YEAR-END
2024

PV+ Journal

SUNGROW
Clean power for all

GLOBAL LEADING PV & ESS PROVIDER

Global No.1 PV Inverter Shipments

Source: 2023 S&P Global Commodity Insights estimates

Sungrow Pakistan

Website: www.sungrowpower.com | **Contact:** M Hamza Shahid | **Tel:** +92 304 7170 200

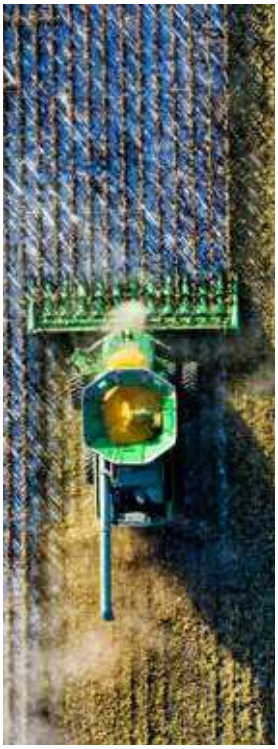
MOVING TOWARDS SUSTAINA-BILITY

Moving towards sustainable living is not just an ecological obligation; it's a compassionate choice that benefits both us and our planet. Sustainability ensures that we leave a healthier, more harmonious world for future generations. By reducing our environmental footprint through responsible consumption, renewable energy, and mindful resource management, we can mitigate climate change, protect biodiversity, and foster resilient ecosystems.

Sustainable living also brings personal advantages. It promotes a healthier lifestyle, as it encourages fresh, locally sourced foods and active transportation. It fosters community connections and reduces stress, making us happier and more fulfilled. Moreover, it bolsters economic stability, as green industries create jobs and lower our energy bills.

#cleanenergy

CONTENTS



EDITOR IN CHIEF
Saleem Khan Tanoli

EDITOR
Shahmeer Zaman

SALES & MARKETING
Furrukh Iftikhar

CORPORATE COMMUNICATIONS
Bilal Ahmed

DESIGNER
Ramiz Ahmed Kapadia

HONORARY ADVISORY BOARD

Zaigham M. Rizvi
Chairman - National Platform for Housing Research

Prof. Dr. Vali uddin
Vice chancellor - Sir Syed University of Engineering and Technology

Engr. Faiz Bhutta
Senior Solar and Energy Consultant

ADDRESS

304, 3rd Floor, Clifton Center, Block - 5,
Clifton,Karachi 75600, Pakistan.
Phone: (+92) 21 35810637 - 39
Email: pv@pvjournal.com

EDITOR'S NOTE

As we near the close of another demanding year, the critical need for sustainable energy solutions in Pakistan and around the world is more pressing than ever. Record-breaking temperatures during the peak summer months have not only intensified energy crises but also led to soaring costs, creating significant challenges for urban and rural communities alike. The impact of climate change—seen in the form of increasingly unpredictable and severe weather patterns—reminds us of the urgency to accelerate our shift to green energy. Moving swiftly toward clean energy sources is essential to protect community health, stabilize our economy, and build a resilient future.

In this issue, we delve into the forward-thinking projects and transformative policies that are paving the way for sustainable growth both in Pakistan and globally. Within Pakistan, we are witnessing encouraging advancements in clean energy, from the promising wind corridors of Jhampir to pioneering solar projects in Balochistan. These areas hold tremendous potential to reshape our energy landscape, offering reliable and affordable power and reducing dependence on costly, non-renewable resources. On the global front, ongoing innovations in renewable technology continue to drive down costs and expand access, making sustainable energy solutions feasible for more communities than ever before.

Through this Journal, we are committed to highlighting these essential developments and inspiring action at every level—from government and industry leaders to individual households. It is our hope that this edition not only informs but also empowers readers to envision and actively contribute to a greener, cleaner future. As we face the months and years ahead, let us take meaningful steps together toward making sustainability a fundamental part of our lives, our communities, and our world.

Local Scoop.

Here we bring you the latest updates on the green revolution happening in your region. Read about how your community is harnessing the power of renewables to shape a sustainable future and create positive environmental impact, one innovation at a time. We talk about breakthrough technologies, and local initiatives driving the renewable energy movement forward.

PAKISTAN DELEGATION BRIEFS IMF ON TAX, ENERGY SECTOR REFORMS

In a notification, the finance ministry confirmed that a delegation met with IMF Deputy Managing Director Kenji Okamura in Washington, where they discussed various measures aimed at expanding fiscal space. These included broadening the tax base, aligning the provincial Agriculture Income Tax (AIT) with the federal income tax system, rationalizing subsidies, streamlining government operations, and reducing energy sector costs.

Additionally, the finance ministry noted that the team briefed the IMF on strategies to stimulate the private sector and implement a prudent monetary policy, alongside external sector policies.

The notification also emphasized the importance of the "steadfast implementation of reforms under the Extended Fund Facility (EFF)."

The delegation, led by the finance minister, includes the finance secretary, the economic affairs secretary, the governor of the State Bank of Pakistan, and other senior officials. They are expected to hold high-level talks with officials from the IMF and World Bank during their week-long visit to Washington.

The delegation's agenda also features bilateral meetings with representatives from China, Saudi Arabia, Turkey, and other friendly nations, along with discussions with senior officials from the US Treasury Department. The IMF and World Bank meetings will run from October 21 to October 26.

This year's meetings carry particular significance for Pakistan, following the IMF's recent approval of a $7 billion loan aimed at stabilizing the country's economy.

Yesterday, the Pakistani delegation also met with Jihad Azour, Director of the IMF's Middle East and Central Asia department, where they outlined government efforts toward fiscal consolidation, revenue growth, and reforms in energy and state-owned enterprises.

MINISTER EMPHASIZES URGENT NEED FOR INVESTMENT IN RENEWABLE ENERGY

Planning Minister Ahsan Iqbal stressed the urgent need for Pakistan's public and private sectors to collaborate in producing affordable, eco-friendly renewable energy to address the country's electricity crisis and improve citizens' lives. Speaking at a renewable energy conference at Lahore University of Management Sciences, he highlighted Pakistan's vast potential in wind and solar power, estimating a capacity of 30,000 megawatts. However, he emphasized that this potential requires significant public and private investment.

Iqbal outlined the government's five key pillars for shifting from fossil fuels to renewables: promoting technological innovation, mobilizing new financial resources such as an Asia energy transition fund, aligning policies within Pakistan and across Asia, fostering regional collaboration, and ensuring an equitable energy transition.

Reflecting on the recent floods that caused $30 billion in damages, Iqbal pointed to Pakistan's high vulnerability to climate change, despite its minimal global emissions. He warned of the resurgence of diseases like typhoid and cholera after such disasters and expressed frustration over the lack of support from wealthier nations.

He also highlighted Asia's growing role in the "Asian Century," calling for climate-conscious energy solutions, particularly in remote areas like northern Pakistan and Balochistan, aiming for affordable, green energy by 2047. Senator Sherry Rehman echoed the need for financial support to address both climate change and energy transition.

DENMARK AND PAKISTAN TO COLLABORATE ON GREEN ENERGY TRANSITION

Danish Ambassador to Pakistan, Jakob Linulf, recently met with Romina Khurshid Alam, Coordinator on Climate Change for Pakistan's Prime Minister, to discuss strengthening climate-focused cooperation. Their conversation centered on Denmark's support for Pakistan's transition to green energy and efforts in climate resilience, biodiversity, and water conservation.

Alam reaffirmed Pakistan's dedication to global climate action, emphasizing national initiatives to safeguard oceans, biodiversity, and critical water and energy resources. She highlighted the "clean ocean agenda," underscoring Pakistan's commitment to preserving marine ecosystems and advancing sustainable practices along its coastline. Partnerships with the government, NGOs, and the corporate sector, Alam noted, are essential to achieving these environmental goals. One of Pakistan's proudest accomplishments, she shared, has been the 300% increase in mangrove coverage along its coast, an achievement widely recognized internationally.

Ambassador Linulf, meanwhile, emphasized Denmark's expertise in renewable energy and sustainable practices, stressing the value of knowledge exchange and technology transfer to support Pakistan's climate objectives. The two leaders agreed on the importance of deepening bilateral cooperation in renewable energy, water management, and climate resilience.

EXPERTS PREDICT AN IMMINENT RISE IN SOLAR PANEL PRICES.

Following a recent drop in solar module prices, Pakistan experienced a surge in imports as buyers sought renewable energy solutions. However, recent data shows a shift: solar panel imports in September 2024 fell sharply to 1,010 MW, down 63% from April's peak of 2,762 MW. This downward trend began in August when imports declined to 1,121 MW.

Key factors behind this drop include shipment delays and logistical hurdles, resulting in a stockpile mainly composed of older inventory. Although immediate price increases are not expected, ongoing supply chain issues suggest potential price hikes as stock levels dwindle.

Earlier this year, falling solar panel prices spurred high demand across residential, commercial, and industrial sectors looking to combat rising electricity costs. Now, however, industry experts warn that existing stock may last only a few months, leading to potential shipment delays if demand rises or further delays occur.

With solar panel prices stabilizing, experts recommend that potential buyers act promptly, as the current market offers a favorable opportunity. While the solar panel supply remains steady for now, declining imports may disrupt future availability, potentially driving up prices as inventories shrink.

LUCKY CEMENT PIONEERING CLEAN, RENEWABLE ENERGY

Lucky Cement Limited has successfully commissioned a 28.8 MW captive wind power project at its Karachi Plant. This achievement marks a major milestone, positioning Lucky Cement as the first company in Pakistan to implement a hybrid renewable energy project of this scale, combining both wind and solar power, according to a news release.

With the addition of the wind power plant, Lucky Cement now generates 55% of its total energy for self-consumption from renewable sources. The company also operates the largest solar captive plant in Pakistan, with a capacity of 42.8 MW, along with a 5.1 MW reflex energy storage solution at its Pezu Plant.

Noman Hassan, Executive Director of Lucky Cement, commented, "Sustainability and the transition to clean energy have been key elements of Lucky Cement's long-term strategy. The installation of the wind power plant reinforces our commitment to energy conservation and green energy promotion. In addition to environmental benefits, this investment will lead to significant cost savings and reduce the country's carbon footprint."

Lucky Cement continues to lead the industry in sustainable practices, embracing new green technologies in its operations.

‘HARYALI’ ART EXHIBITION, DENMARK CALLS FOR URGENT ENVIRONMENTAL ACTION

This week, the Embassy of Denmark in Islamabad hosted a compelling art exhibition aimed at raising awareness and urging action to address climate change. The event, held at the Danish ambassador’s residence, featured powerful artwork calling for urgent environmental action, with Denmark’s ambassador expressing the country’s commitment to supporting Pakistan’s transition to renewable energy.

Despite contributing less than 1% of global emissions, Pakistan is one of the nations most affected by climate change. The catastrophic floods of June 2022, which claimed over 1,700 lives, displaced 33 million people, and devastated vital infrastructure, were linked to climate change by scientists.

The exhibition, titled Haryali (meaning “greenery” in Urdu), was organized to commemorate 75 years of diplomatic relations between Denmark and Pakistan, coinciding with global leaders gathering in Baku for the COP29 climate conference. The showcase featured works by 36 Pakistani artists, who used sculptures and paintings to depict the devastating effects of climate change and global warming.

“Pakistan is among the most vulnerable countries to climate change, and immediate action is needed,” said Danish Ambassador Jakob Linulf. “This is not something Pakistan can tackle alone, and Denmark is ready to offer our expertise to help create a greener society.”

Linulf highlighted Denmark’s success in harnessing solar, wind, water, and biomass energy, noting that Pakistan has abundant resources in all these areas. He expressed his hope for Pakistan to transform its energy sector into a more sustainable one.

Pakistani artist Iman Bilal, known for her sculptures, raised awareness about the health risks of microplastics, stressing the importance of art in inspiring action to prevent environmental damage. Another artist, Kareem Ahmed Khan, hailing from the Hunza Valley, which has been severely affected by glacial lake outburst floods (GLOFs), shared his ongoing efforts to draw attention to climate change’s impact on his region.

Meanwhile, at COP29, Pakistani Prime Minister Shehbaz Sharif emphasized the need for greater trust in the climate pledging process and urged increased climate finance to support vulnerable, developing countries.

CANADA COMMITS TO PARTNERING WITH PAKISTAN FOR A SUSTAINABLE, EQUITABLE FUTURE: ENVOY

Canadian High Commissioner to Pakistan, Leslie Scanlon, reaffirmed Canada's commitment to partnering with Pakistan for a sustainable and resilient future. Speaking at the 'Strategic Dialogue on Strengthening Indigenous Communities: Empowerment through Climate Action, Inclusion, and Gender Parity,' Scanlon highlighted Canada's dedication to socioeconomic inclusion and empowering youth, women, and marginalized communities.

The event, co-hosted by the Canadian High Commission and Serena Hotels, gathered government officials and civil society leaders to focus on socioeconomic inclusion for underserved communities in Pakistan. Scanlon underscored Canada's commitment to reconciliation at home and globally, emphasizing the importance of collaborating with Indigenous Peoples in Canada and marginalized communities worldwide.

Marking Canada's National Day for Truth and Reconciliation, the event provided a platform to amplify the voices of Indigenous and marginalized communities in Pakistan. Scanlon pledged Canada's continued advocacy for these communities by integrating reconciliation principles into its diplomatic efforts.

SIEMENS PAKISTAN TO SELL ENERGY PORTFOLIO TO SIEMENS GAMESA FOR RS17.8BN

In a notice, Siemens Pakistan announced that its board, in a meeting held on October 11, 2024, approved by majority vote the sale and transfer of the company's energy business segment as a going concern to an unaffiliated entity within the Siemens Energy Group, Siemens Gamesa Renewable Energy (Private) Limited. The transaction is valued at approximately Rs17.82 billion as of the valuation date of March 31, 2024.

Siemens Pakistan, primarily engaged in project execution and the manufacturing, installation, and sale of electronic and electrical capital goods, disclosed that the net book value of the energy business as of the valuation date was around Rs17.61 billion (approximately $63.5 million).

The company added that the exact cash proceeds from the sale and the resulting gain or loss will depend on the net book value at the transaction's effective date (closure date) and other contractual events, as per the terms of the agreement to be finalized with the buyer. The completion of the transaction is contingent upon receiving shareholders' approval and other regulatory clearances.

GREEN-TECH HUB LAUNCHED TO REVOLUTIONIZE ENERGY SECTOR

A world-class Green-Tech Hub (G-TH) was launched by the Ministry of Climate Change, in partnership with national and international energy stakeholders, including universities. The hub aims to transform Pakistan's energy landscape and reduce the sector's carbon footprint by promoting green technologies, renewable energy solutions, and eco-friendly innovations. At the launch event, the Prime Minister's climate adviser emphasized that the Green-Tech Hub would play a key role in positioning Pakistan as a regional leader in sustainable innovation and clean energy transformation.

"Today marks a pivotal moment for Pakistan as we inaugurate the Green-Tech Hub. This isn't just a project—it's a movement toward building a sustainable future for our nation. Through innovation, we aim to tackle the most urgent climate challenges and create a greener, more resilient economy," she stated. Ms. Alam described G-TH as more than just an incubator; it is a symbol of hope and progress, where ideas will evolve into solutions that drive Pakistan's shift to clean energy and environmental sustainability.

She highlighted that this initiative directly supports Pakistan's commitments under the Paris Climate Agreement, positioning the country as a leader in the global green economy. It aligns with the national vision for a just transition—one that promotes economic growth while safeguarding the environment and ensuring inclusivity.

FIRST COMPANY IN PAKISTAN TO PARTNER WITH UNDP ON SDG IMPACT FRAMEWORK

Fatima Fertilizer has become the first company in Pakistan to officially partner with the United Nations Development Programme (UNDP) by adopting the Sustainable Development Goals (SDGs) Impact Framework. This partnership is a landmark achievement in Fatima Fertilizer's sustainability journey, showcasing the company's commitment to aligning its contributions with the UN's SDGs. In celebration of this milestone, Fatima Fertilizer launched a campaign to highlight its dedication to sustainability.

The campaign demonstrates how Fatima Fertilizer has integrated the impact framework into its operations, focusing on eight critical areas aligned with the SDGs. Through a comprehensive video, the company showcased its contributions across these areas, including the use of renewable solar energy and reduced fossil fuel consumption, supporting affordable and clean energy initiatives (SDG 7).

Fatima Fertilizer also focuses on empowering rural communities, particularly women, through digital advancements (SDG 9), promoting responsible fertilizer use to support sustainable agriculture (SDG 12), and enhancing national food security by boosting crop yields by over 10% (SDG 8).

LONGi

Propelling the transformation

Founded in 2000, LONGi Solar is one of the **largest** solar manufacturers in the world, ranked as **Tier 1 PV Module Manufacturers** in BNEF with over 60,000 employees, 5,000 global business with TESLA, Aplple, TOYOTA, Pepsi etc. LONGi's R&D investment over $1 billion, annual sales over $15 billion.

LONGi's mission is **"making the best of solar energy to build a green world "**

LONGi's New Products

1. Higher Efficiency 24.8%

5%+ gain over TOPCon per unit

2. More Power Output 670W

30W higher than competitors

3. Anti -Shading

Power loss 70% less than TOPCon

4. Longer Lifecycle

Lower degradation, Longer warranty

PRODUCT PORTFOLIO

Hi-MO X10 (New)

HPBC 2.0

72C, 54C

Hi-MO 7

72C, 66C, 54C

Horizon

28C

For Residential Use, C&I Investment

Download LONGi App to Learn more

Android App QR

iOS App QR

Contact Us:

pakistan@longi.com

to find your product in LONGi

ORACLE POWER COMPLETES INTERCONNECTION STUDY FOR PAKISTAN POWER PLANT

Oracle Power PLC announced that it has completed a transmission and grid interconnection study for its proposed hybrid renewable energy power plant in Jhimpir, Pakistan.

The energy project developer, focused on projects in Western Australia and Pakistan, conducted the study in partnership with China Electric Power Equipment & Technology Co Ltd, a subsidiary of the State Grid Corporation of China. The study, fully funded by the State Grid Corporation of China, evaluated the technical feasibility of connecting the planned 1.3-gigawatt power plant to Pakistan's National Grid. This proposed plant comprises 800 megawatts of solar power, 500 megawatts of wind power, and a battery energy storage system to ensure stable renewable energy supply.

The study recommends connecting the plant to the 220-kilovolt Jhimpir-II grid station via a direct 220-kilovolt double circuit transmission line. Additionally, a 260-megawatt battery energy storage system is proposed to further improve system reliability.

Oracle Power's CEO, Naheed Memon, stated, "This milestone concludes extensive feasibility studies and paves the way for the next phase of detailed engineering design. The study findings provide a strong basis for securing potential off-take agreements. Our focus remains on seamlessly integrating renewable energy into the National Grid, thus boosting energy security and supporting sustainable development in Pakistan."

AIIB EYES FUTURE INVESTMENTS IN PAKISTAN'S ENERGY TRANSMISSION SECTOR

The Asian Infrastructure Investment Bank (AIIB) has shown interest in potential future investments in Pakistan's energy transmission sector. During a meeting between AIIB Vice President Konstantin Limitovskiy and Federal Minister for Economic Affairs Ahad Khan Cheema, Pakistan also requested AIIB to consider financing the Sukkur-Hyderabad section of the Karachi-Peshawar Motorway (M-6) to complete the network from Karachi to Peshawar.

Cheema expressed gratitude for AIIB's support, particularly its assistance during the 2022 floods. He praised AIIB's investments in Pakistan and suggested that the Bank increase its presence at a senior level if its investment volume grows. He also appreciated AIIB's Project Preparation Special Fund (PPSF) commitment for the N-5 Project, emphasizing the strategic importance of the highway for regional connectivity and economic growth.

Limitovskiy voiced confidence in Pakistan's project review processes and reiterated AIIB's commitment to prioritize the N-5 Project. He also highlighted AIIB's interest in expanding its investment in Pakistan's energy transmission sector, further strengthening cooperation with Pakistan.

PAKISTAN SEEKS U.S. SUPPORT FOR ENERGY SECTOR REFORMS

Pakistan has sought U.S. support for energy sector reforms during a meeting between Finance Minister Muhammad Aurangzeb and U.S. Assistant Secretary of State for Energy Resources, Geoffrey Pyatt. According to a Finance Division press release, the minister highlighted Pakistan's energy challenges and ongoing reforms, expressing appreciation for U.S. assistance in supporting Pakistan's shift towards renewable energy.

On the sidelines of the 2024 Annual Meetings of the International Monetary Fund (IMF) and World Bank, Aurangzeb met with S&P Global representatives to discuss Pakistan's macroeconomic stabilization, fiscal consolidation, and improvements in external accounts, which are reflected in strengthening economic indicators. He noted that reduced government financing costs would help lower debt service expenses, expressing optimism for a future upgrade in Pakistan's credit rating by S&P Global.

At the World Bank event "Growing Stronger: An Urgent Call to Improve Child Nutrition," the minister emphasized Pakistan's child stunting crisis, advocating for a comprehensive government approach to address it, especially in rural regions. He highlighted the need for reforms in taxation, energy subsidies, and state-owned enterprises management to create fiscal space for climate action, population control, and child nutrition initiatives. Aurangzeb thanked the World Bank for prioritizing stunting in Pakistan's Country Partnership Framework.

Additionally, the minister met with Asian Development Bank (ADB) President Masatsugu Asakawa, expressing gratitude for ADB's support and welcoming the upcoming office in Islamabad. He looked forward to ADB's finalized Country Partnership Framework and appreciated ADB's exemptions on surcharges beyond exposure limits for Pakistan over the next three years. He also highlighted ADB's $500 million Policy-Based Loan for Climate & Disaster Resilience, set for board consideration on October 29.

In a separate meeting with Digital Cooperation Organization (DCO) Secretary General Ms. Deemah Al Yahya, Aurangzeb discussed Pakistan's potential in the ICT sector and ongoing investments in digital infrastructure, emphasizing collaboration in digital governance, skills development, and foreign direct investment. The finance minister also attended World Bank and IMF plenary sessions and other key events.

PAKISTAN JOINS FOSSIL-FUEL NON-PROLIFERATION COALITION TO EMBRACE A RENEWABLE ENERGY FUTURE

Pakistan has joined a coalition of climate-vulnerable nations advocating for a global fossil-fuel non-proliferation treaty, which calls for an equitable transition away from coal, oil, and gas. The proposed treaty, meant to complement the Paris Agreement, emphasizes the need for financial and technological support to facilitate fair energy transitions for developing nations. As one of the top ten countries most vulnerable to the catastrophic impacts of climate change, Pakistan is the first South Asian nation to engage with this initiative. The country aims to address severe climate challenges, including devastating flooding and rising temperatures, while urging wealthier nations to take the lead in the global energy transition, according to a press release.

Earlier this year, Prime Minister Muhammad Shehbaz Sharif highlighted the importance of climate justice during COP29, calling for increased international support to strengthen the resilience and sustainability of vulnerable nations facing growing environmental threats.

Domestically, Pakistan has actively pursued initiatives at both the policy and implementation levels to promote environmental sustainability. One such initiative is the New Energy Vehicle (NEV) Policy, which aims to transition 30% of all new vehicles—both imported and locally manufactured—to electric power by 2030. The policy incorporates various technologies, with the government offering subsidies totaling PKR 4 billion to encourage adoption. According to the National Energy Efficiency & Conservation Authority (NEECA), the transport sector accounts for 30% of Pakistan's total energy consumption, worth approximately $1.3 billion per month, placing considerable strain on the economy and foreign exchange reserves. Environmentalists and automobile experts view the policy as a transformative step for Pakistan's energy, automotive, and environmental sectors. The shift is expected to help tackle Pakistan's chronic air pollution, particularly the persistent smog problem affecting urban areas.

The widespread adoption of electric vehicles (EVs) could significantly reduce greenhouse gas emissions and lower particulate matter levels, leading to improved air quality and better public health.

PAKISTAN TO HOST 'ENERGY ROADSHOW' IN SAUDI ARABIA

Pakistan is set to host a roadshow in Saudi Arabia to showcase its energy projects and attract Saudi investors. A delegation comprising public and private sector representatives from Pakistan's energy sector will travel to Saudi Arabia next week, with Petroleum Minister Dr. Musadik Malik leading the group.

According to sources familiar with the matter, Pakistan and Saudi Arabia have been in ongoing talks for over two and a half years regarding potential energy sector cooperation. This upcoming visit is a continuation of these discussions, aimed at securing investment in Pakistan's energy sector. The delegation is expected to focus on key projects such as oil terminals, the establishment of new refineries, upgrading existing refineries, and oil pipeline initiatives, in a bid to encourage Saudi investors to participate in these ventures.

Pakistan and Saudi Arabia have already signed 27 memoranda of understanding (MoUs) across various sectors, including energy. Sources indicate that Pakistan is in urgent need of foreign investment, with the energy sector being one of the most promising areas for high returns. Saudi Arabia is seen as a key partner in attracting this investment.
Following the Saudi visit, the Pakistani delegation is also planning to visit Russia to explore additional opportunities for energy sector investments.

PUBLIC SCHOOLS IN SINDH SET TO BE SOLARIZE, SAYS ENERGY MINISTER

Sindh Minister for Energy, Nasir Hussain Shah, has announced plans to gradually solarize all government schools in the province, while also offering full support to private schools in adopting solar energy solutions.

Speaking at the "Paigham-e-Pakistan, Istehkam-e-Pakistan" event during the All Sindh Science and Arts Gala at the PAF Museum, Shah highlighted the significant role of teachers in promoting awareness of Pakistan's history and positive values among students. The event was organized by the Directorate of Private Schools Education Sindh and the All Sindh Private Schools and Colleges Education.

Shah emphasized the importance of stability for the nation's future, stating, "Today's message for the architects of our future is Istehkam-e-Pakistan (Stability of Pakistan)." He urged teachers to inspire optimism in their students, stressing that Pakistan's future is secure and promising. "Conditions are steadily improving, and new job opportunities are emerging," he added.
The minister also pointed to the rising domestic and foreign investments in Pakistan, noting that both local and international investors are attracted by the country's improving security and business-friendly environment. "Investors are seeking business opportunities, drawn by the country's progress and peace," Shah said.

Global Scoop.

Here we dive into the latest developments in the industry as we explore the remarkable strides countries are making towards sustainable power sources, highlighting groundbreaking innovations and initiatives that promise a greener future for our planet. From cutting-edge solar technologies to revolutionary wind farms, this is your gateway to staying informed on the global transition to clean energy.

ACWA POWER ANNOUNCED AS ENERGY & WATER PARTNER FOR COP29

ACWA Power, a global leader in power generation and desalinated water production, has signed on as the Energy & Water Partner for COP29, reaffirming its commitment to advancing sustainable practices in the renewable energy sector. The company, known for its innovative solutions in green hydrogen and energy transition, aims to use its role at COP29 to collaborate with industry leaders, potential partners, and climate advocates to drive meaningful progress toward a sustainable future.

As the world's largest private water desalination provider, ACWA Power is at the forefront of the global shift towards renewable energy. Founded in Riyadh in 2004, the company now operates in 13 countries across the Middle East, Africa, Central Asia, and Southeast Asia, employing over 4,000 people. ACWA Power aligns its business strategy with UN climate goals, promoting projects that enhance energy efficiency, conserve water, and reduce environmental impacts.

COP29 in Baku provides a platform for global businesses to engage with climate policies and showcase their sustainability efforts. The Green Zone will feature private sector organizations demonstrating climate-friendly solutions, with opportunities for presentations, workshops, and networking events. ACWA Power's participation, particularly in hosting its own events and collaborating with other key players, underscores its leadership in the energy transition.

Narmin Jarchalova, Chief Operating Officer for COP29 Azerbaijan, welcomed ACWA Power's partnership, highlighting the company's involvement in Azerbaijan's renewable energy projects, including the implementation of a 240 MW Wind Farm. This contribution emphasizes ACWA Power's pivotal role in advancing renewable energy solutions in the region.

BRIGHTNIGHT GAINS APPROVAL FOR VICTORIA'S LARGEST HYBRID RENEWABLE ENERGY PROJECT

The $700 million BrightNight project, set on 1,060 hectares in Mortlake, Victoria, will introduce 360 MW of solar generation and a 300 MW Battery Energy Storage System, producing renewable energy for nearly 140,000 homes. This facility will contribute over 1% of Victoria's electricity needs while preventing more than 40 million tons of emissions annually.

Victoria's Minister for Energy and Resources, Lily D'Ambrosio, highlighted the Mortlake Energy Hub's role in providing affordable energy for homes and businesses. Acting Minister for Planning, Colin Brooks, described it as a prime example of the rapid momentum in renewable energy. Approved through the State's Development Facilitation Program (DFP), the Mortlake Hub is central to Victoria's plan to expedite projects that drive economic and climate progress. It supports the state's targets of reaching 65% renewable energy by 2030 and 95% by 2035, with over 300 jobs expected during construction and operations.

BrightNight APAC CEO Jerome Ortiz called the project a milestone in Asia-Pacific decarbonization, positioning the Mortlake Hub as Victoria's largest hybrid renewable energy project and a significant step toward a low-carbon future. With renewable energy presently at just under 40% of Victoria's supply, the Hub is crucial for long-term clean energy goals. BrightNight has engaged local communities to align with regional needs, and Country Head Polly Baranco emphasized the Hub's dual role in energy innovation and regional economic growth.

GLOBAL RENEWABLE ENERGY EMPLOYMENT HITS 16.2M AS SOLAR POWER HELPS LEAD JOBS GROWTH

Global employment in the renewable energy sector has reached 16.2 million, spurred by significant investments in solar power, according to the latest report by the International Renewable Energy Agency (Irena). The review shows an 18% rise in renewable energy jobs over the past year, with China leading at nearly half (48%) of total employment.

Solar photovoltaics (PV) was the largest contributor, adding 7.1 million jobs worldwide—up from 4.9 million in 2022. China accounted for 4.6 million of these, underlining its leadership in PV installation and manufacturing. Chinese investments have also transformed Southeast Asia into a solar PV export hub, generating millions of regional jobs.

India and the U.S. reported substantial solar employment with 318,600 and 280,000 PV jobs, respectively, while Europe recorded 757,500 PV positions in 2023.

Beyond solar, liquid biofuels saw job growth, led by Brazil and Indonesia. Conversely, hydropower jobs declined from 2.5 million to 2.3 million, with China, India, Brazil, Vietnam, and Pakistan as top employers. Wind energy continued its ascent, with China and Europe jointly holding 73% of the 1.5 million global wind jobs.

US STUMPS UP $1.5BN FOR TOUGH-TO-BUILD GREEN POWER LINES

The U.S. Department of Energy (DoE) has announced $1.5 billion in funding for four interregional power lines as part of its Transmission Facilitation Program (TFP), aiming to drive investment in new grid infrastructure to support the influx of clean energy in the coming years. According to research from Wood Mackenzie, the U.S. grid requires $80 billion to $100 billion in upgrades and new lines to meet the Biden administration's goal of achieving a 100% clean power system by 2035.

"Building transmission projects is essential for addressing the climate crisis," said John Podesta, the White House national climate adviser. While renewable energy installations are booming due to tax incentives provided by the Inflation Reduction Act and other legislation, the aging and inadequate power grid remains a significant barrier to bringing these clean energy assets online.

Under the TFP, the DoE commits to purchasing up to 50% of the capacity of selected transmission lines, which it will later sell when market demand materializes. "DoE buys capacity on the lines and sells it back. When new customers arrive, we recover our funding, reinvest in new projects, and the cycle continues," explained David Turk, deputy secretary of energy.

ADANI AND GOOGLE PARTNER TO ACCELERATE CLEAN ENERGY GROWTH IN INDIA

The Adani Group and Google have announced a new partnership aimed at advancing sustainability efforts and promoting the growth of clean energy in India. According to a press release on Thursday, Adani Group will supply renewable energy from a solar-wind hybrid project located in Khavda, Gujarat, home to the world's largest renewable energy facility. The project is set to begin commercial operations in the third quarter of 2025.

Adani, with its proven expertise in large-scale renewable projects, including wind, solar, hybrid, and energy storage, is well-positioned to deliver customized energy solutions for commercial and industrial (C&I) clients. The group's focus is on helping industries meet their energy needs while lowering carbon emissions. Moving forward, Adani plans to expand its presence in the merchant and C&I sectors, a critical step toward decarbonizing various industries.

This collaboration also aligns with Google's ambitious goal to achieve 24/7 carbon-free energy for its global operations. Google is committed to reducing its combined Scope 1, 2, and 3 absolute emissions by 50% by 2030, an initiative launched in 2019. By harnessing India's clean energy sources, the partnership aims to power Google's cloud services and operations with renewable energy, supporting the tech giant's sustainable growth in the region.

MIROVA TO INVEST $518M IN RP GLOBAL'S CLEAN ENERGY PROJECTS

French asset management firm Mirova has announced a €480 million ($518 million) investment in RP Global, an independent power producer (IPP), to support its 2.5GW pipeline of renewable energy projects across Europe.

The Mirova Energy Transition 6 (MET6) fund, a French limited partnership managed by Mirova, will contribute €200 million, with an additional €280 million provided by a co-investment vehicle also managed by Mirova.

This partnership allows MET6 to acquire a significant minority stake in RP Global. Mirova's investment director, Anne-Laure Messier, commented: "We are delighted to deepen our collaboration with RP Global, a long-standing partner with whom we've built confidence and trust over nearly a decade.

"This substantial new investment will enable RP Global to advance its IPP model on a European scale, in alignment with the Paris Agreement's framework to reach net-zero emissions by 2050."

PEARL PARTNERS WITH TOTALENERGIES TO INSTALL SOLAR POWER AT THREE PRODUCTION FACILITIES IN THE UAE

Pearl Group, a global leader in polyurethane insulation solutions, has partnered with TotalEnergies to install solar photovoltaic (PV) systems at three major production sites in the UAE, significantly advancing its sustainability goals. This solar initiative is set to reduce Pearl's carbon footprint by lowering annual CO_2 emissions by 568 tons.

Together with TotalEnergies, Pearl has deployed 1,653 rooftop solar panels with a total capacity of 821 kilowatt-peak (kWp) across its facilities. These sites in Dubai will generate a combined 1,336 megawatt hours (MWh) of renewable energy per year. Specifically, the Dubai Investments Park (DIP) South facility contributes 372 kWp, DIP North adds 359 kWp, and Ras Al Khor provides 90 kWp.

Martin Kruczinna, CEO of Pearl, expressed enthusiasm for the partnership with TotalEnergies, highlighting how the project aligns with Pearl's commitment to sustainability and renewable energy. Hamady SY, Managing Director of TotalEnergies Renewables Distributed Generation for the Middle East and Africa, noted the company's pride in supporting Pearl's decarbonization journey. By providing turnkey solar solutions, TotalEnergies aims to help industrial partners like Pearl achieve their sustainability objectives through renewable energy integration.

SunLife
SOLAR (PVT.) LTD.

MADE IN PAKISTAN

SOLAR JOURNEY towards a GREENER TOMORROW !

Manufacturing company of Solar Panels in Pakistan

Sunlife Solar is proud to provide top quality Inverters, VFD & Lithium Batteries

Solar Panels | Solar Inverters | Lithium Batteries

Factory: Al-Badar Industrial Zone, Mandiali Stop, 19km Sheikhupura Road, Lahore.

www.sunlifesolar.com.pk

LONGI PARTICIPATES IN 'I SQUARED INVESTOR DAY' IN ABU DHABI

LONGi recently participated in the 'I Squared Investor Day,' an influential event hosted by I Squared, a global investment firm, uniting top investors and industry leaders to explore sustainable investment opportunities amid growing energy demands and the complex energy transition.

Representing LONGi, James Jin, President of LONGi Middle East, Africa, and Central Asia (MEA&CA), contributed to a panel on "Dramatically Changing Energy Markets." Jin highlighted the significant decrease in the levelized cost of energy (LCOE) for solar PV, which has dropped by 89% from 2010 to 2022, making solar one of the world's most affordable power sources. By 2050, solar is projected to have a lower LCOE than coal, natural gas, and nuclear, reinforcing its pivotal role in the global energy transition. LONGi is proud to drive these cost reductions through cutting-edge technology and innovation.

Jin underscored the potential for solar energy, revealing that global PV installations could reach 680 GW by 2025, with MEA&CA experiencing the fastest growth. However, he noted challenges, including slowed economic growth, geopolitical tensions, and complex trade conditions that raise operational costs. The current oversupply has intensified price competition, threatening profitability across the solar industry. Addressing these, Jin emphasized LONGi's commitment to innovation, globalization, and collaboration.

LONGi has invested $1 billion in research and development in 2023 to advance its solar cell technologies and has diversified its supply chain with localized manufacturing to mitigate geopolitical risks, reducing logistics costs and enhancing resilience across 150+ regions.

Looking forward, Jin shared LONGi's vision for deep decarbonization, noting that hydrogen, particularly in the MENA region, presents substantial potential due to low electricity costs and government support. LONGi's electrolyzer capacity reached 2.5 GW in 2023, with plans to scale to 5–10 GW by 2025, fostering synergy between solar energy and hydrogen to drive a cleaner, more resilient energy future.

CROSSETT SOLAR PARK IN ARKANSAS BEGINS SUPPLYING ENERGY TO GOOGLE

This marks Cubico's second successful launch of a solar PV plant within the last year. Now connected to the Midcontinent Independent System Operator (MISO) network, the Crossett solar park has started delivering clean energy to Google through a long-term power purchase agreement (PPA).

Cubico USA's Country Head, Stacey Kusters, commented, "The successful launch of Crossett Solar Park underscores our team's ability to deliver high-quality renewable energy projects, while actively expanding our greenfield portfolio.

"We are thrilled to partner with Google to supply their data center campuses in the Midwest with carbon-free energy from one of our assets. This PPA exemplifies the essential role of clean energy projects in sustainably supporting data centers, especially as demand for AI and machine learning grows across the U.S. and beyond."

ICG ENTERS SOUTH KOREAN RENEWABLES MARKET WITH STAKE IN REVENT ENERGY

UK-based asset manager Intermediate Capital Group (ICG) has partnered with ST International (STI), a South Korean energy company, to acquire a 50% interest in Revent Energy, with STI retaining the remaining 50%.

The collaboration between ICG and STI will bolster Revent Energy's expansion plans. The onshore wind project developer's strategy includes the acquisition, development, construction, ownership and operation of onshore wind projects across South Korea. The company aims to achieve 500MW of installed capacity by 2029.

Revent Energy currently has stakes in two operating wind farms, Yeongyang Wind Power and Youngduk Wind Power. Both are undergoing repowering exercises to significantly enhance their installed capacity.

Happen-ings.

Get ready to immerse yourself in a comprehensive exploration of the dynamic world of renewable energy and beyond. Here we will uncover the latest trends, breakthroughs, and impactful events shaping the global transition to sustainable practices, empowering you with the knowledge and inspiration to be at the forefront of the green revolution.

BENEFIT OR BURDEN? LET'S TALK ABOUT THE KEENJHAR FLOATING SOLAR PROJECT

Pakistan's first floating solar power project will be constructed over Keenjhar Lake, the country's largest freshwater reservoir, at a cost of Rs78 billion, with completion expected in two years. The project aims to generate 500 megawatts of electricity. However, local fishing communities and wildlife experts have expressed concerns about its potential environmental impact.

Keenjhar Lake, recognized as a Ramsar site and a wildlife sanctuary, is a wetland of international significance under the Ramsar Convention—a global environmental treaty established in 1971 in Ramsar, Iran, under UNESCO's guidance. Known for its scenic beauty and rich biodiversity, the lake is also a popular tourist destination, drawing visitors for weekend outings and holidays. It holds cultural significance due to the Sindhi folk tale 'Nuri Jam Tamachi,' with Nuri's tomb located at the lake's center.

Experts suggest that floating solar projects on lakes and ponds are more efficient. The first such project was developed in Japan in 2007, followed by other countries like Bangladesh, India, and the Maldives adopting similar initiatives. Despite this, the fishing communities around Keenjhar Lake worry that the project could negatively impact

the local ecosystem. They argue that the lake's vegetation, which serves as food for migratory birds, may suffer from reduced sunlight due to the solar panels. This could harm underwater plants and aquatic life.

Project finance head Irtza Kazmi noted that the initiative was conceptualized two and a half years ago and would be Pakistan's first floating solar project. He emphasized its benefits, including significant water conservation by reducing evaporation, estimating savings of around four million gallons of water daily. Kazmi also highlighted plans to address local challenges, such as providing better fishing equipment and regular community engagement.

The first phase of the project is expected to generate 1,000 jobs, with 30% allocated for women to promote gender equality. Technical training will be offered, and fish seeds supplied for aquaculture. An environmental and social study by "Go Energy," conducted under Clause 17 of the SEPA Act 2014, indicated rising energy demands in Sindh. The floating solar project is designed to be more eco-friendly compared to fossil fuels, aiming to mitigate environmental harm and reduce global warming.

With growing concerns over environmental damage, the government has halted the development of new coal-fired power plants. The floating solar initiative will harness clean energy, avoiding greenhouse gas emissions and improving air quality. It is expected to generate tax revenues for the Sindh government and reduce electricity costs for consumers. The project's construction phase is projected to create 250 to 300 jobs, prioritizing local residents for operational roles.

Muhammad Jamshed Iqbal Chaudhry, Senior Manager of Research and Conservation at WWF Pakistan, cautioned that the project could alter the lake's surface area, potentially impacting habitats for aquatic and semi-aquatic birds. He warned that shadows from the solar panels might hinder light penetration, affecting aquatic plants and dependent wildlife. The panels could also raise water temperatures and construction noise might disrupt bird breeding. Additionally, chemicals used for maintaining the panels could cause pollution, threatening aquatic life and birds. Sindh Wildlife Department's Deputy Conservator Mumtaz Soomro stressed the importance of ensuring comprehensive wildlife and environmental protection.

GENIXGREEN NOW IN PAKISTAN! WITH A COMPLETE PRODUCT RANGE, SPECIALLY; LV & HV ENERGY STORAGE LITHIUM-ION BATTERIES!

GENIXGREEN, established in 2011, is a globally recognized leader in energy storage solutions, providing customized energy storage systems to a diverse range of clients. Its offerings include energy storage systems, energy management systems, and related technical consulting and services.

Currently, GENIXGREEN operates in over 100 countries worldwide, serving thousands of clients and amassing extensive expertise in energy storage solutions. As of December 2024, the company has achieved a cumulative installed capacity of 7 GWh globally, with projections to reach 8 GWh by 2025 and annual revenue exceeding CNY 1200 million.

The company's six core technologies ensure premium product quality. These include safety, stability, intelligence, cloud-based data integration, high efficiency, and high energy density. GENIXGREEN provides industry-leading smart energy storage solutions for commercial, industrial, and residential applications, offering tailored, cost-effective solutions based on local needs and conditions.

In Pakistan, GENIXGREEN has established a localized professional team capable of understanding client requirements through direct engagement. The team develops feasible, customized solutions aligned with local circumstances, offering comprehensive pre-sales, in-sales, and after-sales services to help clients reduce costs and enhance efficiency.

GENIXGREEN's design philosophy emphasizes sustainability, intelligence, and efficiency, aiming to promote the sustainable use of energy through advanced storage technologies. The company's expertise lies in efficient energy conversion, intelligent energy management, and reliable product performance.

The ES-BOX26 Series, one of GENIXGREEN's flagship products, is a low-voltage solution designed for residential energy storage. It supports up to 16 units in parallel, with an energy capacity ranging from 5.12 kWh to 257 kWh. This series is characterized by high safety standards, ease of installation, a minimalist aesthetic, and seamless integration with modern homes.

Looking ahead, GENIXGREEN remains committed to delivering premium energy storage solutions to its clients in Pakistan. Through continuous technological innovation and exceptional service, the company strives to advance sustainable energy development in the region. GENIXGREEN is dedicated to building a greener, smarter, and more efficient future for humanity.

State Bank of Pakistan (SBP) Governor says a climate-driven banking framework is being worked out to facilitate energy transition finance.

Transition to renewable energy in countries like Pakistan is strongly needed, but they do not have the required financing, the SBP chief told the Asia Energy Transition Summit, organised by the Pakistan Renewable Energy Coalition (PREC) in collaboration with the Lahore University of Management Sciences' Energy Institute, SDPI, Renewables First and PRIED.

Mr Ahmad said countries like Pakistan need to make the most urgent energy transition because they are highly vulnerable to climate change and the most indebted in the world. "Foreign individuals and institutional investors, therefore, are reluctant to invest in such countries," he said in his keynote address at the two-day summit.

He said Pakistan was among the top 10 countries vulnerable to climate change despite its minimal contribution to the issue, adding that the country was committed to reducing its carbon footprint by 15 per cent by 2030, with a further reduction of 35pc conditional upon the availability of external climate financing.

He also highlighted Pakistan's goal to generate 60pc of its energy from renewable

sources by 2030, stressing the importance of adopting policies to reduce carbon emissions. "Although Pakistan faces significant challenges in shifting to green energy, he noted that, despite recent macroeconomic difficulties, the country is in a better position than other Asian nations," he added.

Mr Ahmad pointed out that the share of fossil fuel in Pakistan's energy consumption has decreased by 4.8pc, from 86.79pc in 2019 to 81.9pc in 2023. He acknowledged the country's abundance of natural resources like solar, wind, and hydropower. Additionally, he emphasised the need for developing countries to secure climate funding, stating that macroeconomic stability and structural reforms were essential to addressing climate change challenges.

"The SBP has taken several initiatives, including introducing a revised renewable energy financing scheme in 2016, issuing an environmental and social risk management manual in 2022, and collaborating with the World Bank to develop a Green Finance Taxonomy," he said. On the occasion, Power Minister Awais Ahmed Khan Leghari termed innovative financial solutions crucial to drive Pakistan's energy transition. "Initiatives like the Asian Development Bank's Energy Transition Mechanism and Just Energy Transition Partnerships can mobilise necessary capital for this transition," he said.

Mr Leghari stressed we must follow the Chinese expertise to enhance our renewable energy capabilities, focusing on knowledge transfer, infrastructure development, and technical training. "Pakistan must not rely only on traditional funding sources, it should also consider instruments available in China's financial markets, including RMB-based bonds. Additionally, Pakistan can position itself in the supply chain for green metals, which is critical for future energy technologies."

The minister revealed that Pakistan has 54pc clean energy. This is going to be 82pc by 2034. Pakistan's risk is at large due to climate change, as it experienced 11 floods in the past 8-9 years.

According to him, the fossil fuel part of our energy will reduce from 46pc to 18pc. "We expect to add over 1,200 megawatts in our solar grid every year from now until 2034." Delivering a keynote speech during another session, Dr Nafisa Shah, co-convener of the Parliamentary Forum on Energy and Economy, highlighted deep connections between energy and economic crises.

The summit's first day was marked by a rich exchange of ideas and expertise as various sessions explored the multifaceted challenges and opportunities surrounding the region's transition to renewable energy. Experts and panellists discussed the progress and hurdles faced by different sub-regions, emphasising the need for tailored approaches to overcome barriers in the energy transition. Dr Irfan Khan, Assistant Professor at Texas A&M University, Mr Ali Habib, Dr Zeeshan Ullah Khan, Dr Fiaz Chaudhry, Engr Usman Sheikh and others also spoke.

SUNGROW ACHIEVES 'AA' ESG RATING,

Boosting Global Renewable Energy Initiatives

Sungrow has been recognized for its commitment to sustainability, earning an 'AA' rating in the latest ESG assessment by Morgan Stanley Capital International (MSCI). This high rating underscores the company's dedication to advancing renewable energy on a global scale.

Among Sungrow's notable achievements are securing a 7.8 GWh grid-side energy storage project in Saudi Arabia and a 3 GWh independent energy storage project in Australia. The company's focus on technological innovation has strengthened its position in the renewable energy industry.

MSCI's ESG assessment evaluates over 8,500 publicly listed companies, providing in-depth analysis of their environmental, social, and governance practices. Sungrow's sustainability efforts have also been recognized by S&P Global and Boston Consulting Group (BCG).

Sungrow has aligned its initiatives with four United Nations Sustainable Development Goals (SDGs): affordable and clean energy, industry innovation and infrastructure, responsible consumption and production, and climate action. According to MSCI, Sungrow's Implied Temperature Rise is projected between 1.5 and 2.0°C, indicating alignment with the Paris Agreement's target of limiting global warming to below 2°C compared to pre-industrial levels.

In its 2023 sustainability report, Sungrow reported that renewable energy now accounts for 55 percent of its total energy

use, along with a 6.75 percent reduction in energy consumption per unit of production compared to 2020. Through energy-saving strategies, the company saved over 1,300 MWh of electricity in 2023. As of September 30, Sungrow ranked first among the top ten companies in the MSCI China A Onshore IMI Efficient Energy Index.

Sungrow's sustainable development framework is built on five strategic pillars:
- Excellent Governance
- Toward Net Zero
- Eco-Friendly Development
- Mutually Beneficial Collaboration
- Diversity and Inclusion

Since 2019, Sungrow has benchmarked its initiatives against the 17 SDGs, refining its focus to 10 goals that align with its core business and resources. In 2023, the company set new ESG targets, aiming for operational carbon neutrality by 2028 and supply chain carbon neutrality by 2038, with a goal of achieving net-zero status across its entire supply chain by 2048. By the end of 2023, 96.79 percent of Sungrow's suppliers had committed to the Supplier Code of Conduct.

Recent climate events, such as hurricanes in the United States and floods in Europe, have underscored the urgency of global climate action. Sungrow, along with other renewable energy companies, is committed to supporting the energy transition. The upcoming COP29 conference in November, themed "In Solidarity for a Green World," will further address these critical issues.

VENEZUELA CAN'T SELL ITS OIL, BUT IT HAS FOUND SOMETHING EVEN BETTER: A PLAN TO PRODUCE ENERGY FOR MILLENNIA.

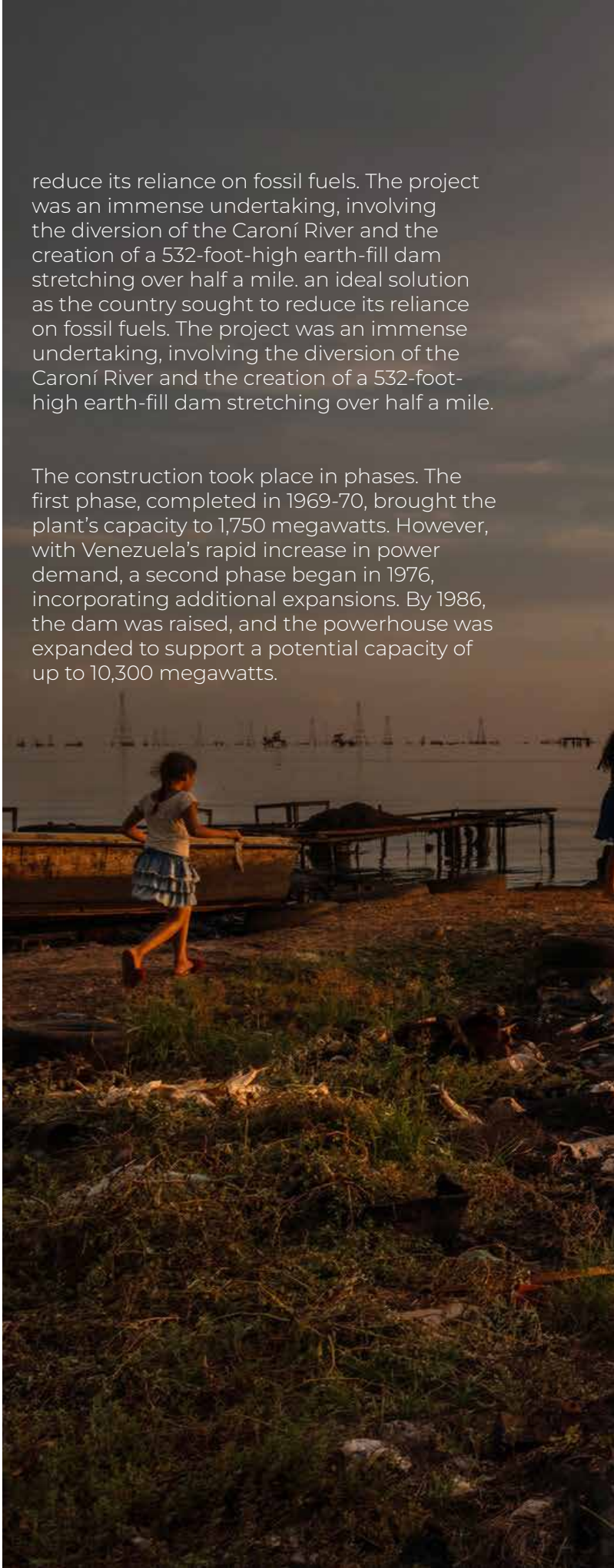
The Guri Hydroelectric Power Plant: A Pillar of Venezuela's Energy Sector

One of the largest power facilities in the world, the Guri Hydroelectric Power Plant—also known as the Simón Bolívar Hydroelectric Station—is a colossal achievement in Venezuela's energy landscape. Located in eastern Venezuela, Guri is a vital, if sometimes precarious, energy source that powers much of the nation. Like many large-scale energy projects, however, its challenges go far beyond engineering feats. From its impressive construction to its forward-looking initiatives, the Guri Plant has been instrumental in transforming Venezuela's energy sector. This article takes a closer look at its story and legacy.

Harnessing the Caroní River: Guri's Role in Venezuela's Energy Landscape

Construction of the Guri Dam on the Caroní River began in 1960, marking a groundbreaking effort in hydroelectric power for Venezuela. Hydroelectric energy was an ideal solution as the country sought to reduce its reliance on fossil fuels. The project was an immense undertaking, involving the diversion of the Caroní River and the creation of a 532-foot-high earth-fill dam stretching over half a mile. an ideal solution as the country sought to reduce its reliance on fossil fuels. The project was an immense undertaking, involving the diversion of the Caroní River and the creation of a 532-foot-high earth-fill dam stretching over half a mile.

The construction took place in phases. The first phase, completed in 1969-70, brought the plant's capacity to 1,750 megawatts. However, with Venezuela's rapid increase in power demand, a second phase began in 1976, incorporating additional expansions. By 1986, the dam was raised, and the powerhouse was expanded to support a potential capacity of up to 10,300 megawatts.



Together with a massive reservoir capable of holding 138 billion cubic meters of water, the Guri Dam became one of the largest hydroelectric projects in the world.

A Major Power Source: Guri's Contribution to Venezuela's Energy Needs

Today, the Guri Hydroelectric Power Plant is responsible for generating around 50,000 gigawatt-hours (GWh) of electricity annually, meeting approximately 73% of Venezuela's total energy needs. As one of the largest power plants globally, Guri supplies electricity to millions of homes and businesses across the country, making it the backbone of Venezuela's energy infrastructure.

The Cost of Dependence: Guri's Impact on Venezuela's Energy Stability

Since its inception, the Guri Dam has been managed by CVG Electrificación del Caroní C.A. (Edelca), a Venezuelan power company. Over the years, multiple modernization projects have been undertaken to extend the plant's lifespan. For instance, in 2007, Andritz Hydro signed a €100 million contract to supply new Francis turbines for the powerhouse, improving efficiency.

These upgrades aimed to extend the plant's operational life by an additional 30 years. However, Guri's dominance in the national power grid has made Venezuela highly dependent on it. Power outages due to fluctuating water levels have become increasingly common, with major blackouts occurring in 2010, 2016, and 2019.

In 2019, a collapse at the San Gerónimo B substation, linked to the Guri Dam, triggered another nationwide blackout, highlighting the risks of over-relying on a single energy source.

Harnessing Hydropower: How Guri Converts Water into Electricity

Hydroelectric facilities like the Guri Dam operate by capturing the potential energy of water stored in a reservoir. By releasing this water to flow over turbines, the plant converts kinetic energy into electricity, which is then transmitted through high-voltage substations operating at up to 800 kV. While hydroelectric energy is renewable, it is not without environmental consequences. Dams disrupt ecosystems and communities; in the case of Guri, the reservoir submerged entire villages. Additionally, dam construction impedes fish migration and floods vast areas, altering the landscape. The decay of submerged vegetation in reservoirs can also release methane, raising environmental concerns.

Guri: A Testament to Venezuela's Renewable Energy Ambitions

The Guri Hydroelectric Power Plant stands as a testament to Venezuela's efforts to harness sustainable energy. With its vast capacity and essential role in powering the nation, Guri remains a key hydroelectric project on the global stage. Yet the challenges it faces—from environmental impact to dependency issues and water shortages—underscore the complexities of large-scale energy generation. As Venezuela continues to adapt and modernize Guri, balancing innovation with sustainability will be crucial for the country's energy future.

Longi Green Energy sets world record for solar module efficiency at 25.4%

China's Longi Green Energy has achieved a groundbreaking world record in crystalline silicon solar module efficiency, reaching a remarkable conversion rate of 25.4% with its independently developed hybrid passivated back contact (HPBC) 2.0 module. Verified by the Fraunhofer Institute for Solar Energy Systems (Fraunhofer ISE) in Germany, this milestone represents a significant leap forward in solar technology, surpassing the previous record of 24.9% set by Maxeon in January 2023 with its interdigitated back contact (IBC) module. This achievement not only highlights Longi's leading role in solar innovation but also marks a historic moment as the first time a Chinese solar company has set the global record for crystalline silicon module efficiency since record-keeping began in 1988.

The significance of this half-percentage point increase may seem small, but in the field of solar energy, where efficiency gains are hard to achieve, it has meaningful implications. Longi's HPBC 2.0 module, with its 25.4% efficiency, redefines the limits of what is achievable for crystalline silicon technology. Solar module efficiency improvements have historically been gradual, with incremental advancements in conversion rates. Reaching a 25% efficiency threshold with crystalline silicon modules marks a transformative milestone, making solar power even more feasible as a mainstream energy source. This accomplishment is expected to be recognized by Prof. Martin Green of the University of New South Wales in the "Solar Panel Efficiency Tables" and added to the U.S. National Renewable Energy Laboratory (NREL) "Champion Module Efficiencies" database.

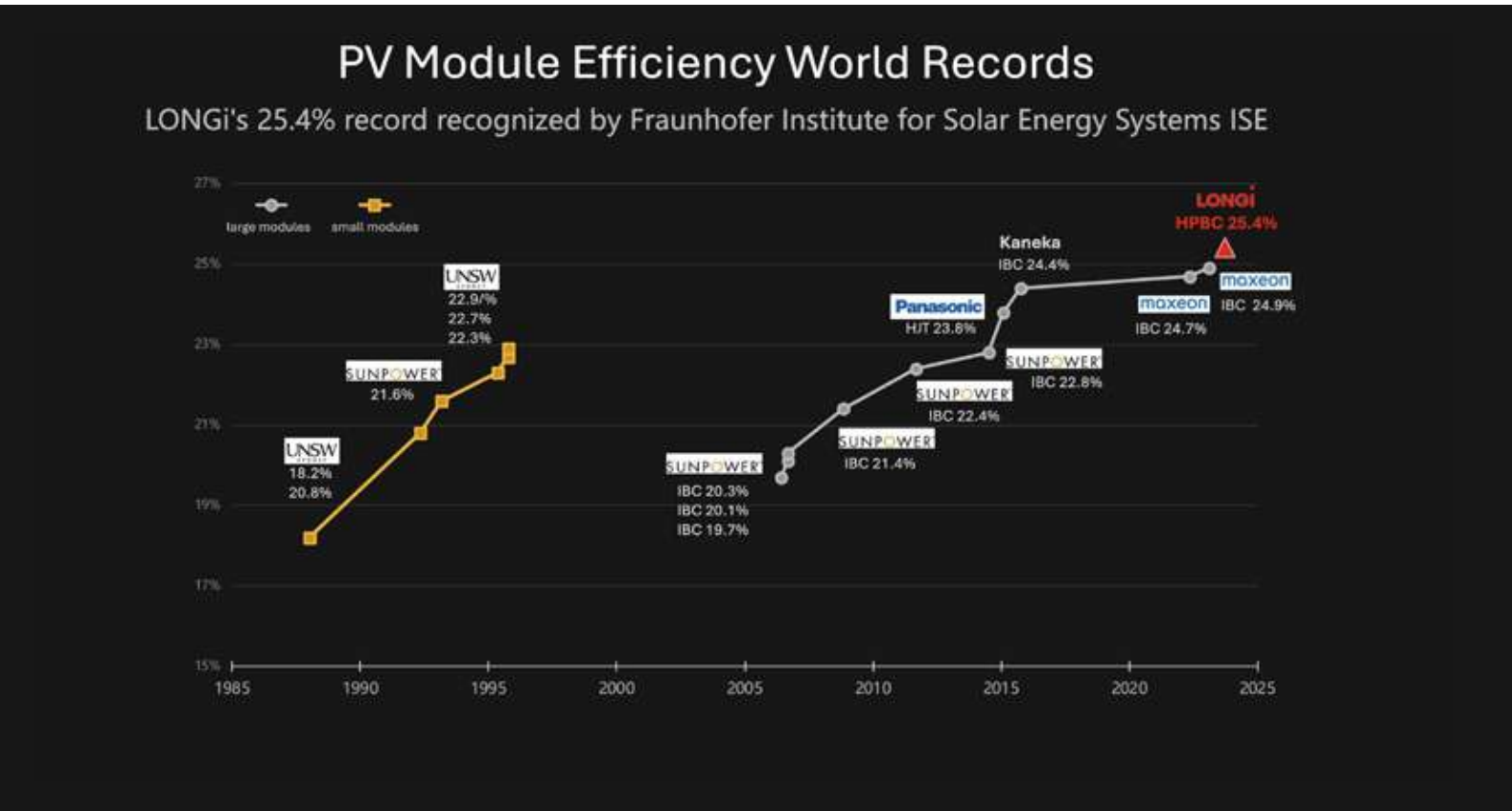
To understand the importance of this breakthrough, it's essential to consider the role of back contact (BC) technology in solar efficiency. Since SunPower's record-setting achievement of 20.3% efficiency in 2007 with IBC technology, BC solar cells have led the way in crystalline silicon module efficiency. Over the past 30 years, BC technology has produced eight consecutive world records in efficiency. Known for its high compatibility with manufacturing processes, BC technology offers a reliable pathway for achieving higher efficiency and has established itself as a cornerstone of solar innovation. Longi's HPBC 2.0 module builds on this legacy by refining BC technology to reach even greater efficiency levels, signaling

an exciting new chapter in the evolution of crystalline silicon-based solar modules.

Longi's record-breaking HPBC 2.0 module is an impressive feat in research and development, but the company's goals extend beyond this accomplishment. Longi remains committed to increasing the efficiency of its mass-produced panels, bringing cutting-edge technology to a wider audience. As of now, Longi's HPBC 2.0 modules available for commercial shipment have achieved an efficiency level of 24.8%, which makes near-record efficiency levels accessible for everyday applications. This level of efficiency means that more energy can be generated from a smaller footprint, which is especially valuable for space-constrained applications, such as urban rooftops.

Building on its research success, Longi has recently launched its Hi-MO X10 series modules, featuring HPBC 2.0 cells that achieve production cell efficiencies exceeding 26.6%. This series represents Longi's commitment to continual improvement and scaling up advanced technologies. Longi has also introduced a range of HPBC-based products designed for diverse market needs, including the Hi-MO X6 and Hi-MO X6 Max, which use HPBC 1.0 cells, and the Hi-MO 9 series, a utility-scale solar solution incorporating HPBC 2.0 technology. These products demonstrate Longi's strategy of pushing the boundaries of efficiency while ensuring adaptability across residential, commercial, and utility-scale solar installations.

The emphasis on HPBC technology underscores its transformative potential in solar efficiency. HPBC technology combines elements of traditional back contact cell design with advanced passivation techniques to reduce energy loss and optimize sunlight conversion. This hybrid design enhances overall module efficiency by minimizing light energy losses within the cell, resulting in more power output from each panel. Additionally, the use of passivated back contacts helps minimize degradation over time, thereby improving the long-term performance of the modules. Longi's mastery of HPBC technology has not only set records but also established a pathway for further efficiency gains that could help lower the cost of solar electricity.



SUSTAINABLE AGRICULTURE: PAVING THE WAY FOR PAKISTAN

Held on October 29th and 30th in Karachi, the International Conference on Sustainable Agriculture 2024 brought together leading experts, policymakers, and stakeholders to discuss the future of agriculture in Pakistan. Organized with support from the Pakistan Media Development Foundation, Ripple Concept, and Exhibitor TV, and endorsed by the Green Pakistan Initiative, the event aimed to address pressing challenges in the agricultural sector while exploring sustainable solutions aligned with Pakistan's development goals.

Pakistan's Commitment to Agricultural Modernization

The conference took place at a pivotal time when agriculture had been prioritized by Pakistan's Special Investment Facilitation Council (SIFC). With the global focus on sustainable farming intensifying, Pakistan was advancing efforts to modernize its agricultural landscape. The Green Pakistan Initiative, launched a year prior, had already made significant progress. Its objective was to boost agricultural productivity through modern technology and sustainable practices, setting the foundation for discussions during the conference.

Organic Farming, Sustainable Practices, and Technological Innovation

The conference covered a wide range of topics, from organic farming practices to the development of sustainable agricultural ecosystems. Sessions delved into how organic methods could enhance productivity while protecting the environment. Additionally,

there were discussions on adopting advanced technologies such as drones for efficient crop management and solar-powered irrigation systems, which had already shown success in regions like Balochistan.

A special plenary session focused on the Land Information and Management System (LIMS), a breakthrough technology aimed at improving land utilization and agricultural planning across Pakistan. This session attracted significant interest from policymakers and industry leaders.

Exhibition Spotlight: Showcasing the Future of Agriculture

Alongside the conference, an exhibition showcased the latest in agricultural technology, offering attendees a glimpse of tools and innovations that could transform Pakistan's agriculture. Provincial pavilions from Sindh and Balochistan highlighted local projects and achievements, providing a hub for innovation, collaboration, and networking. Key sponsors, including the Bank of Punjab, National Bank of Pakistan, and Saudi Pak Investment Company, supported the conference. Their involvement underscored the critical role of financial institutions in driving sustainable growth in Pakistan's agricultural sector, particularly for small and medium-scale farmers.

A First for Sindh: Building Partnerships for a Sustainable Future

As the first event of its kind in Sindh, the conference presented a unique opportunity for stakeholders across Pakistan to connect, exchange ideas, and collaborate on solutions to the challenges faced by the agricultural sector. By gathering industry experts, government officials, and financial institutions, the conference initiated a broader dialogue on sustainable agriculture, setting the stage for future development.

The Green Pakistan Initiative: A Blueprint for Sustainable Growth

Launched in 2023, the Green Pakistan Initiative had already reshaped Pakistan's agricultural landscape, especially in Balochistan. The project aimed to combat poverty and underdevelopment by

converting barren land into productive fields, creating jobs, and promoting sustainable farming practices. In its first year, the initiative installed 40 solar tube wells that irrigated 800 hectares of land, enabling the cultivation of crops like wheat and watermelon, demonstrating its potential to uplift the local agricultural sector.

In its second phase, the initiative expanded with 83 additional solar tube wells, supporting 1,660 hectares of land. Local communities responded positively, viewing the initiative as a model for sustainable development in the region.

Supporting Local Communities with Sustainable Resources

Central to the Green Pakistan Initiative was its commitment to empowering local communities in Balochistan. Through affordable financing, provision of seedlings, fertilizers, solar tube wells, and expert guidance, the initiative helped farmers become active contributors to the province's economic development. By addressing the historic exclusion faced by local populations, the project allowed them to benefit directly from their resources. Over 110 households had already seen benefits from the program, with more expected as it continued to expand. Support from Frontier Corps (FC) Balochistan (South) in providing essential services like land leveling and fertilizer distribution further strengthened the initiative's impact on local communities.

Overcoming Agricultural Challenges in Pakistan

Pakistan's agricultural sector faced numerous obstacles, including rapid population growth, outdated farming techniques, limited foreign investment, and inadequate irrigation infrastructure. These challenges impacted the sector's ability to meet the nation's food security and economic needs. The Green Pakistan Initiative aimed to address these issues by promoting modern farming techniques, improving water management, and introducing technology-driven solutions to increase productivity and sustainability. One notable feature of the initiative was the establishment of agricultural malls in various districts of Balochistan, including Turbat, Panjgur, Awaran, and Khuzdar. These facilities provided farmers with access to fertilizers, seeds, pesticides, technical support, and machinery rentals, modernizing farming practices and enhancing efficiency.

itel Energy

IP54 Hybrid Inverters 1kW-12kW

3-Year Replacement

energy.itel-life.com

Hall# 2

Booth Code M-2-04

IKEA STRENGTHENS ROMANIA'S ENERGY TRANSITION WITH SOLAR AND WIND POWER

IKEA's investment division, Ingka Investments, has taken significant steps toward enhancing its renewable energy portfolio in Romania, aligning with both local sustainability objectives and the company's global climate goals. With recent regulatory approval from Romania's energy authority (ANRE), Ingka Investments is set to develop a large-scale photovoltaic project in Dâmbovița County with a peak capacity of 247 MW, bringing transformative energy potential to the region.

New Solar Power Project in Dâmbovița County

The solar power plant, located in the Muntenia region near Butimanu commune just north of Bucharest, represents one of Romania's largest renewable energy projects. Ingka Investments acquired this solar initiative in late 2023, announcing a planned investment of over $216 million and an anticipated project completion date by the end of 2025. The facility, expected to produce

enough energy to power approximately 170,000 Romanian households annually, will be developed in two phases through Ingka's subsidiary, Butimanu Energy. With a grid connection capacity of 223 MW, this project underscores IKEA's commitment to contributing to Romania's energy transition and reducing the country's dependence on fossil fuels.

Existing Renewable Energy Assets: A Network of Wind Farms

This solar project complements Ingka Investments' existing renewable assets in Romania. The company already operates nine wind farms across the country, with a combined capacity of 171 MW, supporting Romania's clean energy objectives while expanding IKEA's role in the renewable energy market. Together, these solar and wind investments create a diversified portfolio of renewable assets that align with Romania's renewable energy goals, providing Ingka with a strategic foothold in the country's green transition. Furthermore, Ingka's renewable assets in Romania contribute to the local power supply chain, supplying energy directly to end consumers and benefiting communities nationwide.

Enhancing Local Supply Chains Through Renewable Energy

One of the most notable impacts of the new solar power project will be its support for local IKEA suppliers. Ingka Investments announced that the annual energy output from the Butimanu solar facility would enable IKEA's value chain to provide renewable energy to a broader range of local suppliers. This localized energy production is key to ensuring that the company's extended supply chain operates with a lower carbon footprint, supporting sustainable practices across production processes.

Responsible Forest Management Amid Conservation Concerns

In addition to its renewable energy initiatives, IKEA has a significant presence in Romania as the country's largest private owner of forests, holding extensive forested areas, including parts of Europe's last remaining old-growth forests in the Romanian Carpathians. While these forests are essential for biodiversity, concerns have been raised about the environmental impacts of timber sourcing. Greenpeace has called attention to instances where companies supplying IKEA have sourced wood from Natura 2000-protected areas, leading to calls for stricter monitoring and conservation practices. IKEA is urged to ensure that its supply chain aligns with environmental best practices and safeguards Romania's rich natural resources, emphasizing the company's responsibility to maintain sustainability across its sourcing and manufacturing processes.

Global Impact: Ingka's Renewable Investments Beyond Romania

Romania's renewable energy expansion is part of a broader global strategy by Ingka Investments to enhance IKEA's sustainability profile. In addition to the Romanian projects, Ingka recently announced an increased stake in the 1.33 GW Golden Plains Wind Farm in Victoria, Australia. This investment will position IKEA as a major contributor to what will become the largest wind farm in the southern hemisphere. Ingka's 15% share in the project's second phase reinforces its commitment to securing renewable energy across its retail countries, aligning with the company's climate-positive goals. Frederik de Jong, Head of Renewable Energy at Ingka Investments, emphasized, "Our 15% stake in Golden Plains Wind Farm Stage 2 highlights our dedication to securing renewable energy for IKEA retail countries and advancing sustainability goals."

Romania's Renewable Landscape and IKEA's Role in a Sustainable Future

Romania's renewable energy sector is experiencing rapid growth, with the Romanian Energy Regulatory Authority recently approving permits for 39 renewable power plants anticipated to be operational by year-end. IKEA's contributions, from wind to solar power, highlight the company's alignment with national and EU environmental goals. These developments not only reduce carbon emissions but also foster energy security, economic growth, and community resilience across Romania.

Pakistan's $2.1b solar imports from China rise with 155% tariff hike

Pakistan imported approximately 15 GW of solar panels valued at $2.1 billion from China in the last fiscal year, as reported in a study titled The Great Solar Rush in Pakistan. The study noted that rising electricity tariffs, which have surged by 155 percent over the past three years, are driving high-consumption households and industries toward solar energy solutions.

This shift has led to a 10.4 percent reduction in grid electricity demand over the past year, with expectations of further declines. Such trends underscore the need for modernizing Pakistan's grid and revising demand forecasts to support decentralized energy generation. Additionally, the ongoing drop in battery prices is expected to accelerate solar adoption, making urgent grid adaptation critical for sustaining the financial health of Pakistan's utility model.

During the study launch on Thursday, analysts from global and local spheres highlighted Pakistan's swift move to solar as a distinct "solar rush" driven by rising energy costs, decreasing technology prices, and strong import momentum. The study by Renewables First underlines Pakistan's increasing role in renewable energy among developing nations, as noted by various experts at the event.

"Pakistan's solarisation drive is indeed impressive, but we have also seen these trends being replicated in other emerging markets," commented Jenny Chase, a Solar Analyst at Bloomberg NEF. "What makes Pakistan unique is the rapid nature of these additions," she added.

With 27 GW of imports since 2020, Pakistan's market is seen as globally significant, showing substantial growth across residential, industrial, and agricultural sectors. On the matter of adapting grid infrastructure to support this growth, Syed Faizan Ali, a member of the Prime Minister's Solarisation Committee, remarked, "With strong policy alignment, we can harness this growth while addressing these operational challenges."

PAKISTAN SUSTAINABILITY WEEK 2024 - KARACHI EXPO CENTRE

From September 26 to 28, the Karachi Expo Center hosted Pakistan Sustainability Week, a pivotal three-day event dedicated to advancing clean and sustainable energy solutions within Pakistan. Drawing participation from over 200 companies representing more than 30 countries, this significant gathering showcased a diverse range of innovative technologies and new developments in renewable energy, green infrastructure, and environmental sustainability. The event served as a powerful testament to Pakistan's growing commitment to a greener future and its recognition of the critical need for cleaner energy sources amid intensifying global environmental concerns.

Prominent government figures lent their support, highlighting the event's importance at a national level. Distinguished attendees included Senior Minister Mr. Sharjeel Inam Memon, Energy Minister Syed Nasir Hussain Shah, Minister for Industries and Commerce Jam Ikramullah Dharejo, Secretary Energy Mr. Musaddiq Ahmed Khan, and Governor Sindh, Mr. Muhammad Kamran Khan Tessori. These officials underscored the government's dedication to fostering partnerships, implementing forward-thinking policies, and investing in projects that drive renewable energy adoption and sustainable practices across the nation.

Throughout the event, Pakistan Sustainability Week created a collaborative platform where local and international companies could exchange expertise, build networks, and identify opportunities within Pakistan's rapidly evolving clean energy sector. Exhibits, seminars, and interactive panel discussions allowed participants to engage in meaningful dialogues focused on the immense potential for renewable energy in Pakistan, especially in the Sindh region. Rich in wind and solar resources, Sindh was spotlighted as a promising area for energy infrastructure development, with government and industry representatives emphasizing the importance of joint efforts to address existing challenges.

By facilitating cross-sector partnerships and nurturing a space for collaborative innovation, Pakistan Sustainability Week marked a crucial step forward in mobilizing efforts toward an eco-friendly and resilient future for Pakistan. As stakeholders from various sectors unite around shared sustainability goals, the event serves as an inspiring example of how concerted action can drive transformative change for a cleaner, greener Pakistan.






KARACHI E
LTERNATIVE

LTERNATIVE








IPS4


WETEX 2024 CONCLUDES – HIGHLIGHTS, TECHNOLOGIES AND TRENDS

The 26th Water, Energy, Technology, and Environment Exhibition (WETEX) attracted significant participation from companies specializing in digital transformation, cybersecurity, and network security. Alongside these, leading local and international firms showcased advancements in energy, sustainability, water, green buildings, smart grids, and electric vehicles.

Organized by Dubai Electricity and Water Authority (DEWA) from October 1–3, 2024, under the directives of HH Sheikh Mohammed bin Rashid Al Maktoum, WETEX established itself as a platform to advance sustainability and innovation. HE Saeed Mohammed Al Tayer, MD & CEO of DEWA, highlighted WETEX's role in supporting the UAE's cybersecurity leadership and fostering a culture of innovation to address global environmental and technological challenges. WETEX 2024 showcased cutting-edge technologies in artificial intelligence (AI), cyber risk prediction, and advanced security solutions for smart cities. These included best practices for securing information systems, enhancing incident response, and integrating security into smart city designs.

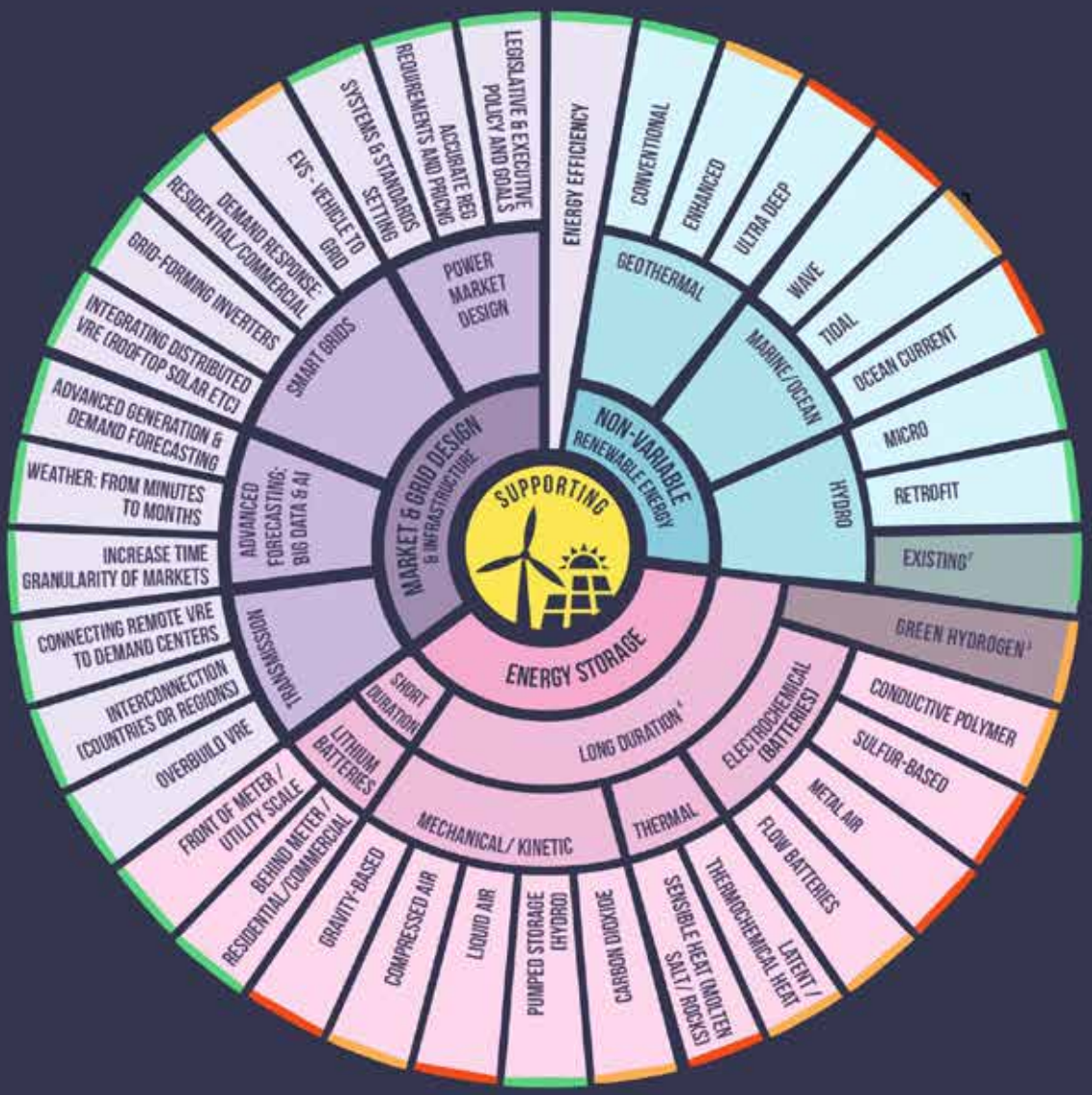
Notable participants included Siemens, which demonstrated smart grid technologies for sustainable power distribution. CEO Helmut von Struve emphasized Siemens' commitment to digitalization and sustainability.

Hitachi Energy, as a platinum sponsor, aligned its participation with DEWA's mission and the UAE's 2050 Net Zero Initiative. Dr. Mostafa AlGuezeri highlighted the company's role in advancing global energy transitions. SAP showcased AI-driven solutions like the Green Ledger to optimize environmental impact, while Larsen & Toubro displayed innovations in renewable energy and water management, reinforcing their long-term commitment to sustainability in the region. Hayat Communications celebrated its strategic partnership with DEWA, focusing on data centers, facility management, and renewable energy solutions. CEO Abdulraouf Alwazzan emphasized their joint efforts to enhance digital infrastructure and innovation in the UAE.

WETEX 2024 reinforced its position as a vital platform for advancing sustainability and technological innovation globally.

Achieving Fossil-Free Electricity[1]

Policies, Tools and Technologies for Supporting Wind and Solar



Key: Market Readiness

- Commercial
- Newly Commercial
- Demo/Pilot

Footnotes:

1. Infographic shows the many choices available for supporting wind & solar to achieve reliable, dispatchable fossil-free energy. There is no one silver bullet. Not all are necessary, although most Market & Grid Design reforms are. List is not exhaustive.
2. No new large hydropower dams should be built. Existing projects should be operated in a way that minimizes impact on vulnerable communities.
3. Converting electricity to hydrogen and back again is inherently inefficient but may make sense in some contexts. Hydrogen should be manufactured, stored, and converted back to electricity, all at the same location, in order to limit inefficiencies and leakage risks.
4. Long Duration storage is mostly not needed until over 50% VRE penetration.

HONEYCOMB WIND TURBINES COULD OUTPERFORM SOLAR PANELS: FREE ELECTRICITY, EVEN AT GROUND LEVEL

THE QUEST FOR CLEAN ENERGY IS A TOP PRIORITY FOR MANY NATIONS, INCLUDING THE UNITED STATES, WHERE SOLAR POWER REMAINS THE MOST FAVORED FORM OF RENEWABLE ENERGY. HOWEVER, THE LATEST INNOVATIONS FROM KATRICK TECHNOLOGIES ARE SET TO DISRUPT THIS TREND.

Their groundbreaking 'honeycomb' wind turbines, known as Wind Panels, promise to generate significant amounts of clean energy while seamlessly blending into various environments. Unlike solar power, these solutions are not only compatible with existing energy systems but also offer a practical alternative.

A New Era in Renewable Energy: Introducing Game-Changing Wind Turbine Technology

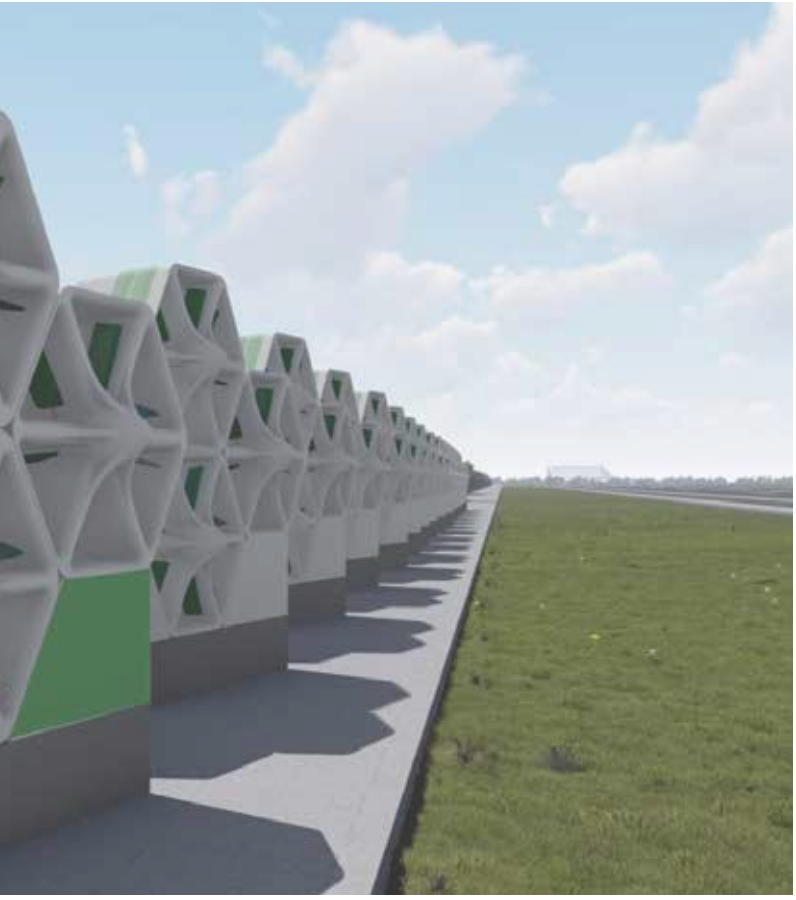
Katrick Technologies, a next-generation renewable energy company, is leading the charge toward a zero-carbon future. With a suite of patent-protected technologies, the company has developed an impressive range of zero-carbon products.

Among these, the Wind Panels stand out by utilizing principles of ducting and mechanical oscillation to efficiently capture wind energy. Unlike traditional wind turbines, these panels have no rotary parts, which significantly reduces maintenance costs while enhancing efficiency. This innovation represents more than just a new method of harnessing wind power—it introduces a completely different paradigm. By replacing bulky turbines with sleek, modular panels, Katrick Technologies enables the installation of wind energy systems in space-constrained areas like densely populated cities.

As the push for sustainable energy intensifies, these Wind Panels offer a simple, cost-effective solution poised to revolutionize the U.S. renewable energy sector.

Innovative Design: Harnessing Wind for a Sustainable Future

Katrick's Wind Panels are uniquely



engineered with channeling ducts that house aerofoils, converting the kinetic energy of wind into mechanical vibrations. This distinctive approach allows energy capture in real-time, even during rapid changes in wind speed and direction.

Notably, the Wind Panels outperform conventional turbines, which often struggle with efficiency under fluctuating wind conditions. The panels operate effectively across a wide range of wind speeds, both high and low, making them ideal for urban areas where traditional turbines can't be installed due to space limitations.

Moreover, these panels can be placed at ground level to harness ground-effect winds, providing a major advantage in urban environments. If widely adopted, these panels could complement local power grids, potentially offering free electricity to numerous homes and businesses.

Competitive Edge Over Solar Panels: Redefining Energy Production

The renewable energy market is highly dynamic, with ongoing competition between solar and wind technologies. While solar panels are often favored for their sleek design and modularity, Katrick's Wind Panels present a compelling alternative.

They offer lower installation and maintenance costs compared to traditional solutions, and their ability to generate electricity at low wind speeds makes them a reliable energy source. By integrating wind and solar energy, overall energy reliability could be improved, bringing the goal of energy independence closer to reality. Households and businesses could generate their own electricity without relying solely on solar panels or conventional energy sources.

The Future of Energy: Merging Wind and Solar for a Greener America

The fusion of wind and solar technologies has the potential to reshape America's energy landscape. As Katrick Technologies continues to evolve, combining these two renewable sources could enhance energy efficiency and supply, benefiting both consumers and the environment.

Integrating wind and solar into microgrids could boost energy security while reducing reliance on traditional power stations. Communities leveraging multiple technologies could create more localized and resilient energy systems, capable of weathering supply shortages and fluctuating prices.

Katrick Technologies' honeycomb wind turbines represent a significant breakthrough in renewable energy. With their versatile design, these Wind Panels have the potential to surpass traditional solar technology, offering a clean, efficient, and cost-effective solution for energy production.

As the demand for sustainable energy grows, the U.S. could be on the brink of a new era of green energy independence, driven by this innovative wind technology.

WHAT YOU NEED TO KNOW ABOUT THE GLOBAL CLIMATE SUMMIT

COP29

The outcomes of this summit will have a far-reaching impact on global climate action. To date, the global community has struggled to curb the destructive practices of the fossil fuel industry, which continues to pollute and devastate ecosystems in the face of escalating human suffering.

COP29 presents a critical moment for global leaders to depart from these past failures. Here's a look at what to expect from this pivotal climate event:

Who Will Be Attending?

COP29 is expected to draw between 40,000 and 50,000 attendees, including representatives from all UN member states, as well as the State of Palestine, the Holy See, Niue, the Cook Islands, and the European Union. Also attending will be diplomats, UN officials, journalists, climate scientists, trade union leaders, and policy experts. In addition to official delegates, activists, NGOs, and Indigenous leaders are planning to participate, although Azerbaijan's own civil society members face limitations due to government restrictions.

What Is the Aim of COP29?

The main goal of COP29 is for countries to agree on, develop, and share comprehensive plans to tackle climate change. This includes efforts to limit future global warming and to support communities already suffering from climate impacts. The 2015 Paris Agreement mandates that nations set targets to reduce greenhouse gas emissions, aiming to keep

the global temperature rise well below 2°C above pre-industrial levels. However, recent findings from the Intergovernmental Panel on Climate Change (IPCC) stress that only by limiting warming to 1.5°C can the worst effects of climate change be averted.

During COP29, nations' progress will be assessed against this 1.5°C target. Even this level of warming would entail significant displacement, economic harm, and loss of life, particularly in lower-income countries. Currently, projections indicate that the planet is on a path toward a 2.6 to 3.1°C increase by the end of the century.

What's the Focus This Year?

COP29 has been labeled "the finance COP" because of its focus on mobilizing climate finance—funds essential to help lower-income countries transition to zero-carbon economies and adapt to climate challenges. A key goal of COP29 is to secure increased funding for these efforts and to establish a new climate finance target.

Where Will the Money Come From?

Under the UNFCCC and Paris Agreement, high-income countries, historically responsible for the bulk of emissions, are expected to contribute the most to climate finance. Human rights law also requires all states in a position to do so to assist in climate action. COP29 negotiators will work to set a clear financial target and establish timelines for delivering these funds to developing countries, advocating for grants instead of loans to avoid deepening existing debt crises.

How Should the Funds Be Used?

The climate finance target should include sub-goals specifying how the funds will be allocated. Amnesty International and other groups are calling for a focus on "loss and damage" funding, which would provide compensation to lower-income countries already facing irreversible climate impacts. One positive step from Azerbaijan's COP29 presidency has been the prioritization of adaptation, a topic often sidelined in climate talks. While reducing emissions is essential, helping communities adapt to unavoidable climate impacts is a crucial component of climate justice.

How Much Money Is Required?

Experts estimate that trillions of dollars are necessary to help lower-income countries take on meaningful climate action, including a just transition away from fossil fuels. Amnesty International and climate justice advocates are calling for an annual target of at least $1 trillion USD in climate finance.

What Are Amnesty's Concerns on Azerbaijan's Human Rights Record?

Azerbaijan's history of repressing free expression, association, and assembly raises serious concerns. Peaceful protests, including those related to environmental issues, are often met with force, and over 300 people are reportedly imprisoned on politically motivated charges. Draconian laws restrict independent media, and those who criticize the government face intimidation. The situation has worsened since Azerbaijan was selected to host COP29, with numerous activists and journalists prosecuted this year.

How Does Azerbaijan's Human Rights Record Impact COP29?

Civil society participation is essential for climate negotiations, as activists and human rights defenders advocate for ambitious targets and ensure that climate action aligns with human rights obligations. Yet, Azerbaijan's civil society faces extreme restrictions, with activists and independent voices often forced into silence or exile. The gap left by independent groups is partl

y filled by GONGOs (government-organized NGOs), which lack genuine independence but create an impression of open dialogue.

What Is Azerbaijan's Climate Record?

Oil and gas comprise about half of Azerbaijan's economy, with state-owned SOCAR providing significant revenue for the government. While Azerbaijan has climate obligations under the Paris Agreement, it has announced plans to expand gas production, a move that contradicts its commitments. COP29 is expected to host numerous fossil fuel industry representatives and lobbyists, including from major oil companies, who have historically influenced summit outcomes by promoting lenient policies and carbon offsetting.

How Has 2024 Highlighted the Impacts of Climate Change?

Extreme weather events are increasingly frequent, and 2024 is on track to be the hottest year recorded. Communities worldwide have been devastated by floods, droughts, hurricanes, and wildfires, all worsened by climate change. Indigenous communities and those dependent on natural resources face the heaviest toll, with livelihoods, cultural heritage, and lives at risk. The economic costs of these losses are monumental, surpassing investments in renewable energy and threatening governments' ability to safeguard human rights.

As COP29 convenes, Amnesty International calls for climate action that centers human rights, urges wealthy countries to increase climate finance, and advocates for a robust fossil fuel phase-out. COP29 must resist risky technologies and prioritize sustainable, equitable solutions to address the climate crisis.

FOREIGN DIRECT INVESTMENT IN PAKISTAN'S ENERGY SECTOR SOARS TO $585.6 MILLION IN Q1 FY25

Foreign direct investment (FDI) in Pakistan's energy sector, encompassing power and oil and gas exploration, surged to $585.6 million in the first quarter of fiscal year 2024-25 (July-September), up from $266.3 million during the same period last year. The power sector attracted the highest share of investment, followed closely by financial services and oil and gas exploration, representing a 119.9 percent increase compared to Q1FY24.

The Overseas Investors Chamber of Commerce and Industry (OICCI) raised concerns about Pakistan's heavy reliance on a few sectors and one main investor, urging for a broader FDI strategy to enhance long-term stability. The State Bank of Pakistan (SBP) further reported an overall 48 percent increase in FDI, reaching $771 million in Q1FY25. While FDI growth is promising, OICCI cautioned that over-dependence on limited investors and sectors might pose challenges to sustainable economic health.

China emerged as the largest investor, contributing $404 million in Q1FY25, or 52 percent of total FDI, including a substantial $244.8 million in September alone. Other notable contributors included Hong Kong ($99 million), the United Kingdom ($72 million), and the United States ($29 million), signaling some diversification, yet structural issues—political instability, security risks, and regulatory hurdles—remain barriers to further growth.

The OICCI report noted that while the China-Pakistan Economic Corridor (CPEC) has positioned Pakistan as a significant trade hub, recent geopolitical developments, such as the U.S.-China trade conflict, add complexity. Additionally, global economic factors like rising interest rates and currency volatility affect capital flow and investor confidence.

Global FDI trends show continued volatility, with the pandemic triggering a 42 percent drop in 2020, which rebounded in 2021. Despite CPEC's potential, FDI in Pakistan has fluctuated between $1.5 billion and $2.5 billion in the past decade, recently impacted by political and economic uncertainty.

EXPERTS CALL FOR ENERGY TRANSITION FRAMEWORK IN PAKISTAN TO SUPPORT PHASED RETIREMENT OF COAL PLANTS

Leading energy experts and economists stressed the urgent need for Pakistan to scale up its renewable energy efforts and accelerate the transition from fossil fuels through a dedicated clean energy framework.

The Sustainable Development Policy Institute (SDPI) hosted a virtual high-level policy roundtable on "The Fossil Fuel Blind Spot at COP29," where experts discussed the country's energy challenges and solutions. Dr. Khalid Waleed, an energy expert at SDPI, opened the session by highlighting the importance of localizing renewable energy technologies for developing nations like Pakistan to ensure energy security. He emphasized the need for technology transfer and information sharing from the Global North.

"Pakistan has overinvested in coal plants to solve the energy accessibility crisis, resulting in underutilized projects that burden national finances," said Dr. Waleed. He also warned that incorporating local coal into the energy mix could present future challenges under international mechanisms like the Carbon Border Adjustment Mechanism (CBAM). He advocated for strategic partnerships, such as Just Energy Transition Partnerships (JETPs), and market-based solutions like the Coal to Clean Credit Initiative to ensure a smooth energy transition.

Zainab Babar, a researcher at SDPI, presented her report on "Transitioning away from Coal: An orderly retirement of coal power plants in Pakistan." She discussed Pakistan's reliance on RLNG and coal, while examining global trends in transitioning from coal to clean energy. She argued that retiring inefficient coal plants would improve Pakistan's global positioning, make industries more globally competitive, and create financial returns by earning carbon credits from avoided emissions.

Dr. Majid Bilal from the Indus Consortium emphasized five key principles for a clean energy transition: local stakeholder engagement in planning, social protection for affected communities, workforce training, diversification of communities, and the promotion of SMEs to create localized jobs. He also stressed the importance of incorporating gender in the transition, advocating for increased participation of women in the energy sector.

Julia Skorupska, Head of Secretariat at Powering Past Coal Alliance, proposed blended finance as a means to accelerate coal plant retirements. "Public finance is limited, but available funding remains underutilized. Governments must align tariffs and halt further coal plant construction," she remarked, referencing successful public and

private finance models to support energy transitions.

Afia Malik, Senior Economist at PIDE, shared data on the long-term benefits of renewable energy. She noted that adopting renewable energy could generate a net global gain of $78 trillion by the end of the century and create three times more jobs than coal power plants. “The initial costs are high, but the economic growth and innovation they drive will far outweigh these challenges,” she stated.

Dr. Majid Ali, Associate Professor at USPCASE, NUST, discussed Pakistan’s growing adoption of solar energy, driven by rising energy costs. Despite importing $2.5 billion in solar panels in 2023, solar accounts for only 1.5% of Pakistan’s energy mix, compared to 16% from coal. He urged the government to renegotiate terms with China, the main investor in coal plants, and explore climate swaps to reduce retirement costs.

Selina Irfan, SDPI Advisor, stressed the need for immediate action by optimizing available technologies such as clean coal washing, electrostatic precipitators, and low-NOx burners while phasing out coal plants. She called for a revision of the Integrated Generation Capacity Expansion Plan (IGCEP) to align with these goals. However, she cautioned that the high upfront costs must be considered in both short-term and long-term scenarios.

Irfan Pervaiz, Deputy Director (Environment/New Technology) at PPIB, raised concerns about the financial implications of early coal plant retirements under China-Pakistan Economic Corridor (CPEC) projects. He highlighted the need for strategic planning to manage these financial challenges, suggesting climate swaps as a potential solution.

Shakeb Elahi, Senior Advisor at SDPI, concluded the discussion by emphasizing that the energy transition is a matter of survival, not just policy. He underscored the need for Pakistan to urgently adopt a clean energy transition framework, optimize its existing resources, and secure global partnerships to navigate the complexities of early coal plant retirements.

WINDS OF CHANGE: STRENGTHENING PAKISTAN'S GRID WITH OFFSHORE ENERGY

Pakistan's national power grid is struggling with significant inefficiency and financial losses, with transmission and distribution (T&D) losses ranging from 20 to 25 percent—among the highest in the world. These losses reached a staggering Rs30,794 million in FY2022-23, as reported by the Pakistan Credit Rating Agency. The country's challenging geography adds to the problem, as power generation is concentrated in the northern and southern regions, while major consumption centers are located in the central areas. This imbalance exacerbates grid stability issues and complicates future transmission infrastructure planning. The instability of the grid also hampers efforts to integrate renewable energy, as managing the variable supply and demand requires a stable infrastructure. Renewables like solar and wind power, with their fluctuating outputs, are particularly challenging to incorporate into the existing system without grid enhancements.

To accommodate the increasing share of variable renewable energy (VRE) in Pakistan's energy mix, the grid must undergo substantial upgrades. Effectively integrating

VRE would not only ensure reliable balancing of these resources but also improve grid resilience and provide a more sustainable energy supply for both consumers and industries.

One promising solution to stabilize the grid is offshore wind power, which can complement solar energy by offering a more consistent, high-capacity renewable source. Offshore wind's steadier output could counterbalance the variability of onshore wind and solar, reducing the frequency and intensity of adjustments required from grid operators. However, incorporating offshore wind into the energy mix would introduce new challenges, requiring robust infrastructure and advanced ancillary services like frequency regulation and voltage support.

Ancillary services are critical for maintaining grid stability. These services include frequency regulation, voltage support, spinning reserves, load following, optimized power flow, and minimizing line overloading—all essential for ensuring efficient transmission and distribution. While thermal power plants have traditionally provided these services, offshore wind, with its predictable output and rapid response capabilities, could also contribute significantly to grid stability.

The provinces of Sindh and Balochistan, in particular, face significant grid stability challenges. Offshore wind could offer a solution, given the country's extensive coastline, favorable wind conditions, and strategic location. Pakistan's Exclusive Economic Zone (EEZ), covering 290,000 square kilometers, offers substantial potential for offshore wind development.

According to a 2020 World Bank report, Technical Potential for Offshore Wind in Pakistan, the country has two promising regions for offshore wind projects: Keti Bunder National Wildlife Park in Sindh and Hingol National Park in Balochistan. These areas, located within 200 kilometers of the coastline, could support both fixed and floating wind turbines.

From these regions, Pakistan could potentially generate up to 21 gigawatts (GW) of wind power—about 37.5 percent of the country's target of 56 GW of installed capacity by 2034, as outlined in the Indicative Generation Capacity Expansion Plan (IGCEP) 2024. This is significant, particularly given that variable renewable energy (VRE) currently makes up just 7 percent of Pakistan's energy mix, a figure expected to rise to at least 30 percent by 2030, according to the ARE Policy 2019.

Integrating offshore wind into the grid would help Pakistan meet its renewable energy targets while enhancing the grid's resilience and reliability. Offshore wind can provide essential services, such as spinning reserves, frequency regulation, and voltage support, while improving the balance between supply and demand.

Officials from the National Power Control Center (NPCC) and National Transmission and Dispatch Company (NTDC) have reported operational difficulties, including faults and losses, in integrating onshore wind power. These challenges stem from issues such as aligning wind generation with the merit-order power generation system and accurately forecasting demand.

Offshore wind can address some of these difficulties by reducing reliance on traditional fuel-based power generation, offering cost savings, stabilizing the grid through fast ramping capabilities, and extending the lifespan of existing generators. Moreover, offshore wind improves power quality by regulating voltage and frequency, providing reactive power to support grid voltage. Improved forecasting tools would further help mitigate the current challenges faced by NPCC and NTDC officials.

Globally, the offshore wind industry has seen rapid growth, with Europe leading the way, followed by China and Japan. Although offshore wind turbines tend to have higher

construction costs than onshore turbines and require an annual average wind speed of at least 10 m/s, their long-term benefits often outweigh these challenges, making offshore wind a sound investment.

For Pakistan, tapping into offshore wind power could significantly contribute to achieving renewable energy goals, reducing greenhouse gas emissions, improving energy security, decreasing reliance on imported fuels, and enhancing grid stability and reliability. Additionally, offshore wind could enable electricity transmission to neighboring regions, such as Gwadar, without the need for extensive transmission infrastructure development in Balochistan.

By embracing offshore wind as a clean, renewable energy source, Pakistan has the opportunity to secure a more sustainable and resilient energy future. Leveraging its geographic and climatic advantages, Pakistan can pave the way for a cleaner, more reliable energy system that meets growing demand while contributing to global environmental sustainability.

A high-level panel discussion at COP29's Pakistan Pavilion explored "Pakistan's Energy Transition: Pathways to a Sustainable Future," highlighting the country's renewable energy ambitions and addressing challenges to a sustainable energy shift amidst global climate concerns. The session convened government officials, industry leaders, and climate experts to deliberate on reducing greenhouse gas emissions while achieving energy security.

Liz Branden, Managing Director of ITrust, initiated the dialogue by underscoring the energy sector's status as the leading contributor to global CO2 emissions, driven by growing demand. Branden pointed out that Pakistan, despite being one of the smallest greenhouse gas emitters, faces severe climate impacts, including devastating floods and economic losses. She emphasized Pakistan's unique opportunity to leverage its abundant renewable energy resources and outlined the country's ambitious Nationally Determined Contributions (NDCs), aiming for a 30% reduction in carbon emissions and a 60% renewable energy mix by 2030.

The launch of a climate finance framework at COP29 was described as a promising move to attract investments in clean energy. However, the panel also highlighted regulatory and financial challenges. Branden emphasized that fiscal constraints and the need for comprehensive policy reforms remain critical hurdles to achieving energy transition goals. Sardar Mohazzam, Managing Director of NEECA, discussed Pakistan's commitment to energy efficiency, with targets to reduce 9 million tonnes of oil equivalent by 2030, potentially saving 35 million tonnes of CO2 emissions annually. This initiative could result in $6.4 billion in savings, yet requires $1 billion annually for effective implementation.

The panel drew insights from Argentina, a nation heavily investing in renewable energy despite significant fossil fuel reserves. Argentina's $11 billion investment has enabled renewables to constitute 30% of its energy mix, presenting a model for Pakistan to replicate through international partnerships and shared expertise.

Sanjay Vashist of the Climate Action Network South Asia highlighted the immense renewable energy potential in the region, citing capacities of 1,000 GW of solar, 1,300 GW of wind, and 350 GW of hydropower. Vashist called for the creation of a South Asia Renewable Energy Fund to mobilize resources for regional clean energy projects, attracting investments from entities such as the Green Climate Fund.

The panel emphasized an inclusive approach to energy transition, advocating for biodiversity conservation and community involvement in project planning. Rising energy prices were noted as a catalyst for consumer adoption of energy-efficient practices, which Sardar Mohazzam stressed as critical for modernizing Pakistan's industrial sector.

C&D EMERGING ENERGY

Solar Energy & Lithium Battery

A Top Comprehensive Supply Chain Service Operator In The Industry

TOGETHER GO BEYOND

2024 V1.0

"AVOIDING CLIMATE BREAKDOWN WILL REQUIRE CATHEDRAL THINKING. WE MUST LAY THE FOUNDATION WHILE WE MAY NOT KNOW EXACTLY HOW TO BUILD THE CEILING." - **GRETA THUNBERG**

stop climate change

Dialogue.

In this edition, we feature
Dr. Sarwat Faheem & Mehfooz Qazi
discussing small industries and
renewable energy.

AN INTERNVIEW WITH INDUSTRY SPECIALIST DR. SARWAT FAHEEM

Sustainable Practices for Small Industries: Benefits, Challenges, and Solutions

As environmental concerns continue to grow, small industries are increasingly encouraged to adopt sustainable practices that can reduce their ecological impact while offering financial benefits. Through support mechanisms, energy efficiency measures, and government incentives, industries can significantly improve operational efficiency, reduce costs, and enhance their market image. Here's a comprehensive look at how small industries can incorporate sustainable practices, the resources available to them, and strategies to overcome common challenges.

Support Mechanisms for Sustainable Practices

Adopting sustainable practices can be challenging for small industries, particularly due to limited financial and technical resources. Support mechanisms play a crucial role in facilitating this transition:

Energy Audits: Conducting energy audits helps identify opportunities for energy savings and cost reductions.

Financial Analysis: Cost-benefit analyses allow businesses to understand the financial impact of sustainable investments.

Training and Workshops: Educational sessions and workshops on sustainability provide employees with knowledge on energy efficiency, waste reduction, and other sustainable practices.

Access to Funding: Information on grants, loans, and other incentives helps small industries access the financial resources needed for sustainable upgrades.

Increased Energy Efficiency

Implementing energy-efficient technologies is a highly effective approach for small industries to reduce both energy consumption and operational costs. Options like renewable energy systems, such as solar and wind, help decrease reliance on fossil fuels, making operations more sustainable. Additionally, adopting energy-efficient equipment, including high-efficiency motors and pumps, can further cut down on energy use. Energy Management Systems (EMS) provide valuable tools for monitoring and managing energy consumption, enabling industries to optimize their energy practices and ensure long-term sustainability.

Benefits of Sustainable Practices

Adopting sustainable practices provides small industries with numerous financial and operational benefits, in addition to reducing environmental impact. Energy-efficient upgrades, such as LED lighting and energy-saving equipment, combined with water conservation systems and waste reduction initiatives, help lower operating expenses. Moreover, companies committed to sustainability tend to enjoy an enhanced brand image, which can improve customer loyalty, elevate their reputation, and give them a competitive advantage in the market. Over time, sustainable practices lead to significant cost savings by reducing energy and water consumption, cutting waste management costs, and extending the lifespan of equipment.

Communication Channels for Promoting Sustainability

Effective communication plays a crucial role in building awareness and fostering engagement around sustainable practices. By using channels like newsletters and email updates, companies can keep stakeholders informed about their sustainability progress and ongoing initiatives, helping to maintain transparency and accountability. Additionally, social media platforms allow businesses to reach a wider audience, showcasing their environmental efforts and achievements to customers, partners, and the public. This not only promotes a positive brand image but also encourages broader support for the company's sustainability goals.

Partnerships and Collaborations

Collaborating with relevant organizations can give small industries valuable resources and guidance to advance their sustainability efforts. Partnerships with industry associations and networks offer essential support and networking opportunities, while environmental organizations and NGOs provide expert advice on sustainable practices. Government agencies also play a key role, offering technical assistance and financial support through various programs designed to encourage eco-friendly initiatives. Additionally, working with educational institutions and research centers allows small industries to access cutting-edge technologies and innovations, helping them stay competitive while adopting more sustainable operations.

Small industries have access to several tools and resources that help them track and improve their sustainability efforts. Practical guides, such as energy efficiency checklists, provide actionable steps to identify areas for improvement. Key performance indicators

(KPIs) like energy consumption reduction, water savings, waste reduction, cost savings, and employee engagement are useful metrics to assess the impact of sustainability initiatives.

In Pakistan, the government offers various incentives to encourage small industries to adopt renewable energy practices. Programs like the Alternative Energy Development Program provide benefits such as feed-in tariffs, custom duty exemptions, and sales tax exemptions on renewable energy equipment. The Ministry of Climate Change also supports renewable energy projects through initiatives like the Green Climate Fund (GCF) and the Climate Change Adaptation and Resilience Building (CCARB) programs. Additionally, the Pakistan Renewable Energy Fund (PREF) offers financing and grants for research and development in renewable energy, while the State Bank of Pakistan (SBP) provides financing for renewable energy projects at discounted rates.

Small industries face several challenges in adopting sustainable practices, including limited financial resources, lack of knowledge, high initial costs, and regulatory complexities. To address financial barriers, businesses can seek affordable financing options such as loans and grants, and perform cost-benefit analyses to understand the long-term financial benefits of sustainable investments. To overcome awareness and knowledge gaps, regular training sessions, workshops, and industry-specific seminars can help educate employees and management on sustainable practices. Infrastructure challenges can be addressed through collaborative facilities and infrastructure upgrades, like installing energy-efficient lighting and equipment. For technological challenges, partnerships with technology providers and research institutions enable access to cutting-edge technologies and foster innovation.

The Sindh Small Industries Corporation (SSIC) offers various resources to support sustainable development. SSIC's Renewable Energy Program provides technical assistance, financing options, and training to facilitate the adoption of renewable energy. The Energy Efficiency Program by SMEDA conducts energy audits, offers technical assistance for energy-efficient upgrades, and provides financing options. Furthermore, the Pakistan Industrial Development Corporation (PIDC) offers technical support, financing options, and infrastructure resources to promote renewable energy projects within small industries.

Measuring the Impact of Sustainability

SSIC measures the environmental and economic impact of sustainability initiatives using various KPIs and assessment tools:

Environmental Impact: Metrics like carbon footprint reduction, energy and water conservation, waste reduction, and pollution reduction help gauge environmental impact.

Economic Impact: Financial indicators include cost savings, productivity gains, job creation, and revenue growth.

Assessment Tools: Life Cycle Assessment (LCA), Environmental Management Systems (EMS), and Energy Audits provide structured ways to measure sustainability impacts.

Recommended Renewable Energy Solutions

SSIC recommends the following renewable energy solutions for small industries to reduce reliance on non-renewable resources:

Solar Energy Solutions: Solar photovoltaic systems, solar water heaters, and solar-powered lighting systems.

Wind Energy Solutions: Small-scale wind turbines and wind-solar hybrid systems.

Biogas Energy Solutions: Biogas generators and biogas-powered boilers.

AN INTERVIEW WITH MEHFOOZ QAZI

PROJECT DIRECTOR SINDH SOLAR ENERGY PROJECT

What is the government's role in enabling renewable energy?

The government plays a critical role in establishing an environment that supports the transition from fossil fuels to renewable energy sources. Currently, approximately 60-65% of Pakistan's national grid relies on fossil fuels, a dependency that leads to high energy costs, increased greenhouse gas emissions, and long-term environmental harm. Fossil fuel-based energy not only strains the economy due to its fluctuating prices but also poses severe threats to environmental and public health.

To facilitate a sustainable shift, the government must prioritize policies and infrastructure development that encourage renewable energy. This includes establishing incentives for clean energy investments, simplifying regulatory processes, and supporting innovation in green technology. Additionally, governments can create partnerships with private companies to build the necessary infrastructure, such as transmission lines for wind and solar power, and implement subsidy programs to make renewable energy affordable for the population. By advancing these initiatives, the government can decrease reliance on fossil fuels, reduce energy costs, and work towards a more resilient and environmentally-friendly energy system. A proactive approach from the government can be instrumental in accelerating the country's transition to a low-carbon, sustainable energy future.

In your opinion tell us about the challenges faced and Progress made in the renewable energy industry in Pakistan. One of the most significant challenges in Pakistan's energy sector is making renewable energy accessible and affordable, despite the country's wealth of natural resources. As of now, renewable energy accounts for only 6% of Pakistan's energy mix, falling far short of the ambitious 30% target set for 2030. Achieving this goal requires considerable investment in infrastructure, technology, and policy support. A promising development in this area is the Jhampir wind power plant, which contributes

1,800 MW to the national grid. This plant is strategically located between Karachi and Hyderabad, two major industrial hubs, which allows it to supply clean energy to areas with high power demand. However, challenges remain. Balochistan, for example, has one of Pakistan's strongest wind corridors, yet a lack of transmission infrastructure has prevented this region from capitalizing on its potential.

The Sindh government has proactively addressed some of these obstacles by allocating 57,000 acres for renewable energy projects. However, despite this allocation, projects totaling an impressive 25,000 MW remain stalled due to insufficient transmission networks. To address this, the Sindh government has introduced the Sindh Transmission and Dispatch Company (STDC) under a Business-to-Business (B2B) model. This initiative includes a 350 MW hybrid project in Jhampir, combining solar and wind energy with battery storage, which is projected to operate at one-third of the current energy costs. These efforts indicate that while challenges are substantial, proactive government intervention and strategic planning can make a considerable difference in realizing Pakistan's renewable energy potential.

How does the government plan on helping low-Income households in Sindh?

The Sindh government is aiming to alleviate energy poverty by providing free electricity to low-income households that consume under 300 units of electricity per month. This program targets three specific groups: individuals without electricity access, households that use less than 100 units, and households that consume under 200 units monthly. For those meeting the 300-unit criteria, the government plans to provide comprehensive energy kits designed to cover essential needs.

These kits include a solar panel, battery, energy-efficient fans, and a device for charging mobile phones, ensuring basic electricity needs are met sustainably. Each kit is tailored according to the energy consumption of the household, allowing for efficient and targeted support. To prevent misuse, the government has established strict criteria and a monitoring system to ensure that these resources reach only those who genuinely need them. This initiative not only addresses immediate energy needs but also encourages the adoption of renewable energy at the grassroots level, contributing to both social welfare and environmental sustainability.

How can we raise awareness about the importance of clean energy in Paksitan?

Promoting renewable energy in Pakistan requires a comprehensive approach, combining education, community engagement, government support, and partnerships with private sectors and NGOs. Awareness campaigns across television, radio, newspapers, and social media can effectively highlight the benefits of renewable energy, such as reduced pollution, cost savings, and job creation. Through infographics, documentaries, and success stories like the Jhampir wind farms, these platforms make renewable energy relatable and impactful.

Educational programs are also vital. Integrating renewable energy topics into school and university curricula fosters sustainability among young people. Workshops, field trips, and research projects at educational institutions help build an informed, eco-conscious generation Engaging communities through local partnerships spreads awareness at the grassroots level. Workshops and exhibitions, especially in rural areas, can showcase solar panels and affordable energy solutions, making renewable options accessible Government incentives like subsidies and low-interest loans further encourage renewable adoption. Emphasizing the health and environmental benefits can also inspire public support. Finally, renewable energy fairs and conferences create dialogue, showcase advancements, and foster a national shift towards sustainable energy.

GLOBAL EVENTS

WFES
Date: 14 - 16 January 2025
Venue: ADNEC, Abu Dhabi

PSW
Date: 21 - 23 February 2025
Venue: Lahore Expo Centre

Intersolar Europe Exhibition
Date: 7 – 9 May, 2025
Venue: Messe, München

ASEAN Sustainable Energy Week
Date: 2 – 4 July, 2025
Venue: Bangkok, Thailand

Electricity Pakistan
Date: - 1 - 3 August, 2025
Venue: Expo Centre, Lahore

Solar PV & Energy Storage World Expo
Date: 8 - 10 August, 2025
Venue: Guangzhou China

Intersolar South America
Date: 26–28 August, 2025
Venue: Expo Center Norte, Sao Paulo

RE+
Date: 8 – 11 September 2025
Venue: Las Vegas, NV

WETEX & DSS
Date: 30 Sep to 02 Oct, 2025
Venue: Dubai World Trade Centre (DWTC)

PSW
Date: - 17 - 19 October, 2025
Venue: Karachi Expo Centre

THE COMPLETE JOURNAL ON ALTERNATE ENERGY

Phone: (+92) 21 35810637 - 39 | Email: pv@pvjournal.com | Web: www.pvjournal.com

PAKISTAN SUSTAINABILITY WEEK

#PSW
AN EVENT ON ALTERNATIVE ENERGY

21 - 23 FEB 2025
LAHORE EXPO CENTRE

17 - 19 OCT 2025
KARACHI EXPO CENTRE

The Largest Sustainability & Clean Energy Technology Exhibition & Conference

ALONGSIDE

SOLAR® PAKISTAN

ELECTRICITY® PAKISTAN
ENERGY | STORAGE | POWER

fakt

(+92) 21 3581 0637 - 39
enquiry@pakistansustainabilityweek.com
www.pakistansustainabilityweek.com