertility: Continuous cropping, combined with inadequate replenishment of soil nutrients, is leading to the depletion of soil fertility in many parts of Sindh.

Climate change has made rainfall patterns more erratic, with some regions experiencing heavy downpours and others suffering from drought. This unpredictability makes it difficult for farmers to plan sowing and harvesting times. Pakistan relies heavily on the Indus River, fed by Himalayan glaciers. Climate change is accelerating glacier melt, initially increasing river flow but eventually leading to reduced water availability as glaciers shrink.

Groundwater Depletion: The increased demand for irrigation due to irregular rainfall is leading to over-extraction of groundwater, exacerbating water scarcity issues. Rising temperatures and improper irrigation practices are contributing to soil salinization, which reduces soil fertility and affects crop yields. Increased rainfall intensity leads to soil erosion, further degrading arable land and reducing agricultural productivity.

Climate change is causing shifts in the growing seasons for various crops. For example, the wheat planting season has shifted in some areas, disrupting traditional farming cycles. Warmer temperatures and changing precipitation patterns are leading to the proliferation of pests and diseases, which can devastate crops.

Pakistan is taking some steps to adapt to these challenges, including developing climate-resilient crop varieties, improving irrigation practices, and promoting sustainable farming techniques. However, more comprehensive and coordinated efforts are needed to mitigate the impact of climate change on agriculture. Addressing these challenges requires a multi-faceted approach, including both mitigation and adaptation strategies to ensure the sustainability of agriculture in the face of a changing climate.

The agricultural sector in Pakistan is facing economic challenges due to reduced crop yields and increased costs for inputs like water, fertilizer and pesticides. This is particularly challenging for smallholder farmers, who have limited resources to cope with these changes. As agriculture becomes less viable, there is a trend of rural-to-urban migration, with many people moving to cities like Karachi in search of better opportunities. This migration is putting pressure on urban infrastructure and services.

According to a report by the State Bank of Pakistan, in Pakistan, estimates suggest that malnutrition and its outcomes cost the country's economy 3% of GDP (US$ 7.6 billion) every year. In particular, high child mortality rates, prevalence of zinc and iodine deficiencies, stunting, and anemia lead to deficits in physical and mental development.

The frequency of climate-related natural disasters has alarmingly risen in Pakistan. The most observed hazardous phenomena in Pakistan during 1980-2022 were floods, tropical cyclones, extreme temperatures, and occasional droughts. It has been observed that the intensity of floods has been increasing over the years, which can be attributed to changes in global climate patterns (rising temperature and changing precipitation patterns), melting glaciers, deforestation, and urbanization.

Climate change leads to prolonged droughts in specific regions of Pakistan. In 2018, insufficient rainfall and extended water scarcity caused drought conditions in Balochistan and Sindh. In September of that year, the Sindh government declared significant portions of Southern Sindh as "calamity areas" due to deficient rainfall during the monsoon season. Unlike other natural disasters, droughts build up gradually over time, and their impacts can persist for several years after they occur.

Climate change exacerbates Pakistan's vulnerability to floods by altering precipitation patterns, intensifying extreme weather events, and increasing the frequency and severity of floods. Rising global temperatures contribute to melting glaciers and increased water runoff, further exacerbating flood risks, particularly in

There is a need for more efficient irrigation techniques, such as drip irrigation, to conserve water and reduce the impact of water scarcity. Strengthening flood management infrastructure, such as embankments and drainage systems, can help mitigate the impact of flooding on agricultural lands. The agriculture sector in Sindh is under significant stress due to climate change, with rising temperatures, erratic rainfall, water scarcity, and soil degradation posing severe challenges. Addressing these issues requires targeted interventions, including improving water management, promoting climate-resilient agriculture, and supporting farmers to adapt to changing conditions. There is a dire to develop and promote climate-resilient crop varieties that can withstand higher temperatures and water stress is crucial for sustaining agriculture in Sindh. ■

Solar revolution happening in Pakistan

EU Report

A silent revolution at a very micro scale is happening in renewable energy (mainly solar) in Pakistan and despite its efforts to discourage the adoption to cover the national grid stranded cost, the government may not be able to stop these building blocks of micro solar installments to have a macro impact in years to come. It is better to embrace it.

The math is simple. Inflating electricity bills and falling solar prices have made the decision of households easier -irrespective of economic class, to utilize solar in the energy mix. The payback on solar investment has gone down from around 10 years to 1.5-2 years with net metering. The government is contemplating discouraging it by reducing the incentive of net metering. However, that may not be able to stop the conversion.

The real game changer is going to be improvement in battery and chip technology along with their falling prices. The industry experts claim that the prices (and technology of higher battery life cycle) are going to fall faster than the solar panels. Already the price of Lithium-ion batteries is down by 90 percent in USD/KWh in the last decade and may reduce to half from current levels in 3-5 years.

This along with the lack of clarity on the future of net metering means households and other consumers may go for a hybrid (battery dependent solution). Upper-class consumers to opt for Lithium-ion batteries may shave off the peak load expense on the grid and may at some point in the future potentially go completely off the grid. Middle and lower-middle-class consumers are moving fast towards energy storage for lesser loads using solar panel plates and Lead-Acid batteries (which are almost at one-fourth of the price of Lithium-ion batteries).

The battery storage doesn't have to cover 24 hours to be feasible for consumers. The government has installed expensive base-load power plants (IPPs) to match the peak load in summer. That is why the rate of peak hours is higher. And that gives more incentive to install batteries to shave off that load by storing power produced in the daytime to be consumed in peak hours. The peak-shaving is increasing the incentive for battery storage solutions.

The other element is that despite having a surplus in generation capacity, there are areas (both urban and rural) where load-shedding is high due to grid transmission constraints or load management owing to higher theft. Here small-scale solar adaption could be at an even faster pace.

This segment is highly value-conscious and one of the key drivers for their purchase decision (other than price) is the length of warranty offered by the companies. Here companies like Daewoo Batteries (Treet Battery Ltd) which offers a 1-year warranty, versus the industry norm of 6 months) can extract the juice. Then BYD Lithium-Ion batteries have been launched in Pakistan by Diwan International recently which relatively affluent class people to benefit from.

Research shows that the quality of the battery is a major factor in selecting which storage solution to go for at the time of installation of solar. Lithium-ion batteries have a longer life, but their high up-front costs and minimum base capacity would result in having a smaller market. The bigger share is of middle and lower-middle class where millions of households may opt for Lead-acid batteries, as they may not have enough space on the roof (in houses less than 10 Marlas, the solar panel space would be less than for 5-7 KV and available Lithium-ion batteries to support a minimum of 5KV load). Here good companies making Lead-acid batteries are to grab the market share.

In the past, UPS and other solutions largely relied on conventional vehicle batteries which are not designed to be used with UPS and Solar and are likely to malfunction much earlier. With growing knowledge on battery storage, consumers may opt for 'deep cycle' batteries as those are specially designed to be used in energy storage applications –players in the deep cycle battery manufacturing (such as Treet Battery (Daewoo Batteries) and Atlas Battery (AGS)) to have first mover advantage.

With falling battery prices, the adaptation to EVs (especially) in 2-3 wheelers may accelerate. That is to reduce the price gap of EVs and ICE vehicles. Low-end consumers may have bikes on EVs and use solar-powered energy to charge them. That is to have the double benefit of reducing electricity and fuel bills. The macro benefit is to have fewer imports of fuel and low emissions in an already polluted environment. It's a win-win for all. ■

GOODWE

YOUR SOLAR ENERGY SOLUTION

Maximize
Your Savings

Increase
Energy Independence

Warranty
5 years replacement

ES G2 Series HOT SALE

3-6 kW | Single Phase | 2 MPPTS | Hybrid inverter (LV)

Strong backup power supply

HT Series HOT SALE

100-120 kW | up to 12 MPPTs | Ongrid Inverter(HV)

IP66 and C5 Protections

ES Uniq Series UNBEATABLE VALUE FOR MONEY !

8-12kW | Single Phase | Hybrid Inverter (LV)

Compatible with Lead Acid and Lithium

en.goodwe.com

Fahad Ali - Country Manager Pakistan
0300-0457492

Solar Technology Future in Next 20 Years: A Perspective About Pakistan

Govt must continue to incentivize solar energy adoption through subsidies, tax incentives, and favorable tariff structures; solar power will become increasingly accessible to households, businesses, and industries across country

Mustafa Tahir

Writer is Deputy Editor Energy Update

As the world grapples with the challenges of climate change, energy security, and sustainable development, solar technology is emerging as a beacon of hope. Over the next 20 years, solar energy is poised to revolutionize the global energy landscape, with Pakistan uniquely positioned to harness its potential. This article explores the future of solar technology, focusing on its implications for Pakistan's energy sector, economy, and society.

The Evolution of Solar Technology

In the coming two decades, solar technology is expected to undergo significant advancements. Innovations in photovoltaic (PV) cells, such as the development of perovskite solar cells, promise higher efficiency and lower costs. These advancements will likely lead to widespread adoption, making solar energy the most cost-effective and reliable energy source. Additionally, the integration of solar technology with energy storage systems, like batteries, will address intermittency issues, enabling a round-the-clock power supply.

Furthermore, the rise of smart grids and the Internet of Things (IoT) will optimize solar energy distribution, enhancing efficiency and reducing waste. These technologies will allow real-time monitoring and management of energy consumption, empowering consumers to make informed decisions about their energy use. In this scenario, decentralized solar systems, such as rooftop panels and microgrids, will become more prevalent, reducing dependence on centralized power plants and enhancing energy resilience.

Solar Energy in Pakistan: Current Landscape

Pakistan, with its abundant sunlight and favorable climatic conditions, is ideally suited for solar energy development. Over the past decade, the country has made strides in harnessing solar power, with the installation of large-scale solar farms and the proliferation of rooftop solar systems. The government's initiatives, such as net metering and the Private Power Infrastructure Board (PPIB) formerly Alternative Energy Development Board (AEDB)'s policies, have played a crucial role in promoting solar energy adoption.

However, challenges remain. The high

initial costs of solar systems, limited access to financing, and inadequate infrastructure have hindered widespread adoption. Moreover, the lack of awareness and technical expertise among consumers and policymakers has slowed progress. Addressing these challenges will be essential for Pakistan to fully realize the potential of solar technology.

In the next 20 years, solar energy is set to become a cornerstone of Pakistan's energy mix. As technology advances and costs continue to decline, solar power will become increasingly accessible to households, businesses, and industries across the country. The government's commitment to renewable energy, coupled with international support and private sector investment, will drive the expansion of solar infrastructure.

1. Solar-Powered Industries and Agriculture: Pakistan's industrial and agricultural sectors, which are heavily reliant on fossil fuels, will gradually get transition to solar energy. Solar-powered irrigation systems will revolutionize agriculture, reducing dependency on diesel pumps and promoting sustainable farming practices. Similarly, industries will adopt solar technology to power their operations, reducing energy costs and carbon emissions.

2. Rural Electrification and Energy Access: Solar technology will play a pivotal role in addressing Pakistan's energy access challenges, particularly in rural and remote areas. Off-grid solar solutions, such as solar home systems and microgrids, will provide reliable and affordable electricity to communities that are not connected to the national grid. This will not only improve the quality of life in these areas but also support economic development and poverty alleviation.

3. Economic Growth and Job Creation: The expansion of the solar industry in Pakistan will create significant economic opportunities. The establishment of solar manufacturing plants, EPC (Engineering, Procurement, and Construction) companies, and service providers will generate employment and spur economic growth. Moreover, the development of a skilled workforce in solar technology will position Pakistan as a regional hub for renewable energy expertise.

4. Environmental and Social Impact: Widespread adoption of solar technology will contribute to Pakistan's environmental sustainability goals. By reducing reliance on fossil fuels, solar energy will help mitigate air pollution, reduce greenhouse gas emissions, and combat climate change. Additionally, the social impact of solar energy, particularly in terms of energy access, will be profound, empowering communities and fostering social equity.

Policy and Regulatory Framework: Key to Success

The future success of solar technology in Pakistan will depend on a supportive policy and regulatory framework. The government must continue to incentivize solar energy adoption through subsidies, tax incentives, and favorable tariff structures. Additionally, efforts to streamline the regulatory process and reduce bureaucratic hurdles will be crucial in attracting investment and accelerating project implementation.

Furthermore, public awareness campaigns and educational programs will be essential in fostering a culture of sustainability and encouraging the adoption of solar technology. Collaboration between the government, private sector, and civil society will be key to overcoming challenges and ensuring the long-term success of solar energy in Pakistan.

Conclusion

As the world moves towards a sustainable energy future, solar technology will play a central role in transforming Pakistan's energy landscape. Over the next 20 years, advancements in solar technology, combined with supportive policies and growing investment, will enable Pakistan to harness its vast solar potential. The result will be a cleaner, more resilient, and equitable energy system that supports economic growth, social development, and environmental sustainability. In this bright future, solar energy will not only power homes and businesses but also illuminate the path towards a prosperous and sustainable Pakistan. ■

Study highlights true cost of Thar coal

EU Report

A recent study suggests that the external costs associated with Thar coal should be factored into the overall cost of power generation from this resource to accurately assess its true expense.

The study, titled 'Externalities of Thar Coal', was unveiled at an event organized by the Pakistan Research Institute for Equitable Development (PRIED) on Tuesday night. Thar coal, as the largest domestic fuel resource, is often promoted as an affordable local option for the future and is frequently presented as a cost-effective solution to Pakistan's energy crisis. However, there are significant socio-environmental concerns related to coal.

The report aims to estimate the external costs associated with coal-fired power generation using Thar coal in District Thar, Sindh. It identifies and quantifies these externalities, which are borne by society and the environment rather than by investors or consumers.

The report notes that the current methods for determining energy tariffs for coal and other fuels typically include costs related to energy production, infrastructure investment, financing, transmission, distribution, consumer connections, fuel price adjustments, operation and maintenance, government subsidies, and taxes.

However, these calculations overlook several costs not directly incurred by investors, distributors, or consumers, but which impact society and the environment.For instance, public health issues faced by communities near power plants and coal mines; greenhouse gas emissions; toxic pollution; and water resource degradation are externalized costs that are not accounted for in the traditional pricing model. Such costs are borne by society and the environment instead of investors, power generators, or consumers far from Thar.

The report highlights that certain well-established external costs, such as the social cost of carbon -- which is updated annually -- are not reflected in the periodic cost adjustments. These are classified as externalities.

The focus of the report is on identifying these externalities related to coal mining and power generation from Thar coal. Specific areas examined include open-pit coal mining, post-mining landscape impacts, coal-fired power generation, coal transportation, and the decommissioning of power plants.

Grids facing enormous challenges these days due to massive solar power injection

Enercap CEO, **Waseem Ashraf Qureshi**

The electricity grids have been facing enormous challenges these days due to the injection of a lot of solar power.

Chairman and CEO of Enercap, Waseem Ashraf Qureshi, stated this in his speech on the occasion of Solar Conclave and Technology Excellence Awards-2024 recently organised by the Energy Update at a hotel in Lahore.

Mr Qureshi said the intermittency of renewable energy had been causing a lot of instability and other problems for the grids. He told the audience at the conclave that harmonics, frequency regulations, and peak shaving had been the biggest challenges the grids had been facing these days.

"As the best manufacturer in the market, we believe, we have the biggest solution to this problem ever offered in the market," Mr Qureshi said.

He informed the audience that Enercap introduced the first supercapacitor-based energy storage system. "We have also developed large utility-scale battery energy storage systems," he said.

He said that these best storage systems were compatible with any grid system in the world. "We have been deploying these systems in a lot of countries around the world including Turkey, Saudi Arabia, and the UAE," said the Enercap CEO.

Mr Qureshi said that his invention Energy Saver was the world's most advanced power electronics system that has ever been offered by any company in the world. "It can blend different energy sources, regulate the power quality, and can also compensate the power factor," he said.

He said that Enercap offered micro-grid software free to every customer for the complete monitoring and management of the energy servers. He said the Enercap's energy systems could be installed in any type of environment whether industrial or commercial. It can also compensate for any type of power factor.

"We are also the best-levelized cost of electricity storage offering in the market," he said. "So it is more viable for us to offer energy as a service and charge our customers on the usage of batteries, which nobody has ever offered. For this purpose we have developed a special billing mechanism and software," he said.

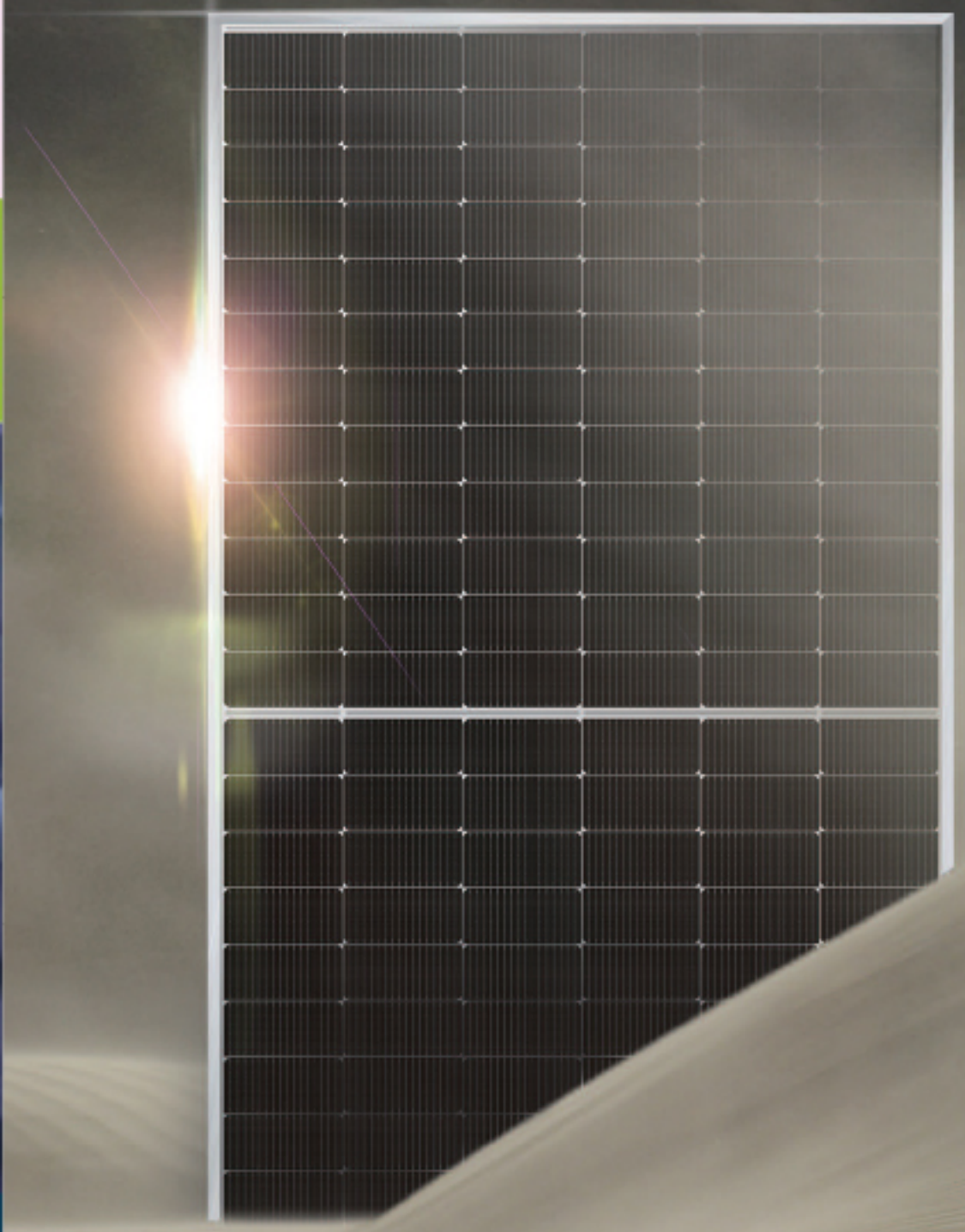
He also greeted Energy Update on organising the Solar Conclave to discuss in detail the issues persisting in Pakistan's solar energy market. ■

ENERCAP

JOLYWOOD

Same Sunshine
More Value

TIER 1
Bloomberg
NEW ENERGY FINANCE



JW & NIWA SERIES

WINDPROOF

Lower Carbon

Reduce 10.19% Carbon Emission

Higher Reliability

Lower temperature coefficient
Lower operating temperature
Lower hot spot temperature

Hurricane resistance | Snowstorm resistance
Hail resistance | Burst resistance

Higher Output

Increase 1.63% Power Generation

The Best Choice for Challenging Conditions

Contact Us

info@jolywood.cn www.jolywood.cn @Jolywood Solar

Connect IT with HUAWEI
building future for business together

Huawei Pakistan made its first ever significant mark in ITCN ASIA POWERED BY HUAWEI for the global technology leader in Pakistan at the Karachi Expo Centre, this year's ITCN promises to be a landmark occasion with Huawei's debut participation, showcasing its latest innovations and technology solutions.

Huawei Pakistan Presenting its cutting edge solution from Digital Power consisting of Data Center Facility & Critical Power, FusionSolar products of Commercial & Industrial PV Solutions, Huawei representative highlights how businesses can maximize the benefits of intelligence, digitalization, and the strategic advantages of advanced network and digital power technologies, emphasize accelerating intelligence through business development, industry advancements, and ecosystem growth.

The event was graced by the presence of notable dignitaries, including the Minister for IT and Telecom, Ms. Shaza Fatima, Additional Secretary IT and Telecom, Ms. Aisha Humera, Chairman PASHA, Mr. Zohaib Khan, Brigadier Nadir from SIFC, CEO of PSEB, Mr. Zeeshan Khattak, and Huawei's Vice CEO Public Affairs, Mr. Yushaoning. In recognition of his outstanding contributions to the IT sector,

Chairman PASHA, Mr. Zohaib Khan, was honored with a shield by the Minister for IT and Telecom, Ms. Shaza Fatima. This award highlights Mr. Khan's excellent work and the significant role PASHA plays in driving the IT industry forward. The exhibition attracted considerable attention, with Governor Sindh, Mr. Kamran Tessori, making a special appearance at the Huawei booth. Governor Tessori expressed his excitement and interest in learning more about Huawei and its various initiatives in Pakistan, underscoring the importance of international partnerships in the region's technological advancement.

Following the second day of the event, Additional Secretary IT, Ms. Aisha Humera, paid a detailed visit to the Huawei booth. During her visit, she showed a keen interest in several cutting-edge technologies, including the Huawei Inverter and the newly launched eKit, which is designed to serve the SME market. Her interest in these technologies reflects the government's commitment to exploring innovative solutions that can bolster the country's technological infrastructure.

While addressing to the audience, Ray Yu Shaoning, Vice CEO Public Affairs, Huawei Pakistan said, "Huawei Pakistan, a key participant in this year's event, is showcasing its cutting-edge solutions from Digital Power and EBG, which include the Data Center Facility & Critical Power, FusionSolar products for Commercial & Industrial PV Solutions, and the newly launched EKIT product line. These offerings represent the latest breakthroughs in foundation models and a wide range of new SMB models and applications. Huawei's representatives have highlighted how businesses can

maximize the benefits of intelligence and digitalization by leveraging advanced network and digital power technologies. They emphasize the importance of accelerating intelligence through business development, industry advancements, and ecosystem growth."

Kevin Jin, Managing Director, Huawei Pakistan Digital Power said in his remarks, 'As a premium partner of ITCN Asia Karachi, Huawei Digital Power is excited to showcase our latest advancements in digital power technologies. This event provides a valuable platform to demonstrate how our Data Center & critical power empowering the society for scalability in storage technology along with Residential and C&I PV solutions are driving growth and innovation across industries. We are also proud to lead and highlight our commitment to delivering cutting-edge solutions that protect and empower businesses and promoting greener and carbon free Pakistan. We look forward to engaging with industry leaders and exploring new opportunities for collaboration and advancement.'

Empowering Carbon free economy Huawei Pakistan showcased its latest Solar innovation Solutions for Residential and commercial and Industrial markets, covering all expects and highlighting the upcoming C&I inverter 150KTL and I-Site power.

This year's ITCN event, held at the Karachi Expo Centre, features a comprehensive display of the latest advancements in technology, including digital transformation solutions, cybersecurity, and data center & FusionSolar innovations. Other key highlights of ITCN Karachi 2024 include presentations on emerging technologies, panel discussions featuring industry experts, and networking opportunities for professionals across various sectors. The event promises to be a hub of innovation and collaboration, setting the stage for future technological advancements in Pakistan and beyond.

Govt to hike gas prices

EU Report

The government has made up its mind to further increase the gas prices to force people to shift from gas-based space heating system to grid electricity-based in the winter season. To this effect, a committee, headed by Petroleum Minister Musadik Malik and comprising Nepra chairman, secretaries of Power and Petroleum divisions, has been constituted. The prime minister constituted the committee in the last week of July, and it would submit its recommendations to him next month. "The committee will hopefully meet for the first time in the current or next week on how to shift gas-based space heating system to electricity-based by jacking up gas rates and in return what electricity rates are to be offered to people for space heating in the winter season," top officials of the Energy Ministry privy to the development told The News. "There are 12 slabs of gas consumer categories and the last category consumers of above 4hm3 are paying the gas price of Rs4,200 per MMBTU, which is much higher than the ring-fenced price of imported RLNG. The authorities are working to escalate the gas prices of all remaining consumers who fall in the first 11 slabs, including protected and non-protected consumers."

Sindh CM proposes major relief plan for electricity consumers

EU Report

Sindh Chief Minister Syed Murad Ali Shah has presented a significant relief plan for domestic electricity consumers to the Federal Minister for Energy Owais Laghari. The proposal includes providing relief to consumers using up to 500 units of electricity, eliminating peak hour charges, and abolishing different tariff slabs. The chief minister emphasized that reducing electricity costs would increase demand and utilize surplus electricity effectively.

During a video conference, CM Shah discussed these proposals with Laghar. Both leaders deliberated on targeted subsidies for low-income consumers through the Benazir Income Support Program, with the Sindh government submitting the plan to the federal government for consideration. The CM also proposed a uniform electricity rate for all domestic consumers to boost consumption. Laghari acknowledged the need for further discussions on eliminating tariff slabs and emphasized reducing production costs using local fuel sources.

The meeting concluded with suggestions for incentivizing factories to operate night shifts with reduced electricity rates, potentially creating employment opportunities. Minister Laghari agreed to finalize these proposals in a separate meeting with the Chief Minister.

THAR coal dream versus reality

Muhammad Usman Zafar

The writer is MPhil. & MSc in Coal Technology with 14 years of experience in coalfield

Govt needs to facilitate local mining companies to start mining to increase coal production; railway connectivity is very important to transport Thar coal to other industries

Thar coal is the center of discussion at every energy conference and seminar. We normally start our discussion with Thar which can change the energy dynamics of the country and we can develop Thar based energy system in the country.

The dream is to change every coal-fired power plant in the country to Thar coal to save forex and reduce electricity costs. The government is also interested in this change and urges the industry to start a transition process to shift to Thar coal. Many coal-fired power plants are interested in using Thar coal in their boilers with or without some minor and major modifications. Pakistan's energy mix is majorly based on fossil fuels. It has an installed capacity of 46,000 MW, which includes 52% thermal, 28% hydro, 17% nuclear and 5% renewable sources.

Our dream is very impressive to utilize indigenous resources but realizing this dream is very challenging. Some experts are suggesting starting surface gasification on Thar coal and exporting syn gas from Thar to other parts of the country. Although surface gasification is possible, it requires huge initial capax and state-of-the-art facilities. We must admit that there are funding gaps, and the required infrastructure is not there for such high capax and OPEX projects. For the time being, this idea is not applicable to us.

Currently, Thar coal-based power plants are installed in Thar blocks I & II. The total capacity of installed plants is 26,000 MW. i.e. 1,320 MW in each Block. There are some major challenges that need to be addressed if we want to achieve our dream of utilization of Thar coal.

First, the primary challenge is the mining capacity. The mining capacity of block I is 7.8 MTPA and it is sufficient to produce 1,320 MW for Shanghai electric power plant. The same is the case with Block II, as current production level is 7.6 MTPA, and coal produced is utilized in three IPPs (660 MW Engro, 330 MW Thar Energy, 330 MW ThalNova). There is no excess coal available at blocks I or II for any other plant. Even the third expansion of block II is reserved for Lucky Power Plant Port Qasim. And there are no published plans for block I for further expansion. Keeping in mind the global challenges, environmental constraints, and international pressure from coal has reduced the chances of obtaining funds for new mining or expansion of current mining blocks.

The second major challenge is transportation from Thar coal to other power plants. There are multiple factors like environmental, political, and security that need to be considered for sustainable coal supply by road.

Thirdly, the role of the regulator currently revolves around the IPPs located in Thar. Moreover, a few IPPs in block II are not fully utilized due to transmission line constrains while the coal dedicated for three committed IPPs (7.6 MPTA) is not fully utilized. The balance coal can be used for other industries for blending, but it is not utilized due to regulatory issues. The rules and regulations for coal supply to non-IPPs and other industries like cement plants are yet to be approved by the regulator TCEB.

Conclusion: To consider above mentioned constraints, we are not in a position to convert or increase the Thar coal power generation. We need to start our planning if we need to use this indigenous resource. We need to take serious steps to mitigate all the risks and roadblocks in sustainable mining and capacity enhancement.

Local investors need to step in for the capacity enhancement of mining projects. The government should facilitate and motivate local mining companies to invest and start mining in other blocks to increase coal production. Railways connectivity is very important if we need to transport Thar coal to other industries. Thar has a huge potential and reserves, but coal mining capacity needs to be enhanced to meet the energy needs of the country. ■

Fronus SOLAR ENERGY X SOLAX POWER

EXCLUSIVE DISTRIBUTION PARTNER IN PAKISTAN

Ultimate ENERGY COMBO

Next Generation Hybrid Inverter

GENKI

Single Phase - 6 Kilowatts

&

Li-ion Battery Module

TP-LD53

IP65 Protection | 100Ah | 5.3kWh

IP65 Protection | Intelligent | High Efficiency | Economic

SCAN FOR MORE

Fronus SOLAR ENERGY | 042 111 111 140
WWW.FRONUS.COM

HJT represents cutting-edge solar panels' innovation

Rana Farhan, Director Middle East & Pakistan at Huasun says one of the standout features of HJT panels is their outstanding temperature coefficient; HJT's lower temperature coefficient ensures better resilience against heat-induced efficiency losses; we are committed to continuing our efforts in advancing solar technology

Naeem Qureshi

Energy Update magazine conducted an interview with Rana Farhan, who is Rana Farhan, Director Middle East & Pakistan at Huasun. The content of the interview is given below:

ENERGY UPDATE: Mr Farhan, the solar energy landscape in Pakistan has seen significant growth in recent years. Can you share your perspective on the current trends and the role of technology in shaping this industry?

Rana Farhan: Absolutely. The solar industry is rapidly evolving, primarily driven by a global push towards cleaner energy sources and enhanced efficiency in power generation. Today, businesses and industrial players face critical decisions when selecting the right solar technology for their projects. The race for higher energy yields, reliability, and long-term value has spurred innovations in solar technologies. Among the leading technologies are monocrystalline, polycrystalline, N-Type TopCon, and the highly advanced HJT by Huasun Solar.

EU: Huasun's Heterojunction Technology (HJT) has been gaining attention lately. What makes HJT technology stand out from other solar technologies?

Rana Farhan: HJT technology represents the cutting edge of solar innovation. It combines the best crystalline and thin-film technologies by layering ultra-thin amorphous silicon on top of crystalline silicon wafers. This hybrid design results in superior performance and higher energy yields. Huasun's HJT panels, for example, boast some of the highest efficiencies in the market, reaching upwards of 24%. This remarkable efficiency translates to more power generated per square meter, making HJT panels ideal for industrial and large-scale commercial projects where maximizing energy yield is critical.

EU: How does HJT technology perform in high-temperature environments, such as those found in Pakistan?

Rana Farhan: One of the standout features of HJT panels is their outstanding temperature coefficient. They have a lower temperature coefficient compared to conventional solar technologies, meaning they lose less efficiency in high-temperature environments. This makes them particularly effective in hot climates like Pakistan, ensuring consistent energy output and better ROI over time.

Moreover, Huasun's HJT panels are bifacial by design, capturing sunlight from both sides of the panel. This significantly

boosts overall energy generation, especially in installations where light reflection from surfaces, such as white rooftops or the ground, can be leveraged.

EU: You mentioned earlier about the performance of HJT technology in extreme heat conditions. Could you elaborate on that?

Rana Farhan: Certainly. Understanding the performance of photovoltaic (PV) technologies under varying environmental conditions is crucial for their efficiency and long-term viability. One key parameter is the temperature coefficient, which indicates how much the efficiency of solar panels decreases with each degree increase in temperature.

Empirical data from outdoor projects have shown that while maximum temperature conditions for studies were at 35°C, in countries like Pakistan, where temperatures often rise above 45°C, HJT's advantages become even more pronounced. The energy yield gains in major installations have been noted to be up to 6% higher in these hotter environments.

EU: That's impressive. How do these advantages translate to the overall value proposition for EPC companies and industrial players in Pakistan?

Rana Farhan: HJT's lower temperature coefficient ensures better resilience against heat-induced efficiency losses, especially when temperatures exceed the norm of 25-35°C. This results in more reliable energy production during peak sunlight hours when temperatures are at their highest, and energy demand often spikes.

Huasun's innovative approach not only offers greater efficiency under ideal conditions but also ensures more consistent performance during extreme heat, making it an optimal choice for installations in high-temperature regions like Pakistan. By adopting Huasun's HJT panels, EPC companies can secure their place in the future of renewable energy with a powerful, sustainable, and forward-thinking solution.

EU: It sounds like HJT technology is set to play a significant role in the future of solar energy in Pakistan. What's next for Huasun in this market?

Rana Farhan: As market dynamics continue to shift, the demand for higher efficiency, durability, and innovative solar solutions is at an all-time high. Huasun Solar's HJT technology stands at the forefront of this movement, offering unparalleled efficiency and performance benefits for industrial projects seeking to maximize their energy yield.

We are committed to continuing our efforts in advancing solar technology and providing solutions that meet the needs of energy production in diverse climatic conditions worldwide. Adopting HJT technology can contribute significantly to the efficiency and economic feasibility of solar energy projects, solidifying its position as a key player in the movement towards sustainable energy solutions globally.

Consortium Agreement Signed for Machike-Thallian-Taru Jabba Pipeline

A key consortium agreement for the Machike-Thallian-Taru Jabba White Oil Pipeline Project was signed today at the SIFC Secretariat, PM Office. The event was attended by Federal Minister for Petroleum Dr. Musadik Malik, DG SIFC Major General Asad Rehman, and OGRA Chairman Masroor Khan. The agreement was signed by MD PSO Syed Muhammad Taha and DG FWO Major General Abdul Sami, alongside an MOU with CEO PAPCO Irtiza Qureshi and MD ISGS Nadeem Bajwa. This 477 km pipeline will link Machike near Lahore to Taru Jabba near Peshawar, completing the oil pipeline network from Karachi to Peshawar. It aims to ensure safe, efficient transport of petroleum products, with a capacity of 7 million tons per annum (MTPA), extendable to 10 MTPA. Construction is set to begin soon, with a focus on timely and safe project completion.

Need stressed to cut power tariff by 9 cents per unit

EU Report

The Vice President and Regional Chairman of the Federation of Pakistan Chambers of Commerce & Industry (FPCCI), Zaki Aijaz, stressed the need to reduce electricity prices to 9 cents per unit during a discussion on high tariffs and agreements with IPPs. He made these remarks while addressing the fourth meeting of the FPCCI Central Standing Committee on Energy, convened by the committee convener, Malik Khuda Bakhsh, at the FPCCI Regional Office. Mr Zaki Stated that lowering energy prices could stimulate economic growth, suggesting that renegotiations with IPPs could be considered or alternative solutions explored to reduce electricity costs for businesses and consumers. The meeting was attended by committee members, business leaders, and technocrats who discussed the utilization of available energy resources in the country, the exploration of new resources, and various proposals. In his address, Mr Malik stated that the Energy Committee, under his leadership, is providing effective recommendations to the government and relevant institutions from the FPCCI platform to address the challenges in the energy sector. He expressed confidence that they would successfully contribute to the energy development that Pakistan needs.

Rapid population growth straining economic development

Special Report by Mansoor

Country's population increased more than threefold in last 50 years

Rapid population growth and high fertility rates are significantly straining the country's economic development and its ability to provide essential services like healthcare, education, and social protection. The government is taking proactive measures to control population growth and fertility rates.

According to Economic Survey 2024, they create awareness through media campaigns and provide Family Planning services through Family Welfare Centers (FWC), Reproductive Health Services Centers (RHS-A), Regional Training Institutes, and Mobile Service Units. Despite comprising approximately 50 percent of the population in Pakistan, women's participation in the country's labour force is considerably lower than that of men.

However, it is essential to recognize their abilities, skills, and efficiency and understand the challenges and obstacles they encounter. Doing so is crucial in developing strategies that help retain female employees, promote gender equality, and create a more inclusive and supportive work environment. This, in turn, can contribute to a more balanced labour force and foster hope for a brighter future.

Pakistan faces the daunting task of transforming its large number of young people into a demographic dividend. Unfortunately, the country's economic opportunities have not kept pace with its population growth and changing age structure. However, there is the reason for optimism given the government's efforts to improve employment prospects for young people through initiatives such as the 'Prime Minister's Youth Business & Agriculture Loan Scheme' and the 'Prime Minister's Youth Skill Development Programme.'

Based on the 7th National Population and Housing Census, the country's overall population has increased by 16.3 percent to 241.5 million, compared to the population in 2017 (excluding Azad Jammu and Kashmir and Gilgit-Baltistan). The population growth rate at the national level is 2.55 percent. In contrast, the growth rate in urban areas is 3.65 percent, which is higher than the population growth rate in rural areas, i.e. 1.90 percent, due to rural-urban migration. The population density increased from 260.88 persons per square km in 2017 to 303 persons per square km in 2023. Additionally, the average household size has decreased from 6.39 in 2017 to 6.30 in 2023. Pakistan's population has increased more than threefold in the last 50 years, largely due to high fertility and growth rates.

A country's capacity to generate employment depends upon its available resources, technological base and advancement, and institutional strategies. Similarly, human resources, skills, and technical competence determine the type of employment contributing to sustainable economic growth. Skill development is an important area to focus on to train the youth to meet the needs of emerging market dynamics. For this purpose, the National Vocational & Technical Training Commission's (NAVTTC) strategic initiatives are reshaping the Technical and Vocational Education and Training (TVET) landscape, fostering skill development, and addressing systemic TVET challenges in Pakistan. NAVTTC's skill development-related initiatives and, most importantly, the Prime Minister's Youth Skill Development Programme (PMYSDP) registered substantial progress in the TVET landscape of Pakistan, creating a robust, inclusive, and globally competitive workforce for sustainable national development. PMYSDP is the vehicle of change to empower youth and harness their potential for human development and the transformation of the future of Pakistan.

56,000 youth are currently enrolled under the PMYSDP, a Rs 4.9 billion programme for skill training in emerging 39 IT, 53 Industrial, and 34 hardcore skills. The programme targets the domestic and international job market, especially for the Kingdom of Saudi Arabia, Gulf countries, the European Union (EU), and far-eastern states like Japan, Korea, etc.

Pakistan's urban population increased from 75.67 million to 93.75 million between 2017 and 2023, making it one of the most urbanized nations in South Asia. Almost 39 percent of its population lives in urban areas. Urbanization strongly impacts a country's economy and development, leading to changes in various areas such as labour market opportunities, family structures, education, health, environment management, security systems, and governance. The Population and Housing Census of 2023 revealed that the urban population is rising, with 38.82 percent of people currently living in urban areas. This trend is observed in most provinces, except in Khyber Pakhtunkhwa, where the share of the urban population decreased from 16.55 percent in 2017 to 15.01 percent in 2023.

Similarly, the urban population in Islamabad decreased from 50.37 percent in 2017 to 46.90 percent in 2023. Table 12.3 presents the percentages of urban and rural population across different provinces. The data demonstrates that from 2017 to 2023, the share of the urban population in Sindh, Punjab, and Balochistan increased due to better education, health, and earning opportunities in urban areas. Among all the provinces, Sindh has the highest urban population, from 51.89 percent in 2017 to 53.73 percent in 2023. Punjab ranks second with an increase from 36.86 percent to 40.70 percent in the same period. Similarly, Balochistan's urban population rose from 27.62 percent in 2017 to 30.96 percent in 2023. However, Khyber Pakhtunkhwa differed from other provinces as the percentage of the rural population increased due to the merger of FATA into Khyber Pakhtunkhwa.

The data indicates that the population growth rate of Punjab and Sindh increased, while Khyber Pakhtunkhwa, Balochistan, and Islamabad experienced a decline in population growth. Punjab saw a significant increase in population growth rate, rising from 2.13 percent to 2.53 percent. On the other hand, Islamabad witnessed a substantial decline in population growth rate, plummeting from 4.91 percent in 2017 to 2.81 percent in 2023. Figure 12.2 compares the provincial growth rates.

Countries with a growing youth population, such as Pakistan, have the potential to benefit from a demographic dividend by investing strategically in education, skill development, and job creation. This can lead to a more dynamic and robust workforce, which drives economic growth and innovation. The government supports this effort by offering skill-training programmes and facilitating access to finance to encourage youth entrepreneurship. Skill development institutes are also working to enhance the employability of the youth. Additionally, the government is exploring overseas employment opportunities, which will help reduce the unemployment burden on the economy and boost remittances. ■

solis makes top global ranking in Residential PV String Inverters

Solis (Ginlong Technologies), a global leader in solar inverter technology, proudly announces it has received the #1 ranking position in global residential inverter shipments, as reported in the latest Wood Mackenzie inverter market share report. This represents a significant rise from Solis previous standing as the worlds third-largest PV inverter manufacturer across all segments for three consecutive years.

Solis leap to the top of the residential inverter market is a validation of its commitment to innovation, quality, and customer satisfaction. This milestone is a direct result of Solis strategic focus on developing high-performance, reliable inverter solutions that meet the dynamic needs of the residential solar sector.

With partnerships spanning over a decade since our inception in 2005, Solis has earned the trust of customers worldwide, said Jimmy Wang, President of Solis Inverters. This customer-centric approach and technological leadership are central to our success. We are deeply grateful for our customers continuous support and confidence, which fuels our journey of innovation and excellence. He added, The recognition from Wood Mackenzie is a testament to our strategy of combining cutting-edge innovation with unparalleled reliability, creating value throughout the solar supply chain.

Solis maintains a steadfast pursuit of excellence through rigorous quality control and product innovation, tailored to market demands. Solis further ensures success by offering comprehensive services from pre-sales to post-sales support to customers and solar installers. With a significant increase in R&D investment—exceeding 5% of annual sales in 2023—Solis is dedicated to enhancing product reliability and advancing innovation beyond customer and market expectations.

Actively fulfilling its mission to Develop technology to power the world with clean energy, Solis is at the forefront with a customer-first approach and a steadfast dedication to sustainable progress. ■

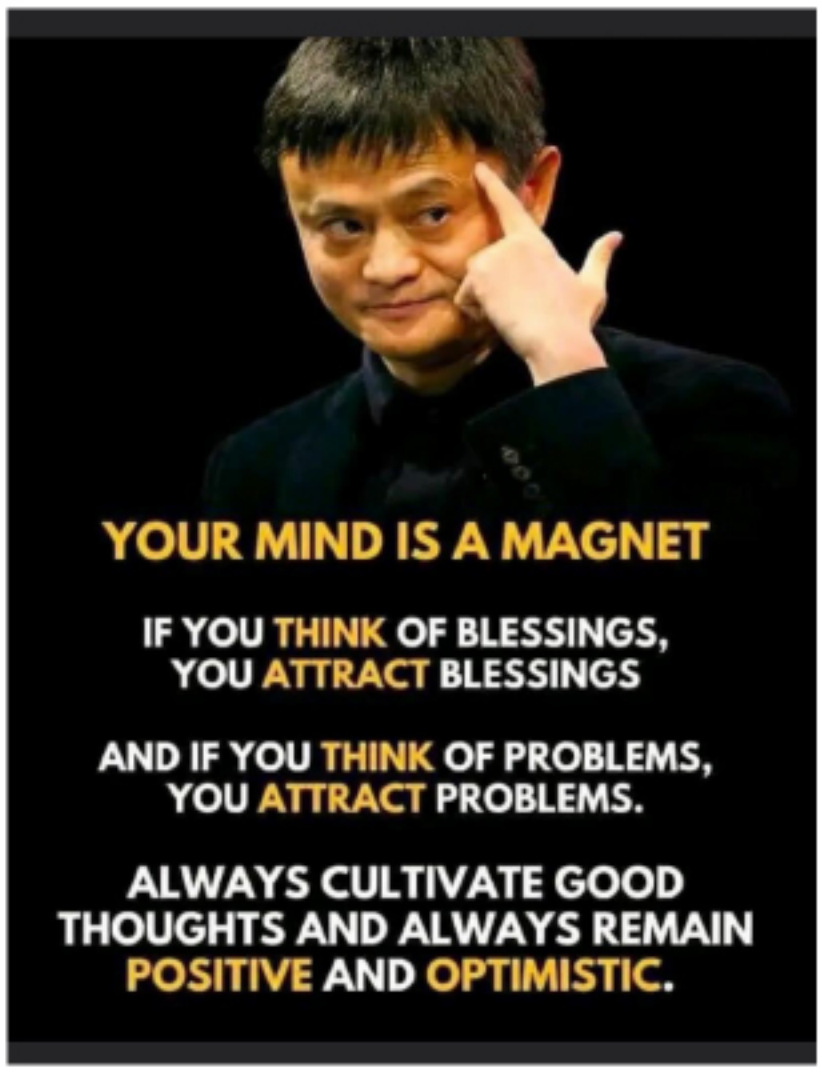
Pakistan Nears IMF Deal Amid Structural Reforms and Political Uncertainty

Mansoor Ahmed

Pakistan is moving closer to securing a new deal with the International Monetary Fund (IMF) following the successful conclusion of talks between IMF staff and Pakistani officials. While concerns about political instability and debt sustainability persist, the progress in negotiations and Pakistan's efforts to meet IMF conditions increase the likelihood of approval.

Pakistan has implemented several IMF-mandated reforms, though political and economic challenges remain. The country's strategic importance and support from key nations like the US, China, and Gulf states may influence the IMF's decision in its favor.

Despite meeting key criteria, the IMF has raised concerns over subsidies and shortfalls in tax revenue, particularly from traders. However, Pakistan's rescheduling of some short-term debts and its central bank's prudent monetary policy have improved its position ahead of the IMF board's meeting on September 25, 2024. ■



SUNGROW

Clean power for all

No.1 Sold PV Inverter Globally

Source: S&P Commodity Insights

No.1 Bankable for 4 consecutive years

Only inverter supplier ranked **100%** bankable

Source: BloombergNEF

No.1 BESS System Capacity Installed

Source: S&P Commodity Insights

No.1 Rank in **PVBL** Global Top 20 Inverter Brands **2024**

No.1 Installed Base **1.7+ GW** in Pakistan

SUNGROW POWER SUPPLY

Website: www.sungrowpower.com

Channel Manager - M Hamza Shahid

+92 304 7170 200 - hamza.shahid@sungrowpower.com

Power sector plagued by decades-long challenges

Unreliable service delivery at high costs tormenting; IPPs face accusations of unfair deals and exorbitant profits

Muhammad Faisal Sharif

Pakistan's power sector has been plagued by challenges for decades, with unreliable service delivery at high costs that burden consumers and the economy.

At the centre of much debate and criticism are Independent Power Producers (IPPs) the country started inducting in the early 1990s to boost electricity generation capacity. While IPPs have significantly increased Pakistan's security of supply, they have also faced accusations of unfair deals and exorbitant profits. In the 1980s, the adoption of market economies by the US and UK under the Reagan and Thatcher regimes spurred global economic liberalisation with Washington-based international financial institutions promoting neoliberal policies in the global South. This also influenced the liberalisation of capital-intensive electricity sectors and marked a departure from the earlier belief that the electricity supply chain should be a state-controlled natural monopoly, given its unique engineering and economic characteristics.

Amidst this global trend, Pakistan's state-owned giant utility, Water and Power Development Authority (Wapda), faced serious challenges in delivering quality services and raising capital. Therefore, following the World Bank's advice, the country started reforms with Wapda's disintegration to enhance capital formation, improve efficiency, and foster competition.

However, Pakistan's weak political and institutional frameworks impeded the completion of the reforms, leading to a chronic decline in service delivery. Despite challenges, the country's electricity sector presently operates in a single-buyer mode with a near-completion transition toward a multiple-buyer market.

Since Wapda's unbundling, the government, under various power policies, has inducted 100 IPPs with around 25,000 MW capacity (including 46 conventional IPPs (22,000 MW) and 54 renewables IPPs (2,600 MW), according to the Private Power & Infrastructure Board, totalling $30 billion investment. Therefore, conventional IPPs receive a two-part tariff: Energy Purchase Price (EPP) for operating costs based on actual generation and Capacity Purchase Price (CPP) for capital

and fixed costs based on plant availability, regardless of production. In Pakistan, with a high reliance on imported fuels and currency devaluation, electricity generation costs account for nearly 90 per cent of total power sector revenue. Therefore, as electricity prices climb, IPPs are blamed for having a major share in generation capacity.

The power purchase price (PPP) has doubled in the past five years, from Rs 1.65 trillion in 2019-20 to Rs 3.28tr projected for 2024-25, with capacity payments rising from Rs 0.91tr to Rs 2.12tr, as per the FY20 Power Purchase Price Forecast report by the Central Power Purchasing Agency.

This results in an average electricity price of 27.35 Rs/kWh, including 9.69 Rs/kWh for energy and 17.66 Rs/kWh for capacity payments, as per the National Electric Power Regulatory Authority. However, the sharp increase in PPP is largely driven by the country's volatile political economy with large currency devaluation, high inflation, and interest rates. Given the high electricity prices, some critics call for contract termination of IPPs or conversion to a merchant mode without realising its legal and financial repercussions.

State-owned distribution companies (Discos) are significant contributors to these inefficiencies, with high technical losses and low recovery rates averaging over 16pc and 86pc, respectively, with some Discos exceeding 37pc losses and reliability indices far exceeding regulatory benchmarks, as per the FY23's Performance Evaluation Report by Nepra. Pakistan is transitioning to a wholesale electricity market, and its success hinges on private sector participation, which requires a trusted and enabling environment. Unsubstantiated allegations, propaganda, and past attempts to renegotiate locked contracts under coercion damaged the private sector's confidence, forcing the government to offer similar or enhanced incentives in every new round of IPPs.

This back-and-forth approach hindered policy evolution. Recently, the 600 MW solar IPP advertised twice did not receive any bid, reflecting a lack of investor interest in the sector. Consistent policy commitment could have led to competitive tariff regimes, rationalised financial incentives, and reduced government assurances, thereby reducing the overall tariffs and the need for long-term agreements that restrict modifications under changing economic conditions.

Paving the path to sustainability

Sara Khan

The writer is an engineering journalist

In a decisive step towards embedding sustainability into Pakistan's economic framework, the first session of the FPCCI Committee on UN SDG Goals was held in Karachi.

This comprehensive deliberative session brought together key players from the private sector, government bodies, and civil society to chart the course for the effective implementation of the United Nations Sustainable Development Goals (SDGs) in Pakistan. As an engineering journalist deeply committed to sustainability, I had the privilege of participating in and documenting the insights shared during this pivotal meeting. The discussions were robust, reflecting the collective urgency to align Pakistan's business practices with global sustainability standards.

A Collaborative Endeavor

The session, moderated by Sara Tahir and convened by Naeem Qureshi, featured contributions from a diverse group of stakeholders, including industry experts like Dr Basharat Hassan and Barrister Sara Kazmi. The deliberations focused on identifying the challenges and opportunities that lie ahead as we strive to integrate the SDGs into every layer of our economic activities. One of the most significant outcomes of the session was the recognition of the need for a phased approach to sustainability reporting. Participants acknowledged that while some industries have begun to voluntarily adopt ESG practices, there is an urgent need to move towards a more standardized and mandatory reporting framework. This transition will ensure that all sectors contribute meaningfully to the nation's SDG targets.

Key Challenges and Strategic Discussions

The discussions also highlighted several critical challenges that must be addressed to make sustainable development a reality in Pakistan. Chief among these is the fragmented regulatory environment, which currently poses significant barriers to cohesive action. Participants called for greater alignment between various regulatory bodies to streamline compliance and foster a more supportive environment for sustainable business practices. Financial constraints, particularly the high costs associated with adopting new technologies and the limited access to concessional financing, were also a major focus. The session underscored the need for innovative financial instruments, such as green bonds and tax incentives, to ease the burden on businesses and encourage the adoption of cleaner, more efficient technologies.

Engagement and Collaboration: The Way Forward

A recurring theme throughout the session was the importance of collaboration. It was clear that the success of SDG implementation in Pakistan will depend on the strength of partnerships between the public and private sectors. The session paved the way for the establishment of regular forums and working groups, which will serve as platforms for ongoing dialogue and innovation. Public awareness and education emerged as crucial components of this effort. By raising awareness about the long-term benefits of aligning with the SDGs, we can inspire more companies to integrate these goals into their core operations. The session was not just about identifying problems; it was about finding actionable solutions that will drive real progress.

A Shared Commitment to the Future

The deliberations in Karachi mark the beginning of what I hope will be a transformative journey for Pakistan. The outcomes of this session will be shared with major stakeholders who are in a position to drive these initiatives forward. Our collective commitment to sustainability is not just about meeting international expectations; it's about securing a better, more resilient future for Pakistan. As someone who has been closely involved in this process, I am optimistic about the road ahead. The energy and dedication displayed during this session give me confidence that we are on the right path. The groundwork has been conducted, and now it's time for us to build on this foundation, ensuring that the principles of sustainability are woven into the very fabric of our nation's growth.

ENERGY UPDATE

INTERNATIONAL SOLARPOWER CONCLAVE AND TECHNOLOGY EXCELLENCE AWARDS 2024

Group Photo of Solarpower Technology Excellence Awards 2024 Winners with Chief Guest Governor KPK Faisal Karim Kundi. Managing Editor Energy Update Naeem Qureshi, Director Admin and Finance Ruqiya Naeem, Chief Marketing Officer Engr. Nadeem Ashraf and others also seen in the picture.

Recognization of excellence performance in solar industry

Energy Update presents solar technology awards to 28 companies

Mustafa Tahir

Photo of Panelist includes Waqas Moosa, CEO, Hardon Solar, Syed Faizan Ali Shah, Member of the Prime Minister's Solarization Committee, Government of Pakistan, Faiz Bhutta, Energy Expert, Muhammad Ahsan from Astronergy and Usman Waheed Country Head Sungrow.

The Energy Update has once again won laurels from the key stakeholders of Pakistan's renewable power sector. This time the Energy Update has won applause by organising a first-of-its-kind event in Pakistan to properly recognise and honour innovation, creativity, and excellence in the arena of solar power to further the cause of maximizing renewable energy production in Pakistan.

The dignitaries from key stakeholder institutions praised the consistent efforts made by the Energy Update to support and promote Pakistan's clean power sector by organising such forums to discuss issues faced by the industry players, regulators, government, service providers, and end-consumers.

Solar Power Conclave & Technology Excellence Awards 2024 was organised at a hotel in Lahore by the Energy Update in partnership with the Ministry of Energy (Power Division), Private Power Infrastructure Board (PPIB), and Pakistan Solar Association. The event, attended by clean energy experts, also discussed in detail the issues hampering the growth of Pakistan's solar power sector. A panel discussion was part of the event for this purpose.

Khyber Pakhtunkhwa Governor Faisal Karim Kundi distributed awards

among representatives of 28 companies for showing excellence in various categories of domestic, commercial, and industrial-scale solar power systems.

The concerned energy sector representatives who spoke at the panel discussion emphasized greater exploitation of Pakistan's solar power potential to swiftly transition away from fossil fuel-based electricity production and end the acute economic sufferings of the masses due to heightened power tariffs.

The relevant experts who spoke on the occasion said that greater reliance on abundantly available solar power all over the country could guarantee the protection of Pakistan's energy security

The speakers at the conclave also emphasised the need for proper regulation of the Pakistani renewable energy market to prevent the fleecing of unsuspecting consumers at the hands of unregistered dealers who brazenly sell substandard solar power products due to lack of regulations.

Speaking as the chief guest at the conclave, Khyber Pakhtunkhwa Governor Faisal Karim Kundi said that Pakistanis were extremely worried over exorbitant electricity bills, which caused tremendous economic hardships to the masses.

"The people of Pakistan are rightly distressed over inflated electricity bills and it is the government's responsibility to be fully answerable before the people over this grave injustice," he said.

From L to R Chief Guest Mr. Faisal Karim Kundi, Governor, Khyber Pakhtunkhwa, Usman Siddique from Solis, Engr. Mian Fahad, Country Director, Growatt New Energy, Mubarak Hussain, Country Manager - Huawei Smart PV, Fahad Ali Country Head GoodWe, Muhammad Naeem Qureshi, Managing Editor, Energy Update, Ruqiya Naeem, Director Admin and Finance Energy Update and Engr Ahad Nazir, Associate Research Fellow / Head Center for Private Sector Engagement, Sustainable Development Policy Institute addressing on the occasion.

The KPK governor said that the energy crisis had been deepening in Pakistan, which must be addressed at the earliest. "It has caused huge problems for the people. The government must swiftly work towards resolving the energy crisis to provide relief to the masses," he observed.

He said that the Pakistan Peoples Party (PPP) had always worked to provide cheap electricity to the people in the country. "The Sindh government has been producing electricity from natural resources from the Thar coal power plant and Jhimpir wind power plant," he added.

Earlier, Managing Editor, Energy Update and Chairman Organizing Committee Muhammad Naeem Qureshi delivered a welcome address.

During a panel discussion, Faizan Ali, Member of Prime Minister's Solarization Committee, said the committee had prepared a proposal to induct 10 Giga Watt electricity through solarization into the system in the next 10 years.

"The proposal will be submitted to the Prime Minister in the next few days," he said while adding that the PM would then decide whether it would be generated through a distributed scale or at a utility-scale.

Faizan Ali further said that the government needs to encourage people to self-consumption of solar power rather than exporting units through net metering. "The government may reduce buyback from Rs27 to Rs5 per unit, and instead incentivize the consumers in installing batteries," he added.

PPIB Managing Director, Shahjahan Mirza, hoped that the conference organised by the Energy Update go a long way in achieving the government's goal of maximizing clean power production to lessen reliance on imported fossil fuels for electricity

Group Photo of organizers with Participants and valuable Guest

MEMENTO DISTRIBUTION TO SPONSORS

SOLIS INVERTERS

SHENZHEN GROWATT NEW ENERGY TECHOLOGY CO,. LTD.

HUAWEI INTERNATIONAL CO. LIMITED

HUASUN ENERGY CO LIMITED

GOODWE TECHNOLOGIES CO., LTD.

INVEREX SOLAR ENERGY

SUNGROW POWER SUPPLY CO., LTD.

ASTRONERGY SOLAR

ZIEWNIC PVT LIMITED

SOGO GROUP OF COMPANIES

DYNESS DIGITAL ENERGY TECHNOLOGY CO., LTD.

SUSTAINABLE DEVELOPMENT POLICY INSTITUTE

production.

He said the PPIB stood fully committed to promoting solar power as the viable option to increase clean energy production and decrease the electricity tariff for the end-consumers.

He said the PPIB would also support a greater role of the private sector in utilising Pakistan's clean energy resources for establishing a multi-buyer electricity marker after transitioning from the current system where only government entities buy the electricity.

Engr Faiz Bhutta lambasted Independent Power Producers (IPPs) as the mode of power generation, saying that distributed solar systems must be embraced and implemented quickly. "At present, there is no concept of virtual power plant in Pakistan, which have been successfully functioning in developed countries," he said, adding that it will help optimize usage and performance of batteries in the country.

Muhammad Ahsan from Astro Energy, Waseem Qureshi from Enercap Holdings and Usmaan Waheed from Sungrow also spoke at the panel discussion, moderated by Waqas Musa from the Pakistan Solar Association (PSA).

Earlier, Hammad Nazir, a representative of the Sustainable Development Policy Institute (SDPI), presented a research study on Pakistan's contribution to carbon emissions. "The public-private partnership (PPP) in the energy sector is good, but the roles of the government and the private companies have been overlapping," he said, adding that the roles need to be redefined to perform the tasks effectively.

He said that Pakistan had committed under the Paris Agreement to increase renewable energy to 30% in Pakistan by 2050, in addition to 30% of hydropower, which would combine to fulfill 60% of the total energy requirement through clean energy sources in the country. "At current pace, we are nowhere near the path towards achieving this target," he added.

Besides, Usman Siddique from Solis Pakistan, Engr. Mian Fahad, Country Director Growatt, Mubarak Hussain Country Manager Huawei Smart PV and Fahad Ali Country Head GoodWe spoke at length about their products and cost-efficiency.

ORGANIZED BY

ENERGY UPDATE

INTERNATIONAL SOLAR EXCELLENCE AWARDS 2024

STRATEGIC PARTNER

Private Power & Infrastructure Board
Ministry of Energy (Power Division)
Government of Pakistan

SUPPORTING PARTNER

PSA
PAKISTAN SOLAR ASSOCIATION

CONGRATULATIONS TO ALL AWARD WINNERS

- SOLIS INVERTERS
- SHENZHEN GROWATT NEW ENERGY TECHOLOGY CO,. LTD.
- HUAWEI INTERNATIONAL CO. LIMITED
- GOODWE TECHNOLOGIES CO., LTD.
- INVEREX SOLAR ENERGY
- HUASUN ENERGY CO LIMITED
- SUNGROW POWER SUPPLY CO., LTD.
- ZIEWNIC PVT LIMITED
- ENERCAP ENERGY HOLDINGS LTD.
- ASTRONERGY SOLAR
- SOGO GROUP OF COMPANIES
- DYNESS DIGITAL ENERGY TECHNOLOGY CO., LTD.
- ESL RENEWABLES (PVT.) LIMITED
- ALBARIO ENGINEERING PVT LIMITED
- CROWN SOLAR ENERGY
- VOLTAIC POWER PRIVATE LIMITED
- NETLINE GROUP OF COMPANIES
- AMA ENERGY SERVICES PVT LIMITED
- MEEZAN BANK LTD
- ACM GROUP OF INDUSTRIES
- NEW RABIA ENTERPRISES
- LANDMARK ENERGY
- UNIVERSAL CABLES INDUSTRIES LIMITED
- DECENT SOLAR
- TRI ANGELS ELECTRONICS (PVT.) LTD
- AMERICAN SOLAR
- SOLAR POWER 99
- NRTC ENERGIES PVT LTD

ENERGY UPDATE

INTERNATIONAL SOLARPOWER TECHNOLOGY EXCELLENCE AWARDS 2024

PICTURES OF AWARD WINNERS

SOLIS INVERTERS

SHENZHEN GROWATT NEW ENERGY TECHOLOGY CO,. LTD.

HUAWEI INTERNATIONAL CO. LIMITED

GOODWE TECHNOLOGIES CO., LTD.

INVEREX SOLAR ENERGY

SOLIS INVERTERS

ZIEWNIC PVT LIMITED

SUNGROW POWER SUPPLY CO., LTD.

ASTRONERGY SOLAR

SOGO GROUP OF COMPANIES

DYNESS DIGITAL ENERGY TECHNOLOGY CO., LTD.

ESL RENEWABLES (PVT.) LIMITED

ALBARIO ENGINEERING PVT LIMITED

CROWN SOLAR ENERGY

VOLTAIC POWER PRIVATE LIMITED

NETLINE GROUP OF COMPANIES

AMA ENERGY SERVICES PVT LIMITED

MEEZAN BANK LTD

ACM GROUP OF INDUSTRIES

DECENT SOLAR

NEW RABIA ENTERPRISES

LANDMARK ENERGY

UNIVERSAL CABLES INDUSTRIES LIMITED

TRI ANGELS ELECTRONICS (PVT.) LTD

AMERICAN SOLAR

SOLAR POWER 99

NRTC ENERGIES PVT LTD

THANKS TO OUR VALUED SPONSORS

solis

GROWATT

HUAWEI

GOODWE

ENERCAP

SUNGROW

APT INVEREX SOLAR ENERGY

ASTRONERGY

SOGO

ZIEWNIC SOLAR ENERGY

HUASUN

DYNESS

SDPI

The World's Most Advanced Energy Storage System

BEYOND BATTERIES

ENERCAP

Key Features:

- **Graphene** based supercap
- **Zero degradation** over life
- **Ultra fast** charging & discharging
- Up to **15 years** warranty
- **100%** Depth of discharge
- **Non chemical** - environment friendly
- Operating temperature **-30°C~ to +70°C**

enercap.energy | info@enercap.energy | +971 55 307 2584

ENERCAP

SOLIS INVERTERS

Established in 2005, Solis, a subsidiary of Ginlong Technologies (Stock Code: 300763. SZ), has become one of the most experienced and largest manufacturers of PV string inverters globally. The company, under the Solis brand, offers a comprehensive range of inverter solutions, from 0.6 kW to 350 kW, covering hybrid, on-grid, off-grid, and more, to meet the diverse needs of its customers. Solis's inverters are recognized for their exceptional reliability and efficiency, having been rigorously tested and validated by the most stringent international certifications. Solis is the global leader in the residential inverter market, a testament to its industry-leading innovation and quality. The company's success is driven by a robust global supply chain, world-class R&D, and state-of-the-art manufacturing capabilities. Solis optimizes its inverters for each regional market, ensuring they deliver superior performance and seamless integration. To further enhance customer experience, Solis has built a network of local experts who provide personalized service and technical support, ensuring satisfaction at every stage of the process. Through its unwavering commitment to excellence, Solis continues to set the benchmark in the PV string inverter industry, empowering sustainable energy solutions worldwide.

SHENZHEN GROWATT NEW ENERGY TECHOLOGY CO,. LTD.

Growatt, a global leading supplier of PV inverters, storage and smart energy solutions Growatt was established in 2011 by a group of pioneers in the global PV industry with a vision to build a green and sustainable future. Specializing in sustainable energy generation, storage and consumption, as well as energy digitalization, the company designs, develops and manufactures PV inverters, energy storage products, EV chargers, smart energy management system and others. Since its foundation, Growatt has been committed to continuous technology innovations. With a well-established R&D platform and a R&D team of more than 1,100 professionals, the company constantly introduces new upgrades and innovations in the energy efficiency, functional safety and intelligent solutions of inverter, energy storage and EV charging applications. Till now, it has obtained more than 187 patents. Growatt hold itself to comprehensive and strict engineering and quality control standards. From design to manufacturing, the company has implemented a comprehensive and rigorous system to ensure high level of quality, reliability and performance. It has received 'All Quality Matters Awards' by TÜV Rheinland for its C&I inverters—MAX 80KTL3 MV and MAX 125KTL3-X LV as well as battery storage solution—ARK Battery System for achieving first-rate performance in numerous safety and reliability tests.

Committed to 'glocalization', Growatt has set up 42 representative sites worldwide to provide localized service support with a combination of online and offline support. The company has developed the Online Smart Service (OSS) system that enables installers, integrators and distributors to manage and maintain their solar plants remotely and intelligently.

To date, Growatt's business spans across 180 countries and regions. The company works with thousands of local partners to establish robust distribution and logistics networks, ensuring convenient access to its advanced product portfolios for global customers.

According to S&P Global Commodity Insights, Growatt ranks among the global top five PV inverter suppliers. In particular, the company is the world's top 2 residential inverter supplier and also one of the top five global commercial & industrial pv inverter supplier in terms of shipment volume.

In addition, international market research company EUPD Research has recognized Growatt's preeminent brand position across global markets according to its surveys and analysis. The institute has presented Growatt with 'Top Brand PV Inverter' and 'Top Brand PV Storage' awards for achieving outstanding performance in terms of reliability, market penetration, brand awareness and satisfaction across global markets.

Learn more about Growatt by visiting https://en.growatt.com.

HUAWEI INTERNATIONAL CO. LIMITED

Huawei is a leading global provider of information and communications technology (ICT) infrastructure and smart devices. The company is committed to bringing digital to every person, home and organization for a fully connected, intelligent world. In the fields of communications networks, IT, smart devices, cloud services, intelligent automotive solutions, and digital power, we provide customers with competitive, secure, and reliable products, solutions, and services. Through open collaboration with ecosystem partners, we create lasting value for our customers, working to empower people, enrich home life, and inspire innovation across organizations of all shapes and sizes.

Founded in 1987, Huawei is a private company entirely owned by its employees. Huawei currently has over 207,000 employees, more than 114,000 of which are R&D employees (55%). We operate in more than 170 countries and regions, serving more than 3 billion people worldwide.

Huawei constantly innovates based on our vision and customer needs. We have invested heavily in basic research, concentrating on technological breakthroughs that can drive the world forward, and Huawei ranked 5th on the 2023 EU Industrial R&D Investment Scoreboard. Furthermore, years of R&D investment have yielded fruitful innovation results, and Huawei holds one of the world's largest patent portfolios.

GOODWE TECHNOLOGIES CO., LTD.

Established in 2010, GoodWe is a world-leading smart energy solution provider, with the research and manufacturing of PV inverters and energy storage solutions at its core. With a long-standing strong presence in the solar market, GoodWe inverters have seen an accumulative installation of 71.2 GW in more than 100 countries. GoodWe boasts a robust production capacity, with the ability to manufacture 35 GW of inverters and 2.1 GWh of batteries. The company employs over 5,000 individuals globally, including more than 1,000 dedicated R&D staff and 150+ employees based overseas. According to Wood Mackenzie reports from 2020 and 2021, GoodWe is recognized as the world's top supplier of residential energy storage inverters. The company also ranks among the top three in both energy storage inverter supply and PV inverter market share by shipments in Europe and Australia.

INVEREX SOLAR ENERGY

Inverex is a company with clear commitment to customers for the best products and services. Aiming to meet our client's objectives, we leverage quality, performance and price competitiveness. These constitute our strength. The international leading brands have been delivered all over Pakistan from last 17 years, demonstrating our expertise in significant challenges all around the country. There is a unique dynamic in our business working along team members who bring together an electric mix of experience, skills and qualifications. As Inverex is a well-known solar energy brand in Pakistan. We are committed to providing superb quality products that you not only aid in greener and sustainable Pakistan but also have a significant portion of impact on how greener energy is being established for such beneficial purposes that benefit today's environment.

As for our products, we offer permanent and promising partnerships throughout Pakistan with deep-rooted, success oriented companies. Our sole perspective is to make the environment favourable and green with advanced and revolutionary solar products to make Pakistan brighter.

HUASUN ENERGY CO LIMITED

Anhui Huasun Energy Co., Ltd (hereinafter referred to as "Huasun"), founded in July 2020, is a technological innovation enterprise specialized in the R&D and large-scale manufacturing of ultra- high efficiency N-type silicon heterojunction (HJT) solar wafer, cell and module. As the industrial pioneer of heterojunction technology in China, Huasun has delivered over 6GW of HJT products to over 40 countries around the globe. Huasun now owns 20GW capacity of high-efficiency HJT products, ranking as the largest HJT manufacturer in the world. With active response to the goal of "carbon peaking and carbon neutrality", Huasun keeps exploring effective improvements on the efficiency of solar cells and modules as well as the way to realize low-cost mass production of HJT products. In the future, Huasun will deliver more solar products with higher performance and better quality, so as to contribute to build a zero-carbon world!

ZIEWNIC PVT LIMITED

The journey of the company has been initiated with the name of ZIEWNIC in 2014. Hardships of the company has successfully led them to develop their goodwill with the passage of time. Today's, the company is known as ZIEWNIC PK (Pvt) Ltd. The company is dealing with the solar panels and solar inverters to meet with the deficiencies of the production of electricity and promoting the idea of sustainable development of society. ZIEWNIC solar panels and inverters approaches reliable products with the excellence and outstanding services. We suggest ideas as per the need of customers in order to meet global demands and challenges. The accessibility of quality product ranges from residential, commercial and industrial in order to meet the requirement level of consumer nationwide. The availability of products has vast range from lower to bigger level to satisfy the customer's wants and demands. The initiative step to flourish the economy with the idea of sustainable development and promote progress of the country with eco-friendly environment.

SUNGROW POWER SUPPLY CO., LTD.

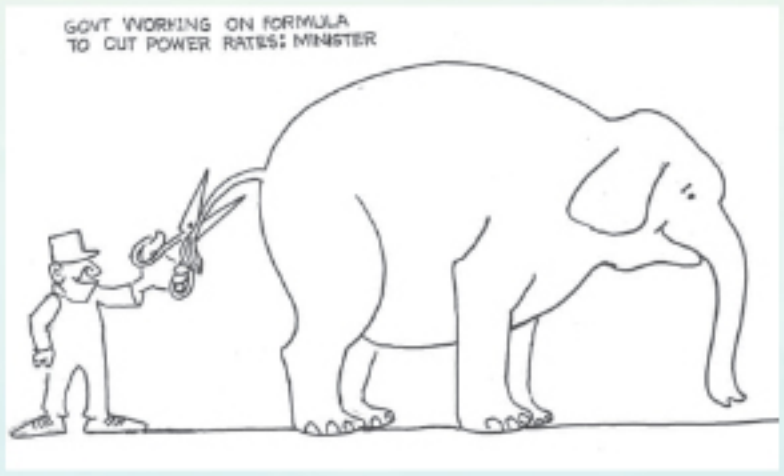
Sungrow Power Supply Co., Ltd. ("Sungrow") is the world's most bankable inverter brand with over 405 GW installed worldwide as of June 2023. Founded in 1997 by University Professor Cao Renxian, Sungrow is a leader in the research and development of solar inverters with the largest dedicated R&D team in the industry and a broad product portfolio offering PV inverter solutions and energy storage systems for utility-scale, commercial & industrial, and residential applications, as well as internationally recognized floating PV plant solutions, NEV driving solutions, EV charging solutions and renewable hydrogen production systems. With a strong 27-year track record in the PV space, Sungrow products power over 150 countries worldwide.As a leader in innovation in the solar industry, Sungrow possesses a dynamic technical R&D team which consists of over 3100 employees. The Company has also invested in its own in-house testing center approved by SGS, CSA, and TÜV Rheinland. Sungrow has the world's largest inverter factory, with a global annual production capacity of 305 GW, including 25 GW outside China. Offering a wide range of solutions and services, Sungrow is committed to providing clean power for all and is steadfast in its efforts to become the global leader in clean power conversion technology. Learn more about Sungrow by visiting www.sungrowpower.com. In Pakistan, Sungrow has a significant presence with 1.7 GW of installed inverters, which have the lowest fault rate. The company offers a complete range of inverters for residential, commercial and industrial (C&I), hybrid, and utility-scale applications. Additionally, it provides innovative Battery Energy Storage Systems.

ENERCAP ENERGY HOLDINGS LTD

The global energy landscape is rapidly evolving, and energy storage is at the forefront of this transformation due to increasing adoption of electrified transportation and decarbonization of the power and industrial sectors. While chemical battery technology has made significant progress over the past decade, its limitations are proving to be a hindrance to the pace of the energy transition.

A new storage paradigm needs to be quickly deployed at scale, that can meet the complex demands of renewable based systems and electrification, otherwise, the potential consequences can be catastrophic for the planet. Enercap Holdings has invented electrostatic, encapsulated-capacitor based energy storage, as an alternative to chemical storage. Enercap's electrostatic storage delivers magnitudes better performance than chemical batteries, across all applications from AA rechargeable cells to MWh grid storage and long-range, fast-charging EV storage.

Enercap's stationery storage technology family of products (Enpack, Enwall, Encap, Ensega) deliver the lowest levelized cost of storage (LCOS) with the technical performance necessary for decarbonization, predictably, sustainably and at scale. There is no capacity degradation over life*, the widest operating ambient temperature range, no thermal runaway risk and environmentally sustainable – all of which lead to more expanded storage options that are otherwise not feasible or possible with chemical batteries. Enercap manufactures and globally distributes utility scale, backup, residential, telecom, microgrid, RV, boating and consumer applications solutions.



ASTRONERGY SOLAR

Astronergy, founded in 2006, is a leading intelligent manufacturing enterprise specializing in photovoltaic cells and modules. As a pioneer in the mass production of n-type TOPCon PV modules, Astronergy has established itself as a top 6 global player in shipments. Under the CHINT Group, Astronergy is committed to creating a sustainable and net-zero carbon world through solar power. With a focus on R&D, production, and sales of high-efficiency crystalline silicon PV cells and modules, Astronergy has launched the ASTRO series, offering high-efficiency, high-quality, and high-performance modules. These modules, available in bifacial and monofacial options, are perfectly suited for utility-scale power stations, commercial & industrial (C&I) PV systems, and residential PV systems. Astronergy's mission is to be the most competitive PV module supplier worldwide, driving innovation and excellence in the industry. With its lead in n-type TOPCon technology, Astronergy continues to push the boundaries of solar power, contributing to a sustainable future.

SOGO GROUP OF COMPANIES

A Legacy of Excellence and Trust

SOGO is not just a name; it's a hallmark of innovation and excellence in Pakistan. Pioneering Chinese trade in Pakistan during the 1960s and 1970s, SOGO group has been managing over 10,000 SKUs today. Headquartered in Karachi, with an extensive sales and distribution network covering every city, town, and village, we embody a legacy of reliability and growth. Our journey began with a vision to diversify into Rechargeable Products, Solar Products, Electrical Equipment, and Lighting Equipment. Adapting to market shifts from seller-driven to buyer-driven, SOGO has continuously empowered the people of Pakistan with sustainable and reliable products. Powering Pakistan with Energy Since 2008; SOGO has over 15 years of experience in the Solar Industry SOGO has evolved into SOGO Solar Solutions to power homes, businesses, and industries.

Why

- Proven Expertise: Our experts bring unmatched knowledge and skill to every project.
- Quality You Can Trust: We provide top-notch products and services, ensuring the best return on investment.
- Comprehensive Solutions: We offer tailored services, from consultation to installation and maintenance.

Our commitment to reliability and durability makes SOGO a trusted name with products such as Solar Panels, Inverters and Lithium batteries.

DYNESS DIGITAL ENERGY TECHNOLOGY CO., LTD.

Dyness, founded in 2017, is a global pioneering energy storage solutions innovator. Relying on advantageous technology and robust product R&D capabilities, Dyness has established a comprehensive product portfolio for full scenarios, including C&I and residential energy storage throughout the entire lifecycle. With its global headquarters in Suzhou, China, Dyness has provided safe, reliable, and high-quality products and services to over 500,000+ users in 100+ countries and regions.

At Dyness, customer satisfaction is always Dyness' top priority. Aligned with its mission to reduce the Earth's temperature, Dyness is collaborating with 90+ global brand partners to reduce the cost of renewable energy usage for users. As the pace of global energy transition accelerates, Dyness is committed to promoting sustainable development on a global scale through commercial deepening. It strives to work alongside the industry, market and society to build a low-carbon future worldwide. Dyness ranks among the top 8 global shipments in the energy storage industry. Our high-quality battery products are manufactured in accordance with international safety standards and hold certifications such as TUV, CE, EN62619, and IEC62040, ensuring superior safety and reliability. We specialize in both grid-tied and off-grid LFP battery solutions designed for residential applications across Europe, Australia, Africa, North America and South America, and beyond. In the Pakistani market, we offer our reliable and efficient energy solutions for residential as well as commercial and industrial applications.

www.nfeh.org

ESL RENEWABLES (PVT.) LIMITED

Established in 2005, Energy Solutions Private Limited (ESL) has emerged as a leading provider of industrial and commercial power solutions in Pakistan. With a proven track record, ESL has installed over 8,000 units nationwide, offering a comprehensive range of prime and backup power generators. As the exclusive distributor of Cummins Gas UK and Aksa Diesel Generators Turkey, ESL delivers top-tier products ranging from 10kVA to 3500kVA, backed by unparalleled customer support.

Under the umbrella of ESL Renewables Private Limited, a dedicated entity for solar and micro-grid solutions, we offer tailored energy-efficient solutions designed to reduce the Levelized Cost of Energy. Specialized in total energy conservation, ESL Renewables leverages cutting-edge renewable technologies, including Tier 1 Grade A solar panels, energy-efficient MPPT inverters and advanced energy storage solutions featuring lithium-ion and tubular battery technologies.

ESL Renewables partners with industry-leading brands to ensure the highest quality in every project. We are also recognized by the Pakistan Engineering Council, AEDB, the Federal Board of Revenue and have received numerous awards from top suppliers for our commitment to quality and valued partnerships.

Serving primarily the commercial and industrial sectors, ESL Renewables boasts an impressive portfolio with projects for prominent companies such as Alkaram Textile Mills (14MW), Riaz Textile Mills (8.2MW), Husnain Textile Group (3MW+), Ghani Group (2.8MW), Zephyrs Textile (1MW+), Siddiqui Group of Industries (1MW+) and Shahtaj Textile Mills (1MW) to name a few. By focusing on sustainable energy solutions, ESL Renewables is lighting the way towards a greener future for Pakistan.

ALBARIO ENGINEERING PVT LIMITED

Born in traditions, driven by excellence Albario Engineering (Pvt) Ltd. was established in Lahore, Pakistan in 1954, to cater to the ever-increasing energy & infrastructure needs of a developing nation.

Over decades, the organization has carved a name for itself in the industry by working as a diversified, multidisciplined, one window solution provider in the fields of Energy, Industrial Solutions, Technology, and Infrastructure Development.

The group has excelled in diversified business activities ranging from Engineering, Procurement & Construction, Electro-mechanical Contracting, Civil & Infrastructure Development, Operations & Maintenance, Oil & Gas, Plant Outages / Turnarounds, Design, Inspection & Testing Services, Upgradation & Rehabilitation Services, BPO, AI & IT Services, Consulting & Technical Trainings, Renewable Energy (Solar, Wind & Hydro), Gas Engine Spares & Services, EV Charging Solutions, and Manufacturing of Transformers.

Power in Numbers

- 10,000+ MW Power Plants Installed
- 2,000+ MW 8 Years of Experience in Iraq
- 6,000+ MW Reliable O&M Services
- 1,200+ Outages Performed
- 5,000+ Skilled Manpower
- 500 / 220 / 132 KV Multiple Grid Stations Installed
- 500+ Equipment's Supplied

CROWN SOLAR ENERGY

Crown Group is the realization of a young mind's dream, brought to life in 2002. Under the mentorship of Mr.S. M. Saleem, his maternal Uncle, Mr. Farhan Hanif developed an understanding that the real essence of business was the maintenance of transparent accounting systems. Furthermore, he learned the concept of ethical business practices, and developed an aversion to interest-based dealings, a principle which Mr .Farhan strictly followed in a llst ages of his career progression. He was inspired by his maternal grandfather's business of importing scooter spare parts from Italy since 1963. As a young man Mr. Farhan delved into this business, starting from the basics to learn the 'ins and outs' of trade.Observing and following the development of the Chinese market for automotives and parts, he launched his own business in 2002 by being the first in Pakistan to grabh old of this opportunity and in 2003 hemade an exclusive rights agreement with Lifan Group, China. This marked the beginning of motorcycle spare parts import which were competitive inprice and an excellent quality substitute for Japanese parts.

Going forward, sky was the limit and Crown Group grew year after year, exploring, manufacturing and introducing new products to the Pakistan imarket.The group entered the business of local motorcycle body parts, motorcycle assembly, CNG rickshaw parts, lubricants, tyres and ultimately moved towards an industrial park for motorcycle parts maker.

VOLTAIC POWER PRIVATE LIMITED

VOLTAIC POWER
Reliable energy partner

Voltaic Power is a solar energy solution provider for residential and commercial applications. The company was formed in 2021, recognizing a gap between the high quality products that consumers demand versus what is being offered at the marketplace. We offer On-Grid (Grid connected) and Hybrid (Grid + Battery) solutions, primarily focusing on residential and small commercial applications. We also offer Off-Grid (standalone) solution for schools, hospitals, and businesses in remote areas where access to grid is either non-existent or unreliable.

Voltaic Power differentiates from our competitors by providing a high quality system with an unmatched warranty on equipment and installations, while still remaining cost-competitive to meet customers' requirement. Solar power for home or business is a long-term investment for a system that should last 25 years without significant recurring cost and we believe consumers in Pakistan deserve the highest quality and lowest life-cycle cost system within their investment targets.

With 30 years of experience in the US tech-industry and US solar energy market during the last 10 years, we understand that having a professional team is essential for our success in Pakistan. We have invested in developing a well qualified professional team of engineers and business professionals who have experience in Sales & Marketing, Solar System design, and highly reliable quality installations.

To maximize ROI for our customers, Voltaic Power systems are backed up with services including long-term Operations & Maintenance (O & M) andonline system monitoring to ensure that the system is running efficiently and generating maximum energy.

At Voltaic Power, we strive to provide the best service to our customers for complete peace of mind for 25 years or more! We promise a customer service experience focused on information and education, as we know that informed customers will always make the best decision for their investment.

NETLINE GROUP OF COMPANIES

NETLINE GROUP OF COMPANIES

Empowering a Sustainable Future

Netline Pvt Ltd is a pioneering force in the power and energy sector, driven by a passion to revolutionize the way our customers access and utilize energy. With a rich legacy of 45 years, we have established ourselves as a trusted and reliable partner, dedicated to delivering innovative solutions that meet the evolving demands of a rapidly changing world.

Expertise and Solutions

At Netline, we specialize in cutting-edge technologies, including UPS systems, battery storage solutions, and solar panel systems, designed to empower our customers with efficient, reliable, and sustainable energy solutions. Our expertise spans the globe, with a presence in the USA, MENA region, and Pakistan, enabling us to make a meaningful impact on our partners and communities.

Our Commitment

We believe that access to clean, efficient, and reliable energy is fundamental to shaping a better future. Our unwavering commitment is to deliver top-tier products and services, driving positive change and making a lasting impact on the world of tomorrow.

AMA ENERGY SERVICES PVT LIMITED

AMA ENERGY

AMA Energy Services (Private) Limited is a leading provider of end-to-end solar energy solutions, catering to a broad spectrum of clients. We specialize in 1-tier PV Solar power projects, delivering cost-effective and sustainable solutions tailored for residential, commercial, and industrial applications. Our expertise encompasses both grid-connected and hybrid systems, with a strong focus on best practices in installation and commissioning.

Our project portfolio includes over 5000 kW of installed capacity, showcasing our capability and experience. We have partnered with prominent clients such as Nestlé, IMH, Packages Group, Shahtaj Sugar Mills, and the governments of Punjab and Balochistan. Our range of services covers solar panel installations, energy-efficient solutions, and advanced energy storage systems, all aimed at supporting Pakistan's transition to sustainable energy.

At AMA Energy, our team of professionals is committed to closely working with clients to address their specific energy needs. We are dedicated to providing reliable, eco-friendly solutions that contribute to a more sustainable and resilient future for Pakistan.

MEEZAN BANK LTD

Meezan Bank is Pakistan's premier Islamic bank, founded in 1997 as the country's first dedicated Shariah-compliant financial institution. Headquartered in Karachi, the bank operates under the principles of Islamic finance, offering a comprehensive range of banking products and services that adhere to Shariah laws.

With a network of over 1000 branches across Pakistan, Meezan Bank provides services including personal and corporate banking, investment banking, and wealth management. The bank's offerings encompass a variety of products such as Islamic savings accounts, term deposits, home financing, auto loans, and business financing, all structured to comply with Islamic finance principles, avoiding interest (Riba) and engaging in profit-sharing and asset-backed financing.

Meezan Bank distinguishes itself through its commitment to high ethical standards, transparency, and customer-focused solutions. It operates with a strong emphasis on Shariah compliance, guided by a dedicated Shariah Advisory Board that ensures all products and services meet Islamic legal requirements.

The bank's mission is to contribute to the economic development of Pakistan by providing innovative and ethical banking solutions, fostering financial inclusion, and promoting Islamic financial principles. Meezan Bank has consistently received accolades for its performance and contribution to the Islamic banking sector, establishing itself as a trusted leader in Shariah-compliant banking.

Participation In Solar awards In Solar customer category

Meezan bank have installed solar systems in 138Branches along with our Head Office, with a total capacity of 2.8 MW.

This green initiative is helping us save 830 metric tons of CO2 annually, which is equivalent to planting 33,000 trees on an annual basis.

DECENT SOLAR

In a market full of false promises and overpriced solutions, a gap existed between customers and solar energy providers. That's when Decent Solar emerged in 2019, offering cost-effective solutions without compromising on quality. Unlike other companies in the industry, we understood the unique requirements of our customers and filled the gap with our exceptional services. Decent Solar quickly set the trend by providing home solutions, corporate sector services, and even solutions for large scale commercial projects. What sets us apart is our commitment to after-sale support, a feature that was missing in the industry before our emergence. We have a dedicated support team to solve any issues Our customers might face after their purchase. Decent Solar has become a leading solar power solutions company, installing solar panels and everything related to it to help their clients shift their electricity usage to solar power.

ACM GROUP OF INDUSTRIES

ACM is a conglomerate company which is collectively committed to exhibiting excellence and innovation in every situational manner. The ACM Group comprises dynamic establishments that contribute diversely in their respective domains and more, including:

* ACM Hi-Tech Engineering
* ACM Plasco International
* ACM Mines & Minerals
* MTM Developers
* MTM Traders

The ACM Group thrives in advancing, sustaining and expanding by concurrently maintaining the principles of integrity, motivation to innovate and fulfilling the social responsibility. ACM is dedicated to fostering prosperity across society, nurturing the environment, and contributing to the global economy. Our diversely extensive experiences range of experiences empowers us to envision and achieve the highest standards of excellence.

Join us to shape a more promising future through exploration, transformation, and progress. ACM Group is not just a chain of companies, instead it is the foundation of visionaries who strive to thrive towards a better future every day.

For Latest Development on Energy, RE & Climate Change Log on to

www.energyupdate.com.pk

Subscription Charges from 2024 will be **Rs. 6,000** including Courier Charges for 1 Year

NEW RABIA ENTERPRISES

WHO WE ARE?
Incorporated in 2006, New Rabia Enterprises (NRE) is one of the largest and most trusted innovative technology brands in Pakistan. Since the beginning, we have strived to provide the best technologies for end users with a differentiated portfolio of power backup and alternate energy solutions, as well as other electronic and electrical products.
We committed to solar and power inverter products for residential, commercial, and industrial demand. We envision future needs to bring uninterruptible and alternative power solutions to customers that make their lives comfortable and efficient. Environmental-friendly is a must-have feature for all our products and services.

Our Vision

Energizing Pakistan with greener,
And more affordable, eco-friendly, and best possible alternate sources of energy.

Our Mission

To provide renewable energy to every corner of Pakistan. We envision a clean, equitable energy system that directs control and benefits back to local communities, with solar on every roof and money in every pocket.
We aim to cater to the increasing demand for solar panels with Tier 1 grading. We strive to provide innovative products with quality solutions at affordable prices.

Customers

We are striving to provide our all customers with safe, high-quality, innovative, and future-ready products.

LANDMARK ENERGY

LandMark Energy brings unparalleled partnership stories from local and international groups Commercials and Technical Advisory are coupled with a dedicated team that provides the best possible solution as per customer's needs. We are 15 Years of experience in commercial and industrial sector. We offer customized small, medium and large scale solar solutions in the region with a vision to create an energy rich future while upholding our commitment to the planet through safe and sustainable practices. LandMark Energy is Pakistan's fastest growing solar company, with nationwide presence, more than 700+ installations, growing at 100% year over year. LandMark Energy is not only providing solar solutions but also all king of Automation and Synchronization solutions of Power Generation sources like Turbines, Gas Engines, Grids and Diesel Gensets.

UNIVERSAL CABLES INDUSTRIES LIMITED

In the year 1978, a small yet solid enterprise appeared on the horizon of the Cable Industry in Pakistan - Universal Cables. Initially the company started off as a manufacturer of PVC insulated wires, cables and flexible cords. Within a very short span of time after its initiation, Universal Cables Industries Ltd got itself recognized as one of the leading and most credible names in contemporary market. Today it proudly stands as a universally acclaimed Cable Manufacturer and Supplier Company featuring diverse product range, advanced technology and an astute vision. Universal Cables Industries Ltd. achieved another remarkable milestone with respect to Quality and Customer satisfaction after it became ISO 14001:2015 certified. Universal Cables is now KEMA Gold Certified for adhering to world quality standards. Recently, Universal Cables had launched Greener Universal (XLPO Solar Cables.) and has got this product TUV Austria Certified, again proving that Universal Cables accords top priority in serving its customers with only top of the line products manufactured with cutting edge technology.

TRI ANGELS ELECTRONICS (PVT.) LTD

Trion, established in 2020, is a leading brand in Pakistan's power industry. Identical with strength, quality, and performance, Trion empowers consumers to change their lifestyle and embrace empowered living. With a nationwide service network, Trion offers a range of Solar Inverters. Our products are available across Pakistan through a wide dealer network, modern trade outlets, and e-commerce portals. We prioritize customer trust, building long-term solutions for improved living. Our R&D center designs products with the latest technology, focusing on safety and security features.

Trion's growth and success testify to its commitment to serving the nation with self-sustaining, eco-friendly electricity solutions. Our vision is to meet possibilities, driving innovation and technology. Our objective is to provide power solutions for consumer needs, focusing on solar renewable energy and eco-friendly solar solutions.
With a dedicated management team and a clear vision, Trion is growing and innovating to meet the needs of the Pakistan market, providing reliable and efficient products for a better tomorrow.

AMERICAN SOLAR

American Solar stands out for its commitment to quality, innovation, and sustainability. Our advanced solar technology ensures maximum energy efficiency and reliability. With industry-leading warranties, exceptional customer service, and a dedication to environmental responsibility, we provide tailored solar solutions that meet your energy needs and help create a greener future. Choose American Solar for cutting-edge, dependable, and eco-friendly energy solutions. American Solar is your trusted partner for sustainable energy solutions. With a commitment to quality, innovation, and customer satisfaction, we offer a range of residential, commercial, and industrial solar solutions.

NRTC ENERGIES PVT LTD

NRTC Energies Pvt Ltd is a specialized company in the field of engineering, procurement, and construction services related to Power and Energy in Pakistan. To meet the growing electricity demand vis-à-vis current renewable energy productin of our country versus the photovoltaic power potential, we provide reliable and efficient customized solar solutions.

NRTC Energies Pvt Ltd is a subsidiary of National Radio and Telecommunication Corporation (NRTC) formed to provide top-of-the-line renewable energy solutions. NRTC is a country's leading ICT and electronic equipment manufacturer and solution provider both in the public and private sectors. We are a registered Solar Energy Solution Specialist in Top Category with all the relevant departments, partnering with only tier 1 brand like Trina, Longi, Canadian-Solar Jinko, JA for solar panels and SMA, Huawei, Sun-grow, GoodWe, Solis for inverters, to provide the best PV energy solutions in the market.

SOLAR POWER 99

POWER SOLAR 99 Limited, incorporated in 2019 and headquartered in Lahore, is a top-tier company in clean energy solutions. We are encouraged by, and welcome, the advent of net metering whereby every rooftop can be used to generate clean and sustainable energy. POWER Solar99 is a premier provider of clean energy solutions, with articular expertise in net metering. The company's technical team has been trained overseas, enabling us to maintain the highest standards in technical know how and quality of installations. In addition to a highly trained technical and sales staff, we have partnered with the top tier manufacturers of solar panels and inverters.

OUR AIMS

Ace quality solar panels, inverters, and all other components are used to produce energy at Indus. Our products are affordable and warrant very few service requests

Best Quality:

We will always provide the highest quality products: To this effect; we are using top tier solar panel, inverters and other components.

Competitive Pricing:

For equivalent quality, we are committed to remaining price competitive. We have developed packages for all income groups without compromising on quality.

Excellent service:

Our after sales/installation service is exemplary. We provide one year free on-site service. Even after one year, we will continue to provide timely service at nominal cost. The quality of our products warrants very few service requests.
Specialized teams for Residential, Commercial, Industrial and Agricultural applications.

For Latest Development on Energy, RE & Climate Change Log on to

www.energyupdate.com.pk

Subscription Charges from 2024 will be

Rs. 6,000

including Courier Charges for 1 Year

Ziewnic Unveils Cutting-Edge Lenox Inverter and ZBox Lithium Battery with Unmatched Durability and Efficiency

Endless Energy

eco energy

Ziewnic introduces the Lenox Inverter and ZBox Lithium Battery, a powerful combination designed for superior energy efficiency. The ZBox Lithium Battery boasts European technology, offering a remarkable 10-year warranty and a 20-year lifespan, ensuring long-term reliability. Paired with the Lenox Inverter, which features IP65 protection, smart load management, and an impressive 98% maximum efficiency, this duo provides a top-tier energy solution. With Ziewnic's commitment to innovation and durability, customers can enjoy peace of mind and optimized performance for years to come.

www.ziewnic.com info@ziewnic.com
(021) 111 000 666

ZIEWNIC®
SOLAR ENERGY

Green liberalism and policy approaches

Transition from fossil fuels to sustainable and clean energy sources is required

Saleha Qureshi

The writer is the Pakistan Industrial Decarbonisation Programme lead at the Sustainable Development Policy Institute, Islamabad

Global efforts to tackle climate change frequently introduce frameworks designed to mitigate environmental impacts and drive the transition to a low-carbon economy. The success of these frameworks depends heavily on their ability to adapt to the specific social, economic, political and environmental dynamics of the regions where they are implemented. Developing countries face unique challenges in adopting these global solutions due to limited resources and greater vulnerability to climate change.

As the world intensifies its efforts to meet the goals of the Paris Agreement, there is a growing recognition of the need for climate policies that are both inclusive and context specific. Tailoring global frameworks to fit the diverse realities of different regions requires the integration of local knowledge, ultimately encouraging more resilient and equitable climate strategies.

Green liberalsim is emerging as an ideological framework that is increasingly being embraced by policymakers and environmentalists. This approach represents a synthesis of classical liberal principles such as democratic governance, individual freedoms, the rule of law, and human rights with an unwavering commitment to environmental sustainability.

The central tenet of green liberalsim is the belief that economic growth, social equity and environmental stewardship are not mutually exclusive. Rather, these can be integrated in a way that allows them to thrive together. This vision promotes a future where the pursuit of economic prosperity is aligned with the imperative to protect and enhance the natural environment, ensuring that both present and future generations can enjoy the benefits of a healthy planet.

At the heart of green liberalsim is the idea of harmonising economic development with environmental protection through a balanced and strategic approach. This philosophy advocates for efficient and sustainable use of resources, driven by innovation, technological advancements, and market-based solutions. Green liberalsim emphasises the importance of setting the right incentives such as carbon pricing, renewable energy subsidies and regulatory frameworks that encourage green investments to guide market behaviour towards sustainable outcomes.

The proponents argue that by leveraging the power of free market and individual choice, alongside strong legal and institutional frameworks, we can achieve significant environmental gains without compromising the core values of liberalism, such as freedom, entrepreneurship and human dignity. Green liberalsim seeks to create a sustainable future where economic vitality and environmental health reinforce each other, fostering a more resilient and equitable global society.

The vision is ambitious yet achievable: a world where economic growth, social objectives and environmental sustainability work in concert. This vision is predicated on the belief that innovation and technology, when guided by free market principles and appropriate incentives, can optimise resource use and mitigate environmental impact. Within the framework of green liberalsim, a central debate revolves around the differing perspectives of Malthusians and Cornucopians, two schools of thought that offer contrasting views on the relationship between population growth, resource consumption and environmental sustainability.

Malthusians, drawing on the ideas of economist Thomas Malthus, argue that unchecked population growth poses a significant threat to the planet's finite resources. They contend that without stringent population control measures and careful management of natural resources, humanity will face severe crises, such as famine, disease and environmental degradation.

From a Malthusian perspective, the emphasis is on imposing limits to growth, advocating for a more cautious and conservative approach to resource use, with a focus on sustainability and preservation to avoid ecological collapse.

Cornucopians, on the other hand, embody a more optimistic outlook that aligns closely with the principles of green liberalsim. They argue that human ingenuity, technological innovation and market-driven solutions have the potential to overcome the limitations of natural resources.

Cornucopians believe that through a judicious application of technology, free markets and the right incentives, economic growth and environmental sustainability can coexist; even reinforce each other. In the context of green liberalsim, this perspective suggests that rather than imposing strict limitations, a society should invest in innovation and create policies that encourage sustainable practices while fostering economic prosperity. Cornucopians advocate for harnessing the power of human creativity to develop new ways of living that are both economically viable and environmentally sound, ensuring that progress is achieved without compromising the planet's health.

Green liberalism finds itself at the intersection of these two viewpoints, seeking to balance the cautious approach of the Malthusians with the optimism and faith in innovation that characterises the cornucopian outlook.

Green liberalsim integrates the principles of political economy to effectively address environmental challenges by applying economic reasoning to ecological concerns. One fundamental concept is the role of opportunity costs and incentives in shaping corporate and individual behavior. For instance, companies are often faced with decisions such as whether to invest in cleaner technology or to purchase carbon allowances under a cap-and-trade system.

These decisions are influenced by the opportunity costs associated with each option and are further guided by a system of incentives both positive, such as tax breaks or subsidies for green investments, and negative, such as penalties for excessive emissions. By aligning economic incentives with environmental goals, green liberalsim encourages market actors to make decisions that contribute to sustainability while also fostering economic growth. This approach underscores the belief that well-designed economic policies can effectively steer behaviour towards environmentally responsible outcomes without stifling innovation or economic freedom.

Another key element in the green liberalsim framework is the recognition of the tragedy of the commons, which illustrates the risks associated with individuals acting in their own interest to the detriment of shared environmental resources. Green liberalsim advocates for effective governance models, whether central or decentralised, that can manage common resources sustainably and equitably.

This involves establishing clear property rights and minimising transaction costs to ensure that resources are used efficiently and markets function smoothly. Additionally, green liberalsim emphasises the importance of knowledge, information and freedom in economic decision-making.

Ensuring that decisions are informed by accurate data and free from unintended consequences is crucial for achieving long-term sustainability. In this view, transparency, education and access to information are essential components of a green economy that respects both environmental limits and the principles of liberalism.

By integrating these economic principles with environmental ethics, green liberalsim seeks to create a resilient and sustainable future where economic vitality and ecological health coexist in harmony. Green liberalsim prioritises the urgent need to transition from fossil fuels to sustainable energy sources.

This global threat underscores the need for enhanced international cooperation, where nations not only work together on mitigation strategies to reduce emissions but also on adaptation efforts to build resilience against the inevitable effects of climate change.

To effectively integrate this approach, Pakistan will need to focus on expanding innovation and market-driven solutions, which will facilitate a transition from its dependence on fossil fuels to renewable energy sources. This transition is essential for fostering economic resilience while mitigating environmental impact.

Implementing green liberalsim in Pakistan will require establishing clear property rights, reducing transaction costs and ensuring informed decision-making to create policies that are both economically viable and environmentally sound. Additionally, effective governance models will be crucial for managing common resources sustainably, addressing the tragedy of the commons and promoting equitable growth. By aligning economic development with environmental stewardship, green liberalsim offers a hopeful and pragmatic path forward. Adopting this framework will involve harnessing technological innovation, incentivising sustainable practices, and fostering international cooperation to address climate change and resource management challenges effectively. ■

Illuminating a path to affordable electricity

DEPS Pvt Ltd's solar solution to Pakistan's power woes

Diwan Fakhruddin,
CEO, DEPS Pvt Ltd

Pakistan's electricity sector has long been plagued by inefficiencies, leading to exorbitant tariffs and unaffordable power for millions. As the country grapples with an energy crisis, DEPS Pvt Ltd is pioneering a sustainable solution through solar energy.

The current electricity pricing mechanism in Pakistan is marred by a complex web of subsidies, taxes, and inefficiencies. Consumers face high tariffs, while the government struggles to manage the financial burden of subsidies. The situation is further exacerbated by transmission losses, theft, and a reliance on imported fossil fuels.

The consequences of this flawed system are far-reaching. Industries struggle to compete due to high energy costs, while households are forced to allocate a significant portion of their income towards electricity bills. The environment also suffers, as reliance on fossil fuels contributes to pollution and climate change.

At DEPS Pvt Ltd, we believe that solar energy holds the key to unlocking affordable and sustainable electricity for Pakistan. Our innovative solutions harness the country's abundant solar resources to provide clean, reliable, and cost-effective power.

By leveraging solar energy, we can: reduce reliance on imported fuels, mitigating the impact of price volatility; minimize transmission losses and theft, ensuring more electricity reaches consumers; offer competitive tariffs, making electricity more accessible to millions; create jobs and stimulate local economies through solar adoption; and contribute to a cleaner environment, reducing Pakistan's carbon footprint

Our expertise in solar solutions spans:

- Rooftop solar installations for residential and commercial consumers
- Large-scale solar farms for industrial and utility-scale power generation
- Energy storage solutions for efficient power management

As a leading solar solutions provider, DEPS Pvt Ltd is committed to illuminating a path to affordable electricity for Pakistan. We collaborate with government agencies, industries, and households to promote solar adoption and create a sustainable energy future.

Join us in our mission to harness the power of solar and create a brighter energy future for Pakistan. Together, we can illuminate a path to affordable electricity and energize a better tomorrow.

DEPS

Diwan Energy & Power Solutions

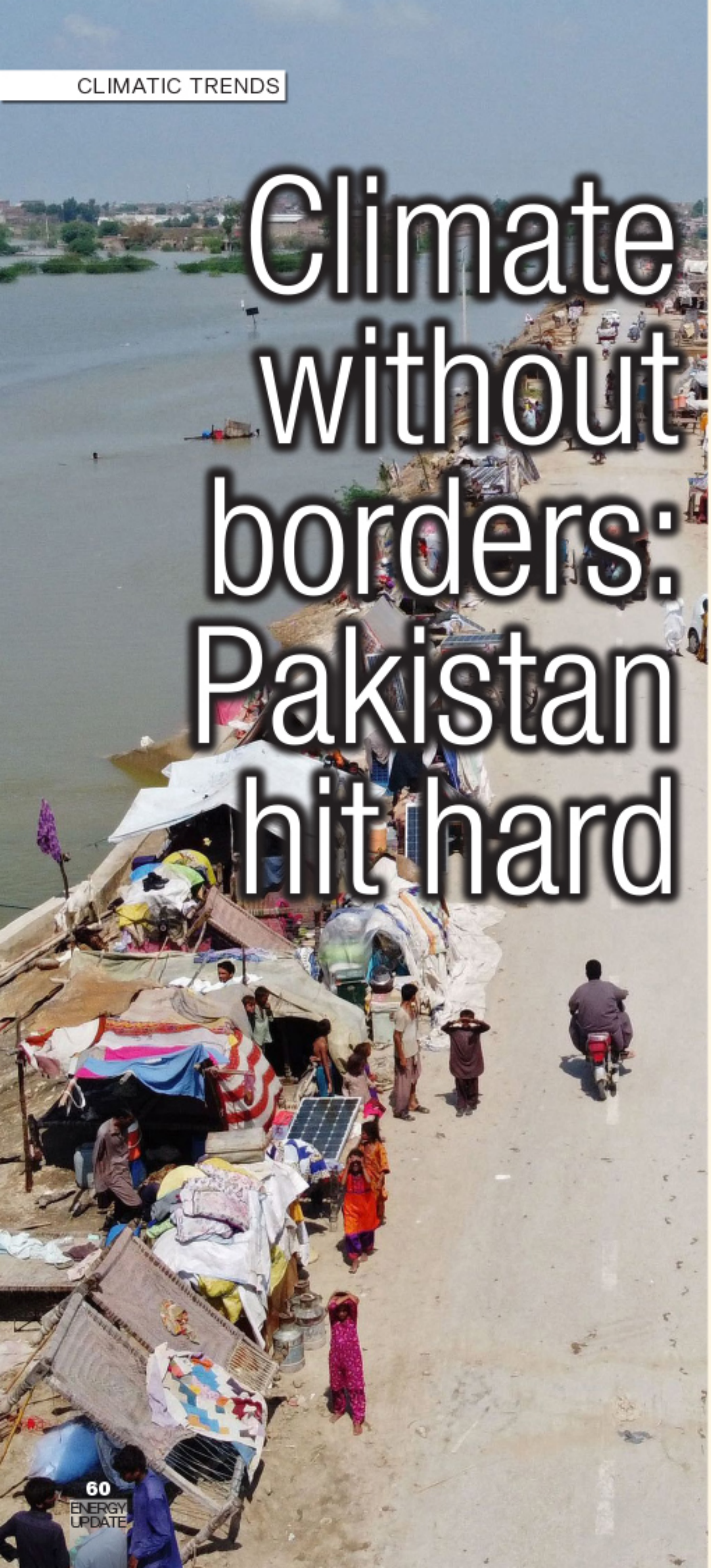
(PVT LTD)

INVETROX

ON-GRID & HYBRID INVERTERS

COMING SOON

www.diwanenergy.com



Climate without borders: Pakistan hit hard

Pakistan's climate risks are rooted in shared ecosystems with its neighbours; major regional climatic trends often cast a shadow on national economic progress

Ali Tauqeer Sheikh

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

CLIMATE change does not need passports as it does not respect borders. Pakistan's climate risks are rooted in shared ecosystems with its neighbours. Major regional climatic developments and trends often cast a shadow on our national economic progress and well-being. Our climate threats originate in regional climate systems, often located in neighbouring countries. In fact, as climatic changes unfold, new 'climate borders' may emerge, requiring a distinct form of regional climate diplomacy.

From the Bay of Bengal to the Arabian Sea, and from the Tibetan Plateau to the Pamirs that link the Karakorams and Hindu Kush ranges, they are all part of the Himalayan mountain system defining Pakistan's water resources, ecology, economy, and cultural heritage. As the entire region is recording profound changes in monsoon patterns, all our climate neighbours have begun to experience compound extreme weather events (CEWEs), whereby each climate disaster triggers another one.

Like Pakistan, our climate neighbours have also been witnessing CEWEs. In the South Asian landmass, dry areas have become drier with less than normal precipitation coupled with less cooling off at night. The frequency of hot summer days and hot summer nights has increased in the region. Record-setting daily temperatures have become more common. We have seen that heatwaves have often triggered torrential rains as experienced recently in several parts of India and Pakistan.

Record-high temperatures in Delhi and Lahore, for example, have resulted in record-breaking rains in both cities. It should be recognised that flooding is often attributed to weak governance rather than climate change. We have seen severe heatwaves in the upper Indus Basin result in downstream flooding. Record-high tempera-

tures in Balochistan, Sindh, and KP have invited heavier monsoon rains in several parts of the country.

Emerging trends in slow-onset climate events have also become perceptible in recent years. Monsoon currents, for example, have begun to visit the upper mountain reaches in Chitral and Swat. Likewise, tropical storms in the coastal belts of Balochistan and Sindh are now influenced by disturbances in weather patterns in the Arabian Peninsula, affecting the frequency and intensity of rains in the Gulf region. Easterly winds from the Arabian Sea are resulting in increased torrential rains in Balochistan.

The challenge is to rethink the way in which we manage climate risks and plan adaptation. Many urban centres in South Asia, from Karachi to Kolkata, have seen that droughts, heatwaves, and floods in their hinterland have spurred outward migration. Seasonal and permanent displacement and migration have become major sources of rapid urban growth. It is perhaps felt nowhere more strongly than in Karachi that has provided refuge to a steady stream of migrants from Dadu and Jacobabad propelled by high temperatures, from Tharparkar accelerated by prolonged droughts, and from Sajawal, Badin and Thatta because of seawater intrusion and salinisation.

Karachi has attracted communities from Balochistan and KP's newly merged districts, plagued by land degradation and deforestation. Southern Punjab has also been contributing migrants in response to increasing hill torrents from Koh-i-Suleiman, a mountain range that separates the arid regions of Balochistan from the more fertile areas of Punjab, KP, and parts of Sindh.

A fundamental difference between traditional and non-traditional security challenges is the emergence of new climate borders. While traditional security is fundamentally concerned about geopolitical borders, the new climate frontiers are defined by transboundary impacts and the implications of change in climate systems and their cross-border impacts and implications.

The just-released Global Transboundary Climate Risk Report, 2023, by the Stockholm Environment Institute and others partnering in the initiative on 'Adaptation Without Borders', has drawn attention to some critical blind spots in national climate policies as well as the solutions offered by international climate diplomacy. It is an important report as it has pointed out — based on nine case studies — that transboundary climate risks also include those transmitted by national adaptation responses. The report has observed that national adaptation measures can have both positive and negative results across borders. In some instances, these can be negotiated to deliver shared benefits.

Climate risks impact local livelihoods, and critical sectors, such as finance, health and global supply chains, including agricultural commodities and manufacturing components. In the South Asian context, transboundary climate risks include shared rivers, mountain ranges, melting glaciers, flood disasters, and cross-border risks to infrastructure, and livelihoods.

The transboundary risk report has presented case studies, many of them of interest to Pakistan: agricultural commodities and food security, industrial supply chains, energy and sustainable energy transformation, finance, human health, mobility, livelihoods, well-being and equity issues. Amnesty International and other activist groups have long argued that climate justice must transcend national borders as climate hazards in one country have an impact across borders and affect its neighbours.

Each case study carries a message for Pakistan; perhaps the most central one is that policymakers and opinion leaders need to address their blind spots in climate policy. These risks are triggered by a climate hazard in one country affecting communities across the border. Likewise, adaptation actions in one country can be detrimental for neighbouring states. The risk report has called for more global cooperation on adaptation, with international policy fora as key drivers. National efforts to respond to climate change cannot succeed without understanding transboundary climate risks.

In a nutshell, the challenge is to rethink the way in which we manage climate risks and plan adaptation. The report sets out four potential areas to build resilience: i) create opportunities for innovative research on transboundary climate risks, ii) develop national/ regional indicators to track transboundary climate risks, iii) strengthen research based on climate scenarios, modelling and projections, and iv) negotiate preferred options to mitigate transboundary climate risks.

In order to manage regional climate risks and climate threats to security, non-traditional responses will be needed. Since most climate disasters are transboundary by nature, they require regional management approaches. Managing regional climate threats that do not respect national borders, will need process-oriented approaches that are not zero-sum but, instead, aspire to win-win scenarios. ■

Another oil, gas discovery made in KP

EU Report

Pakistan has discovered new deposits of oil and gas in Kohat district of Khyber Pakhtunkhwa province.

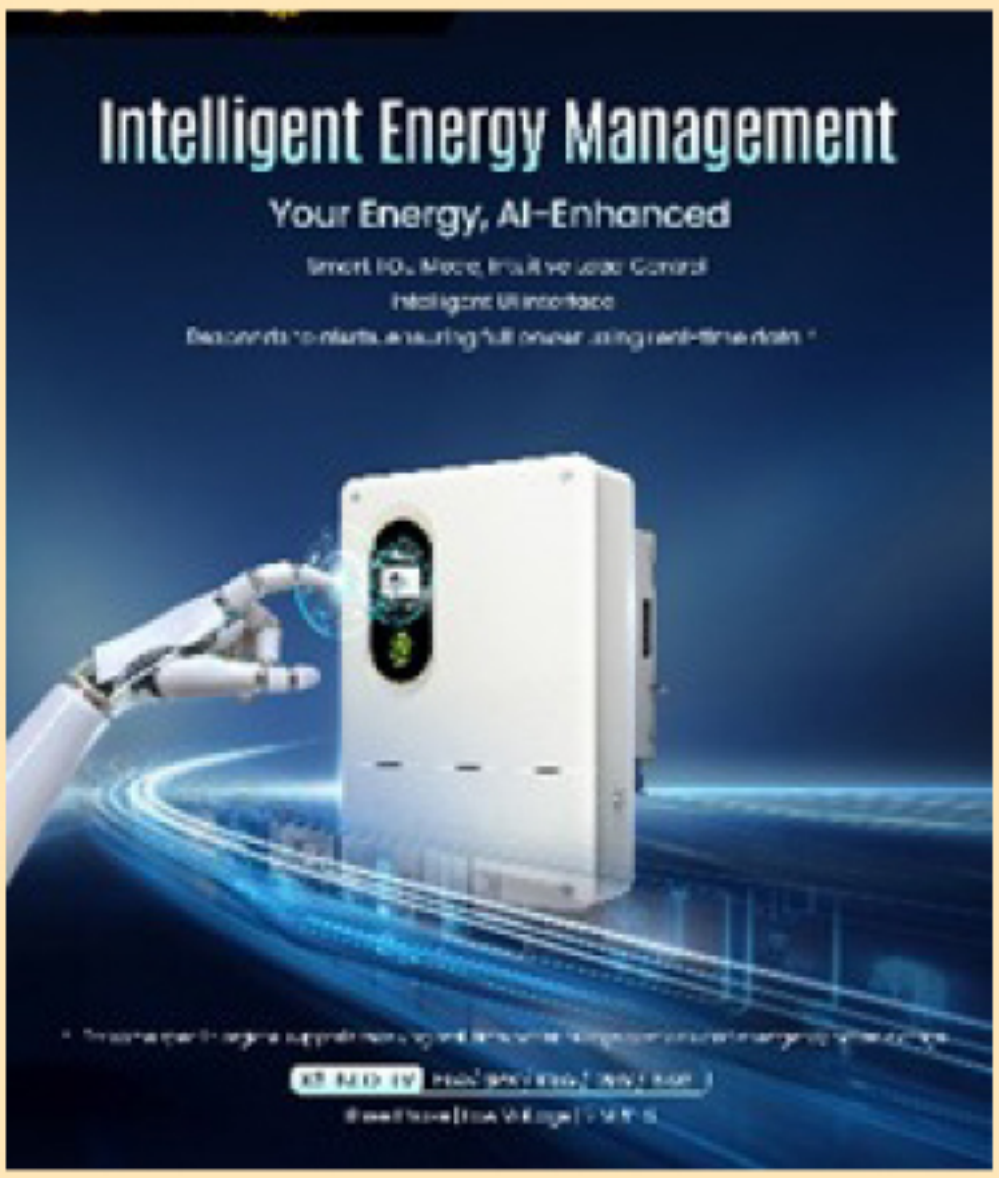
MOL Pakistan, a fully owned subsidiary of Hungarian multinational oil and gas exploration firm shared this news. MOL Group has about 8.4 per cent share in the Tal Block. The TAL Joint Venture, comprising MOL Pakistan Oil & Gas Co. B.V. (Operator), Oil & Gas Development Company Limited (OGDCL), Pakistan Petroleum Limited (PPL), Pakistan Oilfields Limited (POL) and Government Holdings Private Limited (GHPL) has announced the discovery of gas condensate in the Razgir-1 exploratory well, located in Kohat district.

The well, which was spudded on January 9, 2024, has been successfully drilled to a total depth of 3,773.98 meters. The well has shown a production rate of approximately 17.9 million standard cubic feet per day (MMSCFD) of gas and 153 barrels per day (BPD) of condensate, with a choke size of 40/64 inches and a wellhead flowing pressure (WHFP) of 2,017 pounds per square inch (PSI).

This new discovery de-risks further exploration in the TAL Block, creating new development opportunities. The joint venture believes this discovery will contribute to improving Pakistan's energy security by increasing the hydrocarbon reserves of the country, as well as those of MOL and its partners.

Revolutionizing Renewable Energy

SolaX Power unveils X3-NEO-LV Three-Phase Hybrid Inverter



SolaX Power, a frontrunner in the renewable energy industry, has recently launched its groundbreaking product, the X3-NEO-LV three-Phase Hybrid Inverter, marking a significant milestone in the evolution of solar energy technology.

This innovative device is designed to cater to the dynamic and expanding green energy market, offering a robust, efficient, and intelligent solution for solar power systems.

The X3-NEO-LV inverter is equipped with a plethora of features that make it a standout product in its class. It can handle an impressive 200% PV oversize and boasts a peak EPS apparent power for 10 seconds, ensuring a consistent energy supply even when solar conditions are less than optimal. The built-in shadow tracking capability optimizes energy generation by adjusting to the position of the sun, while the integrated surge protection device (SPD) safeguards the system from voltage spikes.

One of the most notable features of the X3-NEO-LV is its high efficiency, with a maximum efficiency curve reaching up to 98% at 15kW. This efficiency is further supported by a wide operating voltage range and compatibility with various PV input configurations, making it adaptable to a multitude of solar setups.

The inverter's intelligent design is not only reflected in its high efficiency but also in its quick response times. With a single unit UPS-level switching time of less than 4ms, the X3-NEO-LV ensures seamless power transitions, minimizing any disruptions to the energy supply. Its capacity for parallel operation, allowing up to 10 units to work in tandem for both on-grid and off-grid applications, and its ability to handle a maximum charging/discharging current of 300A, make it a versatile and powerful choice for energy management.

SolaX Power's commitment to safety is evident in the optional Arc Fault Circuit Interrupter (AFCI) protection and the inverter's high IP65 protection degree, which shields it from environmental factors. The X3-NEO-LV is also generator-compatible, adding to its list of features that cater to a diverse range of energy needs.

As the global community increasingly seeks sustainable energy solutions, SolaX Power's X3-NEO-LV stands as a testament to the company's dedication to providing advanced, reliable, and user-friendly solar energy solutions. Its innovative technology, comprehensive features, and commitment to safety make it a compelling choice for those looking to invest in clean energy. ■

COSMOS ENERGIES
Let's make God happy

AEDB PEC PSA

Cosmos Energies

Is a customer-oriented company, that provides customized solar energy solutions. keeping in view individual clients needs and wants. Over super dynamic team of self leaders feels pride and honor in serving our clients as our family...

Why COSMOS ENERGIES ?

- **Over 300+ successful installations and counting!!**
- **Saved over $1.5 million in foreign reserves for Pakistan, boosting our economy and securing our energy independence.**
- **Added more than 5MW of clean energy to the national grid, powering our future sustainably.**

Call Us: 0319-9267667

Email: Info@cosmosenergies.com

For more information please visit our website:
www.cosmosenergies.com

COSMOS ENERGIES

CORPORATE WINDOW:
Looking towards ethanol

Abdul Waheed Bhutto

The writer is the Pro Vice-Chancellor at Dawood University of Engineering and Technology

Liquid biofuels derived from renewable sources provide an eco-friendly alternative to traditional petroleum-based fuels

Liquid biofuels derived from renewable sources such as edible and non-edible oils and animal fats provide an eco-friendly alternative to traditional petroleum-based fuels. These biofuels can be easily blended with diesel and gasoline (petrol) for use in existing engines, typically up to a certain percentage, without requiring engine modifications.

Among biofuels, ethanol is particularly notable and is produced on a large scale in several countries from energy crops such as maize (corn), sugarcane, rice, barley, sweet sorghum and other biomass materials like straw, grass and wood.

According to the Pakistan Economic Survey, Pakistan's transport sector consumed approximately 13.6 million metric tonnes (MMT) of petroleum products in the fiscal year 2023-24. To meet this demand, the country imported 5.28 MMT of gasoline and 2.37 MMT of diesel oil during the same period.

The Pakistan Sugar Mills Association (PSMA) reports approximately 90 sugar mills operating in the country, with a total crushing capacity estimated at 6.8m tonnes daily. Pakistan is among the top ten largest sugar-producing countries and utilises molasses, a by-product of sugar-making, to produce ethanol.

Since Pakistan has successfully maintained ethanol export momentum without direct subsidies, establishing distilleries for the sugar by-product could be a lucrative investment

Domestically produced ethanol presents a significant opportunity to reduce reliance on oil imports by blending it with conventional fossil fuels. Producing ethanol from grain requires additional units for grain handling and milling, slurry preparation, and liquefaction.

However, procurement challenges arise due to infrastructural and operational issues, and there is no clear roadmap for higher ethanol blending in Pakistan.

In 2023, Pakistan produced 3.12m litres of molasses and exported 470m litres of undenatured ethyl alcohol at a unit price of $0.64 per litre, resulting in an export value of $302m; around 20 ethanol manufacturing plants, including vertically integrated sugar mills and standalone ethanol units, contributed to this production.

Ethanol is traded as Hydrous Ethanol (containing a minimum of 94 per cent to 96pc ethanol) and Anhydrous Ethanol, which is fuel grade (containing a minimum of 99pc ethanol or higher).

Most distilleries in Pakistan produce 95pc ethanol content and would require enhancement to 99.7pc for blending with petrol (gasoline) in motor engines, necessitating the installation of an additional dehydration unit. Since Pakistan has successfully maintained ethanol export momentum without direct subsidies, establishing ethanol distilleries is a lucrative investment.

Ethanol typically has a lower energy content per unit mass compared to gasoline, which is why vehicles running on ethanol may experience lower fuel economy. However, ethanol is often used

as a fuel additive to gasoline (eg E10, which is 10pc ethanol and 90pc gasoline) to improve combustion and reduce emissions.

For a country like Pakistan, high volatility in global oil prices represents a major economic risk, affecting business, agriculture, and manufacturing dynamics. Thus, reducing dependency on imported fuel to the maximum extent possible should be a national priority. Indigenous energy crops like maize and sugarcane offer a promising opportunity if their production and recovery rates are increased.

Pakistan can learn from India's experience to address energy costs, meet climate commitments and manage the excess production of sugarcane, maize, broken rice and other food grains. India plans to increase its ethanol blending ratio from 10pc to 20pc by 2030 by establishing modern ethanol plants nationwide to convert crops and biomass/waste into ethanol. The Indian National Policy on Biofuels, updated in 2022, aims to significantly increase biofuel utilisation across energy and transportation sectors by promoting domestic feedstock for production. This initiative seeks to substitute fossil fuels, enhance national energy security, mitigate climate change impacts, and create sustainable employment opportunities.

The policy aims to reduce India's dependency on oil and gas imports through a five-pronged strategy focused on increasing domestic production, adopting biofuels and renewables, improving energy efficiency, refining processes, and promoting demand substitution.

The Ethanol Blended Petrol Programme is central to this effort, which regulates ethanol prices and utilises damaged and surplus food grains for ethanol production. These measures have not only reduced CO2 emissions but also addressed agricultural overproduction challenges.

Given its similar climate and agricultural patterns, Pakistan could benefit by adopting analogous strategies to leverage ethanol's environmental and economic benefits.

Once Pakistan establishes a roadmap for biofuel blending in its National Policy on Biofuels, farmers can cultivate energy crops such as sugarcane, maize (corn), sweet sorghum, barley, rice (non-food grade), and oilseeds (mustard, sunflower, and soybeans). These crops are well-suited for biofuel production due to their established agricultural practices, economic significance, and regional suitability, making them common choices in the area.

Establishing a regional agricultural hub in South Asia holds immense potential to bolster food and energy security by leveraging the agriculture sector's pivotal role in supporting a significant portion of the population directly and indirectly.

This initiative could address challenges by enhancing crop yields and narrowing the gap between potential and current production. However, despite Pakistan's current hesitance, fostering regional cooperation is essential to unlock shared benefits and tackle common issues such as low GDP growth, high inflation, currency reserves, and unemployment. ■

AI applications in renewable power sector

Shakir Ali Soomro

The writer is an assistant professor at the Department of Electrical Engineering, Mehran University of Engineering and Technology

Artificial intelligence (AI) has a significant role in the renewable energy industry, and it can involve various power transformation stages, starting from renewable energy forecasting, monitoring and controlling of smart grids, and up to the security of nuclear power stations. AI has advanced features that can monitor the sustainable operation of the renewable sector and guide it toward a safer, environmentally friendly, and efficient future.

AI applications can use the variable nature of renewable sources and predict future forecasts more precisely. This nature would help improve plant availability, schedule repairs, and keep grid stability at high standards. Alongside this, the application of AI can help predict weather events like extreme weather events (heat waves, drought, wildfires, and storms), sea level rise (ice and glaciers melting), food insecurity, ocean acidification, outdoor air pollution and species extinction.

This leads to better organisation of the unit commitment, improved reliability, greater dispatch efficiency and reduced operating reserves needed. Power grids are used as efficiently as possible through AI applications that use vast amounts of meteorological data to adjust operations according to changing weather conditions.

Energy dealers and the power industry would benefit from the optimal utilisation of AI, which helps them stay out of trouble and provides cost reduction and financial return benefits. Demand-side management and economical load dispatch are two areas where AI excels. AI ensures that the electrical grid runs at optimal load, which aids grid operators in optimising energy consumption.

AI helps lower electricity costs and improves energy efficiency by analysing data from smart meters and accurately forecasting network load. Further, AI applications can be implemented in a decentralised energy trading system, which guarantees effective energy redistribution, increases trade scheduling and availability of clean electricity, forecasts energy, and lowers total cost. Apart from this, AI applications monitor optimal periods for energy storage systems to enhance system efficiency and technology lifespan.

AI applications can easily locate the problem in the power systems and reroute power within a limited span of time without interrupting the grid stability and decreasing downtime. AI applications should occupy high-quality data for effective operation. Data must be precise and well-organised to improve energy management and produce insightful results for the utilities.

In conclusion, energy systems combined with AI applications are essential for making successful renewable energy industry projects. Current laws and potential guidelines should be abided by the AI systems in the renewable energy industry. Through the potential application of AI, the renewable energy industry should grow at a greater pace to make a clean, green, and sustainable future. It would also keep the grid stable and reliable, and AI technologies must be safe against cyber-attacks. ■

Sindh Energy Ministry Extends Full Support to IEEEP Fair:

A Hub for Innovation and Industry Collaboration

EU Report

Sindh Minister for Energy, Syed Nasir Hussain Shah, expressed his department's unwavering support for the 13th edition of the International Electrical Engineering and Electronics Products (IEEEP) Fair at the Karachi Expo Centre, during the inauguration ceremony on September 10. Organized by the IEEEP (Karachi Centre) in collaboration with Badar Expo Solutions, the three-day event, running from September 10-12, showcases over 285 national and international brands, with exhibitors from countries such as China, Poland, Malaysia, Brazil, Germany, and the Netherlands.

Minister Shah underscored the significance of the event, stating, "We will work closely with our support departments, including the Ministries of Investment, Planning, and Development, to ensure robust participation and engagement throughout the three days of the fair." He emphasized that the Sindh Energy Ministry's involvement demonstrates the provincial government's commitment to promoting business-to-government interactions, driving growth in the energy sector, and supporting both local and international industry stakeholders.

Addressing the nation's energy challenges, the minister commended the IEEEP for its critical role in organizing the fair, which he believes will bolster efforts to enhance industrial efficiency and innovation in the energy sector. "The contributions of the IEEEP will undoubtedly strengthen our resolve in meeting Pakistan's energy challenges, and I extend my appreciation to Badar Expo Solutions for their dedicated support in hosting this important event," said Shah.

Chief Executive of Trade Development Authority of Pakistan (TDAP), Zubair Motiwala, also spoke at the event, recognizing the IEEEP Fair as a platform that has expanded beyond its original scope of addressing the country's energy needs.

"Today, the IEEEP Fair stands as a crucial platform for displaying innovations and fostering economic growth, not just in energy but across a broad spectrum of electrical, electronics, and allied disciplines," he said.

Zohair Naseer, Chief Executive of Badar Expo Solutions, acknowledged the fair's potential to provide local exhibitors with opportunities to expand into the export market. "This fair is designed to support local companies aspiring to enter the global stage, providing guidance and assistance in identifying new opportunities for their products and services," Naseer remarked. He further emphasized that the fair is committed to supporting local innovation while offering a platform for international exhibitors to showcase cutting-edge technologies and solutions.

The event fosters critical partnerships, investments, and joint ventures across various sectors, with the aim of boosting Pakistan's energy infrastructure and industrial capabilities. Energy Update Magazine serves as the media partner for the IEEEP Fair, amplifying the event's visibility and outreach to industry stakeholders. ■

CROWN
SOLAR ENERGY

Roshan Har Pal
Roshan Har Kal

VISTA

N-Type
Bifacial | Monofacial

TIGER

www.crownsolarenergy.com 021 111 000 348

Privatisation without deregulation: A recipe for disaster in energy sector

Many voices call for immediate privatisation of government-owned electricity distribution companies

Sajid Mehmood Qazi

The writer is a civil servant with deep interest in the oil, gas and climate change issues

As Pakistan grapples with economic instability and rising electricity prices, many voices call for the immediate privatisation of government-owned electricity distribution companies (DISCOs). These advocates argue that privatisation is the solution to rampant electricity theft, operational inefficiencies, and financial haemorrhaging.

While their concerns are valid, a crucial element often overlooked is the importance of deregulation. Privatisation without deregulation can transform a public sector monopoly into a more dangerous private sector monopoly, with dire consequences for consumers and the economy

The pitfalls of privatization without deregulation

Privatisation, in theory, promises increased efficiency and reduced costs. However, without a robust deregulation framework, it simply transfers the monopoly from public to private hands. This can be more detrimental, as private monopolies often operate with profit maximization as their sole objective, with little regard for service quality or consumer welfare.

The case for deregulation

Deregulation involves removing government-imposed controls and restrictions to allow for a free and competitive market. In the context of Pakistan's energy sector, it would mean allowing multiple private players to enter the market, fostering competition, encouraging innovation, and ultimately benefiting consumers through better services and lower prices.

Economic incentives and efficiency

Without the possibility of new private players entering the market, a privatised monopoly has no economic incentives to improve efficiency. A private owner bound by governmental regulations cannot implement new technologies or innovations freely. For example, if a privatised DISCO is still tied to government entities through contracts, the system remains monopolistic. This scenario limits the potential for technological advancements and operational efficiencies.

The issue of bill collection

A privatised distributor, without the legal and enforcement capabilities to collect bills, will continue to seek government subsidies, much like the case of K-Electric. This perpetuates the dependency on government support, negating the benefits of privatisation.

International examples of successful deregulation

Several countries have successfully deregulated their energy sectors, resulting in improved efficiency, lower prices, and enhanced service quality. These examples provide valuable lessons for Pakistan.

The UK's energy sector deregulation in the 1990s is a prime example. The government introduced competitive markets for electricity generation and supply. This led to a significant reduction in electricity prices and improvements in service quality. Consumers benefited from a wider choice of suppliers and innovative service offerings.

Closer to home, India provides a compelling example of successful deregulation in the electricity sector. In 2003, India passed the Electricity Act, which aimed to transform the power sector by promoting competition, protecting consumer interests, and ensuring the supply of electricity to all areas.Power markets are hosted on a power exchange. Exchanges facilitate competitive pricing, improved resource allocation, and greater market liquidity in the power sector.

Power exchanges were first introduced in Europe in 1990-91, and they now operate in about 50 countries around the world. The Electricity Act of 2003 established the framework for exchange operations in India, and exchanges commenced in 2008.The spot market was introduced in 2020, which further enhanced the flexibility and responsiveness of the power trading system.

India has three major power exchanges regulated by the Central Electricity Regulatory Commission (CERC), where generators, utilities, and large consumers trade electricity. The Indian Energy Exchange Ltd (IEX) dominates with more than 90% market share, followed by Power Exchange India Limited (PXIL) and Hindustan Power Exchange Ltd (HPX).

In FY 2023-24, IEX traded about 110 billion units (BU) of electricity, growing 14% year-on-year. The government has recently amended various regulations to encourage and incentivise participation in power exchanges, reflecting their growing importance in India's electricity market.

Key outcomes of India's deregulation:

1. Increased competition:

The Act facilitated open access in transmission and distribution, allowing private players to enter the market. This increased competition among power producers and suppliers, leading to better services and competitive pricing.

2. Improved efficiency

With the entry of private companies, there was a significant push towards improving efficiency and reducing losses. Modern technologies and management practices were adopted, enhancing the overall performance of the sector.

3. Lower prices and better supply:

Consumers benefited from lower electricity prices due to a competitive environment. Additionally, the quality and reliability of supply improved, reducing outages and ensuring a steady supply of electricity.

4. Consumer choice

Deregulation allowed consumers to choose their electricity suppliers, fostering a customer-centric approach among service providers. This led to better customer service and more innovative product offerings.

5. Investment in Infrastructure

The regulatory reforms attracted substantial private investment in the power sector, leading to the development of new power plants, transmission lines, and distribution networks. This infrastructure development was crucial in meeting the growing demand for electricity.Our regulator NEPRA can learn a thing or two from its Indian counterpart.

The Pakistani context

In the early 1990s, Pakistan unbundled the Water and Power Development Authority (WAPDA) into various generation, distribution, and other companies. The aim was to corporatize these entities and pave the way for privatisation. However, apart from the partial divestment of government shares from Karachi Electric Supply Company, no significant progress was made. The absence of a comprehensive deregulation framework hindered further advancements.

The National Electric Power Regulatory Authority (NEPRA) formulated the Competitive Trading Bilateral Contract Market (CTBCM) policy to promote electricity wheeling. However, exorbitant wheeling charges demanded by government entities like the Central Power Purchasing Agency (CPPA) thwarted its implementation. These high charges deter potential private players from entering the market, stifling competition and innovation.

The path forward: deregulation before privatization

To avoid the pitfalls of privatisation without deregulation, NEPRA must urgently focus on creating a conducive environment for deregulation. This involves several key steps:

1. Implementing a robust regulatory framework:

Establish a transparent and fair regulatory framework that promotes competition and prevents monopolistic practices. This includes setting reasonable wheeling charges to encourage private players to enter the market.

2. Facilitating market entry

Simplify the process for new entrants to obtain licenses and permits. Reduce bureaucratic hurdles and provide incentives for private investment in the energy sector.

3. Unbundling and Restructuring

Further unbundle existing government entities involved in the generation, transmission, and distribution of electricity. Ensure that these entities operate independently to foster competition.

4. Strengthening Legal and Enforcement Mechanisms

Enhance the legal framework to ensure efficient bill collection and reduce dependency on government subsidies. Empower private companies with the necessary tools to enforce contracts and recover dues.

5. Promoting transparency and accountability

Ensure transparency in regulatory decisions and the operations of privatised entities. Establish mechanisms for consumer protection and redressal of grievances.

6. Learning from global and regional examples

Study successful deregulation models from other countries, including India, and adapt best practices to the local context. Engage with international experts and stakeholders to design effective deregulation strategies.

The call for privatisation of DISCOs in Pakistan is not without merit. However, privatisation without a robust deregulation regime is a recipe for disaster. To transform the energy sector and achieve economic stability, we must prioritise deregulation.

By fostering a competitive market environment, encouraging private investment, and ensuring transparency and accountability, the country can achieve the twin goals of efficient energy supply and consumer welfare. The sooner this is done, the better it will be for Pakistan's socioeconomic development. ■

OGRA launches Plant for Pakistan initiative

EU Report

To celebrate Pakistan's 77th Independence Day, the Oil and Gas Regulatory Authority (OGRA) has launched the 'Plant for Pakistan' initiative, reflecting the nation's commitment to combating the adverse impacts of climate change. The eco-friendly drive was inaugurated by OGRA Chairman, Masroor Khan, who planted a tree alongside Members of the Authority and OGRA employees. The initial phase saw the planting of over 200 trees on the green belt in front of the OGRA Headquarters in Islamabad, in collaboration with the Capital Development Authority (CDA). Chairman Masroor Khan commended the Capital Development Authority for its support during the drive. He emphasized the importance of collective efforts in safeguarding the environment, stating, 'As we celebrate our Independence Day, let us pledge to serve our nation with dedication and to protect our environment from the dangers of climate change. Together, we can make a difference by planting as many trees as possible.' ■

Power bills outshine house rent rates

EU Report

Electricity bills have outpaced home rental rates for some people in Pakistan, as tariff increases and other reforms to comply with IMF loan conditions spark nationwide protests, reports Bloomberg. The South Asian nation -- where nearly half the population survives on less than $4 a day -- has seen electricity prices surge 155 per cent since 2021, after the government started hiking industrial and retail rates to bolster its chances of securing loans from the International Monetary Fund. The energy sector has become an acute pain point as Pakistan grapples with chronic economic crisis. Inflation of around 12 per cent -- the highest in Asia -- has eroded purchasing power and pushed electricity consumption to the lowest in four years as people and companies abandon the predominantly gas-powered national grid in favor of installing solar panels. The average per-unit electricity price for residential users rose 18 per cent in July, when the country secured a new $7 billion loan from the IMF. Many residents have since seen electricity bills -- typically a fraction of household expenses -- surpass rents that range from $100 to $700 a month, said Samiullah Tariq, head of research at Pakistan Kuwait Investment Co. ■

Pakistan needs to enhance gas production: study

Pakistan faces a pressing need to boost its exploration and production efforts to reduce reliance on RLNG imports due to rapidly diminishing natural gas reserves and increasing demand from households, fertilizers, and power sectors, according to a report by the Pakistan Credit Rating Agency (PACRA).

The country's proven natural gas reserves have been decreasing due to a lack of significant new discoveries. From FY15 to FY23, Pakistan's natural gas reserves declined by 8.5 per cent. As of FY23, the reserves were recorded at 14,981 billion cubic feet (bcf), a 7.3 per cent decrease from the previous year. In FY24, Pakistan's nominal GDP reached Rs106 trillion, marking a 2.8 per cent increase in real terms compared to the previous year. Large Scale Manufacturing (LSM), crucial for economic growth due to its extensive links with other sectors, accounted for 75.6 per cent of manufacturing activities in FY23. Although LSM decreased by 10.3 per cent in FY23 compared to an 11.7 per cent drop in FY22, it experienced a slight increase of 0.99 per cent year-on-year in the first 11 months of FY24.

Globally, proven natural gas reserves were reported at 206,430 billion cubic meters (bcm) in CY23 (calendar year 2023), up 0.3 per cent from CY22. In contrast, Pakistan's reserves were down to 14,981 bcf, reflecting a 7.3 per cent year-on-year decline. ■

Kaiser Bengali protests govt's austerity, rightsizing drives

EU Report

Renowned economist Dr Kaiser Bengali walked away from the present federal government's ambitious drive to curtail its expenses by adopting austerity measures and rightsizing its operations. Dr Bengali parted ways with three committees of the federal government formed for the purpose. These committees were formed for austerity, rightsizing, and slashing the government's expenses.

The prominent economist sent his resignation to Federal Finance Minister and Cabinet Division Secretary. The resignation shows his lack of confidence in the government's efforts to reduce its expenses. According to Dr Bengali, the federal government initially launched a good effort to slash its wasteful expenditures. He said the three committees had sent valid recommendations to curtail the government's expenses. He mentioned that the three panels had reviewed the working of 70 government institutions and 17 public sector corporations. A proposal was sent to do away with 17 divisions of the government. The panels also suggested the closure of 70 government agencies.

He was of the view that the government hadn't been taking into account the recommendations sent by the three panels. He said the government was only resorting to downsizing low-grade government employees to cut down its expenses.

Dr Bengali lamented that employees from grades 1 to 16 drawing lower salaries were being shown the door while the jobs of senior grade officials were being protected. He claimed that the government could curtail its expenses by Rs30 billion annually after the retrenchment of the senior grade officials. ■

NFEH
NATIONAL FORUM FOR ENVIRONMENT & HEALTH
WWW.NFEH.ORG.PK

FPIP
FIRE PROTECTION INDUSTRY OF PAKISTAN

PHPA
PAKISTAN PSE PROFESSIONAL ASSOCIATION

14th ANNUAL FIRE SAFETY AWARDS & CONVENTION 2024

DECEMBER 5, 2024

MOVENPICK HOTEL, KARACHI

FOR AWARD NOMINATION, BRANDING & CONFERENCE REGISTRATION

ENGR. NADEEM ASHRAF

0304-309 8328

0333-236 0579

nadeem.event@gmail.com

www.nfeh.org

Fronus SOLAR ENERGY X SOLAX POWER

EXCLUSIVE DISTRIBUTION PARTNER IN PAKISTAN

Fronus Unveiling *Pakistan's* Most Powerful *Hybrid Inverter* for the First Time

Next Generation Hybrid Inverter

NEO

Three Phase - 10.5kW / 15.5kW

Coming Soon

- IP65 Protection
- 8ms Switch Over Time
- 10sec Real-time Cloud Monitoring
- 200% Overload Tolerance for 10s
- 200% PV Input
- Upto 10 Units In Parallel

Fronus SOLAR ENERGY

WEBSITE www.fronus.com

EMAIL info@fronus.com

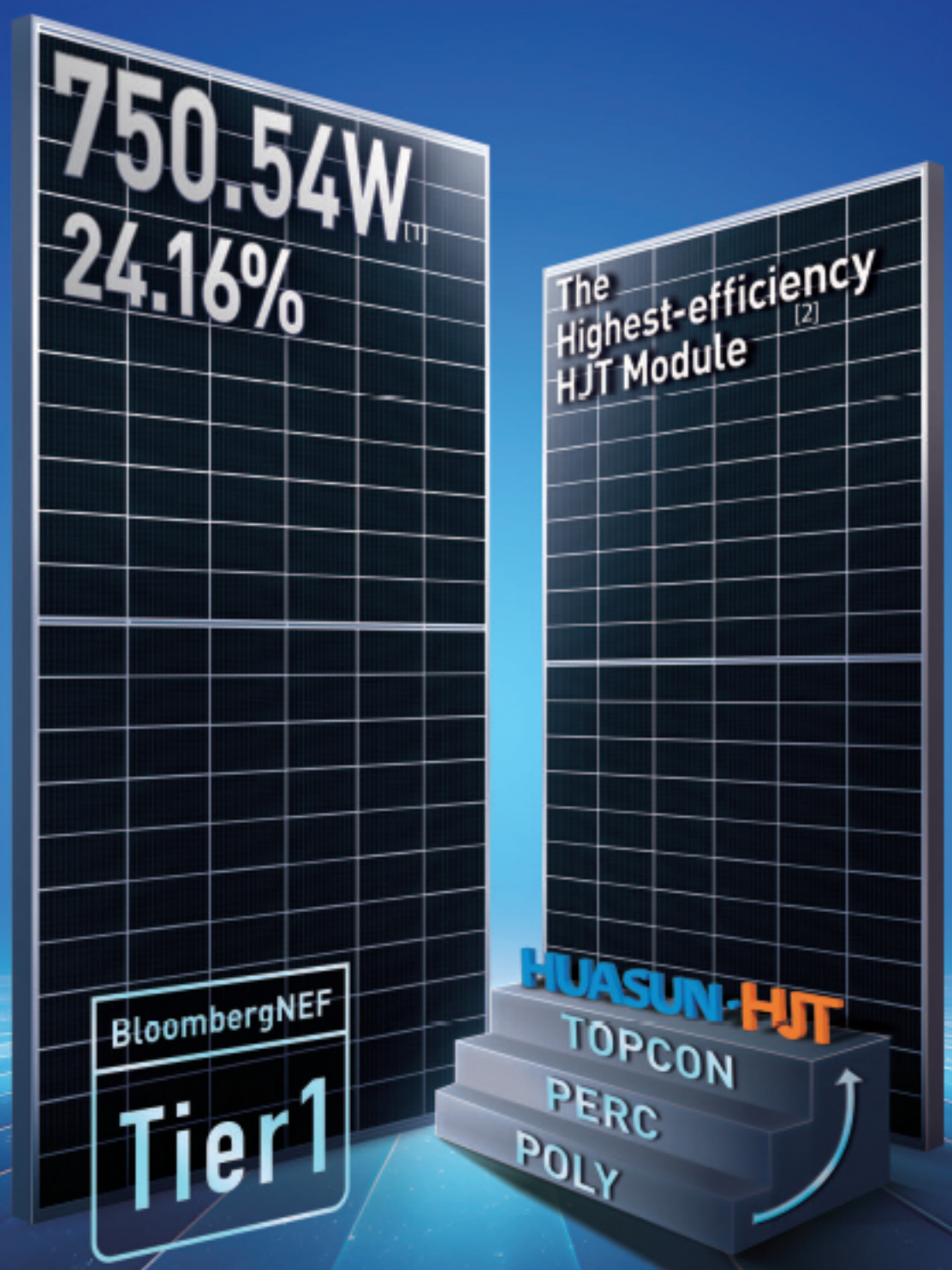
CALL UAN 042 111 111 140

HUASUN

[1] Certified by TÜV SÜD
[2] Source: TaiyangNews Top Modules
[3] Empirical data under. 25-35℃ by CNPQIC

No.1 in Heterojunction

Capacity 20GW+ | Shipment 7GW+



- **-0.24%/°C** of Superior Temperature Coefficient
- **3.89%**[3] ↑ Energy Yield Gain VS. Topcon

CONTACT US

Rana Farhan- Director MENA & PAKISTAN
Rana.farhan@huasunsolar.com | Pakistan@huasunsolar.com

www.huasunsolar.com
Follow us on

30 Watts FAN

Ecosmart FAN

Tamoor FANS

Pakistan's No. 1
Energy Saving Fans

AC DC Series | 30 Watt Eco Smart Series | Pedestal BLDC Series

+92 3178222741
(053) 3726360 / 3726378

info@tamoorfans.com
www.tamoorfans.com

32-B, Small Industrial Area,
Gujrat, Punjab, Pakistan

HUAWEI

Fusionsolar

Making the Most of Every Ray

All-Scenario Grid-Forming Solutions

WE ARE LIVE: https://solar.huawei.com/pk
EMAIL US: Fusionsolarpk@huawei.com

SOLAX POWER | BVB 09 PARTNER

X3-NEO-LV

5kW~ 15kW

LIGHT UP PAKISTAN

and

SAVE THE ELECTRICITY BILL

solaxpower