Regd No. MC 104

FORTNIGHTLY
ENGINEERING REVIEW
The voice of engineers

Founded by Najam ul Hassan (Marhoom)

Vol. 50 No.08 April 16-30, 2025
info@engineeringreview.com.pk Ph:+92-21-32215961-2

www.engineeringreview.com.pk www.youtube.com/engineeringreviewER




# Massive Cost Escalation at Dasu Dam Sparks Minister's Ire as CDWP Approves Key Projects

The revised cost of the Dasu Hydropower Project (Stage-I)—soaring from Rs. 479 billion to a staggering Rs. 1.73 trillion—came under intense scrutiny at the latest meeting of the Central Development Working Party (CDWP), chaired by Minister for Planning, Development & Special Initiatives, Ahsan Iqbal.

The minister, alarmed by what he called "criminal negligence," raised a series of hard-hitting questions about mismanagement and delays that have led to an astronomical increase in the project cost.

Iqbal emphasized the strategic significance of the Dasu project for Pakistan's water and food security, but pointed out that gross inefficiencies had undermined its potential. "How is WAPDA running a project of this magnitude without a qualified and competent CFO?" he asked, reacting strongly to the absence of a professional Chief Financial Officer. The minister also expressed frustration over WAPDA's failure to appoint an independent full-time Project Director, despite ECNEC's clear directions for all projects exceeding Rs. 3 billion.

In a particularly scathing critique, Iqbal demanded to know why WAPDA awarded a 66-km road construction contract in foreign currency, labeling it "criminal negligence" when no satisfactory explanation could be provided. He also noted unauthorized design changes and expenditures made without CDWP or ECNEC approval, directing WAPDA to provide immediate clarifications and calling for third-party validation of the revised project cost.

Despite the controversy, the Dasu project was referred to the Executive Committee of the National Economic Council (ECNEC) for final approval, subject to WAPDA rationalizing the costs and answering the minister's concerns.

CDWP Clears 10 Development Projects, Rs. 1.82 Trillion Referred to ECNEC

In addition to the Dasu project, the CDWP approved and referred several major development initiatives for further consideration. Of the 10 projects reviewed, 4 were approved by the CDWP itself, worth Rs. 14.312 billion, while 6 projects worth Rs. 1.82 trillion were recommended for ECNEC approval.

The meeting was attended by senior officials including Secretary Planning Awais Manzur Sumra, Planning Commission members, Federal Secretaries, and representatives from provincial governments.

Projects covered a wide

*Contd on page 4*






CHINT

Empower the World

# A GLOBAL LEADING SMART ENERGY SOLUTIONS PROVIDER

Provide a complete energy solution for public institutions, businesses and end-users

## Low-voltage Products

**NVF2G Series**
Inverter

**NXB Series**
Moulded Case Circuit Breaker

**NU6 Series**
Surge Arrestor

**NH40 Series**
Switch Disconnector

**NXC Series**
AC Contactor

**NXA Series**
Air Circuit Breaker

**NXZ Series**
Automatic Transfer
Switching Equipment

**NXM Series**
Moulded Case Circuit Breaker

## Meters

**CHS120**
Single Phase Smart Meter

**CHS320**
Three Phase Smart Meter

**DDSU666/DT(S)SU666**
Smart Electricity Meter


**PA/PZ/PD666**
Three Phase Digital
Multi-function Meter

## EV Charger

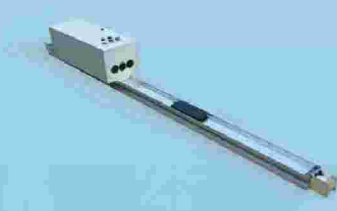
**AC Charger**

**Fast DC Charger**
Rating 150/180kW Dual Plug

## Ring Main Unit

**NG7-12**

## Busway



**NCM3**

## Vacuum Circuit Breakers

**NV2-12**
Indoor Type
Vacuum Circuit Breaker

**NXV-17.5**
Indoor AC High Voltage
Vacuum Circuit Breaker

**Scan the QR Code to find out more about CHINT Global and our Smart Energy Solutions**

### AUTHORIZED DISTRIBUTORS | LOW-VOLTAGE

**Ameejee Valleehee & Sons (Pvt.) Ltd. (AVS)**
Tel: +92 21 32625492 5

**Diwan International (Pvt.) Ltd. (Diwan)**
Tel: +92 021 111 333 926

**HL Pakistan Pvt. Ltd. (HL)**
Tel: +92 0311 1617777

**The Imperial Electric Company (Pvt.) Ltd. (IEC)**
Tel: +92 042 36304861 5

@CHINTGroupAsiaPacific

@CHINTElectric

@CHINTGroup

Empower the World with us at **www.CHINTGlobal.com**

FORTNIGHTLY
ENGINEERING REVIEW
The voice of engineers



# Significant Copper-Gold Discovery Announced by Joint Venture in Balochistan

Fatima Fertilizer Company Limited has announced a major breakthrough in mineral exploration through its joint venture, National Resources (Private) Limited ("NRL").

The announcement, made last week, detailed a significant copper-gold mineralization discovery in District Chagai, Balochistan.

NRL, in which Fatima Fertilizer holds a 33.33% equity stake, was granted the exploration lease in October 2023. Since then, the company has identified several promising prospects within the lease area. Among them, the "Tang Kaur" prospect has shown the most potential and has now advanced to an intensive drilling phase.

So far, 13 diamond drill holes have been completed at Tang Kaur, totaling 3,517 meters. The results from the first six holes (1,500 meters) confirm the presence of mineralized zones ranging from 48 to 148 meters in thickness. The average grades recorded include copper concentrations between 0.23% and 0.48%, gold between 0.09 and 0.14 grams per tonne (g/t), and silver between 1.30 and 6.21 g/t. These figures translate to a copper equivalent range of 0.28% to 0.56%. Notably, the mineralized system remains open toward the north, east, and deeper levels, suggesting further potential.

Advanced drilling is slated to resume in May 2025, with the objective of completing a NI 43-101 Technical Report by the end of the year. NRL has also outlined a 3–4 year plan for detailed exploration and feasibility studies, with ongoing evaluations across other prospects in the lease.

Additionally, NRL has secured a Lead-Zinc exploration lease adjacent to a known deposit that has already undergone a Bankable Feasibility Study. As part of its broader strategy, the company is evaluating the development of a full metal value chain, including downstream processing facilities.

NRL emphasized its commitment to social responsibility, particularly in supporting indigenous communities. Current local employment stands at over 90%, driven by initiatives in clean water, education, healthcare, and small business support. The company also promotes collaboration between industry and academia, and is aligned with sustainability principles.

To support its ambitious exploration plans, NRL is collaborating with the Government of Balochistan and the Special Investment Facilitation Council (SIFC) to secure two additional copper-gold exploration licenses. These efforts are underpinned by a $100 million exploration fund and are expected to attract both domestic and international investment. An MoU has also been signed with Oil and Gas Development Company Limited (OGDC) to jointly develop newly acquired leases.

Fatima Fertilizer Company Limited expressed optimism about the discovery, viewing it as a strategic step toward portfolio diversification and long-term value creation. However, the company cautioned that the mineralization discovery remains in a preliminary phase and further technical and commercial assessments are required before any definitive conclusions can be drawn. – ER REport

# Massive Cost Escalation at Dasu Dam

*Contd from page 1*

range of sectors:

• Education & Training: A Rs. 28 billion World Bank-funded project aimed at improving education delivery in Balochistan was referred to ECNEC. It includes measures for enhancing teaching quality, data-driven accountability, climate resilience, and emergency preparedness.

• Higher Education: The CDWP approved the establishment of a sub-campus of Quaid-i-Azam University in Sheikhupura, pending land provision by the Punjab government and syndicate approval.

• Information Technology: Three projects were greenlit, including a Rs. 5 billion initiative supporting IT startups and venture capital, and a Rs. 4.84 billion program for semiconductor human resource development.

• Physical Planning & Housing: A Rs. 16.1 billion customs infrastructure project was referred to ECNEC.

• Transport & Communications: The Rs. 12.26 billion Sindh Flood Emergency Rehabilitation Project (Phase II) was referred to ECNEC. It seeks to rehabilitate nearly 146 km of roads and bolster disaster response across four districts.

• Water Resources: Two major projects in Balochistan, worth a combined Rs. 27 billion, were forwarded to ECNEC. One aims to improve Quetta's water supply system, while the other focuses on flood management and agricultural irrigation in Kachhi Plains.

Reiterating CDWP's commitment to transparency and efficiency, Ahsan Iqbal emphasized the need to guard every rupee amid a shrinking development budget. "Every rupee is a sacred trust and must be spent with utmost responsibility to achieve the desired development goals," he stated. – ER Report



## Engineering Bazar


# 39th IEEEP Symposium and the Pressing Challenges of Today

***By: Manzoor Shaikh***

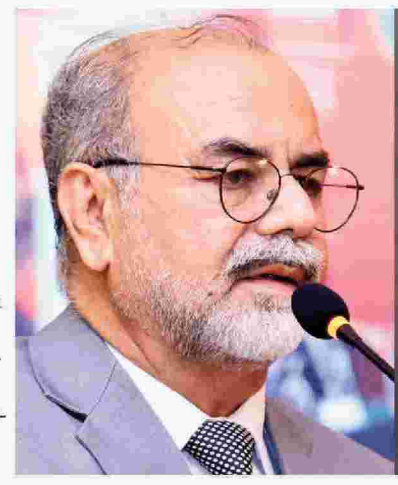
The Institution of Electrical & Electronics Engineers Pakistan (IEEEP) – Karachi Centre is all set to host the 39th Multi-Topic International Symposium on April 23rd and 24th, 2025, at Pearl Continental Hotel, Karachi, according to an official communication shared with the media.

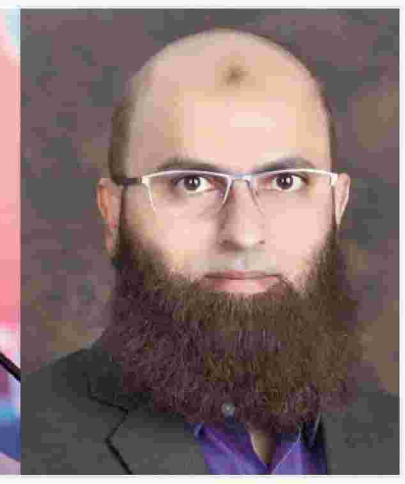
This prestigious annual event is expected to bring together leading consultants, professionals, and experts from electrical, electronics, and allied engineering disciplines. However, a key point of reflection will be whether the symposium truly addresses the most pressing challenges facing engineering education and the local engineering industry in Pakistan.

One major concern is that engineering education is rapidly losing its appeal among youth in Pakistan. What actions policymakers must take to reverse this trend remains a critical and unanswered question.

Secondly, while engineering industries exist in the country, locally manufactured engineering products are seldom available in domestic markets. Despite persistent rhetoric promoting local manufacturing and supportive ecosystems, there appears to be a lack of serious policy-level action both from the government and the engineering fraternity to back these claims.

A third issue that needs attention is the long-discussed need to bridge the gap between academia and industry. While hundreds of promising projects are initiated in Pakistani universities, few ever reach the commercialization or industrial application stage. Whether this year's symposium will set a practical model for academia-industry collaboration remains to be seen.





The program leaflets suggest that the organizers have attempted to incorporate current demands and challenges. However, the true test will be in the quality of discussion and engagement by dignitaries, such as Chairman of the Pakistan Engineering Council (PEC), Engr. Waseem Nazir, who has been facing challenges in leading the council, among other notable guests.

The symposium will reportedly cover a broad range of topics, including:

- Energy markets and sustainability
- Industrial solutions and innovation
- Digital transformation
- Emerging technologies

Yet, there is a noticeable absence of topics related to climate change, particularly technologies and solutions addressing inter-provincial mistrust over water distribution and river systems. This omission could be seen as a missed opportunity to tackle a critical issue affecting national cohesion and long-term sustainability. In the past, the institution has addressed such concerns, often including dedicated sessions and panel discussions to explore these topics in depth.

The agenda includes various sessions relevant to professionals, project managers, EPC contractors, manufacturers, and engineering students. The opening session will feature PEC Chairman Engr. Waseem Nazir as the chief guest, while President IEEEP, Engr. Tahir Basharat Cheema, will also address the gathering. Khalid Waleed, Research Fellow at the Sustainable Development Policy Institute (SDPI), is scheduled to speak on the topic of "Power Sector's Capacity Trap, CBAM, and CTBCM Conundrum."

Over its two-day duration, the conference will host five technical sessions, including a dedicated student session. The final session will be held in a panel discussion format, bringing the event to a close with interactive debate and reflections.

Whether these discussions will lead to tangible outcomes or remain theoretical remains to be seen—but the engineering community will be watching closely. ■

# Six Decades of Jubilee Corporation: Leading the Electrical Industry in Pakistan with Innovation

For over six decades, Jubilee Corporation (JC), a private engineering organization, has been a leading player in the electrical industry of Pakistan.

Established in 1962, JC has consistently upheld its mission of delivering high-quality, reliable, and cost-effective electrical products and solutions to its valued customers.

With a commitment to excellence and a dedication to customer satisfaction, JC has established itself as a trusted supplier of electrical, electronics, and automation technology products throughout the country. With its Head Office in Karachi, a Regional Office in Lahore, and liaison offices in Islamabad, Faisalabad, Multan, and Peshawar, JC maintains a network that aspires to continue growing nationwide.

**A Diverse Product Portfolio for Every Electrical Need**

Jubilee Corporation (JC) offers a comprehensive portfolio of electrical products and solutions designed to cater to a wide range of applications. Here's a closer look at their core product categories:

**Low Voltage Switchgear**

The Low Voltage Switchgear category offers safe and efficient power distribution across various applications. These solutions feature cutting-edge technology, providing reliability and optimal performance for both industrial and commercial use.

**Medium Voltage Solutions**

The Medium Voltage Solutions are tailored to meet the complexities of modern electrical systems. They provide robust performance and seamless power distribution, ensuring high reliability and safety for critical applications.

**Power Distribution**

Jubilee Corporation's Power Distribution products are engineered to efficiently manage and distribute power, optimizing your electrical infrastructure. These solutions ensure a reliable and streamlined power supply, catering to diverse operational needs.

**External Lightning Protection and Earthing Systems**

Safeguard your buildings with comprehensive Lightning Protection and Earthing Systems. These solutions offer critical protection against electrical surges, maintaining the integrity and safety of your equipment.

**Energy Management**

Optimize your energy consumption and enhance efficiency with Jubilee Corporation's Energy Management solutions. These innovative products contribute to sustainable and cost-effective operations by effectively managing energy resources.

**Automation**

JC's Automation solutions embrace the future of industrial processes, helping businesses streamline operations and increase productivity. They offer state-of-the-art automation components that keep you at the forefront of technological advancements.

**Pneumatics**

JC's pneumatic solutions provide precision and control in various manufacturing processes. These reliable and accurate products are essential for efficient automation across diverse industries.

**Power Quality**

Ensure a stable and high-quality power supply with JC's Power Quality solutions. These products address voltage fluctuations and harmonics, guaranteeing consistent and reliable power output for sensitive equipment.

**Motion Division**

Enhance operational efficiency with JC's Motion Division portfolio, featuring advanced drive and motor solutions tailored for diverse industrial applications. The motion control products offer seamless integration with existing automation setups, ensuring high efficiency and accuracy in movement-related applications.

**Instrumentation and Controls**

The Instrumentation and Control components are designed for precision and reliability, meeting the demands of modern industries. These solutions ensure accurate control and monitoring, enhancing operational efficiency.

**Unwavering Commitment to Customer Satisfaction**

Customer satisfaction is paramount to JC's philosophy. They prioritize building lasting relationships with their clients by offering exceptional service at every touchpoint. This commitment manifests in several ways:

**Tailored Solutions:** JC understands that every customer's needs are unique. Their team of highly skilled engineers works closely with clients to design customized solutions that perfectly fit their specific requirements.

**Technical Expertise and After-Sales Support:** JC doesn't just sell products; they provide ongoing support. Their engineers are readily available to address any technical challenges a customer may encounter, ensuring optimal performance and a seamless user experience.

**Nationwide Accessibility:** Accessibility is key for JC. They have established a robust nationwide dealer network that ensures their products and services are readily available across major cities in Pakistan. This allows them to cater to clients throughout the country efficiently.

**In Conclusion**

Jubilee Corporation has become a cornerstone of the Pakistani electrical industry through its unwavering commitment to excellence. Their diverse product portfolio, dedication to customer service, and strategic partnerships with leading brands have cemented their position as a trusted industry leader. As the industry continues to evolve, JC remains committed to innovation, ensuring their clients have access to the most advanced technologies to meet their electrical needs.

For further details and queries, reach out to JC at info@jubileecorporation.com or UAN: +92 21 111 000 520, or visit their website at www.jubileecorporation.com.

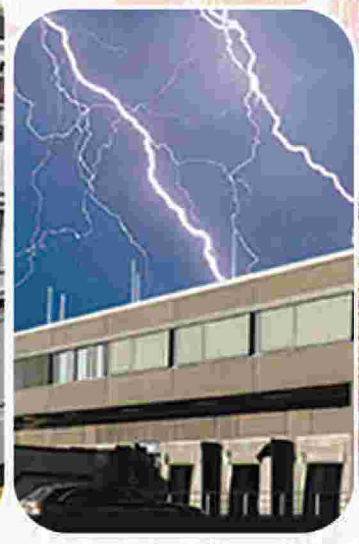
JUBILEE CORPORATION

SWITCHGEAR | AUTOMATION | INSTRUMENTATION | CONTROLS

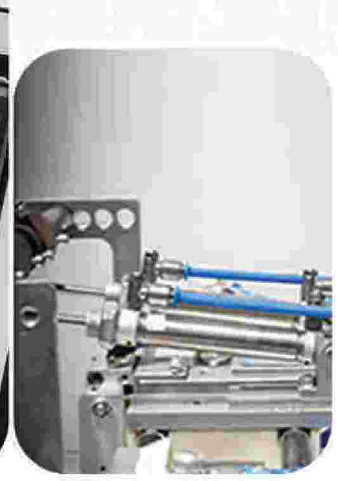
# Technology Driven Quality Service

- Low Voltage Switchgear
- Medium Voltage Solution
- Power Distribution
- Lightning Protection System
- Energy Management
- Automation
- Pneumatics
- Power Quality
- Motion Division
- Instrumentation & Controls







## Authorized Distributor of More Than 35 World Renowned Brands

www.jubileecorporation.com | jubilee.corp@jubileecorporation.com

- Karachi
- Lahore
- Faisalabad
- Islamabad
- Multan
- Peshawar

# Championing Sustainable Change in Industry

Becoming a sustainability leader requires big changes, but the effort is worth it in both environmental and economic terms.

Pakistan Cables is the country's premier and most trusted cable manufacturer in Pakistan since 1953. As Pakistan's first and oldest cable manufacturer, listed on the Pakistan Stock Exchange since 1955, it has continued to set benchmark practices in the industry, maintaining a leading global presence. For over 70 years, providing end-to-end solutions to its customers by offering a versatile product portfolio of Wires & Cables, Aluminium Sections for Architectural Applications, Copper Rods, PVC compound, and Wiring Accessories.


GREENER PRODUCT SOLUTIONS: Pakistan Cables is the exclusive manufacturer of the ACCC® conductors in Pakistan, which is a revolutionary technology for efficient transmission system in Pakistan. Pakistan Cables Limited introduced ACCC Conductor in Pakistan in collaboration with CTC Global, USA.SCS Global Services (SCS) verified that ACCC® Conductor reduces CO2 emissions associated with transmission line losses up to 31% compared to conventional steel-reinforced ACSR conductors. To the best of our knowledge, Pakistan Cables is also the first cable manufacturer in Pakistan to provide KEMA-certified Low Smoke Zero Halogen (LSZH) Power Cables.

SUSTAINABLE OPERATIONAL EXCELLENCE: In 2023, Pakistan Cables became the country's first building material company to have its science-based emission reduction targets validated and approved by SBTi. It was also among Pakistan's first 5 companies at the time to do so. The Company's science-based emission reduction targets are part of its long-term vision to develop its net-zero strategy.

Earlier in 2021, Pakistan Cables became one of the 26 Pakistani companies and the only building materials company that signed the pledge for Business Ambition 1.5°C ahead of COP26. As an ISO 14001 certified company, complying with environmental regulations and adding value over the years in the arena has been a fulfilling journey. Reusing its wooden cable drums, using biodegradable packaging material for some of its product lines, using tote bags over paper-based bags, and reusing and reducing usage of plastics were some of the earliest practices incorporated.

Today, the new manufacturing facility at Nooriabad, Sindh is set to transform the industry. Equipped with latest technology, the Pakistan Cables factory at Nooriabad is also driving the company's sustainability agenda. The water treatment plan and 2 MW on-grid solar power plant were successfully commissioned during FY 2023-24. The Nooriabad factory is also home to Pakistan's first and largest Miyawaki based urban forest on an industrial estate. The Pakistan Cables urban forest is spread across 3 acres of land with approximately 50,000 trees. The Company has partnered with the World-Wide Fund for Nature (WWF – Pakistan), Clifton Urban Forest (Karachi) among others to lend support to green initiatives.

It is a member of the Amir S. Chinoy Group (ASC). The ASC Group has been at the forefront of Pakistan's industrial development for over 70 years. Today, the ASC Group includes two other listed companies, International Industries Ltd., International Steels Ltd and Chinoy Engineering & Construction (Pvt.) Ltd.

As a signatory of the United Nations Global Compact, all CSR related activities are aligned with the UN's Global SDGs. The Company continues to shape a sustainable future in the industry, inspiring others to follow.







# Chakwal Spinning Mills Investment in Data Centre and Cloud Operations

Chakwal Spinning Mills Limited has informed the Pakistan Stock Exchange (PSX) of a significant diversification move as part of its new business plan.

In a notice issued to the exchange, the company announced that its Board of Directors (BOD) has approved and signed a confirmed term sheet for an investment of Rs. 1.1 billion aimed at launching Data Centre and Cloud Operations in Pakistan.

According to the notice, another potential investment of Rs. 500 million is currently under consideration. The Board has authorized the Chairman of the Company to finalize the second term sheet. The company emphasized that all proceedings will be carried out in compliance with the Companies Act, 2017, and other applicable regulations.

This strategic shift is part of Chakwal Spinning Mills' broader vision to diversify its business portfolio and explore new avenues of growth in the evolving digital economy.

About Chakwal Spinning Mills Limited

Chakwal Spinning Mills is a Pakistan-based textile company engaged in the manufacturing and sale of yarn. Traditionally focused on the spinning segment of the textile sector, the company is now positioning itself for growth beyond the conventional textile business through investment in technology-driven ventures. - ER



# Your Trusted Partner for Reliable Energy, Installation & After-Sales Support

**A Legacy of Trust in Power**

In today's rapidly evolving world, where every industry relies on seamless and uninterrupted power, JFoster stands tall as a trusted leader in the power generation sector. With years of experience and a clear vision for the future, the company offers a comprehensive range of diesel generator sets from 10kVA to 1250kVA, engineered to serve everything from small commercial setups to large-scale industrial operations.

As power demands continue to rise, especially in developing economies like Pakistan, JFoster is meeting the challenge with solutions that are not only reliable but also efficient and sustainable. Whether in urban centers or remote regions, power outages can disrupt productivity, compromise safety, and cost businesses significantly. JFoster understands this need and delivers solutions that ensure consistent performance, even under the most challenging conditions.

**Engineering Power with Global Technology**

JFoster generator is powered by globally trusted engines including Power by Perkins, Cummins, Yangdong, and Quanchai. These engines are renowned for their durability, fuel efficiency, and consistent output. To complement this, JFoster equips its systems with Stamford alternators, ensuring smooth voltage regulation and stable power delivery.

Built with precision, these generators are available in various configurations including open-type, soundproof enclosures, and containerized designs making them ideal for use in diverse environments such as hospitals, shopping malls, factories, educational institutions, data centers, and construction sites.

**More Than Supply – Complete Installation & Execution**

Beyond supplying generators, JFoster offers complete turnkey services. The company's technical team manages everything from site inspection and planning to system integration, commissioning, and performance testing. This end-to-end approach ensures that every generator is installed with accuracy and is fully optimized for the site's specific requirements.

Over the years, JFoster has proudly delivered successful installations for numerous high-profile clients and large corporations, showcasing its capability in handling complex and time-sensitive projects. Each installation reflects the company's unwavering commitment to safety, quality, and performance.

**Service That Goes the Extra Mile**

JFoster has built its reputation not only on the strength of its products but also on the depth of its after-sales support. With a dedicated team of engineers and technicians, the company provides maintenance services, technical troubleshooting, and fast access to genuine spare parts.

Customers benefit from ongoing support long after purchase, which ensures maximum uptime and the longest possible lifecycle for every unit. This service philosophy has made JFoster a preferred choice for companies that cannot afford compromise when it comes to power.

**Powering Growth Across Pakistan**

Pakistan, with its expanding infrastructure and increasing industrial activity, has a growing need for dependable power solutions. Frequent power interruptions continue to affect productivity, particularly in manufacturing, logistics, healthcare, and commercial operations.

JFoster has been at the forefront of addressing these challenges by deploying robust power systems across the country. From metropolitan cities like Karachi and Lahore to remote towns and emerging industrial zones, the company is playing a vital role in energizing Pakistan's progress.

As more industries invest in automation, and as energy requirements continue to rise, JFoster's presence in Pakistan is only set to grow. With a focus on customer satisfaction, localized service, and high-performance products, JFoster is becoming a key contributor to the nation's industrial and economic development.

**Built for the Present, Ready for the Future**

With a global outlook and local commitment, JFoster continues to lead the way in power generation. Combining technical excellence with deep market understanding, the company delivers solutions that empower businesses to operate without interruption, no matter the challenges ahead.

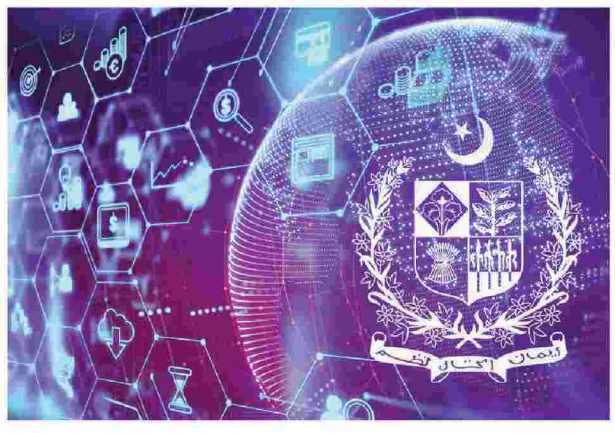
For reliable power, trusted service, and solutions that grow with your business, JFoster remains the name you can count on today, and for decades to come.■



## IT Ministry Set for Restructuring Under World Bank's $77.73m DEEP Project

The Ministry of Information Technology and Telecommunication (MoITT) is set to undergo a major overhaul under the World Bank-funded Digital Economy Enhancement Project (DEEP), valued at $77.73 million.

The initiative aims to strengthen the government's ability to deliver digitally-enabled services to citizens and businesses. To kickstart this transformation, DEEP has initiated the hiring of a consulting firm that will evaluate the ministry's current structure and propose a long-term roadmap aligned with global best practices.



The selected firm will develop a comprehensive restructuring plan, identifying gaps and offering actionable reforms to modernize MoITT over the next decade. Expressions of Interest (EOIs) are currently being invited from eligible firms with relevant experience, in line with the World Bank's Consultant's Qualification-based Selection (CQS) method.

The project, financed through an IBRD Investment Project Financing (IPF) loan, is divided into three components:

- Component 1: Digital Governance & Service Delivery ($58 million)

Focused on building key digital infrastructure, improving inter-agency data integration, enabling secure digital authentication, and creating a unified citizen services portal — all in line with the Digital Pakistan Policy 2018.

- Component 2: Pakistan Business Portal ($15 million)

*Contd on page 11*

# Professor Noman Ahmed Appointed Acting Vice Chancellor of NED University, Karachi

Professor Noman Ahmed was appointed as the Acting Vice Chancellor of NED University of Engineering and Technology, Karachi, on March 21, 2025, by the Government of Sindh.

NED is one of the oldest universities in Pakistan, originally established in 1921 as the Prince of Wales Engineering College. It was later renamed NED Engineering College in recognition of a generous philanthropic contribution by the family of Nadirshaw Edulji Dinshaw, a prominent Zoroastrian businessman. The institution was granted full university status in 1977. Today, NED University has three campuses in Karachi and a constituent college in Mithi, Tharparkar, Sindh.

Professor Noman Ahmed is an architect and planner by profession. He has taught at leading architecture and planning institutions in Karachi and has supervised postgraduate research in the same disciplines. From 1989 to 2000, Dr. Ahmed served as a faculty member and coordinator of the Urban Design Graduate Programme at Dawood College of Engineering and Technology, Karachi.

In 2000, he established the Department of Architecture and Planning at NED University. He is currently serving as Professor and Dean of the Faculty of Architecture and Management Sciences at NED University. Dr. Ahmed has been a regular contributor to national newspapers such as Dawn, The News, and The Friday Times, writing on development and planning issues since 1988.

His professional expertise spans urban and regional planning, with involvement in several assignments across Karachi, Quetta, other cities in Sindh, and beyond. He has authored numerous papers and books focused on urban infrastructure, planning, and the challenges faced by underprivileged urban communities.

He also serves as Chair Holder and Network Coordinator of the UNESCO Chair on Sustainable Urban Regions at NED University. Dr. Noman Ahmed earned his PhD in Civil and Building Engineering from Loughborough University in 2005. ■

# How Universal Cables Emerged on the Horizon

In 1978, a small yet solid enterprise emerged on the horizon of Pakistan's cable industry.


Initially, the company Universal Cables began operations as a manufacturer of PVC-insulated wires, cables, and flexible cords. Within a very short span of time, Universal Cables Industries Ltd. gained recognition as one of the leading and most credible names in the contemporary market.

Today, it proudly stands as a universally acclaimed cable manufacturer and supplier, featuring a diverse product range, advanced technology, and a forward-looking vision. Universal Cables Industries Ltd. has achieved another remarkable milestone in terms of quality and customer satisfaction by becoming ISO 14001:2015 certified. The company is also KEMA Gold Certified, affirming its adherence to global quality standards.

Recently, Universal Cables launched Greener Universal (XLPO Solar Cables), which has received TUV Austria Certification—further proof that the company places top priority on delivering world-class products to its customers, manufactured with cutting-edge technology. ■



# PEF New Leadership in Sindh (South)

Engr. Hafiz Haider Ali, President and the Executive Committee of Pakistan Engineers Forum, has appointed new leadership in Sindh South region for the term of 2025-26.

Engr. Muhammad Imran will be President, Sindh South and Engr. Umar Farooq Memon will be the General Secretary. The other team members are Engr. Ammad Rizvi (Vice President), Engr. Syed Siraj Uddin Hussain (Deputy General Secretary), Engr. Sohaib Ali Khan (Deputy General Secretary), Dr. Saad Nadeem (Finance Secretary), Engr. Wahaj Shahid (Deputy Finance Secretary), and Engr. Uzair Elahi (Social Media Incharge).

The District Presidents in Karachi are Engr. Ammad Rizvi (Karachi East), Engr. Umar Farooq Memon (Karachi South), Engr. Arslan Mansoor (Karachi Malir), and Engr. Abdul Saboor Khan (Karachi North).

The newly appointed President Sindh

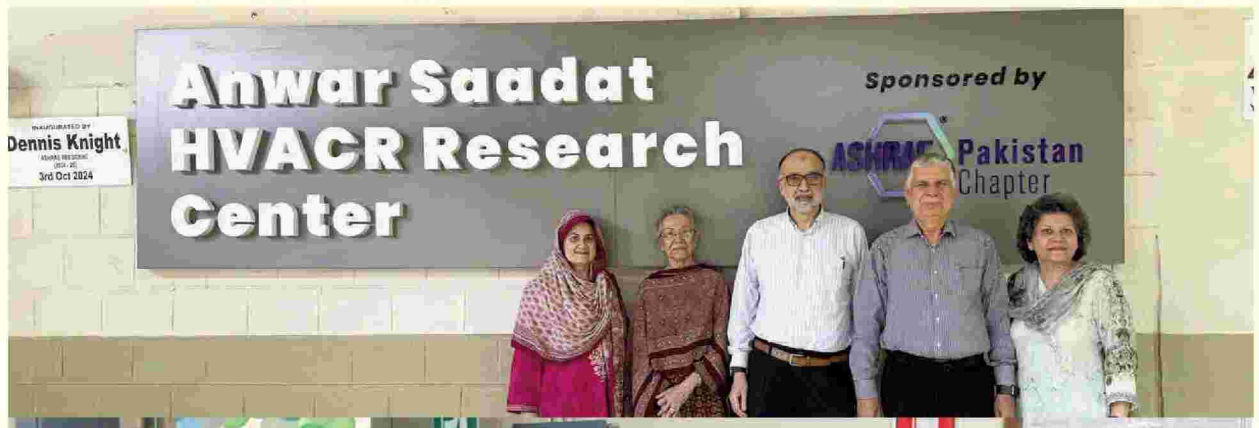
South, Engr. Muhammad Imran, is a seasoned Textile Engineer and Manager with over 20 years of experience and a Master's in Textile Engineering from NED University. He is currently working as Manager, Pre-Treatment, in the premium textile industry. Since 2004, Imran has been actively serving the engineering community through PEF and previously held the position of General Secretary for PEF Karachi.■

## Engr. Anwar Saadat's Legacy Immortalized at NED University:

# A Vision Reborn for the Future of HVACR in Pakistan

Engr. Anwar Saadat's Legacy Immortalized at NED University: A Vision Reborn for the Future of HVACR in Pakistan

In an inspiring fusion of legacy, learning, and leadership, ASHRAE Pakistan Chapter has turned a page in the history of engineering education by upgrading and renaming the Mechanical (HVACR) Lab at NED University of Engineering & Technology, Karachi, as the Anwar Saadat Research Centre. This remarkable transformation pays tribute to Engr. Anwar Saadat (Late) — a true visionary, Past President of ASHRAE Pakistan (2007–2008), and one of the most respected pioneers of the HVACR industry in Pakistan.




A Global Inauguration with Unmatched Presence

The upgraded lab was officially inaugurated on October 3, 2024, by Mr. Dennis M. Knight, PE, President of ASHRAE Society, in the presence of a historic gathering of global HVACR leadership. The momentous event featured a powerful delegation, including

- Mr. Farooq Mehboob, Past President ASHRAE Society
- Mr. Tim Wentz and Mr. Mick Schwedler, PE, Past Presidents ASHRAE
- Mr. Jeff Littleton, Executive Vice President & Chief Staff Officer
- Ms. Sarah Matson, Treasurer ASHRAE
- Mr. Basel Anbari, PE, Director & Regional Chair (Region-at-Large)
- Ms. Adeeba Mehboob, Region Members Council Representative
- Engr. Abbas Sajid, PE, Regional Nominating Member
- Mr. Mahmood Ahmad, PE, President, ASHRAE Pakistan Chapter (2024–2025)

This unprecedented convergence of ASHRAE's leadership in Pakistan marked a bold new era — placing NED University and Pakistan's HVACR talent on the international map of engineering innovation.

A Family's Emotional Tribute — A Nation's Moment of Pride

On April 11, 2024, the family of Engr. Anwar Saadat (Late) paid an emotional visit to the university where his legacy now lives on. The family toured the Anwar Saadat Research Centre, the Haptics – Human Robotics & Condition Monitoring Lab, and the Engr. Muhammad Abbas Sajid Board Room, witnessing firsthand how ASHRAE Pakistan had not only honored Engr. Saadat's name but also elevated the future of engineering learning.

The visit wasn't just symbolic — it sparked real change. Deeply moved by the initiative, the family announced a scholarship program for deserving NED students, ensuring that the values Engr. Saadat lived by excellence, mentorship, and accessibility — and would continue to shape lives for generations to come.

Empowering the Next Generation of Engineers

The Anwar Saadat Research Centre is more than a name on a plaque — it's a living, breathing center of innovation, fully equipped to provide cutting-edge HVACR education, applied research, and industry training.

For young engineers, this is a gateway to:

- Hands-on experience with modern HVACR systems
- Workshops and seminars led by local and international experts
- Direct engagement with ASHRAE programs and resources
- Opportunities for internships, mentorship, and scholarships

It is a platform that bridges academia with industry, helping shape market-ready professionals while attracting investment and commercial attention to Pakistan's growing engineering sector.

A Call to the Industry: Join the Movement

This initiative presents a powerful commercial and CSR opportunity for businesses, manufacturers, consultants, and corporate sponsors in the HVACR, construction, and energy sectors. Partnering with ASHRAE Pakistan and supporting labs like the Anwar Saadat Research Centre is not just a contribution to education — it's a strategic investment in the future of Pakistan's skilled workforce and sustainable infrastructure.■



# IT Ministry Set for Restructuring Under World Bank's $77.73m DEEP Project

*Contd from page 9*

Designed to help the Board of Investment (BoI) digitize and streamline business-related regulatory processes at federal, provincial, and municipal levels, with the goal of launching a unified e-portal for all business compliance needs.

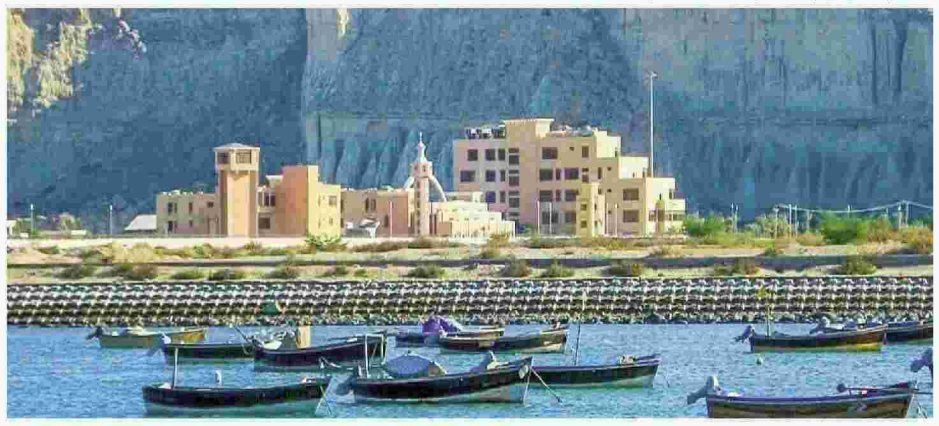
- Component 3: Project Management ($5 million)

Will establish a Project Management Unit at MoITT and four Project Implementation Units across NADRA, NITB/PITB, Ignite, and BoI to oversee project execution, procurement, and stakeholder coordination.

This restructuring is seen as a pivotal step in modernizing Pakistan's digital infrastructure and creating a more responsive and transparent public service ecosystem. - ERMD

AGRI TECH

# COPHC Unveils Plan to Develop High-Tech Aquaculture Industry in Gwadar



The China Overseas Ports Holding Company (COPHC) has presented a comprehensive plan to jointly develop a high-tech aquaculture industry in Gwadar, signaling a significant step toward unlocking the region's maritime potential.

In a meeting with Federal Minister for Maritime Affairs Junaid Anwar Chaudhry, COPHC Chairman Professor Yu Bo shared the company's strategic business proposal focused on establishing a modern, sustainable aquaculture sector in the port city. The initiative aims to position Gwadar as a key hub for seafood production, processing, and export under the broader umbrella of the China-Pakistan Economic Corridor (CPEC).

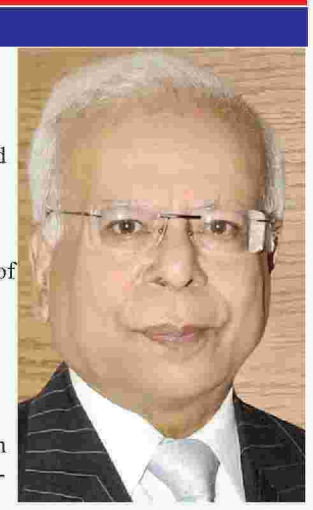
Professor Yu highlighted Gwadar's strategic advantages, including its rich marine biodiversity and proximity to international

*Contd on page 13*



# Agriculture Vision 2030

*By: Ishrat Husain*



The most important reform to make the agriculture sector efficient, remunerative for the farmers, competitive for the consumers and responsive to the changing demand pattern has to be in the area of agriculture marketing. The present collusive marketing system where the petty officials of Agricultural Departments and the cartels of arhthis or middle men are causing havoc to both the consumers as well as producers will have to be dismantled.

Pakistan will have to develop a unified market linking the farms to retail outlets covering the full supply chain particularly in the high value commodities. Investment in on-farm storage, refrigerated vans and specialized trucks, silos and warehousing, wholesale chains supplying to the processors and opening up the highly inefficient and regulated marketing competition will eliminate the excessive rents earned by those involved in the present arrangements. This 'unearned' premium under a reconfigured modern value chain bolstered by competitive forces will then accrue to the farmers and the consumers while acting as a restraint on food inflation..

The positive effects of marketing reforms should be considered against the backdrop of the water availability particularly due to the changes in Climatic conditions. 18 million hectare land is irrigated out of the total cultivated are of 21 million hectare but 55 percent of irrigated land is devoted to low value high water consuming crops. The yield per cubic meter of water is only 0.4 tons of wheat compared to 0.9 tons in India and 2.5 tons in Argentina. Water losses between Canal heads and water courses account for one third of the total amount drawn from the rim of the river tributaries. Another 25 percent is lost within the farms. Thus 76 MAF out of 135 MAF average annual flows is lost due to poor transmission and seepage. Surface water is augmented by about 55 MAF of ground water pumped out by 0.5 million Tubewells throughout the Basin. Ground water thus provides half of all farm irrigation requirements. The actual water use in the four major crops is given in Table I below:

| Crops | Hectares (Million | Water in Cubic Meter (Millions) | Water in Cubic Meter/ Hectares |
|---|---|---|---|
| Rice | 2.419 | 70.508 | 29.15 |
| Cotton | 2.955 | 51.427 | 17.40 |
| Wheat | 7.554 | 51.418 | 6.81 |
| Sugarcane | 1.059 | 48.882 | 46.16 |

Water Utilization in Major Crops

It can be seen from the above table that sugarcane requires 6.8 times more water than Wheat, 2.7 times more than Cotton and 1.6 times more than rice. But the farmers pay flat charge of Rs.150/ hectare irrespective of the amount of water they have used. Had there been volumetric pricing the cropping pattern would have shifted away from water-intensive crops and inefficiencies and waste would have been curbed. The challenge for Pakistan's agriculture in the future is how to maximize yields per cubic meter of water. System improvement through remodeling, rehabilitation and lining of canals and water courses and then periodic maintenance and effective management of the entire system will help.

The main reason for this disastrous situation is that the institutions responsible for managing irrigation system have become politicized. They are highly bureaucratic and ridden with corrupt practices and misuse of power. There is hardly any accountability for the results as those responsible for supervision of the field officials are themselves complicit in these practices.

Modern agriculture depends on economic land holdings of a certain minimum size. Sub-division of land because of inheritance laws, on the other hand, have led to declining farm sizes. A highly intrusive land bureaucracy characterized by the stranglehold of patwaris and tehsildars has made land record keeping and maintenance of ownership deeds and title extremely opaque and susceptible to manipulation and tampering. This legacy has not allowed a transparent land market to function and limited investment in on farm improvements, land consolidation and other related infrastructure .

Under the unchanged scenario the projected shortfall in water requirements for agriculture by 2030 is estimated between 25 to 30 percent. There is overwhelming evidence and almost a consensus that carbon-di-oxide emissions will raise the global temperature by more than 2oC. This will cause melting of glaciers in the Himalaya range, with sudden floods followed by reduction in the flows in Indus River. These losses in water flow would reduce the availability of irrigation water for crop. Although there are no firm estimates but the shortfall may reach as high as 40-50 percent if timely policy actions are not taken. Yields are , therefore, bound to decline from their current levels at a time when population will be rising. High value crops and livestock products that will be in high demand are more water intensive will require more water inputs. For example, it will take three to four times more water to produce one kilogram of beef than one kilogram of grains. The use of water will therefore become the critical constraint for agricultural production. But paradoxically, both the surface and ground water are being, at present, used inefficiently and inequitably. Israel has 1.4 MAF of water producing $12 billion worth crops annually. Pakistan has 135 MAF producing crops valued at $40 billion. The factors responsible for this inefficiency and inequity are manifold. Markets in water are non-existent, regulatory framework is ineffective and mispricing and system losses are widespread. Scarcity premium on dwindling water availability is not reflected in the end-use price. Irrigation charges (Abiana or water user charges) that used to recover the operation and Maintenance (O&M) of the system have fallen to such low levels that they are able to cover one tenth of the O&M costs. Irrigation cost at one time was as high as 45 percent of the overall cost structure of typical rice growing farmers. Today it is less than 1 percent. The incentive for waste and misuse under such distorted price structure is naturally quite high. In absence of adequate budgetary allocations, repairs, periodic maintenance and strengthening of the system have been neglected reducing the usefulness of the asset. Instead of focusing on water resources management that is able to deliver reliable timely water to all the users with minimal losses there is a single minded preoccupation with building new dams, canals, barrages and other physical infrastructure works. The estimated value of Irrigation infrastructure built in Punjab alone is about $20 billion. Maintenance and replacement require about $0.6 billion annually. The actual expenditures are only $20 million and the backlog of postponed maintenance is causing serious risks to the system. The World Bank in its latest report has turned this phenomenon as "Build, Neglect and Rebuild".

– (to be continued)

# Bioeconomy in Pakistan: A Sustainable Path to Economic and Environmental Resilience

*By Ahsan Jalal*

In an era when economies worldwide are turning toward sustainable growth, Pakistan is at a crossroads with the need to transition from a fossil fuel-reliant economy to one rooted in renewable, bio-based solutions.

Dependence on conventional, fossil fuel-based energy has proven not only unsustainable for the environment but also economically burdensome, with billions spent annually on fuel imports. A transformation to a bio-based economy, drawing energy from renewable biological sources, offers an opportunity for Pakistan to leap forward in addressing both economic resilience and environmental sustainability.

The bioeconomy encompasses all production, conservation, and use of biological resources, and it presents an opportunity for Pakistan to leverage its rich agricultural base in the transition toward a more self-reliant, eco-friendly economy. In a country where agriculture accounts for close to 24% of GDP, the shift to a bioeconomy would also address high-priority concerns related to food and water security while contributing toward global SDGs. This article discusses why a bioeconomy is not only feasible for Pakistan but also an urgent necessity and outlines a strategic path toward this ambitious goal.

Bioeconomy: A Global Movement with Local Relevance

Through both indigenous and exogenous means, bio-based economies are being pursued in various countries globally. Countries such as the United States and Germany have invested billions in biotechnological research, bioenergy production, and sustainable agriculture. The People's Republic of China has also integrated bioeconomy strategies into its high-tech and economic planning, increasing the contribution of the bioindustry to GDP and creating employment. The bioeconomy has been strengthened in India as well, encompassing biopharmaceuticals, bioagriculture, and bioenergy.

This transition holds particular relevance for Pakistan. As one of the leading agricultural countries in the world, it is well-suited to leverage its natural resources to generate renewable biological materials for biomanufacturing, bioenergy, and other bio-based industries. Full utilization and sustainable management of the country's agricultural resources would reduce dependence on fossil fuels, enhance value-added exports, and provide environmentally friendly substitutes for synthetic inputs in many industries.

An Urgent Call for Action

Transformational change is desperately needed in real-time, given a host of current challenges: a rapidly growing population, water scarcity, shrinking arable land, and increasing climate change-induced natural disasters—all of which place immense pressure on agricultural productivity and food security. Moreover, the reliance on traditional energy resources raises production costs and undermines economic resilience. Energy costs for the agricultural sector are likely to double by 2030, further straining resources.

Transitioning toward a bioeconomy offers Pakistan a unique opportunity to address these challenges by building a circular, low-carbon economy that ensures resource efficiency, minimizes waste, and encourages reuse. Bioeconomic activities will also help Pakistan to meet Net Zero by 2050 and achieve several Sustainable Development Goals (SDGs), including:

- SDG 1: No Poverty
- SDG 2: Zero Hunger
- SDG 6: Clean Water and Sanitation
- SDG 7: Affordable and Clean Energy
- SDG 8: Decent Work and Economic Growth
- SDG 9: Industry, Innovation, and Infrastructure
- SDG 12: Responsible Consumption and Production
- SDG 13: Climate Action
- SDG 14: Life Below Water
- SDG 15: Life on Land

A Phased Roadmap for the Bioeconomy of Pakistan

In this respect, the strategic roadmap for Pakistan's bioeconomy may be divided into three tiers. Short-term initiatives (within five years) should focus on collecting reliable data related to the country's bio-resources, conducting overall resource mapping, and initiating partnerships for technology transfer and capacity building. These initial steps would lay the foundation for assessing and optimizing resources such as biomass potential in agriculture, forestry, and fisheries.

Medium-term initiatives (5–20 years) may include expanding bio-based industries and launching pilot projects on bioenergy and biomanufacturing. For instance, bagasse—a by-product of sugarcane—can be used to generate energy. Similarly, the 225 million livestock in the country can support large-scale biogas production, particularly in rural areas. In addition, programs on rainwater harvesting, vertical farming, and rural electrification through bioenergy can reduce pressure on limited water resources and enhance food production sustainably.

A longer-term vision (beyond 20 years) includes establishing advanced biomanufacturing hubs and biorefineries to produce bio-based chemicals and materials. Ultimately, Pakistan should aspire to become a regional leader in biotechnology and synthetic biology by providing innovative, homegrown bio-based solutions on both national and global scales.

Achieving this high vision will require strong determination from the government to ensure enabling policies that foster innovation, along with robust partnerships among academia, industry, and global stakeholders.■

# COPHC Unveils Plan to Develop High-Tech Aquaculture Industry in Gwadar

*Contd from page 12*

markets. He emphasized COPHC's commitment to introducing advanced technology and sustainable practices that can drive long-term growth and ecological preservation.

Minister Junaid Anwar welcomed the proposal, calling it a transformational opportunity for Pakistan's coastal economy. "This initiative will tap into Gwadar's vast marine resources, create jobs, attract investment, and strengthen the local economy," he said.

He also reaffirmed the government's full support for international investors, particularly those contributing to Pakistan's blue economy.

To facilitate the project's success, the minister assured provision of critical infrastructure, including reliable electricity, clean water, and improved road connectivity, essential for supporting emerging industries in Gwadar and surrounding regions.

Chaudhry stressed the importance of developing hatcheries, seafood processing plants, and sustainable aquaculture farms to meet international standards and boost export competitiveness. "Pakistan's long coastline remains largely untapped. Developing a robust aquaculture sector is vital for enhancing food security and increasing our export footprint," he added.

Both parties agreed to continue working through relevant government departments and technical experts to shape policy frameworks and implementation models that ensure smooth and efficient project execution.

The engagement reflects a shared commitment to sustainable development, environmental responsibility, and regional economic growth through strategic investment and international collaboration.

The Ministry of Maritime Affairs reiterated its openness to business proposals that align with Pakistan's long-term economic and ecological goals—especially those that harness the untapped potential of its maritime and coastal resources.■

# Integrating Technology Management with Agile Development Methodologies

Engr. Dr. Muhammad Nawaz Iqbal

Another dynamic ecosystem is created with technology management and agile methods in perfect harmony between strategic oversight and iterative innovation.

Technology management sees to it that the adoption, use, and evolution of technology correspond with organizational objectives: Agile method supports adaptability through continuous feedback and, hence, offers flexibility in this process. Their very integration would thus require not only technical expertise but the presence of a strategically evolving view in line with rapidly changing markets. Technology management concerns itself with the planning, directing, and controlling of technological assets in support of business objectives. Once agile comes into play within this scenario, the linear flow of technology planning gets more responsive and modular. Due to its iterative nature, Agile allows consistent adjusting of technological tools, infrastructure, and systems according to real-time feedback and changing user needs, making technology managers even more responsive.

In volatile markets, the speed of technological adaptation is paramount. Agile methodologies such as Scrum, Kanban, or Lean stress are regular re-evaluations of priorities and deliverables. In technology management, this switches from static, long-term technology roadmaps to dynamic, living strategies that can be agile without losing coherency or productivity. The integration also changes the role of technology managers. Traditionally, technology managers focused on long-term capital planning; costs, risk, and minimization. With Agile, they also need to lead with an ethos that fosters innovation, encourages experimentation, and tolerates calculated risk. In this evolution, they become Agile enablers wherein they will lead by removing impediments, coaching teams, and ensuring that the necessary infrastructure is in place to support iterative development cycles.

The Agile principles endorse working solutions, collaboration with customers, and adaptability to changes over extensive documentation and fixed contracts. Technology management, usually with some requisite compliance, governance, and documentation requirements, should find a balance. By embedding lightweight governance models within agile sprints, managers can be sure that regulatory compliance and business agility coexist without conflict. Successful integration necessitates strong communication channels. Agile processes rely heavily on cross-functional collaboration and daily stand-ups, while technology management sometimes works within functional silos.

To bridge this divide, communication protocols should be revamped for real-time data exchange, transparency in decision-making, and accountability shared across previously rigid boundaries between both management and development. The predicted key advantage of this integration is superior prioritization. Agile backlogs are a perfect match for technology management's unique requirements in resource allocation. One can ensure most effective usage of resources at the most urgent-and important-required areas by enabling ongoing continuous grooming of the backlog in alignment with technology leaders' strategic input for the organization as a whole. Resource management attains further intelligence. Due to Agile backing of incremental investment, technology management now has the capability to implement pilot programs and gradually upscale successful initiatives. Such an approach limits the risks associated with large-scale deployment and ensures that each technology project gains validation from feedback loops before going for expansion, thus protecting both financial and human capital.

This paradigm shift changes the tradition of managing risk. Often in traditional technology management, an overall risk assessment manifests at the initiation of the project-as if everything has remained static since that time. Agile brings continual risk monitoring, leveraging retrospectives, sprint reviews, and constant involvement of stakeholders. This agile-aware risk framework allows real-time identification and mitigation of threats, making it comparatively resilient to unforeseen disruptions. Re-adjustment is required as far as metrics and performance evaluation are concerned. Technology management, while predominating in focusing on ROI, uptime, and system utilization, agile measures velocity lead times and team performance. Bringing all these divergent metrics into a common performance dashboard allows leaders to make data-driven decisions that consider both strategy and operational agility.

Vendor and stakeholder engagement is underpinned by this integration. Traditional vendor management approaches in Agile settings may prove inefficient, given commercially-oriented contracts and service-level agreements. Technology managers, therefore, can help build more adaptable and innovative relationships with external partners by moving toward Agile-friendly partnerships that center around common goals, iteration, and collaborative problem-solving. The most commonly sought solutions for scalability, especially when it comes to management in technologies, have probably been transformed by AGILE frameworks, such as SAFe (Scaled Agile Framework) or LeSS (Large-Scale Scrum). They provide structured routes through which enterprises can scale their agile initiatives while maintaining integration and technological alignment. With these approaches in mind, technology managers can support agility across the enterprise level without losing strategic oversight into development.

Now, this integration expeditiously catapults the organization into the new age. Thus digital management-the terms agile were developing rapid prototypes with iterative enhancement of digital tools-while technology management grounds these efforts as being attainable for the long haul and as integrative with legacy systems. All in all, they would generate a coherent structure map for innovation that makes possible balancing between the disruptive and continuity. As a result, they have the completely integrated approach towards the general management of the disruption caused by the change.

Cultural transformation necessarily follows. Integrating Agile into technology management implies getting rid of traditional mindsets that resist change. It pushes for an improved culture of continuous improvement, openness to feedback, and shared responsibility across all technology initiatives. Such a cultural shift also guarantees sustainability, as agility will be embedded in the DNA of the organization.

Technology management's merger with the Agile world is really beyond a tactical alignment; it becomes a strategy for evolution. It gives organizations the power to confidently course through uncertainty, adapt precisely, and lead with vision. Value is delivered in each iteration, strengthening the technological backbone of the enterprise and ensuring that not only is there progress, but that progress is further enabled by every sprint.■

## 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

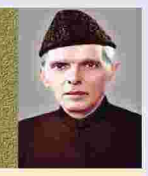
ہائے کیا فرط طرب میں جھومتا جاتا ہے ابر
فیل بے زنجیر کی صورت اڑا جاتا ہے ابر

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 ٹکڑے کیا جارہا ہے۔"
راج گوپال اچاریہ کہتے ہیں: "بچے کے ٹکڑے کیے جارہے ہیں۔"
قدرت نے پہلے ہی سے ہندوستان کو تقسیم کر رکھا ہے اور اس کے ٹکڑے ٹکڑے کر رکھے ہیں۔ ہندوستان کے نقشہ پر مسلم ہندوستان اور ہندو ہندوستان پہلے ہی سے موجود ہیں؛ نہ معلوم اس کے متعلق اتنا واویلا 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 کانفرس، بمبئی۔ 26 مئی 1940ء)

**Founder**
Najamul Hasan (Marhoom)

**Funding Editor**
Riazul Hasan (Marhoom)

**Publisher / Managing Editor**
Muhammad Salahuddin

**Editor**
Manzoor Shaikh

**Honorary Consulting Editors**

| | |
|---|---|
| Prof. B. S. Chaudhry | Education |
| Engr. Farhat Adil | Civil Engg. |
| Engr. Khalid Pervaiz | Elect. Engg. |
| Engr. Sohail P. Ahmed | Industry |
| Dr. Moh. Nawaz Iqbal | |

**Graphic Designer**
Shaikh Muhammad Raza ur Rehman

**Page & Web Designer**
Waheed Ahmed

**Branch Manager (Lahore)**
Hamza Idrees

**Regional Manager (Islamabad & North)**
Muhammad Arif

**Annual Subscription**
2,400



**Printer**
Aslam Zaki, Ayisha Printers,
Eveready Chambers,
Off: Chundrigar Road, Karachi.

FORTNIGHTLY ENGINEERING REVIEW The voice of engineers

Member All Pakistan Newspapers Society

**Head Office**
305, Spotlit Chambers, Dr. Billimoria Street,
Off: Chundrigar Road, GPO Box 807,
Karachi-74200, Pakistan.
Ph: 021-3221-5961-62
0334-2668581
Email: info@engineeringreview.com.pk
engineeringreview@yahoo.com

**Lahore**
Room # 29, 6th Floor
Goldmine Plaza
105-Ferozepur Road Lahore.
Ph: 042-3540-4622; Mobile: 0322-4881881
Email: engineeringreview_lahore@yahoo.com

**Islamabad**
3-B, Basement Tripple One Plaza,
Fazle Haq Road, Blue Area, Islamabad.
Ph: 051-2348-6200 Mobile: 0300-9202824
Email: engineeringreview isb@gmail.com

www.engineeringreview.com.pk

# Dr. Tariq Rahim Soomro: Advancing Computer Science and Global Collaboration

Dr. Tariq Rahim Soomro holds a B.Sc. (Hons) and M.Sc. in Computer Science from the University of Sindh, Jamshoro, Pakistan, and a Ph.D. in Computer Applications from Zhejiang University, Hangzhou, China.

Notably, he is the first Pakistani to have earned all three degrees in the field of Computer Science.

With over 29 years of diverse and extensive experience, Dr. Soomro has distinguished himself as an academic administrator, computer programmer, researcher, and educator. He has held several key administrative positions, including Coordinator, Head of Department, Dean of Faculty, and Head of Academic Affairs. His expertise in academic accreditation spans globally recognized frameworks such as ABET (USA), NBEAC, NCEAC, HEC Pakistan, KHDA Dubai, and the Ministry of Higher Education and Scientific Research, UAE.

Dr. Soomro has published more than 100 peer-reviewed research papers and remains actively engaged in the academic community. He has been a member of IEEE since 2000 and was elevated to Senior Member status in 2005. Currently, he serves as the Chair of the IEEE Karachi Section (2024–2025) and as the IEEE Computer Society R10 Southern Area Coordinator (2020–2025).


He has contributed to numerous committees and editorial boards, including the Task Force on Arabic Script IDNs under ICANN's Middle East Strategy Working Group (MESWG), and serves on the editorial boards of several academic journals. Additionally, he has been a Technical Program Committee member for various national and international conferences.

Dr. Soomro's contributions have been recognized with several prestigious accolades, including the ISOC Fellowship to the Internet Engineering Task Force (IETF) for its 68th meeting. He is affiliated with several professional societies such as the Computer Society of Pakistan (CSP), the Sindh Graduate Association (SGA), and the Association for Computing Machinery (ACM).

He is the first Pakistani to be recognized as an IEEE Computer Society Distinguished Visitor (2021–2023) and the only Pakistani to be honored as a Distinguished Contributor in the inaugural class of IEEE Computer Society Distinguished Contributors (2021).

As Chair of the IEEE Karachi Section, Dr. Soomro represented not only the Karachi Section but also the Lahore and Islamabad Sections at the 2025 IEEE Region 10 Meeting, held from February 22–23, 2025, in Incheon, South Korea.

***Dr. Tariq Rahim Soomro***
***Professor of Computer Science and Rector at the Institute of Business Management (IoBM), Karachi***

BISMILLAH HIR REHMAN NIR RAHEEM

# PROPHET YOUSUF

By Muhammad Tariq Haq | ESL

In ancient lands where tales unfold,
—- A story to Muhammad (PBUH), was divinely told.

Sent by Allah, a guiding light,
—- Through tests and trials, Yusuf was always tried.

In Quran, his tale shines bright,
—- Meccans inquired "How Bani Israel to Egypt arrived?"

They doubted Muhammad's claim,
—- Yet eternal truth, brought them to shame.

Young Yusuf dreamed of stars and sun,
—- Jacob cautioned: "mention to none."

His brothers envied, their hearts were led astray,
—- They cast him in a well and walked away.

A caravan passed through the desert sands,
—- Lifted him to foreign lands.

In Egypt's mansions, as a slave he stayed,
—- In Aziz's house, his true qualities were displayed.

But in Zulaikha's heart, was a fire alight,
—- She desired pleasure and delight.

She tempted, but he ran outside,
—- Preserving his honour; with dignity and pride

When her friends criticised,
—- They cut their hand with the knife; utterly mesmerised

Imprisoned, though it was not justified
—- while he interpreted dreams, his wisdom was recognised.

Two prisoners sought his insight,
—- One would serve wine, the other would be crucified

In prison's dark, Joseph spent his days and nights,
—- Till king saw a dream, continued his plight.

About seven cows fat and thin, he prophesied
—- Seven years of prosperity and then famine will strike

With wisdom rare, Yusuf advised:
—- "Store the ears of grain; be prepared and wise."

From prisoner to ruler, he made his rise,
—- Thus, Allah rewards the true and upright.

His brothers came, in need of grain,
—- Unaware, their brother Yousuf held power and might.

Through subtle tests, their hearts he tried,
—- To see if any virtue therein did reside.

His brothers bowed, as childhood dreams saw the daylight,
—-Yusuf responded with mercy and generously supplied.

He turned to them with grace profound,
—- "Today, no blame is on you, but only respite."

The Quran's message is loud and clear,
—- Invite mankind to reflect and by it teachings abide.

Be the party of God; follow prophet's way
—- You'll find eternal joy, come what may

پندرہ روزہ

# انجینئرنگ ریویو

بانی: نجم الحسن  بانی ایڈیٹر: ریاض الحسن

• جلد نمبر: 50 • شمارہ نمبر: 08 • اپریل: 16-30, 2025 • فون: +92-21-32215961-2, 32632567
• ای میل: info@engineeringreview.com.pk • ویب سائٹ: www.engineeringreview.com.pk

www.engineeringreview.com.pk  www.youtube.com/engineeringreviewER


## سندھ حکومت اور ریلوے کے مابین تھر ریلوے لائن بچھانے کا معاہدہ

تھر کول فیلڈ سے چھور ریلوے لائن تک 105 کلومیٹر ٹریک بچھایا جائیگا، 75 ارب لاگت آئیگی

منصوبے سے حاصل ہونیوالے نفع میں سندھ اور وفاق کا حصہ برابر ہوگا، ناصر شاہ

محکمہ توانائی سندھ اور پاکستان ریلوے کے مابین تھر ریلوے لائن بچھانے پر مفاہمتی یادداشت کی تقریب محکمہ توانائی کے سیکریٹریٹ میں منعقد ہوئی، محکمہ توانائی کے سیکریٹری مصدق احمد خان اور پاکستان ریلوے کی جانب سے محمد فاروق اقبال چیف مارکیٹنگ آفیسر نے مفاہمتی یادداشت پر دستخط کیے

اس موقع پر وزیر توانائی، منصوبہ بندی و ترقیات ناصر حسین شاہ نے گفتگو کرتے ہوئے کہا کہ تھر کے کوئلے کو ملک کے دیگر پاور پلانٹس تک پہنچانے کے لیے دستخط کیے گئے ہیں، انھوں نے کہا کہ تھر کے کوئلے کو ملک کے دیگر صوبوں تک پہنچانے کے لیے ریلوے کا منصوبہ شروع کیا گیا ہے، تھر کول فیلڈ سے چھور ریلوے لائن تک 105 کلومیٹر طویل ٹریک بچھایا جائے گا، منصوبے کے مطابق بن قاسم سے پورٹ قاسم تک 9 کلومیٹر تک لائن بھی بچھائی جائے گی۔

معاہدے کے مطابق منصوبے میں وفاق اور سندھ حکومت کا پچاس فیصد برابر کا حصہ ہوگا، منصوبے پر تقریباً 75 بلین روپے کی لاگت آئیگی، منصوبے سے حاصل ہونے والے نفع میں سندھ اور وفاق کا حصہ برابر ہوگا، ناصر شاہ نے کہا کہ تھر کا کوئلہ ملک کی توانائی کی ضرورت کو پورا کرنے کی مکمل صلاحیت کا حامل ہے ■

## حکومت کا آئی ٹی کے مختلف شعبوں میں بڑے منصوبوں کا اعلان

### 14 اگست کو اسلام آباد اور اس کے بعد کراچی میں آئی ٹی پارک کا افتتاح ہوگا، بزنس رجسٹریشن آن لائن دستیاب ہوگی

حکومت کی جانب سے آئی ٹی کے مختلف شعبوں میں بڑے منصوبوں کا اعلان کیا گیا ہے۔ وفاقی دارالحکومت میں ''لیڈرز ان اسلام آباد بزنس سمٹ'' سے خطاب کرتے ہوئے وفاقی وزیر برائے آئی ٹی اینڈ ٹیلی کام شزہ فاطمہ نے کہا ہے کہ آج کی دنیا میں بہت سی نامعلوم چیزیں ہمیں دیکھ رہی ہیں۔ اسی طرح ماحولیاتی تبدیلی، معاشی ہلچل، سیاسی عدم استحکام جیسے مسائل کا بھی ہمیں سامنا ہے۔ ٹیکنالوجی آج ہمارے ہر شعبے کا حصہ ہے۔

انہوں نے کہا کہ زراعت، صحت، تعلیم، کامرس، پیداوار میں ٹیکنالوجی نمایاں تبدیلیاں برپا کر رہی ہے۔ روزمرہ کی بات چیت اب ٹیکنالوجی پر منتقل ہوگئی ہے۔ سکیورٹی، معاشی منظرنامہ، سب کچھ تیزی سے تبدیل ہو رہے ہیں۔ ڈیجیٹل دنیا سے نکل ہم کر مصنوعی ذہانت کی دنیا میں داخل ہو رہے۔ آج کی دنیا مصنوعی ذہانت، کوانٹم کمپیوٹنگ میں آگے سے آگے نکل رہی ہے اور اگر دنیا کے ساتھ ہم آہنگ نہ ہوئے تو ہم تنہا رہ جائیں گے۔

کانفرنس سے خطاب کرتے ہوئے شزہ فاطمہ نے کہا کہ پاکستان کی مارکیٹنگ پر ہم جو ایک ڈالر خرچ کرتے ہیں،

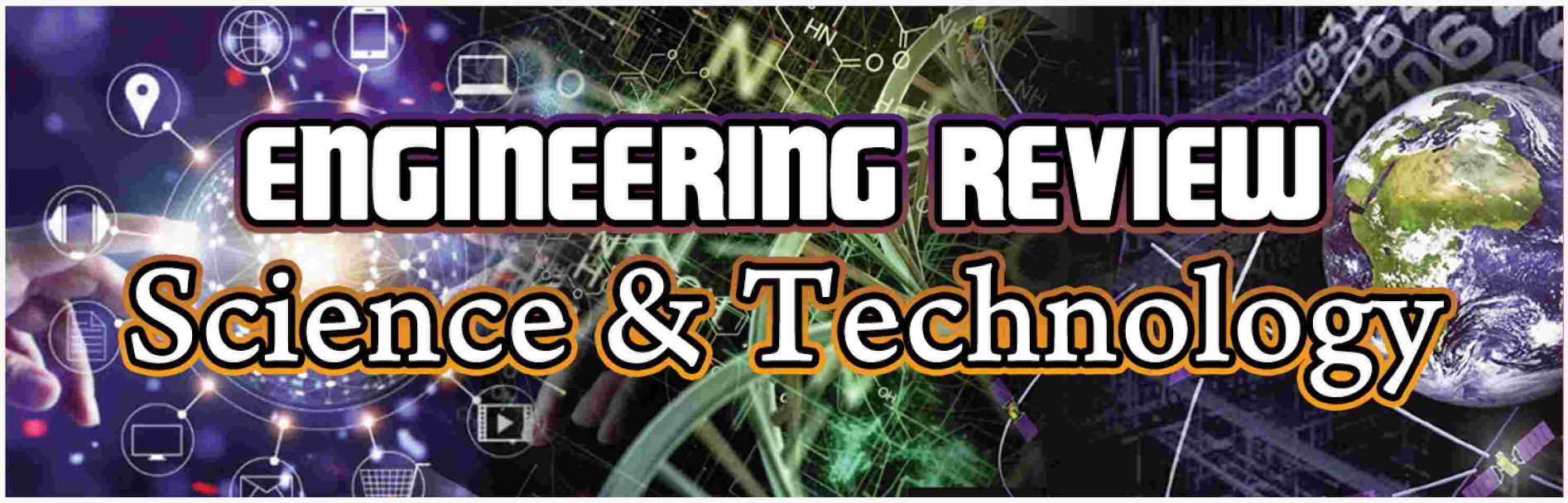

وہ 49 ڈالر کما کر دیتا ہے۔ چند لاکھ روپے کا بجٹ ہے، ہم ایکسپورٹ پاکستان سیلز بزنس میں ہیں اور ہمارا ہدف 25 ارب ڈالر کمانا ہے۔

انہوں نے بتایا کہ پاکستان میں 28 اور 29 اپریل کو ڈیجیٹل غیر ملکی سرمایہ کاری کی سمٹ کا انعقاد کر رہے ہیں، جس کے لیے سعودی عرب کا تعاون حاصل ہے۔

وفاقی وزیر کا کہنا تھا کہ اسلام آباد کے لیے ایک سپر ایپ بنا رہے ہیں۔ اسمارٹ اسلام آباد کا پائلٹ پروجیکٹ بھی لا رہے ہیں۔ بزنس کی رجسٹریشن کے لیے آن لائن تمام اجازت دستیاب ہوگی۔ ایسا عمل ہم نے چین کے شہر شینزن میں دیکھا ہے۔ اسلام آباد میں بزنس سہولت مرکز بنا رہے ہیں اور ہر دفتر ایک ہی چھت کے نیچے ہوگا۔

انہوں نے کہا کہ صنعت کو معاونت فراہم کرنے کے لیے 250 روزگار مراکز بنا رہے ہیں۔ خالی عمارتوں میں آئی ٹی پارک بنا رہے ہیں۔ اسلام آباد میں 14 اگست کو آئی ٹی پارک کا افتتاح ہوگا اور پھر کراچی آئی ٹی پارک کا افتتاح ہوگا۔

شزہ فاطمہ نے کہا کہ تخلیقی صلاحیت کے نوجوانوں کا ہاتھ پکڑ کر حکومت اپنی بہترین سرمایہ کاری کر رہی ہے۔ ■




# Physics reveals the optimal roof ratios for energy efficiency

While serving as a visiting professor in Benevento, outside Naples, Italy, Adrian Bejan noticed something about the local architecture: All the roofs looked the same.

With what seemed like too-shallow peaks on smaller, older structures clustered together, perhaps it was just the style of the times.

Or perhaps the ancient Roman builders had been onto something. An expert in thermodynamics and the movement and flow of heat, Bejan, the J.A. Jones Distinguished Professor of Mechanical Engineering at Duke, was the perfect person to sleuth out an answer.

Sitting down with pencil and paper, Bejan went through the equations and calculations that govern heat flow and transfer within two similar shapes: a long roof with a triangular cross section and a circular cone.

The results, obtained in collaboration with Pezhman Mardanpour, assistant professor of mechanical and materials engineering at Florida International University, are published in International Communications in Heat and Mass Transfer. They showed that there are indeed roof shapes that maximize heat retention—the older generation of Italian architects knew what they were doing.

"Pockets of air are good insulators, and attics are basically just differently shaped pockets of air," Bejan said. "While energy conservation is a popular buzzword today, in years long past it was a matter of survival."

The details of how squat or tall a roofline determine how the air within it will act. Given a single peak on an A-frame or circular cone, if that peak is less than three feet tall, the air will flow smoothly and uniformly across it like water careening down the side of a sink. But if the peak is more than three feet tall, the air will tumble around chaotically like smoke waving wildly in the wind.

Based on the physics of these airflows and heat transfer, if a roof peak is shorter than roughly three feet, it should be about three or four times wider than it is tall to minimize heat loss. And if a roof peak is taller than three feet, it should be an equilateral triangle with a height-to-width ratio of one.

Perhaps unsurprisingly, these are roughly the same ratios that can be found in countless older, modest dwellings created across the world. And they are pretty close to the rooflines that Bejan saw that day in southern Italy.

"This type of insight is not hard to rationalize, but it's easy to overlook even though there are examples everywhere," Bejan said. "It's important for our students—and their professors—to open their imaginations and ask why things are the way that they are."

While Bejan doubts that architects from days gone by were applying thermodynamics to their roof designs, he doesn't think their shapes were accidental, either. It isn't difficult to imagine, he says, discovering that one neighbor's home is warmer than another's and copying its design repeatedly across many years.

It's a lesson, he says, that modern architects could stand to consider as well.

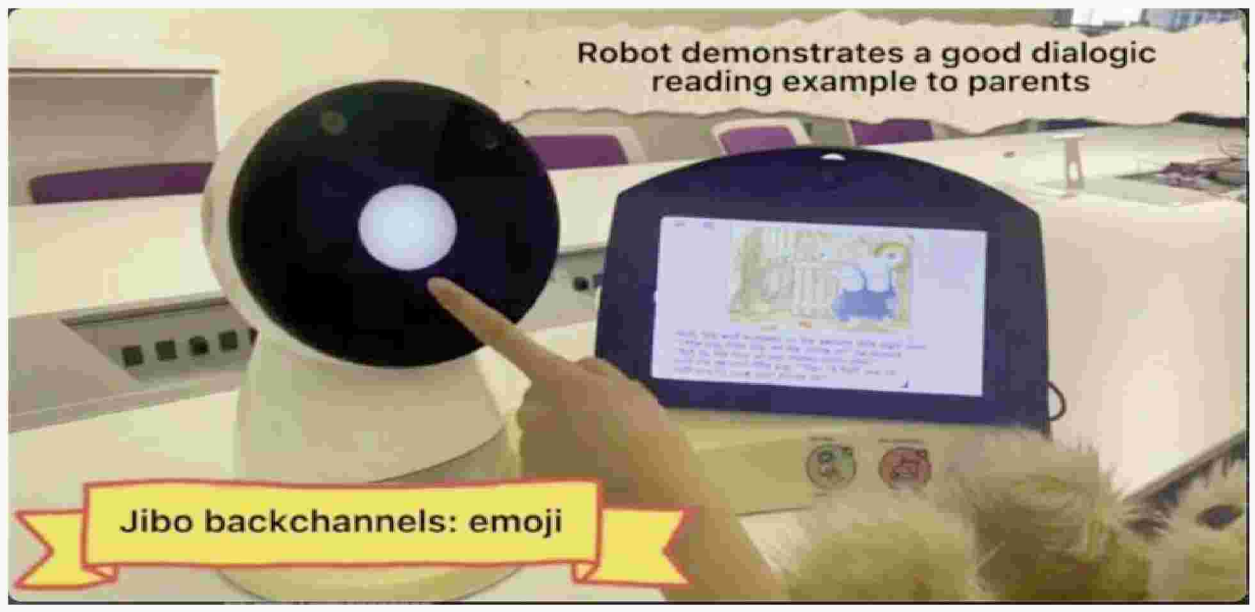
"Today's homes and buildings are being designed to be as energy efficient as possible," Bejan said. "But to my knowledge, nobody is considering the physical shape of the building, or any 'thing' like a vehicle or animal, as a variable that could help with that efficiency, and perhaps we should be." - TX

# Conversation catalysts: Study shows English-speaking robots can enhance parent-child dialogue

Over the past decades, researchers have developed a wide range of advanced social and assistance robots that could soon be introduced into households worldwide. nderstanding how the introduction of these systems might impact the lives of users and their interactions with others living in their homes is crucial, as it could inform the further improvement of robots before their widespread deployment.

Recent studies suggest that household robot companions could foster educational conversations between parents and children, particularly during story-reading sessions. By actively participating in these sessions, for instance by asking questions or assuming the role of a playmate, robots were found to augment interactions between children and their caregivers, enriching their conversations and supporting the children's acquisition of new vocabulary.

Researchers at the Massachusetts Institute of Technology (MIT) recently carried out a study to further explore the potential of social robots as conversation catalysts and tools to enhance interactions between children and parents. Their findings, published in Science Robotics, suggest that English-speaking robots can improve the quality of dialogue between parents and children, with families that fluently speak English benefitting more from their use.




"The integration of social robots into family environments raises critical questions about their long-term influence on family interactions," Huili Chen, Yubin Kim and their colleagues wrote in their paper.

This study explores the potential of social robots as conversational catalysts in human-human dyadic interaction, focusing on enhancing high-quality, reciprocal conversations between parents and children during dialogic co-reading activities."

To explore the effects of the social robot on parent-child interactions, Chen, Kim and their colleagues carried out a series of experiments involving the social robot Jibo, which was co-developed by a professor at MIT. The robot was installed in the homes of 71 families with children between the ages of 3–7.

Over a period of 1 to 2 months, every family was asked to complete six interactive sessions, during which parents and children read stories alongside the Jibo robot. During these reading sessions, the robot could take on one of three roles: a non-active listener, an active participant displaying the same fixed behavior or an active participant switching between different behaviors.

In this latest mode, the robot would actively interject while the parent was reading a story, asking questions, prompting new dialogues, or behaving like a curious child. Interestingly, the researchers observed that how well parents spoke English (i.e., the language in which Jibo communicated) influenced the extent to which their interactions with their children were enhanced by the robot's behaviors.

"Our findings reveal that a robot's active participation enhances the quality of parent-child dialogic conversations," wrote Chen, Kim and their colleagues. "The influence of robot facilitation varied based on parental English proficiency. Strategy-switching robots provided greater benefits to non–native English–speaking families, whereas dyads with native English–speaking parents benefited more from fixed-strategy robots."

Overall, Chen, Kim and their colleagues observed that when the Jibo robot actively participated in interactive reading sessions, parents were more involved in conversations with their children and their dialogues appeared richer. The quality of conversations between non-native English-speaking parents benefited most from the involvement of Jibo when the robot was switching between different behaviors, while those of native English-speaking families benefited when the robot displayed the same fixed behaviors.

"These results emphasize the importance of flexible and diverse robot interaction strategies in ensuring equitable benefits across different family profiles," wrote the authors.

The findings of this recent study are aligned with previous works suggesting that interactive home robots could support parents during story-reading sessions, helping them broaden their children's vocabulary and strengthen their conversation skills. In the future, they could inspire the development of new robots best suited for enhancing interactions between parents and children with varying language skills. - TX

# Transforming real-world doors into gateways to the virtual world: The future of mixed reality

People seeking to feel fully immersed in virtual environments will soon be able to experience a revolutionary approach to spatial computing that bridges the gap between real and digital worlds.

A collaborative research team from NTT DOCOMO, Inc. and Nara Institute of Science and Technology (NAIST), Japan, has developed a novel mixed reality (MR) technology that transforms how users interact with virtual spaces by using everyday real-world doors as natural transition points.

Virtual reality (VR) and MR technologies have long faced a critical challenge—creating a truly immersive experience that feels natural and intuitive. Existing spatial computing applications in VR and MR typically use artificial barriers or abrupt transitions between real and virtual spaces, breaking user immersion and creating a disjointed experience.

To this end, the research team, led by Dr. Daiki Hagimori from NTT DOCOMO, Inc., and Professor Kiyoshi Kiyokawa from NAIST, developed a solution to address this problem. The team includes Hideaki Uchiyama, Monica Perusquía-Hernández, and Yutaro Hirao from NAIST. Through a sophisticated software system compatible with Apple Vision Pro and similar head-mounted displays, the team managed to create seamless transitions between physical and virtual rooms.


Highlighting the unique feature of their technology, Prof. Kiyokawa explains, "To date, no system enables users to physically operate real doors—including all associated sensory feedback—as entry points to virtual spaces."

The new technology allows users to select a real-world door within their MR interface by simply marking two of its corners. Once identified, the door becomes a smart portal between physical and virtual environments. As the user opens the door, the system dynamically renders a virtual space beyond the door, creating an unprecedented sense of natural transition by leveraging existing physical architecture.

The developed system uses advanced hand movement recognition that does not require users to focus specifically on the door handle, making the interaction intuitive and seamless. Moreover, after the user enters the virtual space, the open door seen from inside still looks like a dynamic window back to the real world.

"By incorporating academic expertise from NAIST into the technology that was under development by NTT DOCOMO, a refined system was created," shared Dr. Hagimori.

This technology offers transformative potential across multiple industries. While in the tourism industry, users could virtually step through a door into destinations around the world, applications in real estate would allow potential buyers to take immersive property tours. Entertainment and art industries could create new forms of interactive storytelling where physical spaces become gateways to rich virtual worlds.

As Prof. Kiyokawa puts it, "Our goal is to develop what we call "Personalized Reality'—systems capable of creating dynamic experiences tailored to each individual." - TX