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Rains, Floods Ravage Northern Pakistan, Exposing Long-Ignored Climate, Dev Fault Lines

Islamabad: Torrential monsoon rains and flash floods have unleashed devastation across Pakistan's northern and upper areas, killing at least 210 people and injuring more than 500 in recent weeks, according to disaster management authorities.

The flooding has washed away roads, bridges, homes, and public infrastructure, once again highlighting the country's deep vulnerability to extreme weather events—an issue successive governments have failed to adequately prepare for.

Worst-Hit Areas

The districts of Swat, Chitral, Upper Dir, Kohistan, Gilgit, Ghizer, Hunza, and Skardu

have borne the brunt of the disaster. In Swat, swollen rivers swept away link roads and left entire valleys cut off. In Kohistan, agricultural fields and irrigation channels were submerged, while Gilgit-Baltistan saw destructive cloudbursts that inundated villages within minutes. Thousands of people remain displaced, with temporary shelters set up in schools and community centers.

Electricity transmission lines collapsed under landslides, water supply systems broke down, and hundreds of mud-brick homes crumbled. Farmers across Khyber Pakhtunkhwa and Gilgit-Baltistan have lost standing crops, further compounding the economic toll that already runs into billions of rupees.

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'Designing Future-Ready Technical Moules'

DCU, Ireland professor conducts Academic Staff Training Program

The two-day workshop on "Designing Future-Ready Technical Modules" commenced at Siren Hall, ORIC, Mehran University of Engineering & Technology, Jamshoro.

Prof. Dr. Aneel Kumar, Pro-Vice Chancellor of MUET, formally inaugurated the event. The distinguished resource person, Dr. Inam Ul Ahad, Co-Director - DCU APT Institute, Dublin City University, Ireland, conducted the workshop. The hands-on training aims to equip academic staff with innovative strategies for designing future-ready technical modules aligned with industry demands.

The workshop aimed to help academic staff reimagine module design, explore future-ready teaching practices, and co-create practical module prototypes aligned with industry needs and the evolving role of AI in assessment.

Vice Chancellor Prof. Dr. Tauha Hussain Ali graced the closing ceremony and distributed certificates of appreciation and participation among the attendees. The event was coordinated under the supervision of Prof. Dr. Bhawani Shankar Chowdhry, Advisor (H) international collaborative projects, and Engr. Muhammad Zakir Sheikh, Director NCRAAI and lead dissemination team EU funded projects ACTIVE and CATCH_VR. - PR

Rains, Floods Ravage Northern Pakistan

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Reasons Behind the Crisis

Experts argue that the destruction is not solely the result of heavy rainfall but also decades of poor planning and neglect. Successive governments have repeatedly overlooked:

Unregulated urban expansion into floodplains and riverbeds, leaving communities exposed to disaster.

Weak enforcement of building codes, with infrastructure often unable to withstand extreme weather.

Deforestation in northern regions, which has reduced natural flood barriers and increased soil erosion.

Failure to invest in resilient infrastructure, such as stormwater drainage systems, embankments, and modern dams.

Slow adaptation to climate change, despite repeated warnings that Pakistan ranks among the most climate-vulnerable countries globally.

Climate change has amplified the crisis, with unpredictable and more intense rainfall patterns, accelerated glacial melt in the Himalayas, and frequent cloudbursts. Yet, long-term adaptation strategies, such as watershed management, reforestation, and community-based disaster preparedness, remain largely absent.

Echoes of Sindh's 2022 Floods

The current devastation draws grim parallels with the catastrophic floods of 2022, which submerged almost one-third of Sindh. That disaster killed over 1,700 people nationwide, displaced 33 million, and inflicted economic damages exceeding $30 billion. Districts like Dadu, Larkana, Khairpur, and Qambar-Shahdadkot were among the hardest hit, with entire villages underwater for weeks and vast farmland destroyed.

Despite pledges to "build back better," much of the promised climate adaptation and infrastructure strengthening never materialized. The ongoing floods in the North show how the same vulnerabilities—ignored in Sindh—are now repeating in Khyber Pakhtunkhwa and Gilgit-Baltistan.

What Pakistan Must Do

Rehabilitating the affected areas will require more than emergency relief—it demands structural reforms and a long-term vision. Experts say Pakistan must urgently:

Invest in climate-resilient infrastructure – building stronger roads, bridges, and drainage systems designed for extreme weather.

Implement land-use planning – preventing settlements and construction in vulnerable floodplains.

Strengthen disaster management institutions – with better forecasting, early warning systems, and rapid response mechanisms.

Launch large-scale reforestation and watershed projects – to restore natural defenses against floods and landslides.

Mobilize international climate finance – leveraging Pakistan's position as one of the most affected countries to secure funding for adaptation and rehabilitation.

Engage communities in resilience-building – through local training, preparedness programs, and livelihood diversification.

A Wake-Up Call

The destruction in the North is a stark reminder that climate-related disasters are no longer isolated events but recurring realities. Unless Pakistan addresses the root causes—weak governance, poor planning, and climate neglect—the cycle of destruction and rebuilding will continue, leaving communities permanently vulnerable. – ER Report

Engineering Bazar

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OGDCL Commissions Jhal Magsi Gas Development Project in Balochistan

Islamabad: The Oil & Gas Development Company Limited (OGDCL) has successfully completed and commissioned the much-anticipated Jhal Magsi Development Project, marking an important step forward in efforts to strengthen Pakistan's domestic energy supply.

Situated in the remote and underdeveloped region of District Jhal Magsi, Balochistan, the project is now delivering around 14 Million Standard Cubic Feet per Day (MMSCFD) of pipeline-quality gas and 45 barrels per day (BPD) of condensate. The gas has been injected into the Sui Southern Gas Company Limited (SSGCL) network, after the company laid a 98-kilometer gas transportation pipeline from the Jhal Magsi field to its tie-in point.

Background of the Project

The Jhal Magsi initiative has been years in the making, aimed at tapping into Balochistan's underutilized hydrocarbon resources. The field itself was originally discovered in the 1990s, but remained dormant for decades due to challenging economics and the high cost of development.

Momentum picked up when the Government of Pakistan approved incentives in early 2024, including a shift from the 1997 Petroleum Policy to the Marginal Field Gas Pricing Policy. This policy change allowed previously unviable reserves—like those in Jhal Magsi—to be developed commercially, making the project financially sustainable.

Given Pakistan's growing energy deficit, the government declared the Jhal Magsi development a high-priority project. OGDCL, as the lead operator, was tasked with fast-tracking execution despite logistical and security challenges in the region.

Project Execution

Work officially began in February 2024 with an accelerated schedule. The scope included installation of critical infrastructure such as:

*Amine Unit for gas sweetening,

*Dehydration Unit for removing water content,

*Hot Oil Package,

*Power generation facilities, and

*Gathering systems to ensure efficient processing and transport.

Despite the region's rugged terrain and security complexities, OGDCL and its partners successfully brought the project online within a short timeframe.

Partnership Structure

The Jhal Magsi field comprises two producing wells. It is being developed as a joint venture with:

OGDCL (Operator) – 56% working interest

Pakistan Oilfields Limited (POL) – 24% working interest

Government Holdings Private Limited (GHPL) – 20% working interest

Strategic Importance

With its commissioning, Jhal Magsi is set to play a small but significant role in Pakistan's broader energy security strategy. While its volumes are modest compared to large fields like Sui, the project is seen as a milestone in tapping smaller, previously overlooked reservoirs through policy reforms and modern infrastructure.

The project also holds symbolic importance: it demonstrates how public-private partnerships and regulatory flexibility can unlock dormant resources in frontier regions like Balochistan, while creating local employment and contributing to regional development.

OGDCL hailed the achievement as a reflection of its commitment to sustainable development of domestic hydrocarbon resources, noting that incremental projects like Jhal Magsi will collectively help reduce the country's reliance on imported LNG. – ER News Desk

Omega Power: Pioneering Pakistan's Renewable Energy Revolution

In an era of escalating environmental concerns and surging energy demands, Omega Power Technologies has firmly established itself as a leading force in Pakistan's renewable energy landscape.

With a steadfast commitment to quality, innovation, and long-term impact, the company has built a legacy of trust, engineering excellence, and forward-thinking solutions that are transforming how Pakistan powers its industries, institutions, and homes.

Under the visionary leadership of Mr. Abdul Waheed, Omega Power has emerged not just as an importer and system integrator but as a national enabler of clean energy. Mr. Waheed's standing in the industry is rooted in a single, unwavering principle: never compromise on quality. This ethos is reflected in the company's product selection, project execution, and customer-centric approach.

Omega Power was among the first in Pakistan to introduce globally recognized Tier 1 brands such as GoodWe, Trina Solar, Jinko Solar, and Canadian Solar at a commercial and industrial scale. At a time when the local market was riddled with inconsistent supply chains and substandard components, Omega Power's strategic choices elevated performance standards and set new benchmarks for efficiency, durability, and trust.

The company's project portfolio spans a wide range of sectors—from large-scale installations in universities and educational institutions to flour mills, manufacturing plants, and corporate facilities. Every project is engineered to deliver immediate cost savings and long-term reliability. Omega Power's engineering-first approach ensures that each system is tailored to the client's needs, each component is rigorously vetted, and every installation is executed with precision.

To support its nationwide presence, Omega Power has established state-of-the-art testing and R&D laboratories in Lahore, Multan, and Karachi. These advanced facilities, equipped with cutting-edge diagnostic and calibration tools, enable real-time testing, simulation, and validation of solar systems before deployment. This robust quality assurance process ensures customers receive not just hardware—but certified, performance-guaranteed energy solutions.

Enhancing its service capacity is the company's extensive physical footprint, with regional offices in nearly every major city across Pakistan. This ensures Omega Power is always within reach—offering hands-on support, technical training, and post-installation services wherever needed.

On August 5th, Omega Power unveiled its latest innovation: a high-performance line of 6kW and 8kW hybrid inverters, launched at a high-profile event in Lahore. Designed for Pakistan's residential and mid-scale commercial markets, these inverters mark a bold step toward greater energy independence. Featuring IP66-rated enclosures, 10-year warranties, and seamless lithium battery compatibility, the new range is built to withstand Pakistan's demanding environmental conditions.

Complementing the inverter launch is the introduction of Omega's co-branded lithium battery with Sofar Solar, offering 8,000 cycles and a 10-year warranty. As a globally recognized Tier 1 brand, Sofar Solar is known for engineering precision, durability, and innovation. By aligning with Sofar, Omega Power brings the same advanced technology used in Europe, Australia, and Southeast Asia to Pakistani consumers.

What truly sets Omega Power apart is its ability to integrate premium products into a complete energy ecosystem—combining inverters, batteries, Tier 1 solar panels, real-time monitoring systems, and dedicated after-sales support into one seamless, future-ready solution. This unified approach has made Omega Power the preferred partner for commercial and industrial clients seeking long-term value, efficiency, and peace of mind.

Beyond installations, Omega Power is deeply committed to capacity building, technical training, and public awareness. The company actively educates clients, installers, and policymakers on the benefits of renewable energy—fostering a culture of sustainability and innovation across all sectors of society.

With a robust network of dealers and partners, Omega Power ensures that technical support, spare parts, and expert consultation are always accessible—from bustling urban centers to remote towns. This consistent service model has earned the company the trust of thousands of clients nationwide.

Looking ahead, Omega Power remains focused on pushing boundaries, setting new standards, and accelerating Pakistan's transition to clean, smart energy. With Mr. Abdul Waheed at the helm—supported by global partners like Sofar Solar and a strong national infrastructure of labs, logistics, and leadership—Omega Power is not just contributing to energy security.

It is building a smarter, cleaner, and more resilient Pakistan.n

Bijli Ghar

Pakistan's New Remote Sensing Satellite Becomes Fully Operational

Pakistan's newly launched remote sensing satellite has become fully operational after its successful deployment last month from China's Xichang Satellite Launch Centre, the Space and Upper Atmosphere Research Commission (Suparco) has announced.

"The satellite has established stable contact with ground stations and begun capturing and transmitting high-resolution imagery, greatly enhancing data availability and reliability for various national sectors," Suparco said in a statement.

According to the agency, the advanced satellite will revolutionise urban planning, infrastructure development, and regional monitoring by providing high-quality imaging to track urban expansion and growth. It will also support disaster management through early warnings and rapid response to floods, landslides, and earthquakes, in addition to monitoring glacier recession, deforestation, and climate change indicators. The satellite, Pakistan's second after PRSS-1, will further improve agricultural productivity by enabling precision farming, mapping crop patterns, and managing water resources more efficiently—boosting the country's food security.

Officials said the system will also have a strategic role in supporting national projects, including the China–Pakistan Economic Corridor (CPEC), by mapping transportation networks, assessing geohazard risks, and guiding efficient resource allocation. "These capabilities will not only improve decision-making across multiple sectors but also promote sustainable socio-economic development and strengthen Pakistan's technological autonomy," Suparco noted.

The development places Pakistan alongside a growing number of countries in the region enhancing their space programs. India, for example, operates a fleet of advanced Earth observation satellites under its Cartosat and Resourcesat series, which support agriculture, disaster response, and military reconnaissance. China has built one of the world's most extensive satellite constellations, providing services ranging from remote sensing to navigation and communications, while also assisting partner countries like Pakistan. Bangladesh launched its first communications satellite, Bangabandhu-1, in 2018, expanding its digital connectivity and broadcasting capabilities, and Sri Lanka joined the space domain through leasing and partnerships with private satellite operators.

Analysts note that with its latest deployment, Pakistan has taken another important step in regional space competition, seeking not only to strengthen its scientific and economic base but also to ensure that it does not lag behind its South Asian neighbors in leveraging satellite technology for development and security. - ER News Desk

PPL Reports Ransomware Attack, Assures No Disruption to Core Operations

Pakistan Petroleum Limited (PPL) has disclosed a cybersecurity incident involving a ransomware intrusion targeting parts of its IT infrastructure.

The intrusion was detected on August 6, 2025, following which PPL immediately activated its internal cybersecurity protocols.

In a notice sent to the Pakistan Stock Exchange, the company stated that its IT and cybersecurity teams, in collaboration with external experts, took swift containment measures. These included the precautionary suspension of selected non-critical IT services to safeguard system integrity.

PPL confirmed that its multi-layered cybersecurity systems enabled rapid isolation of the threat. There is no evidence of any compromise to business-critical or sensitive data, and core operations remain unaffected.

The company also clarified that a news item circulating on social media carried inaccuracies. While a ransomware note was received, PPL reported the incident to relevant law enforcement and regulatory bodies as required. No contact was made with the perpetrators, and financial transactions were processed manually during the incident as a precautionary measure.

The company is conducting a comprehensive forensic analysis to further strengthen its cyber resilience. IT services are being restored in a secure, phased manner.

PPL reiterated its commitment to transparency, digital security, and maintaining the trust of its stakeholders through proactive cyber risk management.
– ER News Desk

Power Vision in Electricity Pakistan

Team Power Vision with Mr. Simon John, Director, Lister Petter, at Electricity Pakistan Expo, Lahore.

‘Climate cost of war is more than the combined 2023 emissions of Costa Rica and Estonia’

The carbon footprint of the first 15 months of Israel’s war on Gaza will be greater than the annual planet-warming emissions of a hundred individual countries, exacerbating the global climate emergency on top of the huge civilian death toll, new research reveals.

A study found the long-term climate cost of destroying, clearing and rebuilding Gaza could top 31m tonnes of carbon dioxide equivalent (tCO2e). This is more than the combined 2023 annual greenhouse gases emitted by Costa Rica and Estonia, yet there is no obligation for states to report military emissions to the UN climate body.

Israel’s relentless bombardment, blockade and refusal to comply with international court rulings has underscored the asymmetry of each side’s war machine, as well as almost unconditional military, energy and diplomatic support Israel enjoys from allies including the US and UK.

Hamas bunker fuel and rockets account for about 3,000 tonnes of CO2e, the equivalent of just 0.2% of the total direct conflict emissions, while 50% were generated by the supply and use of weapons, tanks and other ordnance by the Israeli military (IDF), the study found.

Burning fossil fuels is causing climate chaos, with increasingly deadly and destructive extreme weather events forcing record numbers of people to migrate. The Gulf region is among the most vulnerable to extreme weather and slow-onset climate disasters including drought, desertification, extreme heat and erratic rainfall, as well as environmental degradation, food insecurity and water shortages.

The research, published by the Social Science Research Network, is part of a growing movement to hold states and businesses accountable for the climate and environmental costs of war and occupation, including the long-term impact damage to land, food and water sources, as well as post-conflict clean-up and reconstruction.

It is the third and most comprehensive analysis by a team of UK and US-based researchers into the climate cost of the first 15 months of conflict in which more than 53,000 Palestinians were killed, in addition to widespread infrastructure damage and environmental catastrophe. It also provides the first, albeit partial, snapshot of the carbon cost of Israel’s other recent regional conflicts.

Overall, researchers estimate that the long-term climate cost of Israel’s military destruction in Gaza – and recent military exchanges with Yemen, Iran and Lebanon – is equivalent to charging 2.6bn smartphones or running 84 gas power plants for a year. This figure includes the estimated 557,359 tCO2e arising from the occupation-era construction of Hamas’s network of tunnels and Israel’s “iron wall” barrier.

The killing and environmental destruction of Gaza resumed when Israel unilaterally violated the ceasefire after just two months, but the findings could eventually help calculate claims for reparations.

“This updated research evidences the urgency to stop the escalating atrocities, and make sure that Israel and all states comply with international law, including the decisions from the ICC and the ICJ,” said Astrid Puentes, UN special rapporteur on the human right to a clean, healthy and sustainable environment. “Whether or not States agree on calling it a genocide, what we are facing is severely impacting all life in Gaza, and also threatening human rights in the region, and even globally, due to the aggravation of climate change.”

The study, currently under peer review by the journal One Earth, found:

Over 99% of the almost 1.89m tCO2e estimated to have been generated between the 7 October 2023 Hamas attack and the temporary ceasefire in January 2025 is attributed to Israel’s aerial bombardment and ground invasion of Gaza.

Almost 30% of greenhouse gases generated in that period came from the US sending 50,000 tonnes of weapons and other military supplies to Israel, mostly on cargo planes and ships from stockpiles in Europe. Another 20% is attributed to Israeli aircraft reconnaissance and bombing missions, tanks and fuel from other military vehicles, as well as CO2 generated by manufacturing and exploding the bombs and artillery.

Solar had generated as much as a quarter of Gaza’s electricity, representing one of the world’s highest shares, but most panels, and the territory’s only power plant, have been damaged or destroyed. Gaza’s limited access to electricity now mostly relies on diesel-guzzling generators that emitted just over 130,000 tons of greenhouse gases into the atmosphere, or 7% of the total conflict emissions.

More than 40% of the total emissions were generated by the estimated 70,000 aid trucks Israel allowed into the Gaza Strip – which the UN has condemned as grossly insufficient to meet the basic humanitarian needs of 2.2m displaced and starving Palestinians.

But the most significant climate cost will come from rebuilding Gaza, which Israel has reduced to an estimated 60m tonnes of toxic rubble.

The carbon cost of trucking out debris and then rebuilding 436,000 apartments, 700 schools, mosques, clinics, government offices and other buildings, as well as 5km of Gaza’s roads, will generate an estimated 29.4m tonnes eCO2. This is on a par with the entire 2023 emissions generated by Afghanistan.

The reconstruction figure is lower than previous estimates by the same research group due to a revision in the average size of apartment blocks.

“This report is a staggering and sobering reminder of the ecological and environmental cost of Israel’s genocidal campaign on the planet and its besieged people,” said Zena Agha, policy analyst for Palestinian policy network Al-Shabaka.

“But this is also the US, UK and EU’s war, all of which have provided seemingly limitless military resources to enable Israel to devastate the most densely populated place on the planet. This brings home the destabilising [regional] impact of the Israeli settler state and its inseparability from the western military-industrial complex.”

The war on Gaza has also provoked bloody regional tensions. The study found:

The Houthis in Yemen launched an estimated 400 rockets into Israel between October 2023 and January 2025, generating about 55 tCO2e. Israel’s aerial response generated almost 50 times more planet warming greenhouse gases. A previous study found that shipping emissions rose by an estimated 63% after the Houthis blocked the Red Sea corridor, forcing cargo ships to take longer routes.

A conservative estimate of emissions from two large-scale exchanges of missiles between Israel and Iran topped 5,000 tCO2e, with more than 80% down to Israel.

In Lebanon, more than 90% of the estimated 3,747 tCO2e generated by sporadic exchanges came from IDF bombs, with only 8% linked to Hezbollah rockets. The carbon cost of reconstructing 3,600 homes destroyed in southern Lebanon is almost as high as the annual emissions from the island of St Lucia.

The study is based on evolving methodology known as a scope 3+ framework which seeks to capture direct and indirect wartime emissions currently missing from global climate and conflict audits. This can include soil degradation, fires, infrastructure damage, displacement of people, aid, rerouting cargo ships and civil aviation.

Researchers relied on open-source information, media reports, and data from independent aid groups such as UN agencies. The true environmental costs are almost certainly higher given Israel’s media blockade, with data on razed farmland, desertification, remediation, and fires among other carbon-intense impacts hard to obtain.

“This conflict in Gaza shows that the numbers are substantial, greater than the entire greenhouse gas emissions of many entire countries, and must be included for accurate climate change and mitigation targets,” said Frederick Otu-Larbi, co-author, senior teaching associate at Lancaster Environment Centre and lecturer at University of Energy and Natural Resources in Ghana.

“Militaries need to reckon with the fact that their own national security and operational capacity is being compromised due to a changing climate of their own making,” said Ben Neimark, senior lecturer at Queen Mary University of London and study co-author.

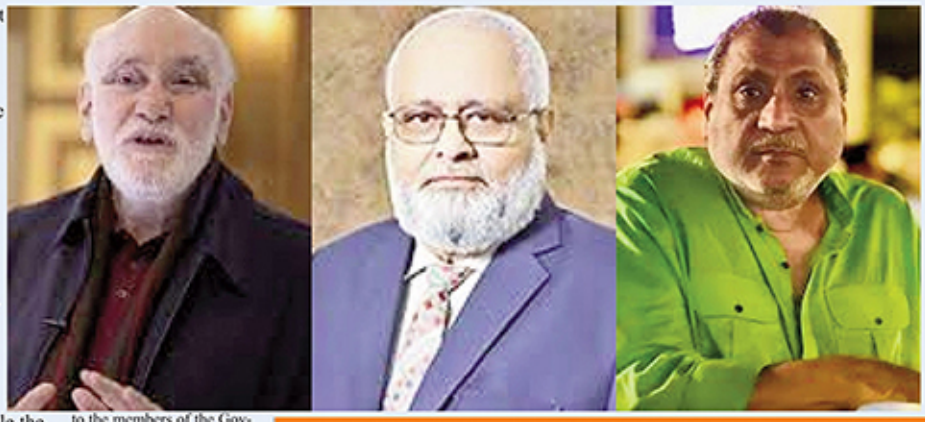
Previous research has found that military emissions rise with spending and buildup.

Israel’s military budget surged in 2024 to $46.5bn – the largest increase in the world, according to the Stockholm International Peace Research Institute. Based on one methodology, Israel’s baseline military emissions last year – excluding direct conflict and reconstruction climate costs – rose to 6.5m tCO2e. This is more than the entire carbon footprint of Eritrea, a country of 3.5 million people.

Yet under current UN rules, reporting military emission data is voluntary and limited to fuel use, despite the fact the climate cost of the destruction of Gaza will be felt globally. The IDF, like most militaries worldwide, has never reported emission figures to the UN.

Hadeel Ikhmais, head of the climate change office at the Palestinian Environmental Quality Authority, said: “Wars not only kill people but also release toxic chemicals, destroy infrastructure, pollute soil, air and water resources and accelerate climate and environmental disasters. War also destroys climate adaptation and hinders environmental management. Not counting carbon emissions is a black hole in accountability that allows governments to get away from their environmental crimes.” – Courtesy TG

PEC Chairman Engr. Waseem Nazir continues distancing himself from inclusiveness



Now that Independence Day 2025 has passed and the Pakistan Engineering Council (PEC) postponed the Excellence Awards 2023—meant for engineers with outstanding performance—Chairman Engr. Waseem Nazir once again demonstrated his tendency to trample the decisions of the Governing Body, the supreme body of the institution. His uninterrupted violation of the laws was this time pointed out by Engr. Prof. Dr. Suhail Aftab Qureshi, Vice Chairman Punjab.

Engr. Qureshi, in writing to the members of the Governing Body and raising objection to the Notification of Engineer's Excellence Award 2023, noted that Dr. Nasir Mehmood Khan, the former Registrar of the Council, has been recommended for the PEC Engineer's Excellence Award 2023.

His letter reads:

I am writing to express serious concerns regarding PEC's recently issued notification Ref: PEC/EXC_AW_2023/020 dated 30 July 2025, wherein Dr. Nasir Mehmood Khan has been recommended for the PEC Engineer's Excellence Award 2023, scheduled for presentation on 14 August 2025, with the note that he was Member/Secretary of the Excellence Award Committee.

It is important to bring to your attention that the Ministry of Science and Technology, through Order No. 1(1)/2018-Misc (Org-I) dated 31 July 2024, has already

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MariEnergies Posts Rs. 65.1 Billion Profit, Declares Rs. 21.7 per Share Final Dividend

Mari Energies Limited has announced strong financial and operational results for the year ended June 30, 2025, posting a net profit of Rs. 65.1 billion and earnings per share (EPS) of Rs. 54.25, despite lower applicable hydrocarbon prices and additional 15% wellhead payments on Mari Field from November 2024.

Net sales stood at Rs. 177.1 billion.

The Board of Directors, in its meeting held on August 8, 2025, recommended a final cash dividend of Rs. 21.7 per share (217%), with no bonus or right shares. PACRA reaffirmed the company's top-tier credit profile with AAA (Long Term) and A1+ (Short Term) ratings in January 2025.

Operationally, MariEnergies achieved its highest-ever hydrocarbon sales of 39.13 MMBOE (107.2 kboepd) compared to 39.01 MMBOE (106.6 kboepd) last year, despite RLNG curtailments and delays in Waziristan Block production. Early output from Waziristan began on March 23, 2025, delivering 70 MMSCFD of gas and around 700 barrels per day of condensate. Production also commenced from Jhim-East X-1 and Pateji X-1 via the Sujawal Gas Processing Facility.

The company added 110 MMBOE in 2P reserves, achieving a Reserve Replacement Ratio (RRR) of 278%. Total reserves and resources (2P+2C) stood at 952 MMBOE at year-end, supported by discoveries at Spinwam-1, Soho-1, and Pateji X-1. The reserve-to-production ratio reached a record 20 years.

In mining, target drilling began in EL-322 & 323 in August 2025, with expansion in Chaghi through strategic acquisitions. The company also entered the technology sector with the incorporation of Mari Technologies Limited and SKY47 Limited, and is constructing a 5 MW data center in Islamabad, with a second planned in Karachi.

The final dividend will be paid to shareholders on record as of September 19, 2025. The share transfer books will remain closed from September 22 to 26, 2025. The Annual General Meeting will be held on September 26, 2025, at 10:00 a.m. at Sheesh Mahal Hall, Islamabad Serena Hotel. The Annual Report will be available via PUCARS and on the company's website. – ER News Desk

AGRI TECH

Cotton: Pakistan is among the ancient homes of cotton, with traces found in Mehrgarh dating back to 5000 BC. The crop spread to the Indus Valley and remains central to the economy today. Pakistan is the 5th largest cotton producer and 3rd largest yarn producer globally. Around 1.3 million farmers grow cotton on 6 million acres, covering 15% of cultivated land. Cotton contributes 0.8% to GDP, 5.2% to agriculture value addition, and 51% to foreign exchange earnings. The crop supports a vibrant textile sector, including 1000 ginning factories, 400 textile mills, thousands of looms, knitwear, and garment units nationwide.

Can agriculture and solar energy work together instead of competing?

Can agriculture and solar energy work together instead of competing? A study led by Maddalena Curioni, Nikolas Galli, Giampaolo Manzolini and Maria Cristina Rulli, researchers in the Department of Civil and Environmental Engineering and the Department of Energy at the Politecnico di Milano, sheds new light on the potential of agrivoltaics.

Published in the journal Earth's Future, the paper analyzes how the coexistence of photovoltaic panels and agricultural crops can help solve the global conflict over land use.

With the growing demand for renewable energy and the need to produce increasing amounts of food, the pressure on arable land is intensifying. Today, between 13% and 16% of ground-mounted photovoltaic installations occupy land that used to be agricultural, a sign of agriculture and energy competing for the same space.

But there is a third option. The study reveals that between 22% and 35% of non-irrigated agricultural land around the world could host agrivoltaic systems while continuing to produce food. It presents an opportunity to integrate two basic needs without compromising one or the other.

To reach these conclusions, the researchers used a spatial agro-hydrological model, simulating the response of 22 crops to the reduction in solar radiation caused by the panels. The model enabled an assessment of potential crop yields in different climates and geographical areas, resulting in a global map of possible places to apply agrivoltaics.

"Agrivoltaics cannot be applied everywhere, but according to our results, it would be possible to combine cultivation and energy production in many areas of the world without significant reductions in yield," says Galli, Glob3Science Lab researcher and co-author of the study.

Global distribution of rainfed areas harvested and/or convertible to agrivoltaics for the scenarios that produce the lowest (a) and highest (b) convertibility globally. (a) corresponds to 50% of radiation reaching the crops and allowing only for yield maintenance or increase, while (b) corresponds to 90% of radiation reaching the crops and allowing for up to 20% yield reduction. Both harvested and convertible areas are represented as pixel percentage. The bivariate color scheme works as follows: the gray-shaded column corresponds to harvested, non-convertible areas (convertible areas = 0%). The triangular colored scheme changes color tone (vertically) according to harvested areas and color shade (horizontally) according to convertible areas. The scheme is triangular because convertible areas cannot be more than the harvested areas. Credit: Politecnico di Milano

"Using the land for both cultivation and photovoltaic systems increases overall output per occupied surface area while reducing production costs. In addition, installing crops underneath the photovoltaic panels reduces the panel operating temperature and increases their efficiency," adds Manzolini, professor in the Department of Energy and co-author of the study.

"This technology could help reduce land competition while improving the sustainability of agricultural and energy systems," concludes Rulli, lab coordinator and co-author of the study.

The results provide a sound scientific basis for guiding policy choices and investments for more efficient and sustainable land use. TX

37 pc of women, girls in Thar Desert Region Battling Depression, Mental Health Camps Find

ER Report

A mental health initiative of the Sindh Mental Health Authority (SMHA), covering over four and a half thousand subjects, has revealed that over 37 percent of the people—predominantly women and adolescent girls—suffer from depression in the desert belt of Sindh, which stretches over 50 thousand square kilometers.

Led by Senator Dr. Karim Ahmed Khawaja, the authority delivered landmark mental health camps across the desert belt districts of Tharparkar, Umerkot, Sanghar, and Khairpur between 2022 and 2025, the authority's communication and team members said.

The Thar Desert—the largest desert in Pakistan—covers an estimated area of 45,000 to 50,000 square kilometers within Sindh Province. In Sindh, the Thar Desert stretches across Tharparkar, Umerkot, Mirpurkhas, Sanghar, Khairpur, and parts of Sukkur and Ghotki.

These camps were designed for the general population, with a strong emphasis on women and adolescent girls, who face disproportionate barriers to mental healthcare due to poverty, cultural restrictions, and service inaccessibility. Over 4,570 individuals received free psychiatric consultations, diagnosis, treatment, psychosocial support, and medications during the initiative. Clinical data revealed that depression (34.7%) was the most common condition, followed by anxiety disorders (11.3%), intellectual disability (11.9%), epilepsy (9.02%), somatoform/conversion disorders (8.61%), and substance use disorders (4.0%).

The initiative was guided by a Council of Advisors comprising senior mental health experts, public health professionals, development specialists, and community leaders who ensured strategic direction, technical oversight, and cultural sensitivity in service delivery. Mental health experts from leading institutions, including Jinnah Postgraduate Medical Centre (JPMC), Dow University of Health Sciences (DUHS), Liaquat University of Medical and Health Sciences (LUMHS), University of Karachi (UoK), Thar Foundation, Ghulam Muhammad Mahar Medical College Sukkur (GMMMC), International Organization for Migration (IOM) UN, Jinnah Sindh Medical University Karachi (JSMU), Peoples Primary Healthcare Initiative (PPHI), Syed Abdullah Shah Institute of Medical Sciences, Sehwan (SASIMS), Institute of Clinical Psychology Karachi (ICP), Department of Psychology, University of Sindh, and Sir Cowasjee Institute of Psychiatry & Behavioural Sciences, volunteered their time and expertise to peovide high-quality consultations and counselling.

Field implementation staff and district-level focal persons coordinated on-ground logistics, identified camp locations, mobilized communities, and ensured smooth operations before and during the clinics. The on-site assessment teams, comprising civil society members and local coordinators, verified camp readiness, setup, and patient facilitation to maintain dignity and confidentiality during consultations.

The Impact Research component, led by Mr. Talpur Ali Murad, Social Scientist and Researcher, documented the clinical outcomes, demographic patterns, and socio-structural determinants of mental illness in the desert belt. This evidence base will inform future mental health programming, policy reforms, and targeted interventions.

Senator Dr. Karim Ahmed Khawaja praised the collaborative spirit of the initiative, saying that this model peoves that with dedication, strategic partnerships, and data-driven planning, mental health services can reach even the most remote and neglected communities in Sindh. It is a testament to what can be achieved when government, academia, and civil society work together.

Recommendations:

☐Integrate mental health services into primary healthcare and school health systems.

☐Initiate tele-psychiatry mental health services in different RHCs in the Thar Desert region.

☐Train LHWs and teachers in basic mental health screening and referral.

☐Expand awareness campaigns to reduce stigma and promote early help-seeking.

☐Collect district-wise mental health data for planning and resource allocation.

☐Ensure cross-sector collaboration between health, education, and social protection departments.

☐Strengthen referral pathways to secondary and tertiary psychiatric care.

☐Provide blood screening services at the RHC level in the desert region.

☐Develop gender-sensitive programs targeting women and adolescent girls.n

PEC Chairman

Contd from page 7

declared Dr. Nasir's appointment and subsequent promotion in PEC as illegal. Following this, he was placed under inquiry and sent on forced sick leave, and the Governing Body of PEC also issued a decision recommending his termination.

Despite these established facts and directions from the Ministry and GB, the recommendation for an award to Dr. Nasir appears to be in direct violation of institutional integrity and governance protocols. This situation raises several alarming questions:

ÝWhy has the Registrar, being the legal custodian of PEC's records and governance, facilitated this recommendation when an official ministry order and GB decision exist against Dr. Nasir?

ÝHow can an individual with proven misconduct and violations be considered for an award of excellence, which is intended to reflect merit, ethics, and service?

ÝIt has come to my notice that this award nomination was influenced by Mr. Khadim Hussain Bhatti, reportedly on the direction of the Chairman, which further raises concerns of procedural manipulation and favoritism.

In view of the above:

Ý I strongly urge that this decision be reviewed immediately,

Ý The notification must be withdrawn,

Ý And necessary action be taken in accordance with the Ministry's directive and the GB verdict.

Awarding such an individual will not only tarnish the credibility of PEC but also demoralize genuinely deserving professionals across Pakistan.

Thank you for your attention to this critical matter. I trust that PEC will uphold transparency, merit, and the rule of law in all its affairs.

Engr. Qureshi's letter is not the first of its kind. Before him, Senior Vice Chairman of the Council, Dr. Sarosh Lodhi, had written to the Chairman and warned him against decisions that violated the Act and Bye-laws of the Council.

The Senior Vice Chairman accused Chairman Engr. Waseem Nazir of consistently violating the PEC Act and Bye-laws through unilateral and unauthorized decisions. In a strongly worded letter, the Vice Chairman warned the Chairman that his latest office order dated 28 June 2025—involving the appointment of several officers in the PEC Secretariat—was illegal and issued without the approval of the Governing Body.

According to the letter, this action breaches Clauses 3(A)(1) and 9(1) of the PEC Act 1976 (as amended), and Clause 49 of the PEC Bye-laws 1976, all of which vest executive powers in the Governing Body, not the Chairman alone. The letter further alleges that newly created posts such as Technical Advisor (Operations) and Technical Advisor (Regulation) do not exist within PEC's legal framework.

The Vice Chairman also accused the Chairman of withholding key information from the Governing Body, entering secret agreements, and overriding the 52nd Governing Body meeting. The letter ends with a stern warning to halt these "blatant violations" and avoid further institutional and legal disaster for PEC.

How Entrepreneurship Drives Scalable Business Models for Engineers

Engr. Dr. Muhammad Nawaz Iqbal

Entrepreneurship provides engineers with access to convert technical innovation into results that make significant businesses suited to growth.

Being analytical and goal-oriented in solving problems, engineers are also in an advantageous position to recognize inefficiencies and develop smart systems, as well as generate solutions for the market. By combining the skills of an entrepreneur with those of an engineer, the effective combination produces an improvable and scalable innovation driver that not only solves existing problems but also provides solutions that will reduce the impact of changing needs in the future. Engineering-led ventures are scalable due to the system credence of optimization and automation. Engineers are instilled with the ability to engineer processes that get better with time, become less dependent on human labor, and can handle larger loads without an equal rise in cost. This basic thought process aligns with the ideology of the entrepreneur, which seeks ventures to scale exponentially instead of incrementally, which is characteristic of contemporary scalable practices.

Engineers not only have the potential to spot untapped opportunities in today's technology but also have the capacity to give technology a new life in a number of other sectors. Be it the employment of AI in agriculture or blockchain in supply chains, the chance to transfer the power of basic technologies to a variety of situations assists in the development of multifunctional solutions. Entrepreneurship capitalizes on this multi-role competency to create innovation "clones," which can then be used to generate revenue at a low marginal cost across different verticals.

Factory-like business models born out of disruptive entrepreneurship through engineers are some of the most impactful outcomes. Platforms like Uber, Airbnb, and GitHub exist because engineers were able to grasp how to source user connections, create data feedback loops, and scale digital ecosystems. These entrepreneurs were able to develop businesses that could quickly scale geographically and demographically by creating systems that were modular and built using APIs. The design of the lean startup paradigm fits the iterative culture in the minds of engineers. Steps for engineers include prototyping, testing, debugging, and improving, which are similar to cycles of entrepreneurial product-market fit. Theoretically, they can iterate pricing, business models, service delivery methods, and feature sets, as founders use these feedback loops to refine the models they are building until they gain traction and efficiency. This is where flexibility comes in on the topic of scaling.

New scalable businesses are built on data infrastructure and automation, which are best fulfilled by engineers. An engineer-entrepreneur does not simply create a product; he or she creates a system of constant learning and development. Their projects involve predictive analytics, robotic process automation, and more, with smart feedback mechanisms integrated into them to evolve in real-time and grow with minimal human intervention. Innovation can also be seen to derive from the moral foundation that most engineer-entrepreneurs carry into their businesses. As sustainability and social interest become key determinants of scalability, engineers who develop green products, intelligent grid systems, or precision production systems are supporting ventures that attract both market appeal and regulatory approval. Such a balance between innovation and responsibility creates opportunities to grow to greater heights in the future.

The discipline of engineering instills great consideration of limitations—whether technical, environmental, or economic. The adaptability of their enterprises means that their models of entrepreneurship are stronger in their own ways. Engineers have learned to design to address uncertainty, creating businesses that operate in a variety of market conditions, making operations and ventures more scalable. Typically, engineers start with solving individual or niche problems and, through success, learn that there is wider demand. This product-market fit trend ensures a high degree of market fit from the start. They can use entrepreneurship to transform these solutions into businesses that scale quickly by licensing them to other companies or adopting a SaaS model.

The internet scale of digital mediums implies that even a relatively small engineering startup can reach millions of users with very modest infrastructure. The barriers to entry have been reduced to the bare minimum through cloud computing, microservices, and open-source technologies. The engineers creating these platforms are not only generating businesses but also entire ecosystems that other individuals can build upon.

The culture of experimentation and risk tolerance is another asset that engineers engaging in entrepreneurship bring into conventional sectors. Whether it is companies using digital twins in manufacturing, firms deploying drones in construction, or companies using smart sensors in healthcare, they disrupt rigid frameworks and insert data-driven scalability options. Such solutions are not scaled by aggressive marketing but by changing value delivery in a revolutionary way.

Multi-disciplinary problem-solving, multi-team design, and code reviews form important aspects of engineering education and practice and also assist engineers in collaborating with marketers, designers, and customers. Entrepreneurship takes this cooperation and uses it to guide the design of organizations, as cross-functional teams can support innovation and continue to expand without becoming incoherent. Intellectual property is a key stake in engineering entrepreneurship. Engineers who develop distinctive algorithms, circuits, and designs have opened goldmines that remain untapped. Entrepreneurship educates them on safeguarding their assets, licensing, and commercialization so that inventions become business-sustaining assets and licensing models that scale far beyond a single product.

As engineers pursue the concept of entrepreneurship, they are changing the paradigm of what a leader should be in the 21st century. They are not based on classical top-down structures but create fast, cross-organizational structures where creativity is everywhere. These structures promote scaling as they reduce bottlenecks and decentralize decision-making—both key features of rapid growth. Above all, entrepreneurship enables engineers to move out of purely technical roles to work directly on the most significant problems facing the world. They are not just creating startups by applying engineering logic to climate change, healthcare, mobility, and other global issues—they are building scalable impact engines that are sustainable. In doing so, they set an example of the combination of invention and intention that modern business requires.■

آوازِ اقبال

اقبال کا ترانہ بانگِ درا ہے گویا
ہوتا ہے جادہ پیما پھر کارواں ہمارا

اے ہمالہ کوئی بازی گاہ ہے تو بھی جسے
دست قدرت نے بنایا ہے عناصر کے لئے
ہائے کیا فرط طرب میں جھومتا جاتا ہے ابر
فیل بے زنجیر کی صورت اڑا جاتا ہے ابر

تیری عمر رفتہ کی اک آن ہے عہد کہن
وادیوں میں ہیں تیری کالی گھٹائیں خیمہ زن
چوٹیاں تیری ثریا سے ہیں سرگرم سخن
تو زمیں پر اور پہنائے فلک تیرا وطن
چشمہ دامن ترا آئینہ سیال ہے
دامن موج ہوا جس کے لئے رومال ہے
ابر کے ہاتھوں میں رہوار ہوا کے واسطے
تازیانہ دے دیا برق سر کوہسار نے

فرمانِ قائداعظمؒ

ایمان ، اتحاد ، تنظیم

اصول اور تفصیلات

گاندھی جی کہتے ہیں "ہندوستان کو جیتے جی ٹکڑے نہیں کرنے دیں گے" راج گوپال اچاریہ کہتے ہیں "بچے کے ٹکڑے کیے جا رہے ہیں"۔ قدرت نے پہلے ہی سے ہندوستان کو تقسیم کر رکھا ہے اور اس کے ٹکڑے کر رکھے ہیں۔ ہندوستان کے نقشہ پر مسلم ہندوستان اور ہندو ہندوستان پہلے ہی سے موجود ہیں، نہ معلوم اس کے متعلق اتحاد اور ملاپ کیوں کیا جاتا ہے۔ وہ ملک ہے کہاں جس کے ٹکڑے ٹکڑے کیے جائیں گے؟ اور وہ قوم کہاں ہے جس کی قومیت فنا کی جانے کو ہے؟ وہ طاقت جس کے قبضہ قدرت میں آج ہندوستان ہے، وہ انگریزوں کی طاقت ہے اور یہ جو ایک خیال دماغوں میں بیٹھ گیا ہے کہ ہندوستان ایک متحدہ ملک ہے اور اس کی اپنی حکومت ہے، وہ صرف اس وجہ سے ہے کہ انگریز اس سارے ملک پر حکمران ہیں۔

(مسلم لیگ کانفرنس بمبئی۔ 26 مئی 1940ء)

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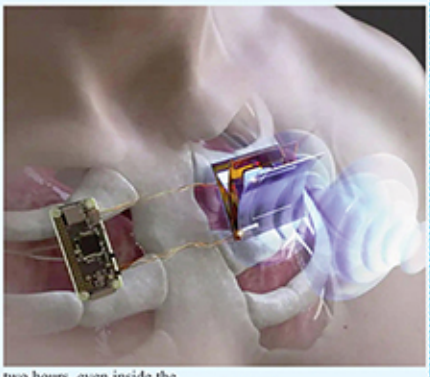
Ultrasound-based wireless charging technology for implantable medical devices

A research team led by Professor Jinho Chang from the Department of Electrical Engineering and Computer Science at DGIST has developed an "ultrasound-based wireless charging technology" capable of rapidly and efficiently charging the batteries of implantable medical devices.

This technology has achieved world-class energy efficiency, fully charging a commercial battery within two hours, even inside the human body.



The research is published in the journal Biosensors and Bioelectronics.

Recently, due to population aging, diseases, and accidents, a rapid increase in demand for implantable medical devices (e.g., pacemakers and neural stimulators) has been observed. However, the batteries in these devices must be replaced periodically, requiring patients to undergo repeated surgeries—posing both inconveniences and risks. To address this issue, developing technology that can wirelessly transmit energy from outside the body is essential in order to charge the batteries without the need for additional surgeries.

Although wireless charging technologies using ultrasound have existed previously, harvesters (energy receivers) that can be implanted in the human body have faced limitations in size and structure. Additionally, the ultrasound intensity that can be safely used in the human body is restricted, resulting in insufficient power output.

To overcome these limitations, Professor Chang's research team at DGIST developed a new type of "sandwich-structured piezoelectric energy harvester." Two piezoelectric layers are stacked such that the front layer harvests incoming ultrasound energy to generate electricity, while the rear layer captures the residual ultrasound to produce additional power. By combining the output from both layers, the harvester achieves over 20% greater efficiency compared to that of conventional designs.

Using this technology, the research team demonstrated that a 140mAh commercial battery could be fully charged in just one hour and 40 minutes at an underwater distance of 30mm. In another experiment using 30mm-thick pig tissue, a 60mAh battery was fully charged within one hour and 20 minutes. These results represent a world-leading performance, achieving at least twice the power output of previously reported technologies.

Professor Chang stated, "This research presents an innovative technology that effectively harvests ultrasound energy, which has not been fully utilized in the past, for wireless charging of implantable medical devices. We aim to commercialize a system capable of fully charging within one hour by combining this ultrasound-based wireless charging technology with high-efficiency semiconductor components."

– TX

BISMILLAH HIR REHMAN NIR RAHEEM

My Lord

By Muhammad Tariq Haq | www.eslpk.com

For all that I need
- My Lord, You are sufficient indeed

To bring me up to speed
- Immense love from parents was received

I was feeble and weak
- You made me stand on my two feet

The food that I need
- You give me sufficient to eat

When sickness makes me cry and weep
- You provide me with relief

When worried
- You give me mental peace

When tired and fatigued
- You put me to sleep

When things go out of my reach,
- I beg and beseech

It is guaranteed
- You will put me make back on the driving seat

When the crisis is deep
- You make way for me and I am quickly freed

When my resources deplete
- You provide me from where I cannot even perceive

To obtain knowledge that I seek
- You made sure I studied

You enabled me to write and read
- And taught me to speak

I cannot displease You with lust and greed
- May my life and death be for You; and so be my sacrifice and every deed

Change every drop of water in the oceans to ink, refill and repeat
- Even then Your praise will not be complete

Neither my parents nor family can remotely compete
- You are my best friend indeed

My Lord please treat me with ease
- When I die as decreed

I have erred indeed, I concede
- Forgive me please to eternally succeed

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پاکستان کا پہلا اے آئی ڈیٹا سینٹر متعارف کرادیا گیا

جدید ترین سہولت پاکستان کے AI ایکوسسٹم کے وژن کو حقیقت میں بدلنے کیلیے تیار کی گئی

ملک کے AI مستقبل کیلیے ایک لانچ پیڈ تیار کیا ہے، سی ای او ڈیٹا والٹ پاکستان مہوش سلمان

ڈیٹا والٹ پاکستان نے کراچی میں ملک کے پہلے مصنوعی ذہانت (AI) پر مبنی ڈیٹا سینٹر کا باضابطہ طور پر افتتاح کر دیا ہے جو کہ ایک انتہائی اقدام ہے اور ملک میں AI کی ترقی، نفاذ اور توسیع کے طریقے کو بدل کر رکھ دے گا۔ یہ جدید ترین سہولت پاکستان کے AI ایکوسسٹم کے وژن کو حقیقت میں بدلنے کے لیے تیار کی گئی ہے، جو اسٹارٹ اپس، محققین، کاروباری اداروں اور سرکاری اداروں کے لیے شاندار انفرااسٹرکچر فراہم کرتی ہے۔

ہائی پرفارمنس GPU کمپیوٹنگ سے لے کر محفوظ کلاؤڈ ماحول تک، ڈیٹا والٹ اب پلیٹ فارم پر انحصار کیے۔ یہ خود انحصاری، خود مختاری، اور پاکستان کی ڈیجیٹل صلاحیتوں کو اجاگر کرنے کی بات ہے۔ ■

ملک میں ہی جدید AI جدت کی راہ ہموار کر رہا ہے، دیہی صاف توانائی سے چلنے والے نظام اور خود مختار انفرااسٹرکچر کے ساتھ۔ ڈیٹا والٹ پاکستان کی بانی اور سی ای او مہوش سلمان علی نے کہا کہ "ہم نے صرف ایک ڈیٹا سینٹر نہیں بنایا، ہم نے پاکستان کے AI مستقبل کے لیے ایک لانچ پیڈ تیار کیا ہے، ہمارا مقصد یہ ہے کہ مقامی جدت پسندوں کو وہ وسائل اور اعتماد دیا جائے جس کی بنیاد پر وہ عالمی معیار کی ٹیکنالوجی تیار کر سکیں بغیر کسی غیر ملکی

سرسید یونیورسٹی آف انجینئرنگ اینڈ ٹیکنالوجی Tech-Edu کی FPCCI 2.0Summit کا انعقاد

ٹیکنالوجی پر مبنی تعلیم، ڈیجیٹل ترقی کی جانب ایک اہم قدم ہے، چانسلر اکبر علی خان

فیڈریشن آف پاکستان چیمبرز آف کامرس اینڈ انڈسٹری (FPCCI) کی کوریج کمیٹی برائے تعلیمی اصلاحات کے زیر اہتمام سرسید یونیورسٹی آف انجینئرنگ اینڈ ٹیکنالوجی کے شعبہ ریسرچ، انوویشن اور کمرشلائزیشن (ORIC) کے تعاون سے Tech-Edu 2.0Summit کا انعقاد کیا گیا جس کا مقصد تعلیمی شعبہ کو درپیش چیلنجز کی نشاندہی کرنا اور جدید ٹیکنالوجی، مصنوعی ذہانت، اور ڈیجیٹل انفرااسٹرکچر کے استعمال کو فروغ دینا تھا تاکہ اسکولوں، کالجوں اور یونیورسٹیوں کے تعلیمی معیار کو بلند کیا جا سکے۔

تقریب کے شرکاء میں سرسید یونیورسٹی کے چانسلر محمد اکبر علی خان، رجسٹرار کموڈور (ر) سید سرفراز علی، پرنسپل آفیسر پروجیکٹ ڈائریکٹر فیڈ شفیق، FPCCI ایجوکیشن ریفارمز کمیٹی کی کنوینر محترمہ صوف بھٹی، شعبہ کمپیوٹر سائنس کے چیئرمین ڈاکٹر کاشف شاہ، ORIC کے منیجر سید محمد ریاض الحق اور دیگر تعلیمی و صنعتی اداروں کے نمائندگان شامل تھے۔

سرسید یونیورسٹی کے چانسلر محمد اکبر علی خان نے اس موقع پر کہا کہ نوجوانوں کو جدید ٹیکنالوجی سے روشناس کرانا مستقبل کی ترقی کے لئے بہت ضروری ہے، اور سرسید یونیورسٹی جدت کے اس سفر میں قائدانہ کردار ادا کرے گی۔

پراجیکٹ ڈائریکٹر پروگرام سندھ کے کوآرڈینیٹر فیڈ شفیق نے کہا کہ تعلیمی میدان میں ٹیکنالوجی نوجوانوں کو مستقبل کے چیلنجز کے لیے تیار کرتی ہے۔ اور حکومت ایسے اقدامات کی بھرپور حمایت کرتی ہے جو تعلیمی میدان میں انقلابی تبدیلی کا پیش خیمہ ثابت ہوں۔

میٹنگ کے دوران ایف پی سی سی آئی کی ایجوکیشن ریفارمز کمیٹی کی کنوینر مسز صوف بھٹی نے ایجوکیشن ٹیک پلیٹ فارم سمیت 2025 کے مقاصد کی وضاحت کرتے ہوئے نوجوانوں کو بااختیار بنانے اور اعلیٰ کارکردگی کو یقینی بنانے کے لئے تعلیمی اداروں میں اے آئی۔ ٹیک ایجوکیشن کے فروغ کے لئے تجاویز پیش کیں۔ ■

Study identifies best times to consume electricity and cut carbon emissions

Shifting electricity consumption to times when the grid has a greater supply from alternative energy sources could help reduce carbon dioxide emissions significantly, according to a new University of Texas at Dallas study.

UT Dallas engineers, who collaborated with researchers from Harvard University and Nantum AI, developed a new model that optimizes the timing of electricity use based on an energy grid's availability of alternative energy sources to achieve greater reductions in carbon emissions, which are a subset of greenhouse gas emissions. The study was published in the May 23 issue of the journal Cell Reports Sustainability.

"When we leverage real-time data on greenhouse gas emissions, we are able to provide information that utilities and consumers could use to make better decisions about electricity consumption to reduce emissions," said Dr. Jie Zhang, associate professor of mechanical engineering in the Erik Jonsson School of Engineering and Computer Science. Zhang, corresponding author of the paper, studies ways to optimize energy use to make energy systems more resilient and reliable.

Grids typically first draw from alternative energy sources, which have no carbon emissions, before moving to other sources such as natural gas and coal to meet electricity demands, Zhang said.

The researchers found that by aligning electricity use with times when the grid is supplied with higher amounts of alternative energy sources, consumers could use the same amount of electricity without increasing carbon emissions. For example, consumers could help to reduce carbon emissions by using their washing machines in the evening, when the grid may get more of its power from wind energy, instead of the afternoon, when the grid faces peak demand and taps into fossil fuel sources for power.

"If you shift your laundry time from peak load to off-peak load times, you help the grid in many ways and reduce greenhouse emissions," Zhang said.

While efforts to reduce carbon emissions often focus on increasing the supply of alternative energy sources, the study demonstrates that making changes on the demand side can also make a significant contribution.

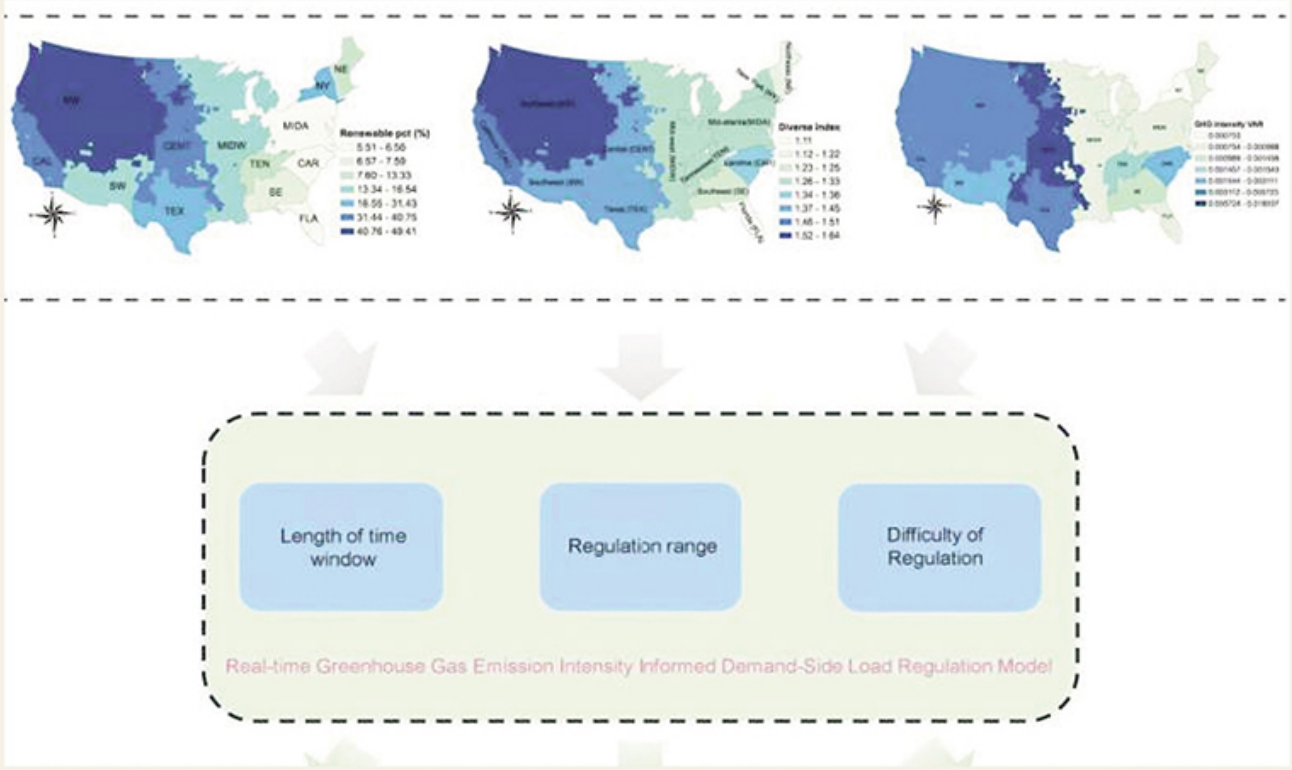
The researchers developed models to study three different scenarios based on different regions of the U.S. that vary in the mix of sources that power their electricity grids. Regions with abundant renewable energy showed the most potential for reducing carbon emissions.

The study demonstrated that providers that incorporate electricity supply and consumption patterns over a year, rather than shorter periods of time, in their planning can achieve greater reductions in carbon emissions.

California, for example, could achieve up to 33% greater carbon-emission reductions by incorporating the annual optimization approach. That means if the state cut carbon emissions by 10%, using the model could boost that reduction to more than 13%. The number is based on consumers shifting 5% of their electricity use to lower greenhouse gas intensity times.

Zhang said that implementing the emissions-reduction model would require utilities to communicate to their customers the time slots when electricity is being generated primarily by alternative energy sources.

Other UT Dallas researchers who contributed to the study include first author Honglin Li, a doctoral student in mechanical engineering, and Soroush Senemmar Ph.D."24. - TX



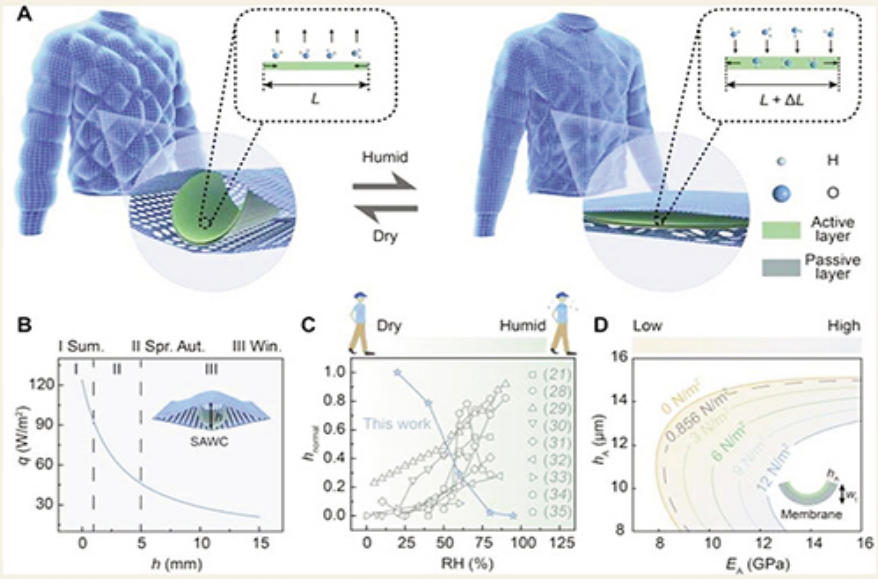
Sweat-sensitive jacket adjusts its thickness to keep you comfortable when it's cold

When we are out in cold weather, we wear warm clothes to stay comfortable. But there is a snag.

Regular warm clothing can't adjust to changes in our body temperature. If we start to sweat, we get too hot and sticky, which makes us want to remove layers. This defeats the purpose of wearing them, since we still need to stay warm.

But what if our clothes could adapt? That's the question Xiuqiang Li at Nanjing University of Aeronautics and Astronautics in China and his colleagues set out to answer. They have developed a jacket with a filling made from a bacterial cellulose membrane that responds to human sweating.

The innovative membrane automatically adjusts its thickness based on humidity. It's 13 millimeters thick in cool, dry conditions and shrinks to just 2 millimeters when humidity levels are high, such as when you sweat. This allows the jacket to be thick when you need to stay warm and then get thinner when you want to cool down a little.



To prove their innovation works, the scientists first used a system that mimics human skin to test its thermal regulation in a controlled environment. Then they took it out into the real world, integrating the material into commercial down jackets and monitoring their performance on people who were walking or cycling.

The results were published in the journal Science Advances, where the researchers noted their sweat-activated clothing is better at controlling body temperature than traditional jackets. "Our sweat-sensitive adaptive warm clothing can expand the thermal regulation capability by up to 82.8% compared to traditional textiles, and extend the no-thermal stress zone by an average of 7.5 hours across 20 cities."

Applications

This new technology has a wide range of potential applications and benefits. Fillings made of the bacterial cellulose membrane could be integrated into various types of clothing for different professions and climates. Outdoor workers such as sanitation staff, couriers and police could stay comfortable for longer periods.

Sweat-sensitive clothing could also help reduce the risk of heat-related health issues that can occur when wearing heavy gear in cold weather, such as dehydration, fatigue and dizziness.

However, more work needs to be done before this clothing is available on the high street. Future research will need to look at how the material performs in extreme weather conditions, its durability over the longer term and its effectiveness in different types of clothing. - TX

Robots learn human-like movement adjustments to prevent object slipping

To effectively tackle a variety of real-world tasks, robots should be able to reliably grasp objects of different shapes, textures and sizes, without dropping them in undesired locations.

Conventional approaches to enhancing the ability of robots to grasp objects work by tightening the grip of a robotic hand to prevent objects from slipping.

Researchers at the University of Lincoln, Toshiba Europe's Cambridge Research Laboratory, the University of Surrey, Arizona State University and KAIST recently introduced alternative computational strategies for preventing the slip of objects grasped by a robotic hand, which works by modulating the trajectories that a robotic hand follows while performing manipulative movements. Their approach, consisting of a robotic controller and a new bio-inspired predictive trajectory modulation strategy, was presented in a paper published in Nature Machine Intelligence.

"The inspiration for this paper came from a very human experience," Amir Ghalamzan, senior author of the paper, told Tech Xplore.

"When you carry a fragile or slippery object and feel it beginning to slip, you don't just squeeze harder. Instead, you subtly adjust your movements—slowing down, tilting, or repositioning your hand—to keep hold of it. Robots, however, have historically just relied on increasing grip force to prevent slipping, which doesn't always work and can even damage delicate objects. We aimed to investigate whether we could train robots to behave more like humans in these scenarios."

The main objective of the recent study by Ghalamzan and his colleagues was to develop a controller that can predict when an object might slip from a robot's grasp and adjust its movements accordingly to prevent it from slipping, similarly to how humans might adjust their movements when handling objects. The controller they developed relies on a bio-inspired trajectory modulation strategy that complements conventional techniques to modulate the force of a robot's grip, enabling more dexterous manipulation strategies.

"Our approach mimics how humans use internal models to interact with the world," explained Ghalamzan. "Just as the human brain continuously predicts the outcomes of our actions—like whether a glass might slip if we move too fast—we built a data-driven internal model, or 'world model,' that allows a robot to predict the future tactile sensations it will experience. These predictions are then used to detect slip instances and adjust movements in such a way that no slip instance will occur."

The team's controller allows robots to slow down, change direction and adapt to the position and orientation of their hands in real-time, instead of simply squeezing harder on objects to prevent them from slipping. This alternative strategy for securing objects by altering a robot's movements could help to reduce the risk that fragile objects will break when a robot is handling them. The trajectory modulation approach also works in instances where the force of a robot's grip cannot be altered, enabling more fluid and smarter interactions with a broad range of objects.

"Our study presents two key breakthroughs," said Ghalamzan. "The first is a motion-based slip controller that is the first of its kind. This strategy complements grip-force-based control and is especially valuable when increasing grip force isn't feasible—such as with fragile objects, wet or slippery surfaces, or hardware that doesn't support dynamic grip control.

"The second is a predictive controller powered by a learned tactile forward model (i.e., world model), which enables robots to forecast slip based on their planned actions."

The newly developed controller was used to plan the motions of a robotic gripper and tested in dynamic, unstructured environments. Notably, it was found to significantly improve the stability of a robot's grasp in some cases, outperforming conventional controllers that work by solely adapting the force of a robot's grip.

"Embedding such a model into a predictive control loop has traditionally been too computationally demanding," said Ghalamzan. "Our study shows that it's not only feasible, but also effective."

The recent work by this team of researchers could contribute to the advancement of robotic systems, enabling them to safely handle various physical and potentially also social interactions utilizing a world model. This might allow robots, for instance, to handle different objects in a wide range of real-world settings, including household environments, manufacturing sites and health care facilities.

"We are actively working to make our predictive controller faster and more efficient, so it can be deployed in even more demanding real-time settings," added Ghalamzan. "This includes exploring different architectural and algorithmic techniques to reduce computational overhead."

As part of their next studies, the researchers are also expanding their system to support more advanced and complex object manipulation tasks, including the handling of deformable objects or items that need to be manipulated with two hands. Eventually, they also plan to combine their approach with computer vision algorithms, which would allow their approach to plan trajectories for robots based on both tactile and visual information.

"Another important direction is improving the verifiability and explainability of these learned models," added Ghalamzan. "As we move toward more intelligent and autonomous systems, it's critical that humans can understand and trust how robots make decisions. Our long-term vision is to develop predictive controllers that are not only effective but also transparent and safe for deployment in the real world." - TX