

MONTHLY

ISSN 2309-6578

ENERGY UPDATE

**SLOW DEATH OF
PAKISTAN'S
WATER SYSTEM**

**PAKISTAN'S
MELTING GLACIERS,
A WAVE OF SHEER CONCERN**

NEW POLICY TO EXTEND
**INCENTIVES FOR
SETTING UP REFINERIES**

**PAKISTAN'S RECENT
POWER BLACKOUT
MAY NOT BE ITS LAST**

**THE CASE OF
NUCLEAR POWER**

**EXCLUSIVE INTERVIEWS OF
MD PPIB & CEO AEDB AND
INDUSTRY LEADERS**

**SPECIAL ARTICLES ON
SOLAR ENERGY**

Bahum Associates



Value Added Partner

FusionSolar Smart PV Solutions



01

Local Presence

02

Local Support

03

Local Warranty

04

Peace of Mind



SUN2000-20KTL
Smart String Inverter



SUN2000-60KTL
Smart String Inverter



SUN2000-100KTL
Smart String Inverter



Bahum Associates (Pvt) Ltd.

19km Ferozpur Road, behind Glaxo Factory, 1km Kam Road, Lahore.

Tel: +92 42 111 222 486

E-mail: solar@bahum.com

Web: www.bahum.com

Mob: 0308 0984849

0308 0984530

0304 0143554



JUBILEE CORPORATION

SWITCHGEAR • AUTOMATION • INSTRUMENTATION • CONTROLS

Autonics

Sensors & Controllers

BE IN TOTAL CONTROL OF YOUR PROCESSES

Ensure precise and accurate
temperature control in any task with

AUTONICS TEMPERATURE CONTROLLERS



High Performance PID Temperature Controllers

TK Series



Autonics offers a diverse portfolio of temperature controllers for heating and cooling control of various processes. With PID control algorithm optimized and perfected by our top experts, you can always be assured of accurate and stable temperature control. Get ready to experience complete control with Autonics temperature controllers.

Economical Dual Display Type



TCN Series CE, RoHS

Economical Single Display Type



TC Series CE, RoHS

Multi-Channel Modular Type



TM Series CE, RoHS

Analog Non-Indicating Type



TA Series CE, RoHS

Also Available

LCD Touchscreen Paperless
Recorders



KRN1000 Series CE

Expand your control with high performance **solid state relays** from Autonics

Autonics solid state relays provide added durability and enhanced performance when configured with our temperature controllers. With high dielectric strength of up to 4,000VAC and various other performance features, our solid state relays are the perfect complement to temperature control systems.

Detachable Heatsink
Standard Type



SR1 Series CE, RoHS

Detachable Heatsink
Slim Type



SRC1 Series CE, RoHS

Integrated Heatsink Type



SRH1 Series CE, RoHS

Analog Input Type



SRPH1 Series CE, RoHS

Socket Type



SRS1 Series CE, RoHS

HEAD OFFICE

KARACHI:

First Floor, Fakhri Trade Centre, Shahrah-e-Ulughat, Karachi - 74200, Pakistan
UAN: (021) 111-000-520 Tel: 3260 2200-07 (8 line)
E-mail: info@jubilee corporation.com
Website: www.jubilee corporation.com

REGIONAL OFFICE

LAHORE:

House No. 20-A, Block-G,
Gulberg III, Lahore
UAN: +92 42 111 000 520
TEL: +92 42 3588 3360 - 61

LIAISON OFFICES

FAISALABAD:

1st Floor, P-12 Charab Market
Sultan Road, Madina Town,
Faisalabad
TEL: (041) 8559210

ISLAMABAD:

Suit # 7, 2nd Floor, 80 West
Malk Complex Bule Area,
Islamabad
TEL: (051) 2802167

MULTAN:

16 & 17, (Ground Floor),
Plot 38-38C, Royal
Plaza, Azmat West
Road Tehsil & District, Multan
TEL: +92 302-8226992



PRISM ENERGY **REVOLUTIONIZING** **RENEWABLE ENERGY**

**Prism offers Long Term Power Purchase Agreements
and tailored BOOT, BOO & EPC Solutions for
Renewable Energy Projects**



PRISM ENERGY

A JOINT VENTURE OF

INFRACO
ASIA



**Albario
Engineering (Pvt) Ltd.**



Commercial

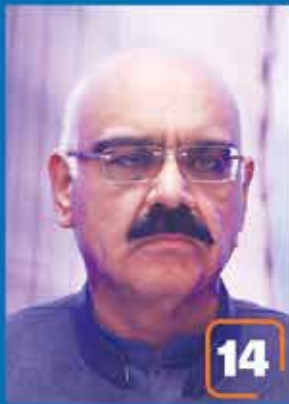


Industrial

WWW.AEPL.COM.PK
WWW.INFRACOASIA.COM

+92 (0) 301 697 9999
INFO@PRISMENERGY.COM.PK

CONTENTS



14

More hydropower projects are need of the hour

Shah Jahan Mirza

CEO Alternative Energy Development Board (AEDB)



28

Pakistan could prosper through aggressive energy policy

Robin Xing

Managing Director of Enterprise Digital Power



32

Pakistan has always been a priority market for the renewable energy sector

Rana Farhan

Country Sales Manager Pakistan (Jinko Solar)



36

Net metering has enabled industries and homes to become energy assets

Sheheryar Shakeel

Manager Trina Solar Pakistan



40

Solar is the future of Pakistan's energy sector

Irfan Ahmed Allahwala

CEO, Mesol, Pakistan



46

Mobilization of international capital resources remains a challenge

Syed Hassaan Shafqat

CEO, E Cube Solutions Pvt Ltd



09

Pakistan's melting glaciers, a wave of sheer concern



10

The Case of Nuclear Power



16

Defining a path for optimum utilization



34

Challenges and opportunities for grid with increased distributed generation

Experts call for specific laws for Karachi's environment protection



24

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.



Happy Pakistan Day

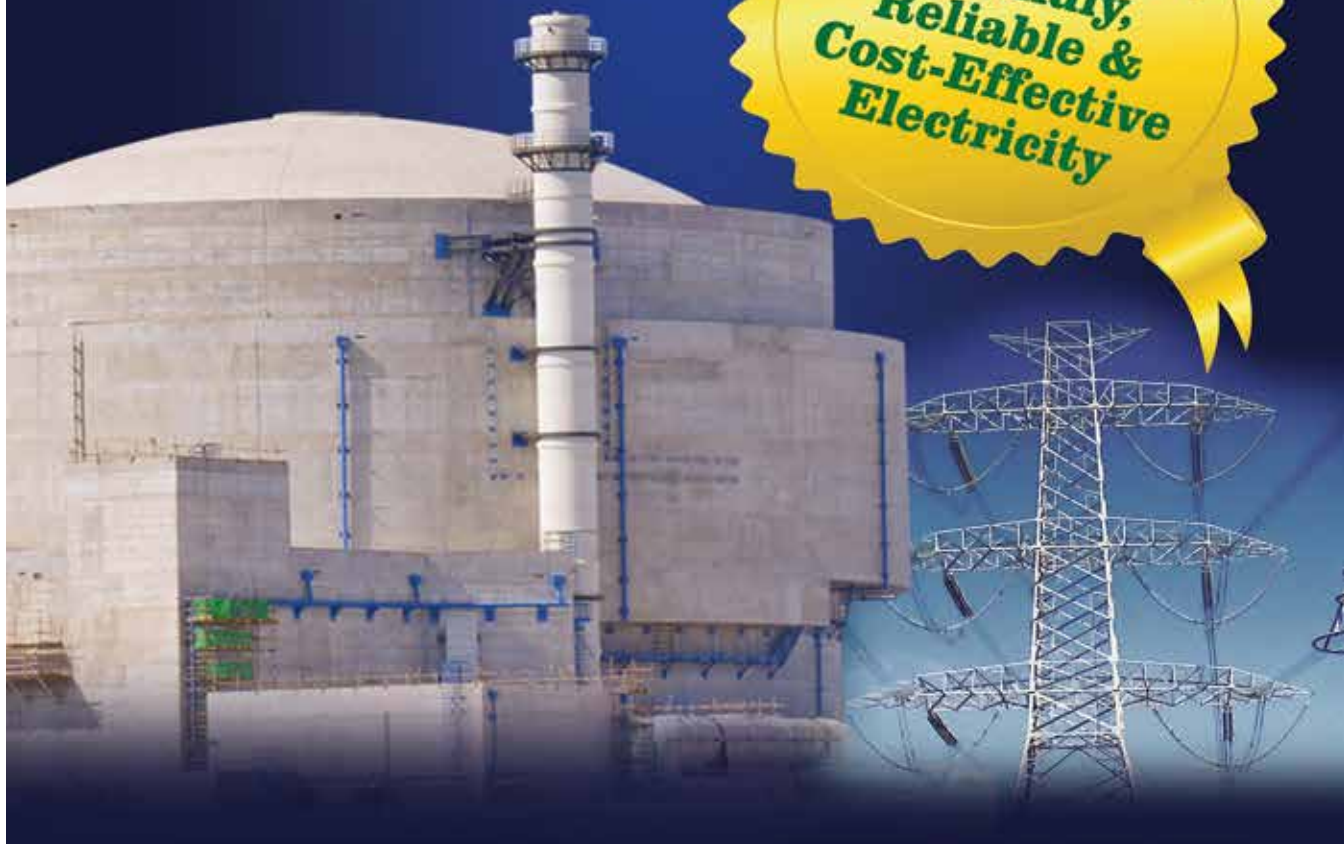
Pakistan Atomic Energy Commission
Committed to serve the nation



PAEC's Gift to the Nation

**1100 MW Karachi Nuclear Power Plant Unit-2
Connected to National Grid**

**Environment
Friendly,
Reliable &
Cost-Effective
Electricity**



POL crisis created by influentials

Govt reacts on its own inquiry report

The present government is perhaps the only regime that has never given any importance to the pressing national issues even at this juncture when it has lost each and every credibility and now its own existence is in doldrums.

Extremely serious issues remained unresolved during its almost three-year regime while its own ministers and advisors remained involved in all such scams wherein essential commodities i.e. wheat, POL, sugar, electricity, gas and RLNG prices have shot up overnight but the government remained unmoved despite persistent hues and cries by the general public.

In a similar way the government has never given a damn to the inquiry report of the Petroleum Commission wherein many bigwigs from Petroleum ministry, bureaucrats and oil marketing companies were held responsible for the usurping of billions of rupees. It's a height of irony that despite taking action against ten culprits the Petroleum Division is unhappy with the inquiry commission investigating Pakistan's petrol crisis. They have called the commission "controversial". In a response to last week's report by the inquiry commission, the petroleum division expressed its dissatisfaction over the commission's members. The five-member Inquiry Commission, headed by FIA Additional Director-General Abubakar Khudabaksh, has recommended strict action against the Petroleum Division secretary, Oil DG, Ogra and private oil marketing companies (OMCs). The commission's report also asked for dissolution of the Oil and Gas Regulatory Authority (Ogra) for six months through an act of Parliament, arguing it is not aligned with ground realities. The Pakistan government constituted this commission on July 28, 2020 to probe the shortage of petroleum products. The 155-page report submitted to the federal cabinet mentions the catalogue of failures of Ogra since 2002 that includes dishing out licenses to OMCs without ensuring actual enhancement of storage facilities, failure to ensure minimum stock requirements, imposition of ritual fines on OMCs for drying out their retail outlets during June 2020, issuance of unlawful provisional marketing licenses to OMCs and more. It recommends strict penal or departmental action against those involved in illegalities. Especially in issuance of unlawful provisional marketing licenses/marketing permissions. But the petroleum division says the commission is controversial because its chairperson and members "do not have the expertise or experience to understand the oil supply chain". They said the commission's report, therefore, is not correct. The petroleum division had nominated former Oil Director-general Rashid Farooq and Petroleum Institute of Pakistan CEO Asim Murtaza as members of the inquiry commission, but they had both excused themselves from joining. It was said that the commission's report cannot be correct because no petroleum experts were part of the investigation. The petroleum division as saying that the commission hired former OGRA director Muhammad Yaseen, who has never worked in the oil sector. NAB has filed an assets beyond known source of income case against one of the members of the commission, Gohar Nafees, according to the petroleum division's reply. "How can he be included in the commission?" the petroleum division questioned. The petroleum division's response is submitted to a committee headed by Federal Minister for Planning Asad Umar who himself is a responsible for sinking the economy.



ENERGY UPDATE

Managing Editor

M. Naeem Qureshi

info@energyupdate.com.pk

energyupdate@gmail.com

Editor

Sajid Aziz

saziz75@gmail.com

Editorial Incharge

Mustafa Tahir

mustafa_mt92@hotmail.com

Director Admin & Accounts

Ruqiya Naeem

ruqiya.nfeh@gmail.com

Chief Marketing Officer

Engr. Nadeem Ashraf

marketing@energyupdate.com.pk

nadeem.event@gmail.com

Marketing Consultant

Khalid Iqbal

khalid.nfeh@gmail.com

G.M Corporate Communication

(Islamabad Office)

Halima Khan

mccm.energyupdate@gmail.com

Art Director

Rizwan Ahmad

rizwanahmed55@gmail.com

Advisors

Zafar Sobani

Kalim. A. Saddiqui

Sohail Butt

Anwar Shahid Khan

Raziuddin Razi

Circulation & Subscription

Zahid Ali

Shakeel Qureshi

Overseas Correspondents

Arif Afzal - USA

Kazim Wasti - Canada

Legal Advisors

M. Nadeem Sheikh Advocate

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

Save Environment & Avoid Excessive Bills

5 YEAR
PRODUCT WARRANTY
20 YEARS - PERFORMANCE GUARANTEE

It's time to choose Inverex

Reduce Your Bills Through Net Metering.

Start Grid Feeding in daytime and utilize units in night time by decreasing your bills to its maximum.



Available From
5 KW TO 100 KW

Weather Proof system smart monitoring on your mobile 100% return of investment with in 3 to 4 years.



Now Also Available On :



Solar Panel



Electricity use



Reverse
Metering



Utility Grid



+92-21-111-209-988



www.aptinverex.com



info@aptinverex.com



[fb/inverexsolarenergy](https://fb.inverexsolarenergy)

PAKISTAN'S MELTING GLACIERS, A WAVE OF SHEER CONCERN

—♦ Sajid Aziz —♦—

The melting glaciers in some significant parts of the world has become a wave of sheer concern for the weather and environmental experts as diminishing glaciers that are the biggest source of natural mineral water worldwide may cause severe shortage of drinking water and increasing the global temperature.

Some scientists think melting ice from Greenland could be inhibiting the crucial northern branch of the Gulf Stream current — the vast ocean current that runs from West Africa to the Americas, up the East Coast and back across the Atlantic to the British Isles — it has served for ages as a kind of planetary heat pump that helps regulate the planet's climate.

It is one of earth's major climate-regulating ocean currents and moving slower than it has in thousands of years. Human-induced climate change is largely to blame, says a report.

"The current could slow down to a point of no return and could disappear, altering the climate on both sides of the Atlantic."

Consequences could include faster sea level rise along parts of the Eastern United States and Europe, stronger hurricanes barreling into the Southeastern United States, and perhaps most ominously, reduced rainfall across the Sahel, the semi-arid swath of land running the width of Africa that is already a geopolitical tinderbox.

"We're all wishing it's not true," Peter de Menocal, president and director of the Woods Hole Oceanographic Institution, said of the shifting ocean currents to The New York Times. "Because if that happens, it's just a monstrous change." Effect of climate change somewhere in the Pakistan and Afghanistan region along the Himalayan range. It was shown in a picture that the big blasting glaciers melting down into the stream, which is a wave of sheer concern. The Gulf Stream impacts weather on both sides of the Atlantic.

With almost 7,253 glaciers located in its high

mountain ranges, Pakistan has more glaciers than anywhere else on Earth outside the polar regions. A new study published last week in the journal *Science Advances* states that climate change is 'eating away Himalayan glaciers at a dramatic rate'.

The Himalayan glaciers supply around 800 million people with water for irrigation, hydropower and drinking. But they have been losing almost half a metre of ice each year since the start of this century, according to the Columbia University researchers who carried out the study. This could potentially threaten water supplies across parts of Asia.

As the ice melts, it forms large glacial lakes, which can threaten local communities such as Hassanabad village with glacier lake outburst floods. In the short-term, experts predict more of this flooding, but less ice in the glaciers could ultimately lead to drought in the long term. In Pakistan, it is estimated that there are over 3,000 lakes as a result of melting glaciers in GILGIT-Band KHYBER PAKHTUNKHWA of which 36 are considered hazardous. The lake formed by the Batura glacier on the way to Khunjerab pass. The International Green Climate Fund has recently granted \$37 million to a new project entitled Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan (2018-2022).

The project is being implemented by the United Nations Development Program (UNDP) and Pakistan's Ministry of Climate Change and is now setting up offices in Gilgit and Chitral after a one-year delay. The project will set up early warning systems and automated weather stations to mitigate the impact of GLOFs. It will also focus on building small-scale risk reduction infrastructure such as gabion walls. The UNDP-Pakistan will be installing equipment like sensors on and around selected glaciers to monitor the discharge and glacier movement. Sixteen valleys with threatening glaciers will be selected in G-B and eight in K-P's mountainous districts. The GBDMA will also be a partner in the large project. ■

THE CASE FOR NUCLEAR POWER



—◆— Saima Durrani —◆—

The Pakistan Atomic Energy Commission (PAEC) joins the nation in celebrating the auspicious Pakistan Day with renewed fervor by adding another feather in its cap, as it's sixth and so far the largest nuclear power plant of 1100 mega watts, Karachi Nuclear Power Plant-2(K2) got connected to the national grid recently. Not simply to be shrugged off as a déjà vu moment, this occasion calls for a thorough retrospective stocktaking of years of hard work and dedication of PAEC's personnel which not only put Pakistan on the map of the world as the only Muslim nuclear power producing country 49 years ago but also gave impetus to Science & Technology infrastructure for sustainable development by providing a reliable, consistent and carbon free electricity generating source to the country—an achievement indeed.

The journey started in the same city of Karachi when PAEC's first nuclear power plant KANUPP began operation in 1974. This plant during 49 years of its safe operation has generated over 14 billion kilowatts hours (kWh) of electricity.

The journey never stopped. At the turn of new millennium, the country's 2nd nuclear power plant namely Chashma nuclear plant C-1 started operation which was followed by another one at the same site, near Mianwali in 2011. Chashma Unit 1 (C-1) and Unit-2 (C-2) have a gross capacity of 325 MW each. Two more plants were added to the Chashma series as Unit 3 (C-3) and Unit-4 (C-4)

starting commercial operation in 2016 & 2017 respectively. In the winter months of both 2017 and 2018, 11% of the total electricity requirement of the national grid was supplied by this site alone. All four nuclear plants at Chashma are under stringent and comprehensive International Atomic Energy Agency (IAEA) safeguards.

Construction of two new nuclear power plants at Karachi, K-2 and K-3 started in August 2015 and May 2016, close to the KANUPP site and will add 2200 MW to the grid. Both K-2 and K-3 are also under IAEA safeguards.

In March 2018, former International Atomic Energy Agency (IAEA) Director General Yukiya Amano visited various nuclear facilities of PAEC and appreciated the safety and security mechanism of Pakistan's nuclear programme expressing satisfaction with Pakistan's peaceful uses of nuclear energy.

The same year the IAEA initiated a four-year programme with Pakistan to closely coordinate on safe, reliable and sustainable operations of nuclear power plants. This speaks volumes about Performance indicators of PAEC's NPPs—PAEC's credibility as nuclear power generating entity as well as the quality and expertise of its well trained and motivated personnel.

From a safety and security point of view, it would be heartening to know that during global summit on nuclear security in Vienna, attended by diplomats from around the world, Pakistan

gave thorough details of 'stringent' nuclear security mechanisms and presented a booklet 'Pakistan's Nuclear Security Regime, at IAEA's third International Conference on Nuclear Security (ICONS). This effort calls for the urgent need to recognize the best practices Pakistan has in place for safety of its peaceful uses of nuclear energy. Time has come that Pakistan's remarkable experience in safe and secure operation of nuclear power plants should be acknowledged admiring the efforts and commitments Pakistan has in place for its peaceful nuclear programme as a responsible Nuclear State.

Apart from reminiscing our successes at this moment, this occasion also requires to analyze the option of choosing nuclear energy for electricity generation and why we should continue to keep it in our energy mix.

The energy sector plays a vital and important role in the development and economic growth of any country. Electricity—as a highly versatile form of energy—stimulates economic performance and plays an important role in the development of every sector of the economy. Pakistan's growing population also needs access to comparatively cheap, clean, safe and reliable power to improve its living standards.

At present, though, no single energy source excels in all measures, each having some pros and cons, most rational national policies seek to diversify their energy portfolios in order to take advantage of the benefits different

energy-supply technologies offer and to mitigate any disadvantages.

Nuclear power despite some challenges appears to be one of the most attractive sources in terms of a small environmental footprint, reliable energy generation, security of the energy supply, and other important measures.

Currently, approximately 12% of the electricity demand of the world is met by nuclear energy. Nuclear power as a source of energy remains of potent value for Pakistan as the country is facing shortages and unreliability of supply when needed. Although, setting up nuclear power plant is expensive,

it is more viable than other forms of energy. For example, wind and hydro energy are dependent on strong wind cycles and rains or melting of glaciers to produce energy whereas in nuclear energy, the enriched nuclear material has a fixed life for which it can produce energy not depending on external variables. It will be in fitness of things for Pakistan to develop its nuclear energy sector that will help it not only in overcoming the energy shortages but also revamp its industrial progress.

Moreover, nuclear power plants have on average a better capacity factor, which means they operate at full power on average 336 out of

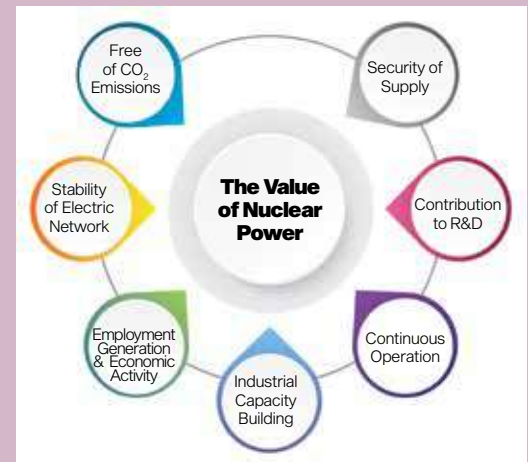
365 days per year with 29 days off the grid for maintenance.

From the climate change point of view as well, of which our country falls in the worst affected category, nuclear power produces one of the lowest green house gas emissions per unit of electricity generated on a life cycle basis. Climate change mitigation is one of the leading reasons for the deployment of nuclear power according to an IAEA publication.

Constructing and operating nuclear plants helps to stabilize electricity prices, thus moderating electricity bills for households and businesses. It creates jobs, boosts the local economy. For a number of sustainable development indicators, nuclear power compares favorably with other power generation technologies.

PAEC being cognizant of all this has been playing a very important role in utilizing nuclear energy for power generation since long and is committed to do so in the years to come.

Hence in view of pros of nuclear power generation, the acumen and experience PAEC has acquired through mutually beneficial coop-



eration over the years, and the impeccable record of safety and security of its nuclear power plants, it deems fit for the top leadership of Pakistan to focus on further benefiting from this technology by adding this to its energy mix while planning for future energy needs as nuclear has the potential to meet the country's energy requirements. ■

The author works as Principal Scientific Information Officer in SI & PR Division of PAEC

Performance indicator of PAEC's NPPs



ALHAMDULLILAH!

MONTHLY ENERGY UPDATE MAGAZINE HAS SUCCESSFULLY COMPLETED IT'S 15 YEARS OF JOURNEY.

ON THIS EVE,
WE ARE NOW
BRINGING OUT THE

15
Annual
Anniversary

EDITION IN MAY 2021

**EXCLUSIVE ARTICLES,
INTERVIEWS, FEATURES
AND EVENT COVERAGE
WILL BE PUBLISHED
IN THIS EDITION**



FOR

ARTICLES

REPORTS

SUBSCRIPTION

ADVERTISEMENT

PLEASE FEEL FREE TO CONTACT US

**ENERGY
UPDATE**
MAGAZINE

Pakistan's recent power blackout may not be its last

— Dr. Shahid Rahim —

The power blackout that struck Pakistan on the night of 9th January may be the proverbial “tip of the iceberg” as there may be many more just waiting to happen. We should fear this because the power grid is currently under tremendous stress that will only grow further in the future. Inadequate investment in T&D facilities, a relentless pressure to cut costs, and a continuously weakening institutional capacity are raising the chances of such incidents which until the recent past were only considered rare. An aggressive and coordinated effort is required to prevent such incidents from happening, minimize the risks of their spreading, and restoring the system back to normal quickly to obviate damage to our grid, loss to our economy, and inconvenience to our people.

Power grids, like all human engineered systems, are prone to failure. Even though through proper design, construction, operation, and maintenance, we can reduce the chances of their failures to some extent, but we cannot eliminate them completely. At the end of the day, it's largely a tradeoff between the cost of building additional reliability in the system and its benefits to economy and society.

Power grids even in advanced countries occasionally fail as is evident from the widespread blackouts that struck the US, Canada, Italy, Sweden, Denmark, Australia, and England during the last decade of the 20th and first decade of the 21st centuries, collectively interrupting power supply to over 150 million people for many hours. Obviously, developing countries with comparatively weaker power

grids were also not immune to such occasional episodes as is evident from the blackout history of power grids in India, Croatia, and Greece. But these episodes there have been only a few and far between. Closer to home, however, and since 2013, we in Pakistan have had a major power blackout almost every year, with 2015 and 2016 even experiencing such blackouts twice.

Why such failures take place in the power grids and why we have not been able to prevent them despite our dazzling advancement in engineering and technology? This has a lot to do with the size and complexity of the power grid itself. Large and interconnected power grids enable linking of diverse and distant power generating stations with centers of demand via complex webs of T&D networks and facilities to benefit from reserve sharing, economic electricity trade, and emergency support, thus enhancing overall system reliability and minimizing supply costs. However, these benefits do not come without their attendant complexity and reliance on a host of supporting services, equipment, and devices which enable operators to maintain a delicate balance between supply and demand often separated thousands of miles from each other.

“Transmission planning” and “system operation and control” are arguably among the most difficult areas in electric power engineering. Transmission planners have to study thousands

and thousands of permutations of the power plans under their consideration to analyze the impacts of normal, contingency, and emergency conditions on the system to ensure its adequacy, security, and stability over the planning horizon. System operators are required to always remain vigilant in real-time to variations in demand and supply and dynamic

behavior of various grid components to maintain “frequency” and “voltage” within approved limits.

Any failure or malfunction of even a minor element, like a tree branch falling on a distribution line or some careless driver hitting his vehicle with an electricity pole, can trigger a sequence of events that can quickly spread into the whole system leading eventually to its collapse. This has been proved time and again from the post-incident investigations of the major blackouts some of which we have listed above.

The Inquiry Report on the 9th January's country-wide blackout conducted by the 3-member committee that had been ordered by NEPRA attributes triggering of this recent episode to a human error—closing of a power circuit-breaker in Guddo Power Station's switchyard after its repair without first removing the “earthing” that had been established for a similar repair work on another power circuit-breaker in the same switchyard. While this may be true and surely a case of gross negligence of Guddo Power Station's staff, this does not absolve the other entities, particularly the NTDC, from the responsibility of failure of their own protection schemes on that power station and in the systems upstream for not isolating the faulty part of the system and stopping it from spreading to the rest of the grid.

The NEPRA Inquiry Report also highlights the causes of the previous blackouts and recommended remedial actions to be taken by relevant entities in their aftermath to prevent similar incidents from recurring in the future. Virtually, the cause of every previous blackout was traced back to lack of proper execution of the “Under Frequency Load Shedding (UFLS) Schemes”. While this demonstrates the shallow thinking of our technical experts, it also speaks

loudly about the importance they assign to electricity consumers of the country. In any advanced country, multiple layers of defense will be placed and activated and allowed to deal with any such incident before resorting to UFLS options. In Pakistan, however, the first line of action the authorities resort to during any system contingency is shedding of the loads of helpless electricity consumers.

This is not just an odd practice by the NTDC system operators, but is very well grounded in the applicable regulatory documents, for instance the NEPRA Grid Code of 2005 which permits the NTDC operators to automatically shed consumer load at a frequency deviation threshold (49.4 Hz) which is fairly close to the nominal frequency (50 Hz).

During frequency excursions that are within a safe range of tolerance, generators all over the world are generally required to ride-through these situations without tripping, at least for some specified period, to allow system operators to manage these situations. Quicker and unnecessary generator tripping always makes it difficult for the operators to effectively deal with abnormal situations which could cause significant technical and financial costs to the whole grid.

Another glaring deficiency that has come to light in the aftermath of the most recent blackout is the absence of any proper contingency and emergency management plan for the power grid. This is a serious issue and NEPRA must ensure that the NTDC develops a formal “contingency management plan” and gets it approved from the Authority as soon as practicable. NEPRA should also ensure that the adequacy and effectiveness of this plan is field tested by conducting drills every year or every two years. NAPRA can mandate this requirement either as part of the Grid Code (currently under revision) or as a separate regulatory requirement to manage these contingencies by clearly defining the roles and responsibilities of the NTDC and other grid users during such a situation in the future.

The inquiry conducted by the NTDC on the above incident (though not available in public domain but whose major findings have been reported in the media) has placed the entire blame for the above blackout, plainly and squarely, on the local staff of the Guddo

Power Station, rinsing its own hands clean off any responsibility whatsoever from the above incident that kept most of the country without electricity for over 20 hours. This reminds us of a humorous take on the term “responsibility” by Ambrose Bierce in his classic “Devil’s Dictionary” as “a detachable burden easily shifted to the shoulders of God, faith, luck or one’s neighbor. In days of astrology, it was customary to unload it upon a star.”

Anyway, we will not indulge in this blame game and let the relevant entities wrangle it out among them. Instead, we will focus below on three aspects which we fear will further compound the vulnerability of the power grid in Pakistan in the future to similar contingencies. These are drying-up of investment in new as well as existing T&D networks and facilities to prime the power grid to adequately serve the new demands and duties that are being imposed on it as substantial renewable but intermittent and variable power generation capacities are added to the system and as our power sector also moves from its present single-buyer setup to a wholesale competitive market in the next few years. The campaigns to power sector restructuring (unbundling, privatization, liberalization, and introduction of competitions in some parts of the electric utility industry) that was unleashed around the world in the late 1980s and early 1990s had as its natural casualty drying up of capital investment in the T&D networks and facilities. For their natural monopoly character, the T&D portions of the power grids were either not opened for private investments or did not attract private investors. Generation projects have remained the focus of attention for both the governments as well as private investors, while T&D systems received a cold shoulder, despite their being the backbone of the entire enterprise. Consequently, power grids everywhere in the world, including Pakistan, have become significantly weaker over time.

The demand on the T&D infrastructure in the meanwhile has grown tremendously and continues to grow further with every passing day. Power grids which were mostly designed, constructed, and operated for highest levels of reliability originally now have to play a new and unprecedented role, as a commercial platform to enable a host of actors including central-station generators, distributed genera-

tors, intermittent and variable solar and wind generators, demand response and management by individual consumers or through their agents. A system that has been accustomed to seeing a unidirectional flow of power from large and central-station generating facilities to consumers for much of its history now has to bear much higher back and forth power flows often in multiple and unpredictable directions for which it has not been originally designed and constructed.

We cannot afford to ignore this critical infrastructure, as we have done, in the recent past, because without a modernized, robust, and resilient power grid, any efforts to overlay additional demands and duties on it, whether of a commercial or technical nature, will not be fruitful, and may defeat the very objectives of the power sector restructuring. Its physical systems, its supporting services, its equipment and apparatus, its fault detection and protection schemes, its real-time status monitoring devices and systems, its operation and control systems and protocols, and the competencies and skills of its professional, all will have to be improved and strengthened which obviously cannot come without adequate investment and funding.

Ministry of Energy and NEPRA must realize the criticality of this subtle weakness that is creeping into the power grid and arrest it before it reaches a point of no return. Both must respond by identifying and encouraging new and imaginative ways to arrange adequate funding that the power grid direly needs to effectively serve its expected role in the restructured power sector with wholesale competition already on the cards.

Their relentless pressure to cut costs should be diverted instead to those parts of the power supply and delivery value chain that have received disproportionate attention from them in the past and are currently enjoying hefty returns on their investments. We must set our priorities in the power sector right and balance our attention in every part of the power grid. The sooner we did it, the better it would be to keep our lights on. ■

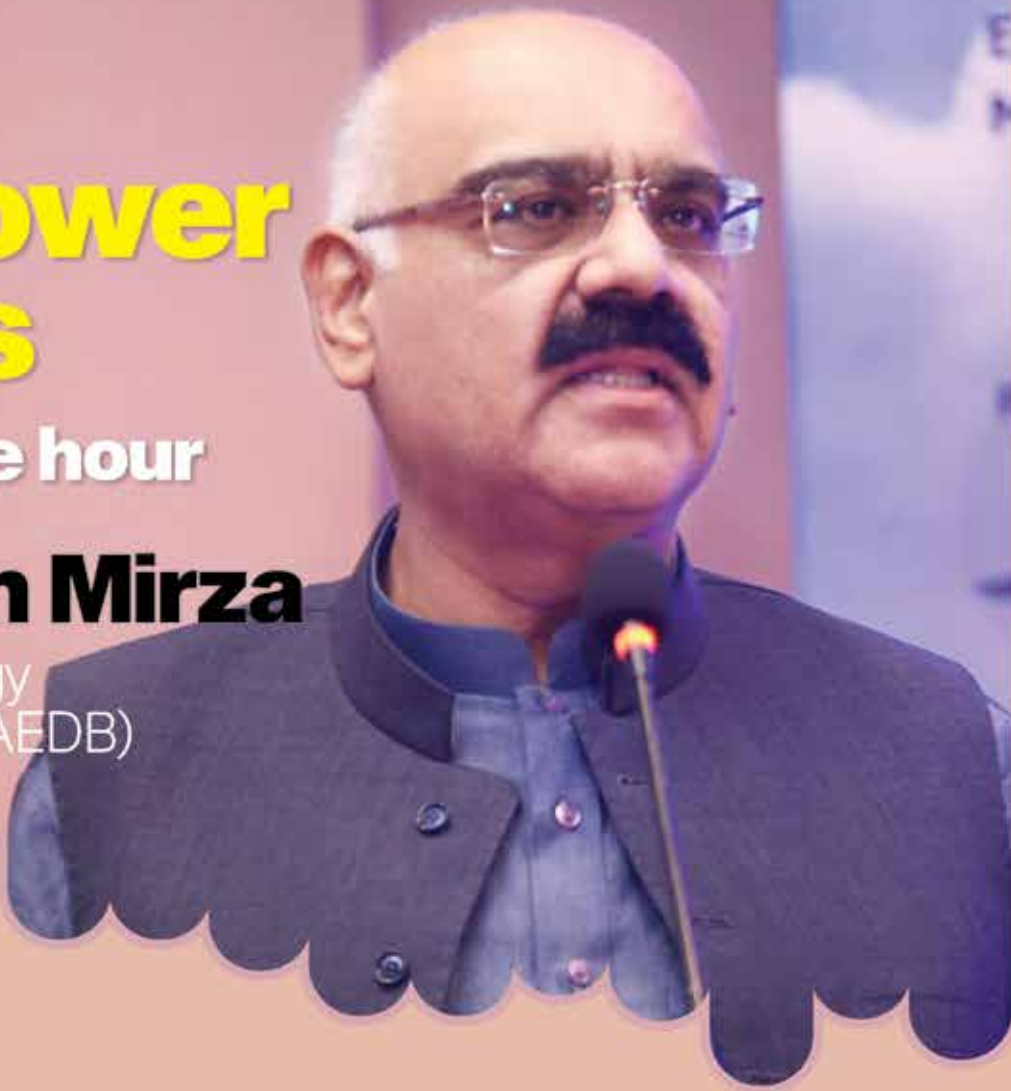
The writer is a freelance consultant specializing in sustainable energy and power system planning and development. He can be reached via email at: msrahim@hotmail.com



More hydropower projects are need of the hour

Shah Jahan Mirza

CEO Alternative Energy
Development Board (AEDB)



—◆ Naeem Qureshi —◆

The Energy Update (EU) recently interviewed the Chief Executive Officer of Alternative Energy Development Board, Shah Jahan Mirza, in his office in Islamabad. The main focus of the interview was the upcoming renewable energy projects in the country. Mr. Mirza also is also the Managing Director of Private Power & Infrastructure Board (PPIB). he continues to highlight his stance on the new power plants .

Energy Update (EU): What's new on the front of solar energy projects in the country?

SJM: We have recently achieved the financial close of four solar projects. The total capacity of these four upcoming renewable projects is 250 Megawatts. One is based in Layyah,

Punjab while the other three will be constructed in Sukkur. The electricity to be generated by these projects will go to the national grid. International financing is involved in all these projects in addition to the concessional loan fa-

cility of the State Bank. Around 10 to 12 months is the construction period of these projects.

EU: What are the main benefits of these upcoming solar projects from



the perspective of the end consumer?

SJM: These upcoming projects entail two to three main benefits. These projects will be based on low voltage of 132 kV so their supply will straight go to the local area via the area distribution company. The line losses are minimum in the case of such low voltage projects. Most importantly, the average pool price of electricity will ultimately drop as much as you avail power supply from such renewable energy projects whose tariff is much less.

EU: What is the main concept behind the proposed plan to merge the two organizations i.e. AEDB and PPIB?

SJM: The two organizations have been doing more or less the same work. The government thinks that the proposed merger of the two organizations will truly create one-window policy for the prospective energy sector investors. This will generate much facilitation for the prospective investors. The merger of the two energy sector organizations is also in accordance with the government's vision of ensuring ease of doing business in Pakistan. This merger will also be a step forward towards setting up the position of independent auction administrator to be utilized when the regime of the competitive bidding will be enforced for the new renewable energy projects. A single organization could perform such a role in a better way.

EU: Which are the upcoming wind energy projects in the country?

SJM: We earlier completed financial close of 12 new wind energy projects. Most of these projects will likely to be commissioned by early next year. These projects will produce 600 MWs of clean energy. A lot of work is being done in the wind sector. The next stage is of the renewable energy projects whose LOIs have been issued by the provinces. There are a total around 190 such projects of both wind and solar energy. The bidding will be done among these LOI holders. The quantum of these projects will be finalized once the generation expansion plan of the government is final.

EU: Any other plan of the AEDB to promote the use of renewable energy in the country?

SJM: We are planning to launch the waste-to-energy projects in some of the big cities of the country. Such projects envisage the best way to deal with the issue of municipal waste generated by the big cities. These projects will consume the municipal waste to generate clean electricity in the country. The municipal or district administrations are supposed to launch these projects as we will lend maximum support in this regard.

EU: What is the plan to increase hydroelectricity production in the country?

SJM: PPIB has the portfolio of total 12,000 MWs of the upcoming power projects in the country. Up to 55 per cent of this portfolio comprises of hydroelectricity projects. So our maximum focus is on new hydropower projects. But this should be kept in mind that the construction period of these projects is much longer than other renewable energy ventures. Anyhow, we are planning to increase hydroelectricity production in the country up to 100,000 MWs that at present stands at around 39,000 MWs. ■

Annual capacity payments to IPPs to reach Rs1.455trn by 2023

—◆ Naveed Butt —◆
—◆ Zulfiqar Ahmad —◆

Federal Minister for Energy, Omar Ayub Khan Monday said that \$6.5 billion are being thrown into 'hellfire' every year to import energy under the head of guaranteed capacity payments – a major source of accumulation of the circular debt – singled by the previous government. Speaking in National Assembly during question hour, Omar said that the annual capacity payments to Independent Power Producers (IPPs) would reach Rs1,455 billion in 2023, which he contended was mainly to faulty agreement signed by Pakistan Muslim League-Nawaz (PML-N).

Ayub continued that the annual capacity payments to IPPs were Rs185 billion in 2013, Rs642 in 2019, Rs860 in 2020 and would reach Rs1,455 billion in 2023, adding, "These are hardcore statistics which I'm talking about". He said that increase in the prices of electricity was due to badly managed agreements with IPPs comprising wrong fuel mixes, which ultimately forced the country to rely on imported fuels for power generation and face the issue of capacity or compulsory payments. Ayub blamed the PML-N government for rising electricity prices in the country, saying they had no vision due to Pakistan Tehreek-e-Insaf (PTI) government is facing the consequences of their flawed policies.

The House was also informed that Foreign Direct Investment (FDI) declined by 29.9% during July-February (2020-21) and stood at \$1300.4 million for the last eight months of the current financial year compared to \$1854.5 million of the corresponding period July-February (2019-20). In a written reply to a question of the Minister In-charge of the Prime Minister's Office to the National Assembly, various reasons were explained of the decline in investment. According to reply, there is a 34.7% increase of FDI outflows amounting to \$683.6 million as compared to \$507.4 million in the same

period. Furthermore, overall inflows during the said period also declined from \$2361.9 million to \$1984.0 million, thus net FDI decreased. It was further explained that Covid-19 had affected the global FDI inflows. During the last year the global FDI shrunk by 42%, which has an effect on all the economies. It was said in another reply that it is hoped that with the improvement in COVID 19 pandemic, the FDI inflows would also improve substantially, adding the Board of Investment (BOI) has initiated several reforms/initiatives for ease of doing businesses, facilitation of investors, promotion of investment opportunities, regulatory reforms, etc.

In a written reply, Minister for Finance and Revenue Hammad Azhar told the House that total public debt increased by Rs12.5 trillion during the 30 months period (Jun. 2018 till Dec. 2020), out of which domestic and external debt contributed Rs7.9 trillion and Rs4.6 trillion respectively. He said that the present government had to pay Rs6.2 trillion (50% of the increase) as interest on debts borrowed predominantly by the previous governments. He said that Public debt increased by Rs3.0 trillion (24% of the increase) due to currency devaluation. This increase was not due to borrowing but due to revaluation of external debt stock in terms of rupees after currency devaluation, he said. The minister said that Rs2.4 trillion (19% of the increase) was borrowed for financing of primary deficit; Rs0.6 trillion (5% of the increase) was on account of increased cash balances of the government to meet emergency requirements, this increase in debt was offset by corresponding increase in the Government's liquid cash balances. He said that Rs0.3 trillion (approx. 2% of the increase) was due to difference between the face value and the realized value of government bonds issued during this period. In another reply, the minister said that out of total interest payment of Rs6.2 trillion, amount of approximately Rs1.3 trillion was paid towards new loans obtained (mainly to pay interest on past loans) by the current government. ■

Courtesy Business Recorder

RENEWABLE ENERGY STORAGE SYSTEMS

Defining a path for optimum utilization



JALAL UD DIN SADIQ
CEO

INTRODUCTION

As a fast developing country Pakistan desperately needs to explore and utilize enormous / untapped Renewable Energy potentials in the country. Due to increase in population and industrial revolution energy demand continues to increase @ 9% annually, hence by 2030 the energy demand will be enhanced from current 25GW to 50GW. Moreover almost 45% of the area and 40

million people deprived of electricity. Supply of electricity in rural / remote is not economically feasible due to long distance and difficult terrains. There is need to explore and use locally available and sustainable energy resources such as Renewable Energy.

To electrify the remote areas, Off Grid electrification through mini or micro grid

hybrid solar system is the viable and economically feasible solution. Hybrid solar systems provides electricity during the day and night (through energy storage system). Various types of batteries are being used for energy storage system. Effort are underway to develop and use economical and reliable storage devices for longer back up period.

SOLAR THERMAL ENERGY STORAGE SYSTEM

A new concept has been developed and is going through a rigorous testing regime. The concept the concept is explained below :-

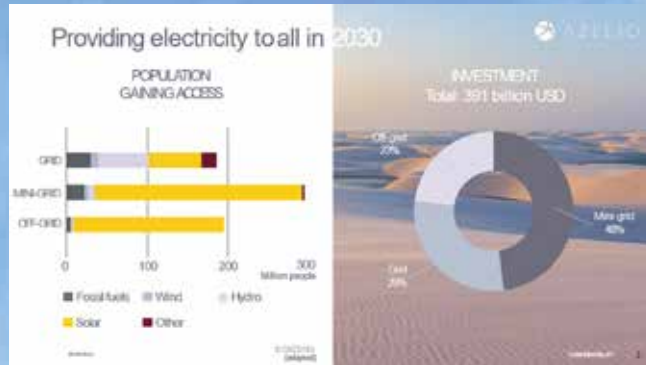


The above setup is an efficient storage facility which assimilates the heat energy from the sun rays focused at a single point. High temperatures can be achieved which melt the storage medium and the molten material will retain the heat energy for about 13 hours. This energy can be utilized throughout the night for running the thermal generator. An exposure of about four hours sunlight will fully melt the storage tank for utilization at night.

The technology developed has certain proven advantages which we feel will make it a very competitive addition to the Renewable Energy concepts. A depiction of positioning with other technologies is shown below.

	Parabolic trough	Solar tower	PV-BEES	Azello
Typical size (MW)	100 – 280	100 – 300	0.01-500+	0.1-50
Maturity	Commercial	Commercial	Commercial	Pilot projects
Scalability	Average	Average	Good	Good
Performance degradation	Near zero	Near zero	0.22-1.0%/year	Near zero
Storage system	Commercially available	Commercially available	Commercially available	Lab demonstration
Grid stability	Medium (w/o TES or hybrid) High (w TES or hybrid)	Medium (w/o TES or hybrid) High (w TES or hybrid)	Medium to high	High
Start-up/shutdown times	Slow (15 min or more) can be controlled	Slow (15 min or more) can be controlled	Fast, can be controlled	Fast, can be controlled
Water requirements [m ³ /MWh] (production cycle)	3 (wet cooling) 0.012 (dry cooling)	3 (wet cooling) 0.012 (dry cooling)	0	0

A very conservative depiction of providing electricity to all by year 2030 is shown below, as initially stated a major portion of our population today is without the electric from the grid. The reliance on renewable energy and setting up off-grid and mini-grid solutions is the most economical way forward.

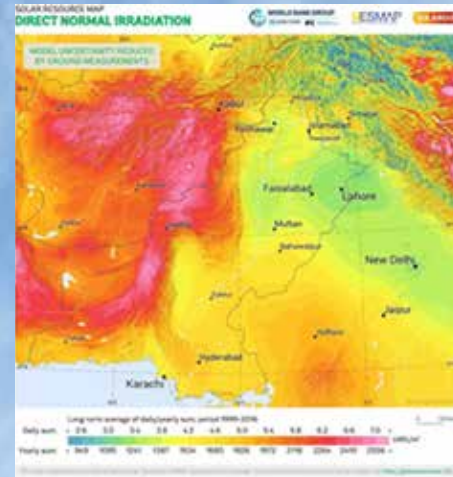


The concept design for the Azelio is very simple and is very effective in providing round the clock power availability, coupled with the unique energy storage concept. The concept is explained below



COMPANY PROFILE

JD Aviation Sourcing and Engineering Services was established in 2014 and its main focus was on Renewable Energy along with spare support for the Armed forces of Pakistan. The concerted effort was aligned at providing the Quality products and systems for the domestic/ industrial end users. The company managed the required legal approvals and established contacts with the reputable manufacturers of solar panels and other necessary equipment used in the solar power generation. Our long term objective remains the local manufacturer of the equipment in Pakistan. We have established strong and interactive working relations with renowned OEM's with this objective as a corner stone of all our initiatives.



Tariff hike:

some caveats and reform proposals

—♦ Syed Akhtar Ali —♦

The government has announced plans to increase power tariff by Rs5.65 per unit, an estimated 40% increase. Gas utilities have asked for similar or even higher increases in their tariffs.

In this space, we will examine the non-tariff options to deal with problems of rising cost and circular debt, which has forced the government to propose the increase in power tariff. Over-capacity and high cost agreements will have a long shadow over the current and future tariff issues. However, reforms are overdue. Without undertaking reforms and increasing efficiency, the tariff hike alone may prove to be counter-productive.

It would be a political and economic risk to try to eke out all circular debt from consumers. As a rule, any capacity payments

under capacity utilisation of 60-66% cannot be passed on to consumers, until the economy starts growing at a pace of 7% or so.

To the extent of under-utilisation of capacity, ways and means would have to be found to finance part of its adjustment through refinancing, debt rescheduling and passing some burden to provinces. Some improvements in capacity utilisation should be possible by removing transmission and distribution (T&D) constraints as well. Reduce power tariff, electricity demand will increase. This is the most controversial yet a subject with great potential. This is reverse of the increase in power tariff.

If this is not true for the residential consumers, it should be true for the commercial and industrial sectors. By increasing demand and thus increasing capacity utilisation, the unit cost will decrease with its impact on circular debt.

Had serious work been done on this aspect, perhaps, the IMF would have been less relentless in pursuing its demand for a large tariff increase.

The recent IPP agreement is a welcome step. These concessions are, however, for the longer term benefit and do not help bridge the current revenue shortfall.

Finally, Nepra should fast track institutionalising these adjustments into a permanent framework. Main issues are revised rates of return on equity (ROE) at 12%, interest rates and risk margins.

It is highly inequitable that G2G projects, which normally enjoy sovereign guarantees, have the same return and debt terms as given to the normal commercial contracts, which face higher risks. Softer lending rates should be required for G2G projects in which normally capital expenditure (capex) is higher due to the lack of competition. We are suffering from a capacity glut. The least that can be done is to advance the schedule of new projects. Putting the distribution companies (DISCOs) right should be on top of the agenda along with doing away with the inefficient generation companies (Gencos).

On the DISCOs and T&D side, major improvements and reforms are required, which is almost half of the problem. T&D losses are high and almost stagnant at 18.3%. There is an issue of receivables of around Rs1 trillion as well, although, allegedly, receivables are exaggerated to reduce losses and enhance



the balance sheet appearance.

Many reforms have been discussed and are overdue like reducing the geographical size of loss-making companies like Pesco and Mepco. Privatisation, either as leasing, management transfer or outright sale has been discussed for a long time. Time has arrived to implement any viable scheme.

Unfortunately, the revival of Pakistan Electric Power Company (Pepco) has been put off. Pepco could have provided the much-needed intermediary layer for a technical and management role, which is currently occupied by the ministerial bureaucracy. Much hope is being tied to the new independent boards, which are neither independent nor effective. Two hours of meetings of a motley crowd of experts and vested interests cannot possibly replace an effective supervisory role that can be offered by Pepco or give it a new and better name with enhanced role to include Gencos and a strong technical component. There are some technical issues as well, which require immediate attention for improving DISCOs' performance and reducing theft.

Smart distribution transformers (DT), with smart meters installed on DTs, have been discussed, offering tremendous efficiency improvement opportunities at a smaller cost than installing smart meters at consumer prices, as proposed by the Asian Development Bank. They will provide an electricity accounting framework on geographically locating theft and losses to manageably smaller areas covered by DTs. K-Electric has done it and is reaping its benefits. USAID has already provided a nucleus through its pilot projects at Mepco and Pesco, which being high-loss companies should have been selected in the first place instead of LESCO and IESCO. With the installation of two capital-intensive nuclear power plants of 1,100 megawatts each, there should be some action on shutting down the inefficient Gencos.

Ultimately, the open market and competition will open the doors for cheaper gas

and electricity, it is argued by many. However, it is a long-term and time-taking issue. Nepra is working on the Competitive Trading Bilateral Contract Market (CTBCM), which has many inadequacies and issues. With or without CTBCM, there should be no constraints on introducing wires-only model in DISCOs. This will simplify complications of privatisation. Some competition can be introduced, without waiting for CTBCM and its implementation, under solicited bidding and by doing away with unsolicited projects, which are partly a source of many vices. There has always been a fear in going for competition. Had this not been the case, our plight could have been better. Similarly, all talk of replacing "take and pay" instead of the current "take or pay" is simplistic. Take and pay works in competitive markets where the price is determined by competition. Decreasing capacity utilisation from 80% to 60-66% under the take-and-pay model has no practical cost reduction impact.

Reforms are due in the Integrated Generation Capacity Expansion Plan (IGCEP). The plan has been made under three assumptions of economic growth of 4-7%. Current growth rate is 3% and is likely to remain low due to the Covid debt and other issues. Tariff hike Despite these changes, project approval continues to be uninfluenced. Its time horizon should be reduced to 10 years and yearly adjustments should be made in a 10-year rolling plan. Poor should be our focus and priority in drawing any financial scheme. There is a case for introducing direct transfer of power and gas subsidies to the poor consumers. This can be introduced under the Ehsaas programme and financed under the general budget and debt. It may have acceptability from the IFIs and may help in reducing the proposed increase. There are other proposals of linking tariff subsidies to localities and plot sizes rather than consumption alone. It may add complexity but may release some resources for passing them to the poor. ■

PPAF, BRSP celebrate **World Water Day** in Quetta



—◆— EU Reports —◆—

Balochistan Rural Support Programme BRSP in collaboration with Pakistan Poverty Alleviation Fund (PPAF), PHED, WASA, & GIZ commemorated "World Water Day 2021" in Quetta. In this regard, an awareness walk on the importance of water was organized from the Metropolitan office to Serena hotel.

The participants were major stakeholders including line departments, teachers, students, civil society members, media representative. Honorable Governor Balochistan, Amanullah Yasinzai was the chief guest of the event. Holger Ziegler, Consul General Sindh, Minister PHED Saleh Nasar Secretary PHED, Roshan Khurshed Bharucha, Chairperson PPAF attended the event.

Speaking at the occasion The Governor of Balochistan said that "We need to do more in order to get our province out of this predicament. Uncontrolled population growth, lack of urban planning and unregulated urbanization, both due to rural-urban migration as well as influx of refugees in Quetta city have further burdened our already strained water sources. PHED is making efforts in the province to rehabilitate a desalination plant in Quetta and working on constructing dams which will provide some relief to our water deficient city."

Nadir Gul Barrech, CEO of BRSP said, "BRSP worked to empower communities so that people are able to sustain and replicate BRSP's interventions in their villages. This has been, especially, true in case of water and sanitation projects. BRSP and GIZ are continuously working to reach SDG 15 by 2030." The honorable guest of the event Saleh Nasar (Secretary PHED) speaking to the event said that "Quetta's water supply is limited, QESCO and WAPDA struggle to provide electricity to the city and from time to time are forced to shut down tube wells. The fast-depleting water resources in the region call for prompt action in the right direction. A number of dams are in pipeline and we hope that we will be able to meet the demand for water in the coming years. ■

NEW POLICY TO EXTEND INCENTIVES FOR SETTING UP REFINERIES

—◆ Khaleeq Kiani —◆

The government has finalised a new policy for petroleum refining under which an incentive package will be extended for setting up of deep conversion refineries. The package will provide a 20-year tax holiday and up to nine-year cascading customs duty reduction in pricing provided the investors sign construction agreements before Dec 31, 2021. The policy framework has been finalised in consultation with the local refining industry. The new policy is set to be presented to the Economic Coordination Committee (ECC) of the cabinet shortly for approval.

All new deep conversion oil refinery projects of a minimum of 100,000 barrels per day (BPD) refining capacity, to be set up anywhere in the country with government approval latest by Dec 31, 2021, shall be eligible for 20-year income tax holiday from profits and gains from the date of commissioning. The government will not guarantee product off-take and the refineries would be free to market their products through their own or other marketing companies or export after meeting local needs. They would also be entitled to exemption from customs duty, withholding tax or any other levy on import of any equipment to be installed, or material to be used in the refinery without certification by the Engineering Development Board (EDB). They would also avail exemption from general sales tax, or any other ad valorem tax on the import of equipment to be installed or materials to be used in the refinery prior to commissioning.

Construction, operations and engineering services performed in Pakistan, whether by local or foreign firms operating in Pakistan, as well as procurement of any local materials shall remain subject to all applicable local taxes, whether provincial or federal. Temporary imports by contractors or subcontractors of all machinery, vehicles, plant and equipment, other materials and spares in connection with setting up, operation, maintenance and repair, which are to be repatriated after completion of the works, shall be exempted from all customs duties, taxes, surcharges and levies on import, and shall be released by customs authority on provision of a bond by the importer, for the defined time period of use. All the above incentives would also be available to the existing refineries as incentive to upgrade and modernise their refineries. There would be no restriction on technology, equipment or process to qualify for such an upgrade provided that it results in motor gasoline and diesel production to

meet specifications notified by the government.

This could include modernisation, expansion and bottom-of-barrel upgrade, whether individually or jointly, by the existing refineries. If an existing refinery qualifies as having met the requirements, its upgrade, modernisation or expansion programme shall be treated as a new project, and shall be eligible for these incentives to the extent of upgrade or expansion through segregated accounts.

The existing refineries would also have to secure government approval for expansion or upgrade programmes along with size, product specification, etc, no later than Dec 31, 2021. They would then be given waiver to continue marketing their products, until the agreed completion date of upgrade, from the notified fuel specifications for motor gasoline and diesel. Refineries that do not provide such undertaking and do not have a waiver shall not be allowed to sell petrol and diesel in Pakistan after June 30, 2022, if they do not meet the fuel specifications notified for imports of such products. Upgrade, modernisation and expansion would be subject to a tight monitoring mechanism.

The product pricing formula of local refineries — both new and upgraded — shall be based on Import Parity Price (IPP) to be derived from the average daily Arab Gulf Mean Freight Onboard (FOB) spot price for the pricing period in use by the regulator, or if not published, shall be derived from average daily Singapore Mean FOB price for the same period. All other elements, including premium, freight, port charges, incidentals and import duties, shall be added FOB to arrive at IPP. Ad valorem taxes shall then be added to arrive at final consumer price.

There shall be no duties on import of crude oil by refineries for their own use. The finished products, however, shall be subject to import duties to be notified by the government from time to time. There shall also be no guarantee of rate of return for existing or new refineries. Any such policy protection to existing refineries, if existing today, in whatever form

(deemed duty, return guarantee, etc) shall be replaced by IPP under the new policy. The refineries shall be allowed to open and maintain foreign currency accounts and retain a certain portion of export proceeds in foreign currency to meet operational requirements. There shall be a 10 per cent duty on import of motor gasoline and diesel of all grades as well as import of any other white product used for fuel for any kind of motor or engine, from July 1, 2021 to June 30, 2026.

The rate of import duty would then drop one per cent per annum starting July 1, 2026, such that it is reduced to 5pc on July 1, 2030, and shall then remain fixed at 3pc thereafter.

This declining scale tariff protection shall be available to any new refinery starting from its commissioning date (i.e. 10pc for five years, with the rate declining 1pc per annum for next five years and shall remain fixed at 5pc thereafter), as long as such refinery starts construction before June 30, 2024. The policy envisages a shift to complete deregulation of the oil sector, including products and pricing, by June 30, 2026 which is the same deadline for upgrades of existing refineries to allow the benefit of competitive forces to pass the benefit on to the consumers. The principle to be followed will be that all oil marketing companies (OMCs) will be free to set the prices themselves, based on the quality of fuels, the location and other services being provided like High Octane Ron 97 at present. However, the government would set the price for pumps of Pakistan State Oil to give protection to the consumers. Currently, Pakistan's oil refining capacity is about 20 million tonnes per annum. About 60pc of the country's requirements of diesel and 30pc of petrol are met by local refineries. The rest is imported as refined products. Four out of five local refineries are obsolete while the fifth is 20 years old. Despite these numbers and the refining industry being integral to the growth of the economy, no new refinery could materialise for more than a decade. Similarly, upgrades of the existing refineries has not kept pace with technology. ■

DEVELOPMENT

Peshawar UET develops low-cost solar panels

—♦ Mohammad Ashfaq —♦

The Centre for Advanced Studies and Energy of the University of Engineering and Technology, Peshawar, has developed solar panels at half the price of the existing silicon ones with the help of international partners by using the third generation solar photovoltaic technology. The lightweight and flexible panels will be formally unveiled this week, principal investigator of the project at the UET Dr Najeebullah told Dawn.

Prof Han of the Huazhong University of Science and Technology, China, and Dr Toby Meyer of Solaronixmix, Switzerland, were also part of the initiative. Dr Najeebullah, who has done PhD in material sciences from Cambridge University, said the project's research phase began in 2014, while the prototype development of the third generation solar panels got under way at the UET's Centre for Advanced Studies and Energy in 2019 with the financial support of the provincial government. He said the centre was established in 2014 with the support of USAID. The principal investigator said the third generation solar photovoltaic panels would cost 50 per cent less than those made with the help of silicon photovoltaic technology mostly by the Chinese companies and sold in the country. He said the third generation solar panels would cost less than the existing ones as the materials used in them were locally available and the manufacturing required lower temperature. Dr Najeebullah said the solar panels in the market needed highly refined poured silicon with purity of 99.99999 per cent and processing temperature of 1100 and above degree centigrade. "We replaced silicon with the naturally available metal halide perovskite in our product, which will be produced at 450 degree centigrade," he said. He said Prof Han was working on the commercialisation of the emerging solar technology and was going to establish a 200MW unit in Huwan area of China. Prof Han told that he would love to work with 'our friend' Pakistan for technology transfer. He urged the Chinese and Pakistani governments to promote technology transfer and allocate funds to commercialise the emerging solar technology under the multibillion dollars worth of China-Pakistan Economic Corridor initiative. Dr Najeebullah said Dr Toby Meyer, who had done PhD at the Ecole Polytechnique Federale Lausanne, Switzerland, helped establish the prototyping lab in the UET. "Dr Toby has been working on third generation solar PV since 1994. He's a student of Prof Michael Graetzel, who is the pioneer of the third generation solar panels," he said. The principal investigator said four companies of the world, including Oxford PV in UK and Germany, Wonder Solar founded by Prof Han, Microquanta, GCL-nano, both in China, and other had so far established manufacturing units and tested their products in the field and were about to provide their products for commercial purposes. When contacted, adviser to the chief minister on higher education department Kamran Bangash said the government fully supported such innovations and therefore, extended the duration of that solar technology project for another year. "Such interventions will generate revenues for universities and contribute to their self-sustainability," he said. ■

JD AVIATION

Sourcing & Engineering Services Pvt. Ltd



SOLARIZATION
DESIGNING &
INSTALLATION

ON GRID AND OFF GRID SOLAR SYSTEMS
AUTHORIZED VENDOR OF AEDB FOR NET METERING

Domestic ON/OFF Grid and Hybrid Solar System



INTEGRATED STREET LIGHTS
GAWADAR



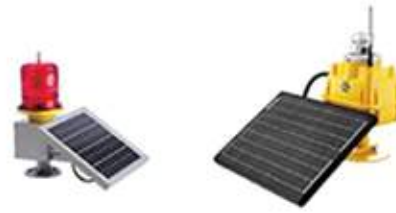
5 KW SOLAR PUMPING SYSTEM
- TARNOL RWP



15 KW HYBRID SOLAR SYSTEM-
LOK SANJH ISLAMABAD



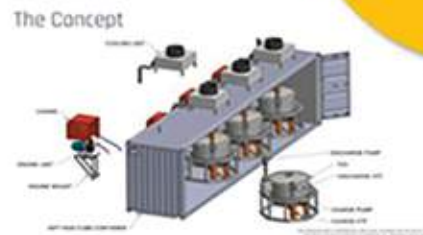
INTEGRATED SOLAR STREET LIGHTS
WITH CAMERA & WIFI OPTION



SOLAR AVIATION LIGHTS FOR
RUNWAY & TAXI WAY

REPRESENTATIVE OF AZELIO IN PAKISTAN

SOLAR THERMAL
TECHNOLOGY
FIELD



JD Aviation along with its partner Azelio a Swedish based company specialized in solar thermal and a leading supplier of sterling engine-based renewable energy solutions is currently working on solar thermal technology as solar thermal has shown great promise in terms of scalability and reliability for generating energy as compared to other solar technologies specially in Pakistan.

A specially designed storage system which can retain this heat energy for long durations, helps to eliminate the costly battery banks, a comprehensive system design culminating into a compact electrical output is the hallmark of this system.

Office: Mid City Apartments, BF-1, Khokhar
road near Fazaia Colony, Rawalpindi

Email:
jdaviation.sourcing@gmail.com

Website:
www.jdaviation.com.pk

Tel: 051-4578427

Slow death of Pakistan's Water System

— Arooj Asghar —

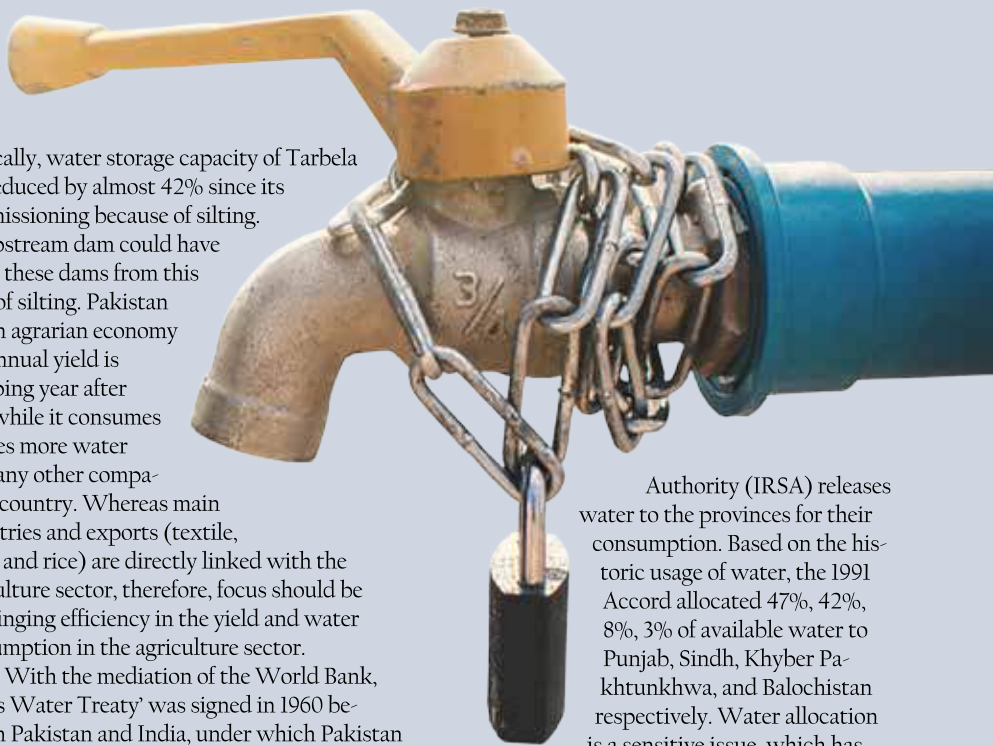
Water outlook of Pakistan is not promising and is facing various grave challenges. Pakistan has three main sources of water; rainfall, underground water, and river system. Rivers entering into Kashmir, Punjab and KPK provinces from India and Afghanistan merge into the Indus River at one point, which is why almost 90% of the population is concentrated around the rivers particularly around the Indus River and its doab areas. It wouldn't be wrong to say that Indus River is the life blood of Pakistan's economy. Despite its importance; Pakistan is fast approaching to become an 'absolute' water scarce country (by 2025) from a water scarce and water poor country because of continuous drop in the water bed; less downpour and deforestation; and massive reduction in the river's water flow. The volume of Indus system has dropped from 156.7 million acre feet (MAF) to 109 MAF in 2019 except having 157 MAF in 2010 because of the floods.

Continuous deforestation makes Pakistan a forest poor country; having a small area of approx. 4.4 million ha under forest that is hardly 5% of its total land. Due to continuous deforestation, we see less downpour; Pakistan ranks 144 in the world in terms of rainfall. Over 10,000 square km of total area of Pakistan is covered with glaciers, which are fast melting and can completely disappear in 20 years. Mining of groundwater is occurring in many area; this mixes the saline water with the fresh groundwater thus contaminating the ground water. Less than 33% population in rural Punjab has tap water while rest are relying on the underground water and tube wells. Similarly, seepage of water from the farms further pollutes the groundwater by actually adding fertilizers, chemicals, and pesticides to the ground water. Siltation in reservoirs has significantly reduced the capacity of Tarbela and Mangla dams. These two dams were perceived in 60's and since then only a few small dams were constructed while no tangible work was done on building of big reservoirs thus putting immense pressure on Tarbela and Mangla.

Ironically, water storage capacity of Tarbela has reduced by almost 42% since its commissioning because of silting. An upstream dam could have saved these dams from this level of silting. Pakistan has an agrarian economy but annual yield is dropping year after year while it consumes 5 times more water than any other comparable country. Whereas main industries and exports (textile, sugar and rice) are directly linked with the agriculture sector, therefore, focus should be on bringing efficiency in the yield and water consumption in the agriculture sector.

With the mediation of the World Bank, 'Indus Water Treaty' was signed in 1960 between Pakistan and India, under which Pakistan was given the rights in perpetuity on the waters of the three western rivers (Indus, Jhelum, and Chenab) whereas other three eastern rivers (Beas, Sutlej and Ravi) were given to India. Over the time, we see mismatch between the location of Pakistan's allocated western rivers and its major irrigation area in the east because India has diverted flow of most of the rivers and has also constructed a number of dams on the rivers, however, it releases water only when it has a flood like situation.

Pakistan not only needs water for its usage but also needs enough water to flow into the Arabian Sea for preventing intrusion into Indus delta region. 'Indus delta' is an area where Indus river merges with the Arabian sea, it is 5th largest delta system in the world and has 7th largest mangrove forest system with countless species of aquatic wildlife. Enough water is not being released thus Indus delta has shrunk by 92% since 1833 because of construction of various barrages and tributaries. Since 1947, sea water has claimed over 4.5 million acres of land from the delta with the displacement of more than 1.5 million people. Provinces and federal government signed "Water Apportionment Accord" in 1991, under which Indus River System



Authority (IRSA) releases water to the provinces for their consumption. Based on the historic usage of water, the 1991 Accord allocated 47%, 42%, 8%, 3% of available water to Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan respectively. Water allocation is a sensitive issue, which has made it almost impossible to

build dams (Kalabagh Dam is an example) or divert water in an upstream province. Moreover, as population is heavily concentrated around the rivers thus making it difficult to build reservoirs close to the settled areas. Displacement of population becomes more of a political issue.

Mismanagement and lack of interest at the policy making level has taken us to this point. Water is a commodity now and it should be properly priced and billed as opposed to the current practice of charging nominal amounts. Inflow of sediment is a natural phenomenon and could not be prevented however, proper planning can help avoiding the Tarbela like situation. Construction of additional storage capacities with the consensus of the provinces can only address the water crisis. Federal government should form a commission comprising of experts and professionals for reviewing the water sector and identifying storage capacities of all sizes across the country. In the larger national interest, every province should come forward with an open mind. Moreover, federal government cannot do all this alone, therefore, private sector should also be involved in resolving the water crisis before it is too late. ■

Experts call for specific laws for Karachi's environment protection

— Faiza Ilyas —

Experts call for Karachi-specific law for tree protection, plantation campaign can increase green cover of the city unless the government enacts a Karachi-specific law for tree protection and plantation and imposes a strict ban on cutting of tree/s, unless it is authorised by an expert committee representing all stakeholders, including the academia. This body should also serve as a legal authority on granting permission for tree plantation at public spaces. They were expressing their opinion about the recently launched tree plantation campaigns in terms of their significance in improving green cover of Karachi and non-scientific approaches never bring out positive, sustainable outcomes. Plantation at public spaces should follow thorough planning, which means studying land and soil properties and getting details about the civic infrastructure existing above and under the ground at the site," said Dr Zafar Iqbal Shams, a senior teacher and researcher at Karachi University.

Karachi's green cover, Prof Jamil Kazmi of KU's geography department who has studied the subject extensively through Geographic Information System (GIS) mapping, said that the city's green cover increased from 500 square kilometres in 1998 to 570 square km in 2008 due to extensive plantation of conocarpus and mangroves and expansion of the agricultur. "It was reduced to 260 square km in 2018 and 2019 (within the city), almost a 50 per cent reduction, following reduction in groundwater level, depletion of agricultural area due to extensive extraction of sand and gravel along riverbeds that led increased

runoff, desertification and urban flooding. Another factor contributing to reduction in tree cover was the increase in the built-up area." The city's green cover, he argued, could only increase with eco-friendly development and trees were protected under a legal cover.

"Thousands of trees are cut down on account of different development projects and a few hundred saplings are planted as replacement. On the other hand, we see either plantation of exotic species or ones which are not suitable for a particular land and the result is high mortality." In this respect, Dr Kazmi referred to plantation of date palm trees on the University Road by the government sometime back. Ninety per cent of them died. Each plant costing about Rs2,500 had been brought from Khairpur. "There is a need for a scientific approach in consultation with experts. We must discourage monoculture as it happened in the past and the entire city was filled with eucalyptus and then conocarpus and promote indigenous species." Highlighting some other challenges to increasing the city's cover, senior ecologist Rafi-ul-Haq said the biggest challenge was the absence of a single civic authority governing the whole city and a Karachi-specific law for tree protection and plantation. "The forest law doesn't apply to Karachi. We need a law that clearly defines rules and regulations for planta-

tion in the city and fixes severe punishment on tree cutting. There should be an expert body with legal powers to survey the city and develop plantation guidelines for a particular area per its requirements, permits plantation campaigns and monitor the process periodically." According to experts, the city can be divided into water-logged, saline and dry land zones and plants suitable to specific conditions should be grown in a specific area. Apart from the coastal land, many parts of the city have become water-logged and highly saline due to leaking water and sewerage.

Plants, such as conocarpus and eucalyptus, Dr Shams suggest, can help improve soil conditions in these areas, if they are planted with proper planning and care. They both are exotic non-invasive (not a threat to local vegetation) with high water requirements and deep roots that can damage underground civic infrastructure. All exotic/imported species must go through an ecological trial to prove that they are not invasive, he said. Plants suitable for water-logged and saline land are both date and coconut species are members of the palm family. The former is suitable for dry areas and the other for coastal land.

"Plants such as moringa, date palm and wild almonds are not suitable for coastal land and will show poor growth," replied Dr Mohammad Qaiser, senior botanist and co-author of Flora of Pakistan, when asked about plantation of these species under a recently launched urban forest project along the Clifton beach.

An exotic species, he pointed out, didn't necessarily be invasive (species) that

threaten local biodiversity as they fast replace local vegetation.

“Devi or vilayati keekar (*Prosopis juliflora*) that releases toxins tops the list of invasive species in our environment as it has spread across the country. *Leucaena leucocephala* (ipil ipil), which is among the 100 worst invasive species in the world, can be seen in some areas of Karachi.” Some exotic species suggested by Dr Shams for different districts of Karachi are: *Delonix regia* (Gul-mohr), *Pithecellobium dulce* (Jungal jalebi), *Peltophorum pterocarpum* (Copper pod), *Parkinsonia aculeata* (Jelly bean tree) and *Cordia sebestena* (Geiger tree). Some suggested native tree species: *Crateva adansonii* (Barna), *Alstonia scholaris* (Devil tree), *Albizia julibrissin* (pink siris), *Albizia lebbek* (lebbek tree), *Cassia fistula* (Amaltas), *Erythrina suberosa* (Flame tree), *Thespesia populnea* (Portia tree), *Dalbergia sisso* (Sheesham) and *Monoon longifolium* (false ashoka) and *Moringa oleifera*. ■

Courtesy: Daily Dawn

Russia keen to develop ‘waste-to-energy plant’ near Karachi



—◆— EU Reports —◆—

Russian experts, on the request of Sindh Chief Minister Syed Murad Ali Shah, have agreed to submit their proposals for modernisation of Pakistan Steel Mills (PSM) for which a study visit would be conducted.

This emerged on Tuesday when a Russian delegation, led by its adviser Andrey Zubal, called on the Sindh CM and discussed matters of mutual interest, said an official statement.

The delegation members include Consul General of Russia in Karachi Rus Welding, Dr Aleksandr G Khozin, Ahmed Rana of Concord Ventures (PVT) limited and Attaché, Russian Consulate Pavel Yamanov. The chief minister was assisted by Minister for Local Government Syed Nasir Hussain Shah, Chief Secretary Mumtaz Shah, Chairman P&D M Waseem, PSCM Sajid Jamal Abro, Secretary Local Government Najam Shah and Secretary Energy Tariq Shah. The government of St Petersburg, Russia has shown interest in working with the provincial government of Sindh on Public Private Partnership (PPP) mode in hydro-treatment facilities, waste processing and waste-to-energy sectors. The chief minister, during today's meeting, acknowledged that the Russian government had constructed the massive project of PSM in Karachi. Now, the unit needed not only to be overhauled but had to be modernised to meet the present day steel production requirements. The visiting delegation decided to send their team to visit the mill to assess the requirements for its modernisation.

The chief minister said that he had already constituted a provincial ministers' committee to study the issues of the mill and recommend their resolution. CM Murad said that with the closure of PSM, a large number of its employees had lost their livelihood. The meeting decided to take up the modernisation of the steel project on priority basis and its feasibility and mode would be studied and shared with the provincial government. The meeting also decided to study the feasibility of establishing a 50MW waste-to-energy power plant at Dhabaji. The chief minister told the delegation that there was a railway line from Karachi to Dhabaji where a power plant can be installed. Another site for the project could be Jam Chakro. The experts of St Petersburg would visit the sites to finalise the location of the project. The other project which came under discussion was establishment of water distribution system in Karachi and installation of treatment plants. The St Petersburg experts would hold more meetings with the provincial government's concerned departments and visit the sites to choose the projects of their choice. The delegation has submitted a conceptual proposal to the provincial government for a solid waste management system. The provincial government would also study their proposal for further action. ■

Petroleum Division proposes converting

—◆— Khalid Mustafa —◆—


The Petroleum Division has worked out a policy to convert the Thar Coal to Liquid (CTL) and Coal to Gas (CTG) with huge incentives in form of fiscal package for investors, including 10-year income tax waiver.

The policy draft identifies the commercial and regulatory framework in which coal can be converted into synthetic gas and synthetic diesel would help displace oil and gas imports to some extent.

Under the fiscal package, the policy proposed fiscal incentives to companies investing in converting Thar coal into liquid and coal into gas. They include waiver of customs duty on all plant and equipment not manufactured locally for coal to liquids (CTL) and coal to gas (CTG) technologies; items manufactured locally will be charged a duty of [5pc]; certification of local manufacture will be done by Engineering Development Board (EDB); waiver of withholding tax on all imported equipment for plants; waiver of sales tax on all imported equipment; waiver of income tax for 10 years if project commences operations before [June 30, 2025]. If operations start later, the final date for income tax exemption shall be fixed as June 30, 2035. For a company to qualify for such concessions, it needs to apply to the Board of Investment (BOI) expressing intention of putting up a CTL or CTG plant, identifying the local coal reserves that it intends to utilize, and the off-take plan for the gas or liquids proposed to be produced. Allocation of any coal fields is in the provincial domain and shall be pursued by the applicant as per applicable rules.

The CTG and CTL plants using imported coal are not eligible.

The draft document also mentions that small scale coal gasification operation are such fiscal policy while commercial deregulation as the



coal gasification units already in operation are not eligible for such fiscal concessions. The policy while highlighting the commercial framework poses it to be fully deregulated. Furthermore, gas from coal gasification shall not be standard pipeline gas (i.e. methane), the producer shall be free to sell it bilaterally on a commercial basis to any customer on mutually agreeable terms to fertilizer plants, or possibly chemical plants in the future.

This gas cannot be mixed with natural gas and will require an independent transportation system if needed. Any pipeline to be built for transporting such gas shall require the necessary regulatory approvals from OGRA. Under the regulatory framework, the policy has proposed OGRA shall be advised by the federal government to develop rules for a simplified licensing process for CTL and CTG plants if no retail sale for diesel or injection of gas into the distribution system is planned. The Thar Coal Board shall notify rules of allocation of mining leases for installation of such plants.

In order to support development of these new technologies, new allocations of local natural gas to fertilizer shall not be made. Any continuation of local gas supply to an existing fertilizer plant, shall be subject to availability of local gas. Any supply of LNG to existing fertilizer plants, if supplied by the state-owned gas distribution companies, shall be based on full cost recovery through customer and budgeted subsidy, if any. ■

Courtesy: The News



DIWAN
INTERNATIONAL (PVT) LTD.

AUTHORIZED DISTRIBUTOR IN PAKISTAN



- Maintenance Free
- Dry Lead-Acid & Lithium-ion
- Safe and Reliablie
- High Purity Raw Material.



Trinasolar

655/660W

Vertex



NEW MODELS 2021

***FusionSolar Residential, Commercial
& Industrial Smart PV Solution***



CHNT



LOW-VOLTAGE ELECTRIC

UAN : (021) 111-333-926
Cell : +92 300-0222-329
Email : info@diwanit.com

Office No 1201, 12th Floor,
Al-Najeebi Electronic Market,
Abdullah Haroon Road, Saddar,
Karachi - Pakistan

    **DiwanitPvtLtd**
www.diwanit.com



SCAN ME

Pakistan could prosper through aggressive energy policy

Robin Xing

Huawei Managing Director of Enterprise Digital Power

—◆ Mustafa Tahir —◆

Q: Would you brief us about yourself? education, professional experience and achievements?

A: I am presently working as Managing Director of Enterprise Digital Power. Working in Huawei for more than 9 years so far 7 years experience in Solar market.

Q: Please inform our readers about major operations of your company in the RE sector of Pakistan?

A: HUAWEI is a global provider of ICT infrastructure and smart devices. Since entering into Pakistan in 1998, Huawei has

maintained robust growth and contributed to Pakistan's overall ICT industry development. Today employs about 1,600 people in the country, 91% of whom are Pakistani nationals. Huawei inverter business belongs to EBG business. We have a dedicated team in Pakistan.

Q: What are the aims and plans of your company to expand its operations in Pakistan?

A: Pakistan has good policies for solar energy such as zero import tax, low loan interest rate for solar projects, etc. The ROI of solar project is around 4 years, which is a very good investment. The C&I and residential markets will keep growing steadily. Utility projects will strike in the market.

Q: Could you introduce Huawei achievements in the solar industry?

A: Huawei offers leading Smart PV solutions harnessing more than 30 years of expertise in digital information technology.

By integrating AI and Cloud, Huawei further incorporates many latest ICT technologies with PV for optimal power generation, thus making the solar power plant to be Highly Efficient, Safe & Reliable with Smart O&M and Grid Supporting capabilities and builds the foundation for solar to become the main energy source. For solar energy users, Huawei launched advanced solution for C&I and residential customers based on the 'Optimal Electricity

Cost and Active Safety' concept. By improving the utilization of solar power, Huawei has helped to power millions of residents and hundreds of industries globally. Huawei will continue to innovate and enable renewable energy to empower each individual, home, and organization.

Q: Do tell us about the exclusive features of Huawei inverter to solar energy?

A: We use AI to reduce OPEX as we improve I-V curve diagnosis. This idea came about between us and our strategic customer. We developed an online inspection and diagnosis of all PV strings. Compared with conventional solution that uses on-site sampling test and time-consuming manual analysis. The smart I-V curve diagnosis can largely shorten the site inspection time from weeks to half a day. AI learns based on experts' knowledge and can accurately identify 14 types of string failure which is certified by TÜV. These diagnosis can

further provide troubleshooting solution to close loop the O&M process. This function has already been deployed in 5GW PV plant worldwide at the moment and the number is still growing.

Huawei together with leading testing and certification organization China General Certification Center (CGC) released the Arc Fault Circuit Interrupter for PV Systems Technical White Paper to enable the industry to better understand AFCI technology. The white paper describes in detail the development background, technical principles, technical difficulties and features, verification and evaluation results, and application prospects of AFCI technology, with the following aims: (i) Provide reference for PV power plant development enterprises and other parties to accurately understand and use products with the AFCI function, (2) Provide a basis for technological development and promotion, as well as for enterprises to continuously improve their products based on changing situations and application

requirements, etc.

Q: What are your views of future technologies in the solar industry?

A: As digitization transforms key industries, we could see the trend of All Things Sensing, All Things Connected and All Things Intelligent happening in the PV industry too. To achieve this vision, smart inverters are key components to reshape the industry. Inverters are no longer just converting DC (direct current) electricity to AC (alternating current), but to control and diagnose the health of the PV systems, ultimately making the system smart and intelligent. At Huawei, our vision is to bring digital to every person, home and organization for a fully connected, intelligent world. This would apply to the solar energy industry. We advocate building an AI-enabled smart PV ecosystem by working with clients, policymakers, upstream and downstream partners to create a fully connected and digital PV system. ■



Bahum Associates



Value-Added Partner (VAP)

the trusted name in providing comprehensive solutions for standby power and alternate energy

Having a combined experience of excellence in engineering expertise in Pakistan and abroad. Bahum feels proud in providing comprehensive solutions for standby power needs for a variety of industries and sectors. Bahum operates on the objective of providing world-class, state of the art, efficient and reliable solutions to all your energy needs and requirements. We provide solutions for AC and DC standby power, which comprises of generator sets, solar inverters and battery banks to provide uninterrupted power to your equipment and infrastructures.

Bahum Associates Bahum solutions are based on world's renowned Huawei Fusion-Solar Smart String PV inverters, Perkins engines UK, Leroy Somer (Nidec) alternators and Nara-

da VRLA and lithium batteries. With time as market has grown, we have diversified ourselves in emerging fields of technologies and currently serving local market of power, health, telecom, agriculture and construction industries and providing solutions based on alternate energy.

The strong presence of the company in Pakistan as a provider of high-quality equipment, services and turnkey solutions in the field of standby power and alternate energy has enabled appointment of Bahum as Value Added Partner (VAP) of Huawei in Pakistan. Bahum provides a complete range of products, services, warranty and service contact we represent in local market on behalf of Huawei and other principals.

The company has country-wide regional

and sub offices with teams to provide services to their individual customers and corporate clients as and when required. All regions have certified Perkins engineers to head their teams. We maintain ample stock of equipment and spares to provide efficient customer after sales support and services.

Bahum has a state-of-the-art workshop to rebuild and overhaul engines along with mobile workshops to provide onsite services. These workshops are equipped with all recommended tools, software and expert engineers. We can rebuild/overhaul engines from 10kVA to 1500kVA. We keep the skill set of our engineers updated through local and foreign trainings held by manufacturers/principals from time to time. ■

PIONEERING PROGRESS, EMPOWERING PAKISTAN



Main Offices and Factory (Unit I)

☎ +92-042-359-20151-59
☎ +92-42-359-20191, 359-20195
✉ mktgdpvt@pel.com.pk
✉ mktgpd@pel.com.pk
📍 14-KM Ferozepur Road, Lahore-54760

Factory (Unit II)

☎ +92-42-35995207-21
☎ +92-42-35995228
📍 34-KM, Ferozepur Road,
Lahore-55110

Regional Office (South)

☎ +92-21-322-00951-4
☎ +92-21-323-10330
✉ infopd-khi@pel.com.pk
📍 Baig Tower, Near Baloch Colony Bridge,
Main Shahrah-e-Faisal, Karachi

Regional Office (North)

☎ +92-51-281-3021-22, 24
☎ +92-51-281-3023
✉ mktgdpvt@pel.com.pk
📍 301, 3rd Floor, Green Trust Tower,
Blue Area, Islamabad



Matiari-Lahore transmission line's technical, contractual issues resolved amicably

6 60 kV HVDC Matiari Lahore Transmission Project is CPEC Project which has been envisioned to evacuate power from power plants in the South of the country. It has a designed capacity of 4000 MW and is being built on BOOT basis. The Project will be owned and operated by Pak MLTC for 25 years and after that it will be transferred to NTDC. HVDC is a new technology in Pakistan and is widely being used around the world in long distance transmission.

The Project Agreements were signed between NTDC and M/s. Pak MLTC in Prime Minister House Islamabad on 14th May, 2018, and construction of the Project was started in December 2018. Currently, the construction of the Project is almost complete and the Project is at advanced stages of testing and commissioning, and more than 95% testing and commissioning stands completed. During the latter part of the testing and commissioning, while the Project was energized on low power testing on 02.12.2020, severe frequency oscillations were experienced throughout the network and to avoid the network outages, HVDC system was blocked after around 14 minutes operation on lower power at 200 MW flow on Line. Afterwards, NTDC revisited all the technical and contractual details pertaining to testing and commissioning and after a detailed analysis, the testing activities of the Project were halted on 11.12.2020 and a Notice of Dispute was served by NTDC to the Project Company on various technical and contractual grounds.

The Project Company prepared a detailed Root-Cause Analysis Report of the frequency oscillations event and submitted the same for review of Owner Engineer, M/s. Hatch Canada, and Independent Engineer, M/s. CESI. Both recommended some changes, suggested mitigation measures, and highlighted certain prerequisites to be fulfilled before resumption of testing and commissioning. Apart from that, there were certain contractual obligations which were impacted by Covid-19 pandemic and were considered essential to proceed with testing. Therefore, the process of negotiations between NTDC and the Project Company was started in order to devise a way forward based on good faith between the Parties.

Thereafter, a series of high-level discussions were started between NTDC and Pak MLTC to resolve the issues under the dispute

resolution mechanism provided in the contract documents. Detailed discussions between the Parties to resolve the issues continued for around 2 months and each and every issue was deliberated upon during the said period. Negotiating teams from both the Parties worked day and night to reach plausible solutions on the matters under dispute. It is also imperative to state that various forums and entities were actively involved in this whole process of negotiations, that is, Ministry of Energy, PPIB, BoD NTDC, Foreign Office, Chairman CET China, and CPEC Authority played vital role during the proceedings of negotiations and provided amicable support to close the issues and reach common grounds to move forward. Resultantly, the MoU was signed between NTDC and Pak MLTC on 18.02.2021, with new targeted COD of the Project on 1st September, 2021, along with outlining a road map for undertaking further testing and commissioning activities of the Project. As a result of MoU, low power testing of the Project was resumed in the end of February, which continued in the month of March, 2021. Currently, low power testing of the Project is complete, up to the level of 800 MW, for both Monopole and Bipole, and further trial run at low power will continue till 30th April, 2021, and then high-power testing for 2200 MW and 4000 MW will be started which will be continued till 31st August, 2021, and pursuant to successful completion of high-power testing, the COD of the Project shall be declared on 1st September, 2021, accordingly.

The agreements reached in the MoU by the management of both Parties were translated into amendments in the Contract documents and external counsels were engaged to draft Addendum Agreements to supplement the common grounds agreed upon. The Draft Addendum Agreements, incorporating changes in the main Agreements, were initialed on 18.02.2021 in WAPDA House Lahore by management of both Parties and were thereafter put forth to both CET and NTDC board of directors for approval and were approved by both Board of Directors accordingly and then were approved by BoD of PPIB and were further sent to Ministry of Energy for securing approval of Govt of Pakistan. The summary for approval of Addendum Agreements was taken up at ECC on 31.03.2021. As per these Addendum agreements CoD of the Project shall be declared on 1st September, 2021, and NTDC will take over partial O&M of Line, limited to patrolling. ■

Pakistan has always been a priority market for the renewable energy sector

A portrait of Rana Farhan, a man with dark hair and a light beard, wearing a light-colored blazer over a striped shirt. He is standing with his arms crossed, holding a folder. The background is a stylized map of Pakistan in shades of blue and green.

Rana Farhan

Country Sales Manager
Pakistan (Jinko Solar)

—◆ Naeem Qureshi —◆

Please brief us about yourself. Education, Professional Experience and Achievements.

Farhan Qurban- Country Sales Manager-Pakistan (Jinko Solar) is a qualified business management professional having more than 10 years of enrich power industry experience with a MS Engineering Management degree. Farhan Qurban has served many esteemed organizations like, Dawood Lawrence (Reon) and DWP Group in leading roles, before joining Jinko Solar- the largest solar manufacturer in the world.

What are your views about the potential and prospects of the use of solar energy in Pakistan?

Pakistan has always been a priority market for the renewable energy sector and now can easily measure the potential from recent IPP developments as well as the numbers from domestic consumers increasing day by day. People now understand the value of free SUN and using the opportunity at full peak. The Government aims to generate up to 25% of its total energy requirement from renewables by 2030. This illustrates an exponential growth trajectory for the industry in Pakistan.

Do tell us about the exclusive projects of JINKO especially recently signed MOU with MESOL?

We strongly believe that a two-way business relationship is the key to success for any business. For the distribution segment, we chose the selective partnership approach to get the confidence of our long-term business partners. Mesol is one of our strategic distribution partners with a collective aim to facilitate the Pakistan market by providing a continuous and reliable supply of highly efficient and highest quality solar modules.

We believe the recent 50MW and 100MW distribution contracts for FY-2021 will take the market to different level and help weed out the prevalence of counterfeit and low-quality solar modules.

What are the plans of Jinkosolar to promote the use of renewable energy in Pakistan?

Jinkosolar has always been the first choice in Pakistan due to its superior and cutting-edge technology. We have the largest product portfolio offering to different market segments of Pakistan, which covers distribution and commercial sectors. We organized several online webinars during the covid pandemic to keep the market updated about the latest happening as PV manufacture. Along with general product webinars we also encourage to industry to attend the individual training sessions conducted by Jinko's global team of experts.

What are the best practices and systems adopted by the JINKO to manufacture its solar equipment as being a socially responsible organization that strictly adheres to the global environmental standards?

As a global leading PV panel manufacturer JinkoSolar believes in practicing what we preach. We have committed to power all our operations 100% by renewable energy by 2025. As using renewable electricity to produce solar panels would be another great success story of how economy should run. To achieve this, we have set up the first carbon neutral solar factory in Chuxiong, China. Chuxiong Base will be the first carbon-neutral factory with 100% powered by renewable energy, it will have solar panels covering the roof, while also drawing power from local hydro power. Moreover, as a smart factory it will have the most advanced and intelligent automated production lines. The quality of our products could be standardized as the top level. It will also have a state-of-the-art recycling system for sustainable development.

Do tell us about other initiatives of the JINKO in the energy sector.

Apart from manufacturing side, in fact, JinkoSolar was the first modules manufacturer to join RE100 and EPI100, two green initiatives that bring together the world's most influential companies committed to 100% renewable power and to doing more with less. Besides, we have been part of B20 Taskforce for 6 consecutive years, and we have been invited to speak in the UN Climate Action Summit and also UN Environment Program, the world Economic Forum and many other global conferences. ■

JBS

invests PRs300 million in ENA, Green Tech, IoT Startup



Jaffer Business Systems (JBS) has acquired significant share of ENA (Energy N Automation), a Green Tech, Power and IoT startup by investing 300 million rupees.

The investment agreement was signed between JBS and ENA in an online ceremony, while adhering to Government's COVID-19 SOPs. JBS is amongst the leaders in the Information Technology industry in Pakistan. Over the years, JBS has been successfully providing innovative, unique, and cost-effective solutions to businesses. After acquiring a significant share of Blutech 4 years ago, ENA is the second startup to become part of JBS. On this occasion, Syed Veqar Ul Islam, CEO, Jaffer Business Systems (Pvt) Limited, said "Against common belief, it is observed that only 16% startups fail due to lack of access to finance. Our model of investment, while promoting entrepreneurship, provides for the structure and platform, which is essential to the success of a new setup. Our role is to work with startups in a manner that we mitigate the risks of failure and provide them with the structure, governance, and support, which helps them to scale, innovate and be successful."

ENA is a startup, founded in 2016, that provides Internet-of-Things (IoT) and power solutions to businesses focusing on the financial sector. ENA's mission is to connect the world through IoT and contribute to a greener world

by reducing carbon footprint and fuel consumption, thus redefining power, and connectivity. Our vision for 2024 is to connect to 25,000 IoT devices leading to energy savings up to 32,500MW, also install 10,000 supercapacitor modules and reduce 105 million liters of fuel consumption, reduction of 300,000 tons CO2 emissions: work of 14 million trees.

Amir Salman, CEO of ENA, said "We are a company with a vision to power and connect the business world. We aim to enable the world with the latest hybrid technologies that save fuel, reduce operational costs, and significantly contribute towards a green environment. As we move into the future, our IoT used cases will develop connectivity that helps reduce power consumption and provides for a better control of electricity bills and saves against misuse. JBS provides us with the right platform and brand image, which will significantly help us exceed our goals for scale, excellence, and innovation."

JBS strategy is to make material impact on the entrepreneurial ecosystem of the country, by enabling and helping structure startups for success. JBS plans to further invest in at least 8-10 more startups that are offering innovative products and solutions to create an impact on the lives of people, businesses, and communities in the areas it operates in. From JBS's dynamic platform, ENA will scale and innovate further with excellence. ■

Challenges AND Opportunities

for the grid with increased distributed generation

— Waqas Moosa —

According to some estimates, solar, wind and other forms of renewable energy will generate over 85% of electricity by 2050. This transition towards renewable energy is coming faster than we can imagine. Traditionally, electricity has been generated by utility scale electricity generators and the electricity business has been a one-way flow with energy flowing from the generators (producers) to the consumers via the wire owned and controlled by the utility companies, or the Grid. The uptake of distributed solar energy has changed this business model and now the direction of flow of the electricity on the Grid can vary from moment to moment with consumers who can produce their own energy with an option to export it back to the grid, i.e. becoming 'pro-summers'.

In particular, with falling prices and easy availability, solar distributed generation systems have made it attractive for customers to partially generate their own electricity. With the advent of net metering regimes in various forms, the adoption of Distributed Generation, especially Solar, has been increasing for both residential and commercial / industrial customers. Within Pakistan, there has been a steep growth of Distributed Generation over the past few years from about 1 MW installed capacity in 2016 to around 48 MW cumulative capacity by the end of 2019. Decline in prices of Energy Storage Systems, and improvement in battery technologies such as Lithium-ion, super capacitors, etc. are expected to further accelerate the trend towards distributed generation.

Distributed Generation, especially solar but also for other forms of renewable energy, offers many advantages over conventional large-scale utility generation. These advantages will ensure that Distributed Generation will continue to be an important and growing part of the energy mix in years to come.

- Clean Energy: mainly solar and wind-based generation
- Supports Grid Supply: delay / avoid expensive capacity expansion projects
- Uses existing Infrastructure: no additional lines or poles needed
- Less Losses: energy is supplied close to Demand

- Better Maintenance: owner is incentivized to produce more energy
- Grid Stability: Ancillary services, particularly in 'solar/wind+storage', improve the quality of electricity supplied

Like with any technological advancement, there is no magic wand to solve all problems with one wave. On the one hand, there are numerous advantages of Distributed Generation that the power sector of Pakistan must take advantage of. On the other hand, the utility companies will need to rethink their business models to account for the changing dynamics with the increase in number of 'prosumers' who both produce and consume electricity in the power ecosystem in Pakistan. Due to the long-term nature of investment and returns in the power sector, it is imperative that the right planning is put in place now to mitigate issues that will arise as level of Distributed Generation increases in the system.

First presented as the Duck Curve by researchers in California working with NREL, the phenomena is named after the Duck-like

shape of the Demand curve for electricity as looked at from the utility side. With an increasing number of households / small commercial establishments installing solar panels on their rooftops, the demand for electricity during the peak solar hours (mid-day) falls rapidly as consumers are consuming the electricity produced directly, and also exporting excess electricity to the grid. After the solar hours, and coinciding with the usual evening-peak hours, the demand faced by the utility ramps up to usual levels. But due to the

low demand during solar hours, the difference between the mid-day low and the evening peak is almost double or more (depending upon how much solar is present). This presents a challenge to ramp up supply significantly in such a short time interval.

There are a number of solutions adopted by various utilities around the world to mitigate the 'Duck Curve' problem. These include investing in grid-level storage, utilizing additional natural gas plants in the 'peaker' role, demand side management through customer incentivization, using electricity vehicles as an additional source of demand, and even exporting electricity to neighboring regions. A combination of these solutions, or other innovations, will be needed in the Pakistan market to ensure that we are able to fully unleash the potential advantages presented by Distributed Generation. ■

(The author is CEO of Hadron Solar (Pvt.) Ltd. an EPC solar solutions provider with over 400 solar installations and 7+ MW installed capacity across Pakistan.)

Confession of a happy man:

- The corona virus is the best thing that has ever happened in my life!
 - My wife doesn't want to travel anymore! ✈️
 - She no longer buys anything because everything comes from China!
 - She no longer goes to the mall to avoid the crowd! 🛍️👛👠👗👔👖
 - She spends all her time in a mask with her mouth closed! 😬
- This is not a virus! It is a blessing !!!



2:27 PM



ORGANIZED BY
National Forum for
Environment & Health
www.nfeh.org.pk

18th Annual Environment Excellence Awards 2021

CALL FOR NOMINATIONS

All Environment Friendly Organizations are
invited to Submit their Nominations

Partners

**ENERGY
UPDATE**

**CSR
CLUB
PAKISTAN**



Publicity Channel

**CSR
Update**

Deadline for Nominations: June 8, 2021

For Award Criteria & other details please Contact.

AEAA 2021 Secretariat:

#309, Al-sehat Centre, Hotel Regent Plaza, Shahrah-e-Faisal, Karachi

Tel: (92-21) 3567 4570,

Cell: 0333-3441295, 0300-2068048

Email: ruqiya.nfeh@gmail.com

www.nfeh.org.pk



“Net metering has enabled industries and homes to become energy assets.”

— Mustafa Tahir —

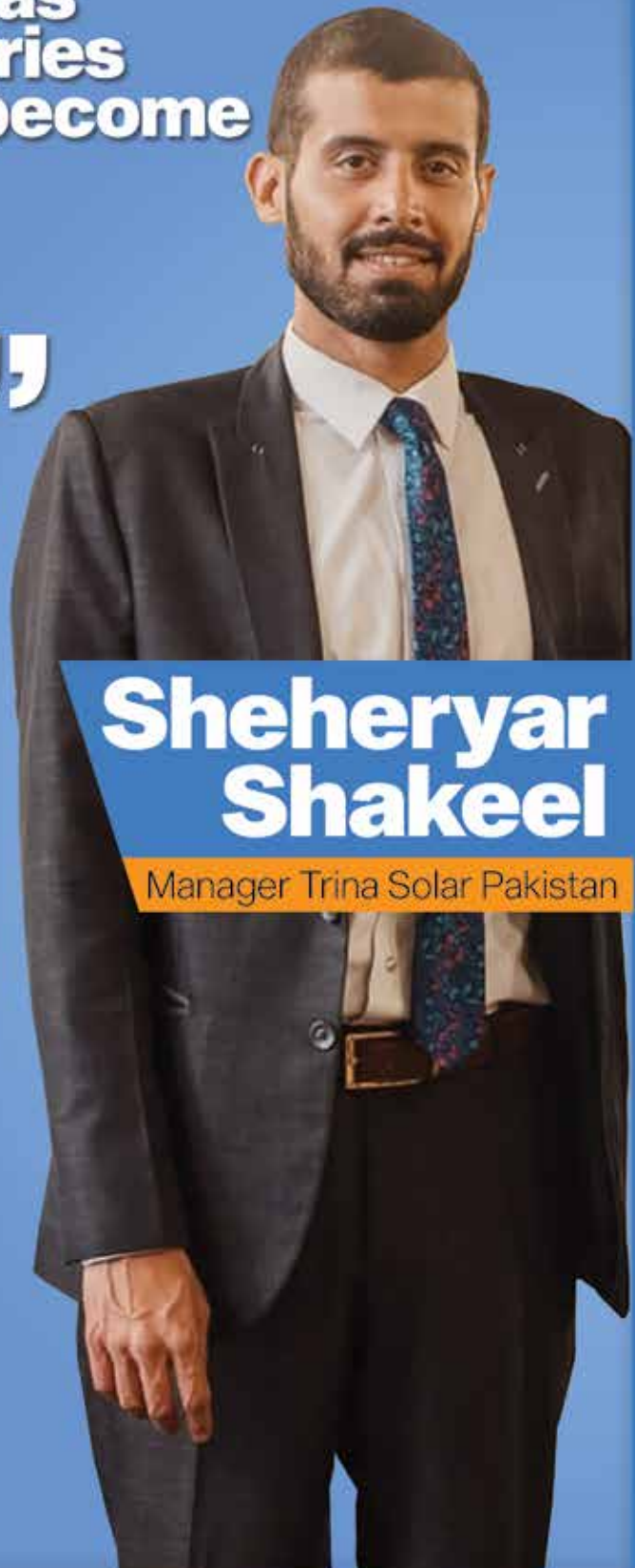
Brief us about yourself education, achievements and professional experience.

I completed my engineering degree back in 2007, I recall that I started working on industrial machines while I was studying for my degree. I continue to study until this day, some of the certifications I completed in the past are; solar energy course from DELFT University, which was conducted by edx.org. I am also a certified energy manager, this certification was completed from national productivity organization in Pakistan. During the early days of my professional career, I worked in the automation and power generation sector of Pakistan. After that, for 2 years I worked in Bahrain where I helped to establish an energy efficient lighting business. Since 2013, I have working in the solar energy sector of Pakistan. I believe that I was fortunate to get exposure to both technical and managerial positions during my professional career. I joined Trina Solar as Sales Manager-Pakistan in 2017.

What are your views about the potential and prospects of the use of solar energy in Pakistan?

Looking at the growth of solar energy since 2013, it would be fair to say that Pakistan's demand for solar energy systems has been massive and it will continue to grow. We expect Pakistan to become one of the largest key solar energy markets in the Southeast Asian regions in the coming years.

Consumer awareness about solar energy has also increased, most customers now already know a



Sheheryar Shakeel

Manager Trina Solar Pakistan

great deal about solar panels and solar systems. Net-metering has enabled industries and homes to become “energy assets” and sell excess electricity back to the grid, this has been a very positive initiative by the local government. The prospects are bright and Trina Solar hopes to help people of this country to further adopt clean and green energy.

Do tell us about the exclusive features of Trina Solar products related to solar energy?

Trina Solar was established in 1997 by Mr. Gao Jifan, we are one of the oldest Tier-1 solar panel manufacturers. Trina Solar also offers complete PV EPC solutions, solar trackers, and energy storage solutions. We also own and operate solar PV plants as IPP. Our Chinese division is also working on IoT solutions for the energy market. For solar panels, Trina Solar has 700 patents, we have our own R&D base, and our technology has broken 20 world records in solar cell and module efficiency. Since our inception we have sold over 66GW of solar panels in over 100 countries of the world. Trina is ranked among the most bankable solar manufacturers of the world. Our internal quality control protocols are at least 3 times stricter as compared to the general PV modules' certification requirements. Our current and latest, VERTEX series of solar panels use 210mm-type solar cells, non-destructive cell cutting technology, multi bus bar, and high density interconnections. This enables high string power, and also enables project owners and turnkey solution providers to save money during project installation. We also invited DNV GL to study projects in US, Spain and Japan based on our Vertex modules, and they also found that this product series can enable savings in BOS. Our latest Vertex series is “VERTEX DE21” was recently launched, this would be one of the first commercially available 635W to 670W solar panels globally. Our partners in Pakistan hope to receive the first shipment of Vertex DE21-635W and 660W modules during July/August this year.

What are your plans for the Pakistani market?

Trina Solar defines its corporate core values as “Customer Focus, Open-mindedness, Respect and Collaborate for Win-Win and Pursuit of Excellence”. For us, the customer comes first. We will continue to support Pakistan's solar PV sector by offering our customers solar products and solutions of the highest quality, responsive customer support and after-sales support, and, regular training sessions. We frequently consult with our partners and ask them for advice on how to further improve our products and services. Pakistan is considered one of the best locations in the world for harvesting solar energy, we hope to further help



“Diwan International” is one of our largest authorized distributors and partners in Pakistan, we are happy to announce that for year 2020, Diwan International has been awarded Trina Solar’s “Platinum Partner” for Pakistan region. Their performance during the last year has been outstanding considering that the whole world was under the first wave of COVID19. Diwan International also intends to unveil our “Vertex DE21-660W” modules in Pakistan, in the month of April.

in getting solar PV technology to the masses of this country.

Do tell us about other initiatives of the Trina Solar in the energy sector.

Our management regularly helps schools and charities around the world by enabling to become ‘energy independent’. Trina Solar has recently completed an off-grid PV power generation project to energize a newly built

vocational training school in Pak Ngum, Laos. The project is sponsored by Overseas Chinese Charity Foundation Of China (OCCFC), where Trina Solar provided a total solution covering engineering, procurement, and construction management, as well as partial financial support. This is a small example of commitment to green energy initiatives.

We also part of world's major climate change and solar energy organizations. ■





Use of RLNG by K-Electric to cost Rs18 billion

— Salman Siddiqui —

K-Electric has said that enhanced use of regasified liquefied natural gas (RLNG) to meet growing demand for power from the city of ports during the summer season will cost an additional Rs18 billion during March-September and consumers will partially share the cost.

Besides, the company has decided to provide maximum possible relief to its consumers during Ramazan, but it would strictly follow its policy of intentional load-shedding of up to seven hours a day in 25% areas in the city, said K-Electric CEO Syed Moonis Abdullah Alvi. The company resorts to intentional load-shedding in some areas due to low recovery of monthly billing from those parts, it has been learnt.

K-Electric Chief Financial Officer Muhammad Aamir Ghaziani said that the use of expensive gas would additionally cost Rs2 per unit, totalling Rs18 billion during March-September 2021. "However, the end-consumers will pay only Rs0.3 per unit," he said. "The remaining cost of Rs1.7 per unit will be paid by the government." The government would finance the cost either through subsidy or by compromising its revenue from the power firm, it was learnt. The power company receives imported gas from Sui Southern Gas Company (SSGC) in the wake of a notable drop in supplies of locally produced gas from fields. "Imported gas costs

double at around Rs1,200 per mmbtu (million British thermal units) compared to local gas, which costs Rs600 per mmbtu," Alvi said. "The inflated cost is feared to impact the flow of our working capital. We may require government subsidy to cope with the situation," he said. Chief Marketing and Communications Officer Sadia Dada elaborated that the power firm was supposed to receive a total of 190 million cubic feet per day (mmcf) of gas from SSGC through a mix of 130 mmcf of local gas and 60 mmcf of RLNG. However, it is being supplied 130 mmcf of RLNG and 60 mmcf of indigenous gas.

"We are trying to complete all the maintenance work before the start of Ramazan in mid-April," she said. According to her, this will help consumers as they will face announced load-shedding for maintenance purposes during the holy month. Besides, the company has chalked out a policy of no load-shedding during Sehr and Iftar timings in Ramazan. It will, however, stick to its policy of intentional load-shedding of up to seven hours a day in about 25% areas in the city during the holy month. She said that currently 75% of areas in Karachi were free from load-shedding compared to 24% at the time of its privatisation in 2005. "We are aiming to make 93% of the city free from load-shedding by 2023."

"If you expect K-Electric to pay markup money (worth Rs150 billion) against its liabilities, it would make K-Electric unsustainable," Alvi said while replying to a question. Talking about K-Electric's forthcoming projects, the CEO hoped that his company would soon sign agreements with the state-owned Pakistan

LNG Limited (PLL) to get additional supply of 150 mmcf of gas from SSGC's network. "PLL and SSGC will sign separate agreements for supplies," he said. He said that year-long negotiations among different entities and the government for the supply of additional gas to K-Electric had concluded successfully and agreements might be signed very soon. New supplies would enable the power firm to kickstart an RLNG-fired new unit of 450 megawatts sometime during the peak summer season around June, he said. Besides, the company drew additional supplies of 450 megawatts from the national grid system for the first time. Earlier in January, K-Electric had announced a total of 900 megawatts in its system ahead of the summer season, including 450 megawatts from the national grid and another 450 megawatts from a new RLNG unit. He said K-Electric had improved power supply infrastructure, which was now capable of distributing almost 6,000MW in the city. The demand, however, remained almost half of the system capacity at present. "The demand may hit the peak of 4,000MW for about a couple of hours this summer," he said. Dada added that the company had a total of 3,000MW in the system at present, including from its own power plants, national grid system and independent power producers (IPPs). "There is no gap between expected high demand and supplies of power in the system considering the usual load-shedding for about seven hours a day in some of the areas in the city," she said. ■

Courtesy: Express Tribune

Govt to hand over management of DISCOs to private sector

— Khalid Mustafa —

The government will neither privatize its all-electric power distribution companies (DISCOs) nor sell out their shares as well, rather it will hand over management of every company and outsource the high losses feeders to the private sector. "This will ensure to make DISCOs efficient by scaling down losses and increasing the recovery of the billed electricity to consumers to make the power sector sustainable."

Special Assistant to the Prime Minister on Power and Petroleum Mr. Tabish Gauhar disclosed this to The News in an interview here on Thursdays. SAPM also touched upon the issues like the circular debt management plan shared with IMF that alarmingly ballooned in last two and half years, and capacity payments trap causing increase in tariff and undertaking given to IMF to make power sector sustainable coupled with the issue of more surges in tariff in years to come to cope with losses. He too updated the situation emerged out of NAB fears that gripped top bureaucracy resulting in zero progress on implementation of revised contracts signed with 47 IPPs to ensure discounted tariff of Rs836 billion in next 20 years. When asked about tariff increase by the incumbent government, the Special Assistant to the Prime Minister responded saying that in the last two and half years, the power tariff has surged by 40 percent. He said that in case the government remains unmoved and does nothing in reducing losses and improving recovery and introducing the ample efficiencies in NTDC, NPPC, NTDC, and transmission and distribution system, then the circular debt will jack up to whopping Rs4500 billion by 2023.

And under the doomsday scenario if appears in case of doing nothing on required actions, the government will be left with no option but to increase power tariff only by Rs4.50 per unit with impact of finance burden of Rs800-900 billion and double the subsidy up to Rs300 billion. However, increasing the 100 percent subsidy will be hard for the government as IMF may not allow. He said that the country is trapped in massive capacity payments because of setting up of unplanned

power plants by the previous regime. The maximum installed capacity stands at over 36000 MW, but the peak demand in summer seasons goes up to 25000 MW and in winter season it hovers at 10,000-12,000MW and the remaining capacity remains idle and the consumers' have to pay the capacity charges in tariff. This year the government has to pay Rs900 billion to IPPs in the head of capacity charges. Of Rs 900 billion, the government will have to pay 30 percent of capacity charges to IPPs installed under CPEC umbrella. The capacity payments will hike to Rs 1455 billion by 2023 out of which 50 percent will be of IPPs set up under CPEC. Coming to the electric power

distribution companies, Mr. Tabish says that DISCOs inefficiencies including line losses are contributing reasonable share in circular debt on average, out of which the massive share in circular debt coming from the loss-making companies such as HESCO, SEPCO, MEPCO, PESCO and QUESCO. "And this is really an alarming challenge for the government to cope with," he said while quoting an example of HESCO and SEPCO of which losses have reached 50 percent because of which the government is braving the annual hemorrhaging of Rs45 billion. ■

Courtesy: The News

Virtual gas pipeline, its viability in Pakistan

Petroleum Institute of Pakistan



Petroleum Institute of Pakistan organized a webinar on the topic of 'Virtual Gas Pipeline & Its Viability In Pakistan' on 08th April 2021. Virtual gas pipelines across the world are extending the market as the demand for Gas increases. These virtual pipelines are being used by Gas suppliers to reach areas which are either uneconomic or difficult to reach with existing pipelines. The system can be suited to variety of transport modes and market segments including power, industrial, commercial sectors and communities. The webinar highlighted worldwide success examples

with economic benefits and growth of the global market in virtual pipelines, meeting the needs of customers located beyond country's gas pipeline grid and its supply chain. Presentation was given by the following distinguished speakers:

Mr. Edmond Toubia – Commercial Manager, Golar LNG – United Kingdom. James O'Brien – Head of LNG Trading, EP Resources – Switzerland. The webinar was attended by senior officials of the energy community in large numbers. PIP's efforts were greatly appreciated on holding a successful webinar on an important subject. ■

Solar is the future of Pakistan's energy sector

—◆— Naeem Qureshi —◆—

“Solar panels are like a big gift for domestic, industrial, and agriculture sectors of the country alike”, this was stated by Mesol Private Limited CEO Irfan Ahmed Allahwala during a recent interview with the Energy Update on the significance of the solar technology for Pakistan.

Irfan Ahmed Allahwala
CEO, Mesol, Pakistan



Following are the important excerpts of his interview:

Energy Update: What is the significance of solar power for Pakistan?

Irfan Ahmed Allahwala: Pakistan is indeed a superb big country but it lacks energy. Our country needs to be energized. We have to spend billions of dollars to import fuel for power generation. A vast amount of our foreign exchange reserves is spent on this account. The Government of Pakistan, both the present government and the past one, has been maintaining a very suitable policy to promote the usage of renewable energy resources in the country. The government has given some incentives this sector very well. The sunlight is abundantly everywhere in Pakistan.

EU: What is the option of net metering to use solar power?

Mr. Allahwala: If a factory installs solar panels to generate electricity for its own use then the unused electricity on Sundays when the factory isn't working will be supplied to the K-Electric. Whereas, the K-Electric fulfills the factory's excess demand for electricity on any week day. This system is called net-metering. Pakistan is one of the early adopters of the system of net-metering. Now the K-Electric has also been offering the system of net-metering. The K-Electric is like one of the last relevant institutions in the country to offer this system. The most amazing aspect of this system is that any factory could easily minimize or altogether end its electricity expense. This option is now available to the factories.

EU: What facility of financial assistance is available in Pakistan to install solar panels?

Mr. Allahwala: The State Bank of Pakistan has introduced a very good policy in this regard as all the banks have now been offering it. The interest rate is too high in Pakistan. The financial assistance, however, is available in the country on a much reduced interest rate to install the solar panels. Installing solar panels is not an expense as rather ultimately it will emerge as an income. If a company decides to invest for this very purpose then maximum

four years are required to get back this investment. If you get concessional loan from a bank for the same purpose, then merely five years are required to pay back this loan as after this period you would become owner of the solar panels you have installed.

EU: What are main benefits of installing the solar panels?

Mr. Allahwala: The solar panels would help you in ending your fuel expenditure. We are unable to export from Pakistan because of the reason that our electricity is too much expensive. This in turn increases much our cost of doing business. We are unable to produce anything, which we are able to sell abroad. These solar panels are like a special gift for us as it is capable of ending our electricity bill.

EU: What are the other interesting aspects about solar panels?

Mr. Allahwala: Earlier, smuggled and unbranded solar panels of low-quality were coming to Pakistan. That was why the people of Pakistan developed the mindset that solar panel technology is not long lasting. Solar panel installation is like a guaranteed profit-earning investment unlike any other business. The installation of solar panels also ensures saving of money in the agriculture sector. It is useful for farming wherever the suction has to be done to draw water. The solar panels are equally useful for domestic, industrial, and agriculture sectors of our country. This technology is like a big gift for all these sectors.

EU: What are the detail of your recent agreement with the JinkoSolar for 50 MWs solar panels?

Mr. Allahwala: These solar panels are called tier-1 or A-grade solar panels. We have ordered them to supply us solar panels having 50 MWs generation capacity. This means solar panels having 50,000 kilowatts capacity. This will be around total 100,000 solar panels. These solar panels will In Sha Allah contributes towards resolving one of the major national issues i.e. energy crisis. These solar panels also carries third-party insurance. A very powerful team of people are behind these solar panels. ■

OGDCL appoints

Zafar Masud

as its new Chairman



Zafar Masud – who had made news for miraculously escaping PIA's plane crash – has been appointed as the Chairman of the Oil and Gas Company Limited (OGDCL) for a period of three years. His recruitment to the state-owned and the biggest oil and gas exploration company in Pakistan has been made under Section 192 of the Companies' Act, 2017, according to stock filing to Pakistan Stock Exchange.

Masud is a seasoned banker and entrepreneur with over 25 years of experience. He has served at top positions for multinational banks in Pakistan and abroad, and was the Regional Managing Director & CEO for Southern Africa, Barclays Bank plc. He has served at government institutions including National Savings and the Ministry of Finance, and was a member of the boards of various public sector organizations including the State Bank of Pakistan, and the Port Qasim Authority. He is currently the President and CEO of the Bank of Punjab, and has served as a Member of the OGDCL's Board. He has also written articles on finance, economics, and energy for local dailies.

Besides him, the Directors of the OGDCL's Board were recently elected for a term of three years at the 11th Extraordinary General Meeting of the company in accordance with Section 159 of the Companies' Act, 2017.

The elected directors include Syed Khalid Siraj Subhani, Mian Asad Hayaud Din, Mather Niaz Rana, Kamran Ali Afzal, Mumtaz Ali Shah, Muhammad Haroon-ur-Rafique, Zafar Masud, Akbar Ayub Khan, Muhammad Riaz Khan, Shamama Tul Amber Arbab, and Jahanzaib Durrani.

IMPACT OF TAXES ON FUEL PRICES

— Syed Akhtar Ali —

Petrol and diesel prices have been reduced for the current fortnight from April 1-15. New petrol price is Rs110.35 per litre, down from Rs111.90 and new diesel price is Rs113.08 per litre, down from Rs116.08. Landed cost or ex-refinery cost of petrol is Rs72.28 per litre.

A maximum of Rs30 per litre can be charged as petroleum development levy (PDL) under the rules but it has been kept at a low level of Rs11.23.

Similar is the price structure of diesel. Light diesel oil (LDO) and kerosene prices have been slashed by Rs1.56 and Rs1.55 per litre respectively. On LDO and kerosene, taxes are not usually charged to keep prices low.

In the prevailing circumstances, petroleum prices could not have been possibly lower than what have been announced.

The Brent crude price dived to one of the lowest levels in recent history to \$18.38 per barrel in April 2020. Thereafter, in the Jun-Nov period, it remained stable in the range of \$40-42 and after November, there has been a fast increase at a rate of \$7 per month. Current Brent price is around \$64 per barrel.

Correspondingly, petrol and diesel prices increased from Rs80-82 per litre in May 2020 to the current price level above Rs110 per litre.

In Pakistan, petrol prices have traditionally been the lowest in the region, while in the case of diesel prices have been varying. Latest international data, as on March 29, 2021, puts Pakistan in the lowest oil price category except for Sri Lanka. In Sri Lanka, diesel price is at \$0.523 per litre against Pakistan's \$0.755. Pakistan's petrol price is, however, the lowest at \$0.728 per litre against India's \$1.274, Bangladesh's \$1.05 and even Sri Lanka's \$0.809.

Traditionally, petrol prices have been higher in India compared to Pakistan and diesel prices used to be lower. Indian oil pricing policy has changed towards higher taxation and prices. Internationally, oil pricing policies can be classified into four categories: Lowest prices in oil exporting countries of the Middle East, countries

with low oil prices between the lowest and US benchmark prices, countries with more than US benchmark and below highest prices in Europe, and countries with highest prices like Norway, Sweden, etc.

For example, the current gasoline prices are \$2 per litre and diesel is sold at \$1.742 per litre. American oil prices are taken as a benchmark as these are stable and least taxed among developed countries and market economies.

Current diesel price in the US is \$0.818 and petrol price is \$0.843. Pakistan's prices used to be in category-III but now they are under another general trend in pricing policies has been that diesel is almost universally taxed lesser than petrol.

The argument has been that diesel is used in public and goods transport and has welfare and competitiveness implications. In Pakistan also, this used to be the case.

For some years, under the influence of a US-based IFI consultant, the policy has been changed in line with the US with no differential treatment. There is a need to reconsider this policy in Pakistan. Admittedly, the political impact of increase in petrol prices is direct and immediate but within no time the impact of diesel prices results in consumer prices of commodities, causing inflation.

The combined consumption of petrol and diesel in Pakistan is around 16 million tons or 200 billion litres.

A tax of Re1 per litre earns the government Rs200 billion. It is the easiest way to collect taxes as opposed to others. In the case of electricity, a tariff increase of Re1 per kilowatt-hour has an impact of Rs100 billion or slightly higher. An increase of Re1 per litre in oil prices has, at current prices and even generally, an impact of 1% on prices.

However, a Re1 increase in electricity tariff has

an impact of 20% on poor, 10% on middle class and 5% on the higher economic class. It may be useful for the policymakers to consider energy prices as a whole to estimate government income vs welfare impact on people.

Electricity prices in Pakistan are the highest in the region, but oil prices are almost the lowest in US dollar terms, although due to heavy currency depreciation, the rupee price impact has been high.

Comparatively, the pain on public (also the industrial and export sectors) and the consequent political and economic impact of the increase in oil prices may be lesser within a certain price range.

The drive to reduce or eliminate circular debt may be moderated by the aforementioned considerations. One of the main causes of rising electricity cost and circular debt is the unutilised capacity and the rising capacity charges. It would be unfair and impractical to try to pass on all of this to the consumer. It would be fair to levy a capacity charge of up to 60%.

Any capacity charge due to lower than 60% capacity utilisation has to be postponed until the capacity utilisation increases to an adequate level and the capacity charge comes down. Some part of the circular debt may have to be absorbed in the general debt as proposed by an IPP report.

Concluding, a review may be conducted of diesel vs petrol pricing, cross electricity-oil price linkage and welfare differentiation and consideration of energy pricing in its totality.

The policy of charging lower tax (PDL) on higher international prices and higher tax on lower international prices, as is the case currently, is welcome and should continue with adjustment in diesel vs petrol prices. ■



DO YOU WANT
TO SAVE ON YOUR
ENERGYBILLS?



CALL NOW
0322 9001235



— DIAMOND —
JUMBOLON

from the makers of *SupremeFoam*

WORLD'S BEST INSULATION COMPANY

WWW.JUMBOLON.COM | WWW.FACEBOOK.COM/JUMBOLON

KE's settlement process:

Aljomaih makes wild allegations against SAPM



— Mushtaq Ghuman —

Managing Director, Investments of Saudi Arabia's Aljomaih Holdings Co, Abdulaziz Hamad Aljomaih has accused Special Assistant to Prime Minister on Power, and Petroleum, Tabish Gauhar, of making "deliberate attempts" to disrupt KE issues' settlement process, sources close to the Minister for Finance told Business Recorder. He is said to have conveyed his "complaint" to Prime Minister Imran Khan in a letter, copies of which have also been sent to Minister for Privatisation, Minister for Energy, Minister for Finance and Minister for Planning, Development and Special Initiatives. Aljomaih visited Islamabad on March 15-16, 2021, during which he held meetings with the Prime Minister and concerned Ministers and officials.

"I received tremendous goodwill and sincerely appreciated your clear understanding of the long pending issues to ensure KE's sustainability and its ability to efficiently serve the growing power demand in Karachi, he said adding that resolving the pending issues will clear the way for the long-delayed entry of Shanghai Electric Power (SEP) to KE," he wrote.

Saudi billionaire Aljomaih was the first chairman of power utility after privatisation and remains one of the largest investors in KE through a consortium which bought out KE. According to him, during meetings, he was assured by all including the Prime Minister that a dispute resolution document was in the final stages of negotiations, to be approved by the PM's office soon. However, the matter remains unresolved and potentially even at risk due to last minute negative comments on the

agreed document by the SAPM on Power. The document was finalized by all the stakeholders through a lengthy, painstaking process and was due for Federal Cabinet approval. "Mr. Prime Minister, in the spirit of accountability, it is my duty to inform you that there is a clear conflict of interest vis-a-vis involvement of your Special Assistant Tabish Gauhar with KE matters," he added. Aljomaih told the Prime Minister that during the deliberations, painstaking efforts were made to ensure adequate representation of all parties that had a bone-fide and a conflict-free interest. Gauhar was not included in such deliberation since he has served as the former Chief Executive Officer (CEO) and Chairman of KE and would be placed to adequately represent the interests of the Federal Government where KE was a counterparty. "His involvement will taint the process and the outcome will always remain challenged regardless of what it is. It is therefore unsettling for us to see Tabish Gauhar cast aspersions on a process, he was not party to when this has been fine-tuned to a form acceptable to all parties," Aljomaih added.

In addition, he stated "he was shocked to learn that well before Mr. Gauhar wrote a letter, he also solicited an invite to join on March 10 2021 an investor briefing call organized and attended by international investors of KE. On the call, as someone aware of the matters (even though he was not part of the process) Mr. Gauhar stated categorically and with certainty, much to the dismay of the attendees of the call, that the Government of Pakistan would be unable to resolve the outstanding issues in a fair manner for both the Government and KE, and that a resolution should not be expected any time soon".

He further contended that "for foreign investors including KSA, Kuwait, and the

UAE entities, receiving such a message from a Pakistan Government functionary while efforts were being made to finalize the conflict resolution document, is most unbecoming and tantamount to mala-fide intent not just for KE but for Pakistan's reputation as an international investment destination. Notwithstanding these issues, Tabish Gauhar has also subsequently commenced a very public anti- KE campaign through various TV appearances for which evidence can be separately presented. In this process, he has publicly questioned decisions he took on behalf of KE during his tenure as its CEO including challenging the amounts of regulatory claw-back determined. "Your Excellency, as you will appreciate this is not the impartial approach expected of a senior government functionary and clearly represents Mr. Gauhar's conflict of interest." "Mr. Prime Minister, I beg your personal attention to this very public issue which, in our opinion is entirely unjust and contrary to the spirit of investment principles," Aljomaih maintained.

According to Aljomaih, "when his group entered Pakistan 15 years ago, it made the largest single direct investment into a power utility and succeeded in turning a bleeding wound of the Government of Pakistan into a self-sustaining entity, despite tremendous roadblocks and bureaucratic hurdles. Now, after 15 years, the investors are still struggling to receive equitable treatment. On behalf of the entire KE investor group, who are highly perturbed and disappointed, I request Your Excellency to urge the relevant Ministries to conclude the process undeterred and in the same spirit in which it was conceived, so that we can move towards resolution of the matters affecting KE and Pakistan's investment landscape," Mr. Aljomaih concluded. ■

Courtesy: Business Recorder

PM unhappy with MoE for delay in finalising modalities

— Mushtaq Ghumman —

P rime Minister Imran Khan is reportedly unhappy with Ministry of Energy (Power Division and Petroleum Division) for prolonged delay in finalisation of modalities required to resolve KE issues, well informed sources said.

On January 21, 2021, Prime Minister had given ten days to SAPM on Power, SAPM on Petroleum, Secretary Power and Secretary Petroleum to finalise modalities of possible settlement along with all possible options including arbitration to be worked out decisions were also warned that action may be taken for failing to comply with the directions of the Prime Minister as per given timelines and progress report may be submitted to the Prime Minister Office. However, the issue is still unresolved as SAPM on Power, Tabish Gauhar and recently removed SAPM on Petroleum Nadeem Babar were not on the same page in terms of "equity and fairness". Nadeem Babar argued that resolution of disputed amount should be on the basis of equity and fairness. Power and Petroleum are now both with Tabish Gauhar who has a trust deficit with KE. A letter written by Tabish Gauhar, which is now the official viewpoint of Power Division, has also made things difficult.

Last month, Prime Minister had assured Abdulaziz Hamad Aljomaih, one of the largest business groups in Saudi Arabia, of full cooperation and support by the government in resolving matters pertaining to KE as well as impediments to the conclusion of Shanghai Electric Power (SEP)'s proposal to take 66.40 percent controlling stakes in KE. Meanwhile, another Inter-Ministerial Committee (IMC) headed by Minister for Privatisation, Mohammad Mian Somoro held meetings to evolve a consensus on the Terms of Reference (ToRs) on Arbitration to resolve dispute receivables/payables and future line of action. At the last meeting of Inter-Ministerial Committee held in Privatisation Commission, a heated debate was witnessed between different participants including the SAPM on Power and removed SAPM on Petroleum due to which no consensus was evolved on ToRs of arbitration. The participants decided that the matter should be tabled before the Economic Coordination Committee (ECC) of the Cabinet along with comments from all stakeholders so that a collective decision is taken as one of the participants shared a decision on sugar subsidy due to

which he was called by the FIA. NAB's fear is one of the key factors behind delay in important decisions. Nepra is also hesitant to support a proposal which says that if the government does not pay Tariff Differential Subsidy (TDS) in time, the additional financial impact should be recovered from consumers.

When contacted, a senior official in the Privatisation Commission told this scribe that a summary on KE affairs along with comments of stakeholders is almost ready for the ECC and will be dispatched any time during this week. In addition to Tabish Gauhar's letter, Power Division in its views on KE's Arbitration proposals maintains that Government parties to the Arbitration Agreement need to have a separate discussion regarding: (i) processing of the case; (ii) parties to Arbitration; and (iii) authorities acting on behalf of Government of Pakistan to execute the Arbitration Agreement.

If further states that the draft handed over during the meeting envisages Secretary Power Division would execute the agreement whereas only two entities of Power Division, namely NTDC and CPPA-G have a dispute with K-Electric. Finance Division, Petroleum Division and Government of Sindh are also required to be parties to the Arbitration Agreement. The mandate/responsibility of the said three parties is beyond the scope of functions assigned to Power Division under Rules of Business, 1973. CPPA-G is the party to this agreement, whereas it has receivables against KE under the contract. Consideration of "equity and fairness" under Clause-3, cannot be allowed to compromise the contractual interests of CPPA-G. "Power Division also does not agree to determination of compensation to be paid by defaulting parties on the basis of principles of financing cost of the claiming party given in Clause-3 of the ToRs because the contractually obligated late payment surcharge to be paid by KE is based on the late payment surcharge on the same rate that CPPA-G has to pay to the power producers," the sources maintained. Power Division has proposed that a separate mechanism amongst the Government parties be agreed as per clause-10 of Arbitration Agreement. Finance Division on behalf of Government of Pakistan has to commit in advance for payment and/ or setting-off of any claim on behalf of and amongst the GoP parties as provided in the Arbitration Agreement. ■

Courtesy: Business Recorder



Mobilization of international capital resources **remains a challenge**

— Mustafa Tahir —

"The mobilization of international capital resources remains a challenge, particularly for provincial projects, said the Chief Officer, ECube Solutions Ltd in an interview with Energy Update (EU)", he continues to say that

Q: Would you brief us about your education, professional experience and achievements?

A: I am an energy enthusiast who has a passion for solar energy products and services. As the CEO of a swiftly expanding renewable energy company - "E Cube Solutions Pvt Limited", I along with my team are helping the masses in energizing lives through renewable energy. I am an electrical engineer with experience in renewables and security surveillance solutions.

It's a journey, an adventure and a challenge like nothing we have ever experienced.

Over the years our people have created a culture of inclusion, curiosity

Syed Hassaan Shafqat
CEO, ECube Solutions Pvt Ltd



osity and diversity — at work and in our communities. Throughout the journey our planet mattered the most to us. We have acted in a way to create a more sustainable and better shared future for the masses of Pakistan. Hence, the crux of the odyssey remains to make a difference in people's lives, communities and our planet by harnessing the power of the sun in the right way.

Q: Please inform our readers about major operations of your company in the RE sector of Pakistan?

A: Hailing from one of the oldest cities in South Asia - Dera Ghazi Khan, I am adamant in my mission to energize the lives of the 51% of the population that is currently living below the poverty line. With a vision to make affordable luxury available to the developing world through energy innovation, ECube Solutions Pvt Limited offers domestic, commercial, industrial and solar solutions for the industrial sector of Pakistan. From modern sophisticated solar solutions to nonpareil net metering services and agricultural solar solutions. E Cube is offering everything under one floor.

Q: What are the aims and plans of your company to expand its operations in Pakistan?

A: With an experience in the field of electrical engineering and renewables, we are creating employment opportunities for the talented youth of Pakistan. From intelligent work-space planning to Up To Date Technology provision, ECube Solutions is ensuring everything to achieve employee delight. As we continue to extend our commitment to continuous improvement out into the world, we continue to look ahead & inspire others.

With laser-like focus on bringing down global emissions we are shaping a sustainable future for all. The energy independence of the state remains paramount at E Cube Solutions, for which we ought to run nationwide awareness sessions and offer quality equipment with cost effective services. While keeping our operations

central in our Lahore head office we plan to launch our offices in all the major cities of Pakistan, in order to make solar solutions easily accessible to the masses. While creating job opportunities and crafting a better tomorrow for our upcoming generations.

Q: To what extent the regulatory and business environment has been favorable in Pakistan for a RE sector company like yours?

A: Pakistan's business environment is on its way to betterment. This country is now offering better business opportunities to the masses of Pakistan. We have better advocates of policies that enhance the reliability, affordability and sustainability of energy for the people of Pakistan. The government is not only giving subsidies on import of renewables but is also providing financing options to the industrialists of Pakistan. Solar is not only environmentally feasible but is also now economically feasible due to Government of Pakistan easy financing and smooth net metering processing.

Q: What reforms and improvements should be brought in the Pakistani RE sector to attract more investment from within and outside the country?

A: The mobilization of international capital resources remains a challenge, particularly for provincial projects. Following reforms and improvements can make investors more interested in RE sector of Pakistan provincial governments to function as facilitators for promoting private sector investments in generation projects, Simplifying investment decision-making by local and federal authorities, Identifying zones of responsibilities in processing and implementing generation projects and extending federal government support backing up the payment obligation of the federal power purchaser and other political- or project-related risks initiated by provincial governments when the projects meet certain requirements. ■

World Bank approves \$120m for green initiative

A funding of \$120 million has been approved by the World Bank for Prime Minister's Green Stimulus Initiative and it can be utilised by Pakistan to boost green jobs for workers who have been laid off due to Covid-19, said World Bank Country Director for Pakistan Najj Benhassine. Talking to Special Assistant to Prime Minister on Climate Change Malik Amin Aslam on, he recommended the government to engage unemployed people in the country's green projects, which were being implemented for conservation and protection of nature. "World Bank is highly impressed with Prime Minister Imran Khan's Clean Green Pakistan programme and various other eco friendly projects initiated under his vision, particularly the 10 Billion Tree Tsunami Programme (TBTP), which is one of the world's largest," he said. "We at the World Bank are mulling over replicating Pakistan's green initiatives in other countries in different parts of the world."

Benhassine voiced hope that the government's efforts would help boost Pakistan's resilience against adverse impact of climate change on health, education, water, energy, agriculture and food security. "It is inspiring that despite limited financial resources, Pakistan launched the Green Stimulus Initiative, which created thousands of green jobs," the World Bank official remarked. He said that his organisation would utilise financial, technological and knowledge resources to support Pakistan through its expertise and experiences in the overall post-Covid green recovery. He continued that the World Bank would enhance investment in green sectors including forestry, environmental protection and climate change resilience through mitigation and adaptation initiatives in the country's climate vulnerable socioeconomic areas. Explaining the Green Stimulus Initiative to the World Bank official, Aslam said that it was launched in April 2020 after Covid-19 hit the country and it was aimed at creation of green jobs for the youth that was laid off due to the closure of business and assorted economic activities. So far, the initiative has led to the generation of 87,000 environment-friendly jobs for the youth, Aslam revealed. Highlighting other similar schemes, he said that an ambitious programme called the Protected Areas Initiative (PAI) had been initiated by the climate change ministry, which was aimed at conservation and promotion of nature-based solutions and creation of 5,000 more green jobs. "This project will help enhance country's protected area from 13% to 15% by 2023," Aslam said. Both sides vowed to collaborate in combating the aftermath of the global health crisis caused by the Covid-19 pandemic and global warming in various socioeconomic sectors. ■

How electricity theft impacts Pakistani society

—◆ Zaara Abbas —◆

Pakistan's ongoing battle with electricity is one that the country just can't seem to overcome. The alarming rate of transmission, distribution losses, power theft and the resulting load shedding is one that has left the country in a constant state of grief for decades. More alarming is the estimated Rs 53 billion worth of power theft in Pakistan in 2018 which is assumed to have risen since. While the government continues to try and figure out which is the best route to take with the IPPs and pricing strategies are being discussed, the circular debt has risen late last year to a whopping Rs 2.3 trillion, a number the average citizen cannot even fathom.

Typically, citizens attribute the shortfall of electricity and load shedding to mismanagement by the government as well as power generation and distribution companies. For example, the Sindh government has been blamed for not lending

enough support to power distribution companies. They have also been accused of backing influential individuals who steal power. This leads to the question – why are influential people stealing power to begin with? But stealing power is not limited to influential people. The primary source of load shedding in Pakistan's largest metropolis Karachi is the kunda system. Even though consuming electricity without payment is illegal and punishable by fines and/or imprisonment, it is pervasive and results in a staggering financial loss. Utility companies have been forced to adopt "recovery based load shedding" which entails higher load shedding in areas where there is low recovery of revenue. Unfortunately this has led to dissatisfaction

among many communities as it is perceived to also penalise the customers that reside in these areas but pay their bills on time.

Power theft continues to

plague the nation with the

vast majority of citizens unable to afford the luxury of generators. Load shedding aimed to manage limited electric power generation and transmission brings suffering to many, particularly to those living in low-income areas.

With the advent of Covid-19 and the extreme restriction of movement it brought, many people no longer had the option of going to air-conditioned shopping centres and malls to enjoy some cool surroundings. By no fault of their own, many were subjected to up to 17 hours of load shedding

in a single day.

Schools, colleges and small businesses all suffer due to power theft by select individuals and communities. Households in relatively higher-income brackets report less load shedding than those from low-income areas, adding to the already widening class divide. To mitigate power theft, utility companies have set up several channels to report power theft. Unfortunately, there is lingering distrust in the government and power entities. A survey by the International Growth Centre held in Karachi in 2018 reported people who experienced more load shedding were "less likely to participate in civic activities such as voting". Such is the impact the kunda system has on Pakistanis. Besides electricity theft by individuals and communities, industries are also stealing electricity by tampering with meter readers. Outdated technology makes it easier for theft to take place. This is understandably an undesirable problem as large companies and industries can usually afford to pay their utility bills. Sadly, even well known, supposedly elite, educational institutions have also been known to steal power. One of the main justifications given for power theft is the ever-increasing cost of electricity. With summer around the corner and the increase of price Rs 1.95 per unit of electricity, load shedding seems imminent. This price tag includes the cost of approximately 17 per cent of power that is lost during transmission. We could argue that neighbourhoods, communities, and individuals should hold each other to higher standards and ensure that the large populace does not suffer due to the selfishness of the few. However, we also need to be cognisant of the argument that electricity is turning into a luxury for the masses. Unless we address the myriad issues around transmission and distribution losses, there seems to be no light at the end of the tunnel for Pakistan. At least not if you don't have access to a generator.

Moving forward, Pakistan is in dire need of awareness campaigns and initiatives that educate people on how power theft directly impacts them. Controlling power theft is extremely difficult but not impossible. To do so, it is important to hold each other accountable. It may sound idealistic, but once we start holding each other accountable, we raise the standards of our own living. Instead of stagnation and despondency, we can opt for development and hope. Instead of seeing this as the duty of governments and corporations, we can take this upon ourselves to make our neighbourhoods and lifestyles better not just for us, but for the entire nation. ■

Courtesy: Exp Tribune

PM seeks CLIMATE FINANCE

for Pakistan, other states

— EU Reports —

Prime Minister Imran Khan has called upon the major economies to pursue a holistic approach towards climate change and galvanize supportive finance for Pakistan and other vulnerable countries braving the climatic challenge. “We expect this to be a moment for the world’s major economies to come forward and galvanize supportive finance for responsible countries like Pakistan, that are doing their best to reduce emissions,” the prime minister wrote in his article published in *The Times*, a British national daily. The prime minister mentioned that the Global Climate Risk index ranked Pakistan as the eighth most vulnerable country to climate impacts with frequency and intensity of climate disasters constantly rising over the decades. Since 2000, Pakistan has lost 9,989 lives, suffered economic losses worth \$3.8 billion and witnessed 152 extreme weather events, all triggered by climate change, he wrote.

He pointed that while Pakistan was not a contributor to this globally changing climate and emitted less than one percent of the global carbon emissions, it was committed to be a part of the global solution by pushing the growing economy on to a greener, cleaner and low carbon future. The prime minister said adapting to climate change remained a challenge, compelling to invest in early warning systems, climate proofing of flood prone infrastructures, establishing cross-country disaster management networks and working with

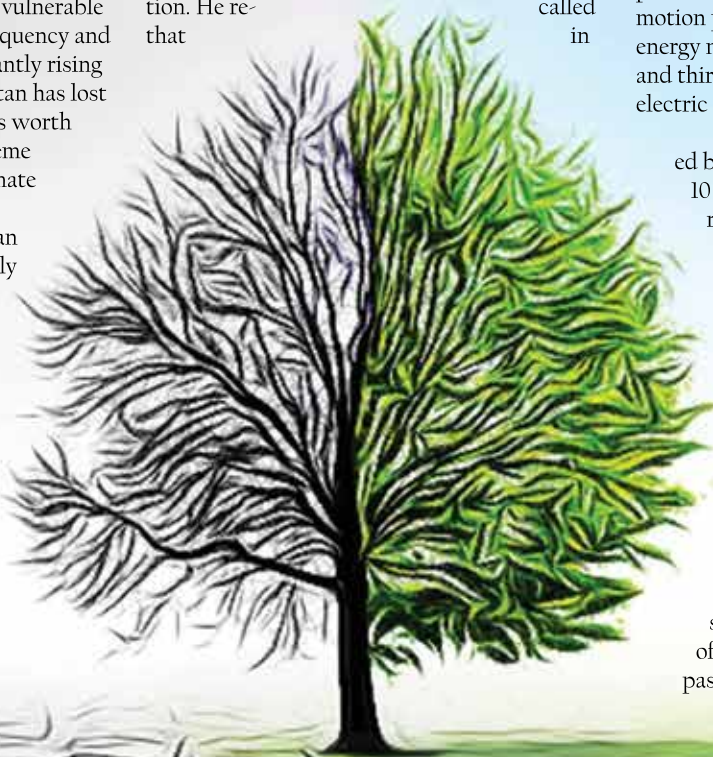
local communities. He said Pakistan’s climate change expenditure was already hovering menacingly around 6 percent of the annual federal budget, a figure poised to rise further as impacts begin to bite. Pakistan’s commitment and all these efforts to address global climate now need to be augmented with supportive climate finance and green investments, he said.

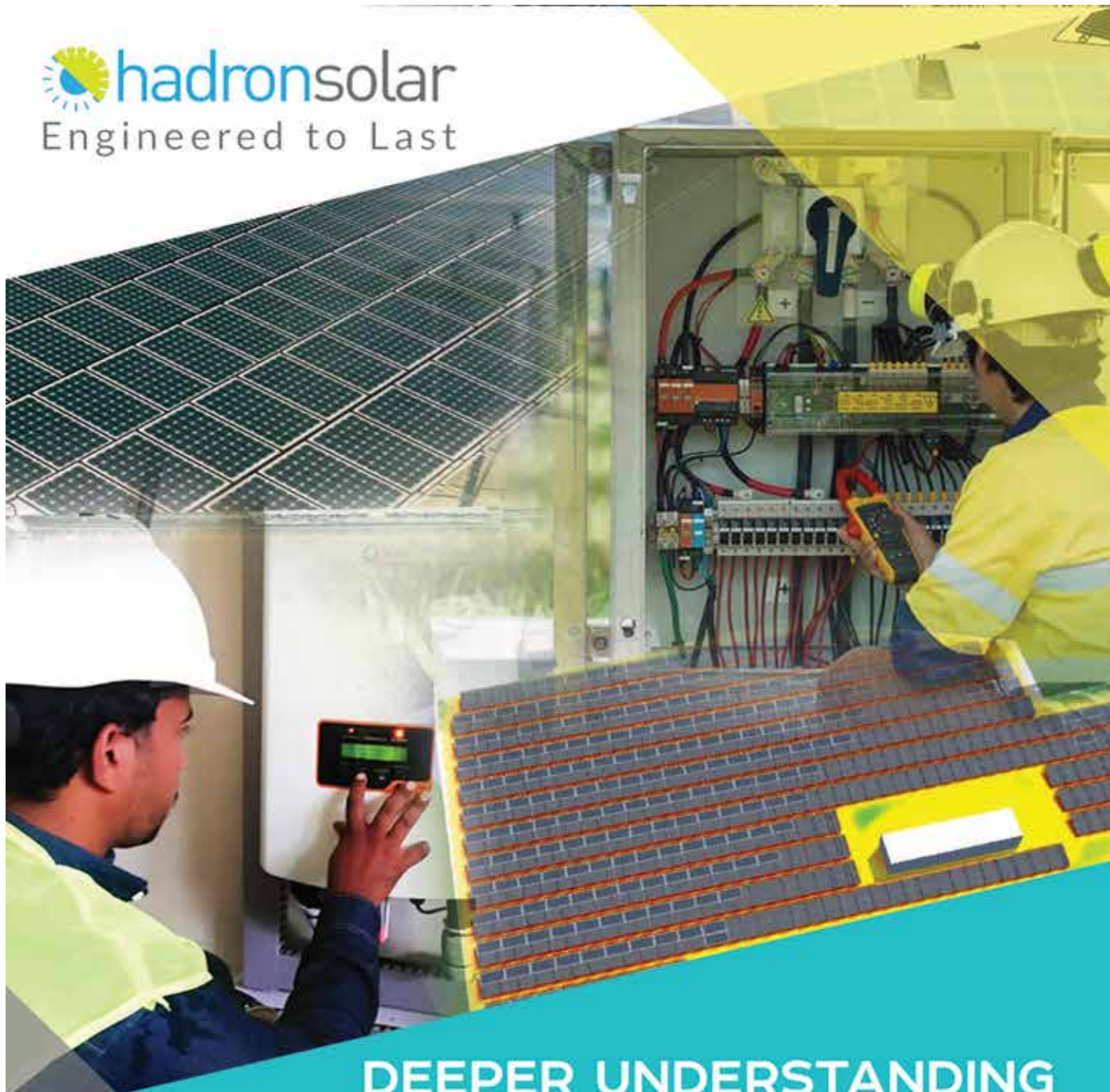
He said adapting to inescapable climate change comes with acute economic costs, adding that with rising impacts, Pakistan’s adaptation finance needs have been estimated at \$7-14 billion every year. In a situation of human and economic catastrophe of COVID-19, he said, the Glasgow COP26 Summit was critical as it gave a rare opportunity to address these challenges through understanding, collaboration and cooperation. He recalled in

2015, an analysis indicated that developing countries would need around \$400 billion in climate finance support to shift towards low carbon development pathways. He regretted that the drop in clean energy transition ironically coincided with the failure of developed countries to deliver the promised \$100 billion/year of climate finance by 2020 - a commitment that remains weak on actual deliverance. Unless there is a debt relief programme for the global South and enhanced global climate finance leveraging clean investments in these regions, the default fossil fuel powered pathways will remain unchanged and the invaluable opportunity of a clean energy transition will wither away, he said.

Imran Khan stressed that Pakistan was piloting a sovereign debt linked nature bond to bring innovation to this dialogue, but much more needed to be done. He expressed intention to travel to COP26 in Glasgow with hope and optimism showcasing Pakistan’s positive climate actions. Imran Khan mentioned that monsoon season in Pakistan was about both hope and fear. Hope because the rains irrigate Pakistan’s farmlands and refresh cities after the intense summer heat. Fear that the rains will overwhelm us, bursting river banks and unleashing urban flash floods, he said. He recalled that last summer, Pakistan experienced the heaviest rains in a century, with an unprecedented cloudburst leaving much of the sprawling metropolis of Karachi inundated, rendering thousands homeless and over 100 dead. Pakistan is used to coping with heavy monsoon rains, he said; however 2020 was unexpectedly intense with the scientists saying that the situation would become increasingly common as the planet warms. The prime minister said his government had set in motion plans to shift by 2030 a sixty percent of energy mix towards clean carbon free energy and thirty percent of transport towards green electric mobility.

This clean energy shift is complemented by our ambitious vision for planting 10 billion trees, with \$650 million being rolled out to plant the first 3.3 billion by 2023 and, thereby, aiming to restore over 1 million hectares of carbon absorbing forests, he said. He mentioned that Pakistan was the only country in the world with an expanding mangrove forest that was helping to increase the carbon rich ecosystem by 300 percent in the past few decades and now further increasing it to over half a million acres within the next three years. My Government has put its trust and confidence in nature-based solutions with the associated benefit of creating 85,000 new green jobs in the past year alone, he said. ■





DEEPER UNDERSTANDING BETTER SOLUTIONS

With 400+ installations and an experience of over 10 MW of solar projects across Pakistan, Experienced Sales team works with customers to develop customized, innovative financial solutions for their solar projects. With a dedicated Net Metering team and a 24/7 Customer Support Center, Hadron Solar ensures that the projects deliver as per design, long after the installation is completed.

Giving boost to solar sector, InfraCo Asia & Albario establish JV

InfraCo Asia and Albario Engineering establish joint venture Prism Energy, giving a boost to the development of Pakistan's distributed solar sector

Prism Energy (Private) Limited ('Prism'), an end-to-end renewable energy solutions provider, recently commissioned its first commercial and industrial (C&I) solar energy facility in Faisalabad, Pakistan. The development and implementation of the 248kW facility was led by the Prism team, with the support of InfraCo Asia and Albario Engineering Private Limited (AEPL). Islamabad, Pakistan – 22 February 2021, with its high solar irradiance, there is tremendous potential for Pakistan to harness solar power to meet its energy needs. According to the World Bank, utilizing just 0.071 percent of the country's area for solar photovoltaic (PV) power generation would meet Pakistan's current electricity demand. However, much of Pakistan's abundant solar resource remains untapped, with renewable sources currently fulfilling only around 4% of the country's energy needs. In order to achieve its national target to generate 30% of its energy from renewable sources by 2030, Pakistan will require greater private sector investment in renewable energy infrastructure, including high-quality, distributed solar solutions. InfraCo Asia, a Private Infrastructure Development Group (PIDG) company, and AEPL have entered a joint investment and development agreement establishing Prism Energy – a joint venture company, to develop and implement commercial & industrial (C&I) solar projects across Pakistan, thus providing new and improved access to clean and renewable energy sources. Prism aims to introduce international best practice to distributed solar development in Pakistan, by leveraging the development expertise of InfraCo Asia, as well as the on-ground experience of its local partner AEPL. The Prism team brought into operations its first C&I solar energy facility in January 2021, providing electricity to the Pearl Towers in Faisalabad, Pakistan. The 248kW facility is part of Prism's larger C&I

solar platform, through which its shareholders are aiming to roll out C&I solar projects at scale. By demonstrating the commercial viability of high-quality, net metered C&I solar solutions, InfraCo Asia and AEPL expect to crowd-in greater private sector investments for Pakistan's distributed solar sector. The newly commissioned solar plant, which is built on two rooftops of the Pearl Towers in Faisalabad, supplies affordable, reliable and renewable energy that is able to meet the energy needs of the commercial complex during the day. This includes the operation of its shopping mall, restaurants and offices. It is expected that the solar plant will enable energy bill savings for Pearl Towers, and improve the overall sustainability of operations by reducing its reliance on electricity from the national grid, which is primarily derived from the burning of fossil fuels. The solar plant is also expected to improve the reliability of energy access by reducing each client's reliance on the grid, which suffers from frequent power outages.

"We are delighted to be part of the transition towards solar energy sources with Prism Energy and appreciate the Prism team's professionalism and support in the process. Pearl City Towers is one of the largest commercial projects in Faisalabad, and we are proud to lead in the city's sustainability journey. The solar plant will help reduce our energy bills significantly" said Ibtasam Iqbal, CEO of Pearl Group. Following the implementation of the Pearl Towers project, Prism Energy is looking to replicate its success across Pakistan, with several larger-scale distributed solar projects of up to 5MW currently in the pipeline. The site owners under a long-term (15-20 year) offtake agreement, at tariffs that are discounted in comparison to those offered by state-owned distribution companies in Pakistan. The net metering arrangement will also enable clients like Pearl Towers to sell surplus energy back to the national grid, resulting in further cost reduction. At present, high development risks continue to be associated with Pakistan's distributed solar sector due to the lack of regulatory support

and high-quality developers. Through the Prism Energy joint venture, InfraCo Asia and its joint venture partner AEPL aim to de-risk the development of distributed generation solar power projects in Pakistan by introducing international best practice at each stage of the development and implementation process. Coupled with proven models of offtake agreements, Prism Energy will demonstrate the commercial viability of developing distributed solar plants to world-class standards in Pakistan. In so doing, InfraCo Asia and AEPL aim to pave the way for other private sector investors and developers to implement high-quality solar power infrastructure, and thus promote the uptake of equivalent renewable energy solutions.

Allard Nooy, Chief Executive Officer of InfraCo Asia said: "We are very heartened by the safe and healthful progress made by the Prism Energy team during this challenging time.

Through the joint venture, InfraCo Asia is working with AEPL with an aim to develop up to 40MW in aggregate solar power generation capacity – thereby demonstrating the commercial viability of a world-class, distributed solar model for Pakistan. We hope that this will pave the way for greater private sector investments in renewables, and support Pakistan's ambitions to transition towards generating 30% of its energy from renewable sources by 2030." Ahmad Najeeb, Chief Executive of AEPL expressed, "We are excited to commission our first project with Prism Energy and look forward to executing a strong pipeline of projects in 2021 and 2022. At Prism, we are strongly committed to build, own and operate green energy projects across the country." Arooj Asghar, CEO of Prism Energy, added, "This is a significant milestone for our team, to successfully manage and commission the project in a safe and timely manner. We expect a strong and positive response from the market considering the needs of businesses in Pakistan, the lack of reliable and economical power, and the strong development practices we bring to the table." ■

IEEC, NED organize IEEC 2021

Department of Electrical Engineering, NED University of Engineering and Technology and the Institute of Engineers Pakistan (IEP) Karachi center have jointly organized the 6th International Conference of Electrical Engineers - IEEC-2021. The event was held on 8th of April 2021. The conference has been annually organized having originated in 2016. This year's theme was "Aspiring Pathways In Electrical Engineering (ASPIRE)". Modes of the presentations were hybrid – with both online as well as in-person attendance. The conference was organized in collaboration with various universities of Sindh and Balochistan provinces including Sir Syed UET Karachi, Hamdard University, Bahria University, NUCES FAST, PAF KIET, PNEC NUST, MUET Jamshoro, QUEST, BUITEMS Quetta, BUET Khuzdar, IIEE UIT and some others.

Vice Chancellor, NED University Karachi, Prof. Dr. Sarosh Hashmat Lodi was Patron In-Chief of the conference and Pro-Vice Chancellor, NED University Karachi, Prof. Dr. Muhammad Tufail was Patron. Engr. Suhail Bashir was Chief organizer of the event. Due to the COVID-19, conference timelines were strictly managed, allowing for tighter action slots. Still, the conference received about 50 papers. After a rigorous review process, sixteen submissions were accepted for oral presentations while about a dozen were selected for poster presentation.

Among the prominent speakers of the opening session at the conference were Engr. Suhail Bashir (Chairman IEP), Prof. Dr. Saad Ahmed Qazi (Dean ECE, NED UET Karachi), Prof. Ir. Ts. Dr. Mohammad Rizal Arshad (Deputy VC University Perlis Malaysia), Guest of Honor Dr. Faisal Khan (PVC BUITEMS), Dr. Muhammad Tufail, Pro-Vice Chancellor NED University and Chief Guest Engr. Saiyed Asif Mahmood (Chairman, Technomen Kinetics Pvt. Ltd). Speaking on the occasion, Dr. Saad Ahmed Qazi, conference convener, highlighted the technological inter-blending of cross-disciplinary areas leading to emergence of new commercially acceptable paradigm shifts – such as EVs and Navigation. Dr. Muhammad Rizal, during his keynote address



talked about the technologies involved in search of MH 370 flight which disappeared over Indian Ocean some years ago. In the closing session, Prof. Dr. Vali Uddin (VC SSUET Karachi) talked about the role, conferences play in bringing academia and industries together and the life-long learning. Engr. Asim Murtaza Khan (President NEDIAN) expressed the need of bringing further diversity and engagement in our societies. He also highlighted the contributions of NEDIAN in assisting NED University move towards its goals. Engr. Sohail Bashir, Chairman IEP Karachi Centre announced the best paper awards and distributed shields and mementos among the guests and the winners. Dr. Attaullah Khawaja, presented conference highlights, while Dr. Abdul Ghani Abro presented the vote of thanks.

The following two research papers were jointly declared the best papers presented in the conference on the bases of judges' scores and were awarded IEP medals, Durr E Shehwar, Urooj Shaukat, Farah Akram and Syed Sajjad Haider Zaidi, "IoT Based Energy Management System for Optimal Energy Consumption in Residential Facilities" Muhammad Affan, Ahmed Naim Ghaniwala, Muhammad Afaq Khan, Muhammad Maaz Akhtar, Abdullah Shaikh and Dr. Riaz Uddin, "Analytical Kinematic Analysis of Multi DOF Serial Link Robot Arm". ■

Archroma, NED University join hands to promote research in textiles

Archroma, a global leader in specialty chemicals towards sustainable solutions, today announced that it has signed a memorandum of understanding with NED University of Engineering & Technology (NED) in Pakistan. The memorandum will pave way for cooperation initially for a five-year period. The partnership will explore innovations in upscaling textile research with futuristic visualization enabling the textile industry in Pakistan to align itself with the fast pace of global advancements. Another important aspect of this collaboration will be research in other fields of engineering i.e. chemistry, civil and industrial. Both partners will hold joint sessions to prepare students for challenges of the industry through in-house training sessions, developmental projects, research in textile applications and process innovative methodologies by pioneering value additions. The Archroma Center of Excellence in Karachi will play a vital role wherein faculty members of NED will be able to work in the textile applications lab to cater to their need based tailor made programs and students will continue internship placement programs. Mujtaba Rahim, CEO of Archroma, Pakistan, at Archroma commented, "We, at Archroma, believe in continuous improvement leading to sustainable growth and creating value for our stakeholders. We will further collaborate with faculty members of NED in chalking out a doable practical program in textile



applications for the students. And our continued partnership with NED will also bring us closer to the chemical and civil engineering faculties which goes well with Archroma's new innovations." "This partnership is going to have a far-reaching impact especially in textile research for NED and Archroma. Our textile faculty has been in close liaison with Archroma in holding international conferences and bridging gaps between academia and industry. We are very enthusiastic about formalizing this mutually beneficial relationship and look forward to interesting research outcomes. Industrial liaison of students will create confidence and the training, internships and working sessions will benefit them in their career development," Dr. Sarosh Hashmat Lodi, Vice Chancellor of NED commented. ■



P R E S E N T S

INTERNATIONAL CONFERENCE & SHOWCASE SOLAR CLEAN ENERGY PAKISTAN 2021

THEME

**THE PERFECT TIME TOWARDS
SUSTAINABLE GREEN ENERGY**

JUNE 17, 2021 | KARACHI MARRIOTT HOTEL

SUPPORTED BY



PRIME SPONSORS



**FOR SPONSORSHIP, STALL BOOKING AND REGISTRATION,
PLEASE CONTACT US:**

☎ 021-35653676 | 021-35643478

☎ 0300-2068048

✉ powergenconf@gmail.com | info@energyupdate.com.pk

📍 309, Al-Sehat Center Adjacent Hotel Regent Plaza, Shahrah e Faisal, Karachi



国家电投
SPIC

中电国际胡布发电有限公司
CHINA POWER HUB GENERATION COMPANY (PVT.) LIMITED

**A Project of
China Pakistan Economic Corridor**



SPIC

CHINA POWER HUB GENERATION CO. LTD.



Winner of the
Excellence in Corporate Social Responsibility in Times of Covid-19 Pandemic
Excellence in Education & Scholarships
Excellence in Community Development & Services
Excellence in Sustainability Initiative

Serving Pakistan through Sustainable Initiatives

SERVING PAKISTAN'S ENERGY NEEDS



Call us for a quote

0317 317 1975

2021

Bringing
Innovations
To Life!



NOW
LAUNCHED

VEGA

COST EFFECTIVE
SUPERCAP
BATTERY

WORLD'S
MOST ADVANCED BATTERY



SIRIUS SUPERCAP
ENERGY STORAGE

ALL NEW
EV BATTERY
6-MIN CHARGING

EV CHARGER



DIGITAL POWER GENERATOR



CENTAURI
ENERGY SERVER

BLU UPS

WORLD'S BEST
POWER
MANAGEMENT
SYSTEM



amber & waseem
GENERAL TRADING LLC



INFUSION POWER
INDUSTRIES LLC



INFUSION SOLAR
ENERGY SYSTEMS LLC



BGT GENERATORS
TRADING LLC



INFUSION MEDIA
EMPOWERING INFORMATION

EXCLUSIVE DISTRIBUTOR of

KILOWATT LABS
BETTER ENERGY

LAHORE 83D, Jinnah Market, DHA XII (EME), Canal Bank Road

KARACHI B-144, Block-5, Gulshan-e-Iqbal, Main Rashid Minhas Road

✉ info@wrltec.com

🌐 www.wrltec.com

WRL TECHNOLOGIES (PVT) LTD

ABB is pioneering Fast Electric Vehicle Charging in Pakistan

ABB's EV charging solution covers home and commercial charging applications ranging from 4.6kW ~ 600 kW power.



Experts say that EV charging infrastructures are the 'fuel station of the future'. By supplying, maintaining and managing fast EV charging stations network for GO, Attock Petroleum Limited, Premier Systems (Pvt.) Limited (Audi Importers), ABB is supporting the transition to electric transportation in Pakistan.

Contact us at electrification@pk.abb.com
To discover more, visit abb.com
Cell: +92 31 6477 7076

