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# Keti Bandar: A 30-Year-Old Dream Returns to Drawing Board

From Benazir Bhutto's ambitious power-and-port plan to a proposed \$522m deep-sea terminal, Keti Bandar is once again being presented as Sindh's gateway to the sea—but this time, the real challenge is turning another grand plan into reality

**By Manzoor Shaikh**

Keti Bandar has been waiting for its moment for a very long time. The small coastal town at the edge of the Indus Delta has repeatedly appeared in Pakistan's development plans as a place that could change the economic geography of Sindh. It has been imagined as a deep-sea port, a coal gateway, a power-generation center, an industrial zone and, more recently, a maritime and economic corridor.

Yet generation after generation of plans have come and gone. Now, after almost three decades, the idea is once again gathering momentum. This time, the Sindh gov-

ernment is talking about a much broader development corridor, while a major Chinese engineering company has put forward a con-



ceptual master plan for a deep-water port. China Harbour Engineering Company (CHEC) has proposed the development of a

new deep-sea port at Keti Bandar, with a preliminary engineering cost of about \$522.34 million for the first phase which

envisages a 500-metre multipurpose terminal, while the larger concept includes multiple terminals, logistics facilities and supporting

infrastructure.

The proposal was presented to President Asif Ali Zardari in August, bringing Keti Bandar back into the national spotlight.

But there is something important about this latest proposal: Keti Bandar is not a new dream.

Its modern history as a major infrastructure project goes back to the government of former prime minister Benazir Bhutto in the 1990s.

Benazir's Keti Bandar dream

In October 1994, Benazir Bhutto's government signed a memorandum of understanding with Consolidated Electric Power Asia (CEPA), a Hong Kong-based company associated with businessman Gordon Wu, for a massive coal-fired power project in Sindh.

The original proposal was extraordinary-

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## Keti Bandar: A 30-Year-Old Dream Returns to Drawing Board

*Contd from page 1*

ly ambitious. The project envisaged eight 660MW generating units, eventually producing around 5,280MW of electricity. It was not conceived merely as a power plant. The plan included transmission infrastructure, roads and a railway connection to the Thar coalfields.

And, crucially, a deep-sea port at Keti Bandar was part of the wider concept. In June 1995, CEPA received a Letter of Support for an approximately 1,300MW Keti Bandar power plant after depositing a performance guarantee of around Rs285 million. The initial phase was to comprise two plants of roughly 650MW each.

At the time, the Keti Bandar project was seen as part of a much larger economic transformation. Thar coal would provide the fuel, a railway would connect the coalfields with the power complex, transmission infrastructure would carry electricity to the national grid, and the proposed port would provide a maritime gateway.

The vision was strikingly similar in one respect to what is being discussed today: port, energy, transport and industrial development were intended to grow together.

But the project soon became entangled in disagreements over its economics and, particularly, the source of coal.

CEPA proposed using imported coal for the first phase, while the original concept had placed greater emphasis on indigenous Thar coal. The issue became controversial after the government changed in 1996.

In June 1997, the Nawaz Sharif government announced that the Keti Bandar thermal power project had been cancelled. The government cited the absence of physical work, the proposal to use imported coal and concerns about the economics of the transmission infrastructure.

Yet even then, the Keti Bandar idea refused to disappear. Only a few months later, in August 1997, the government withdrew its decision to scrap the project following negotiations with an American company that had acquired CEPA's shares. Contemporary reporting noted that the power agreements remained intact and confirmed that the deep-sea port was part of the CEPA plan, although the required port study had not yet been completed.

The project ultimately failed to move forward. The reasons remain part of a complicated history involving changes of government, questions about imported versus indigenous coal, financing, tariffs, transmission costs and the terms of the agreements.

But one thing is clear: the idea of Keti Bandar as a major port and energy gateway

was already being discussed seriously in the 1990s.

The dream keeps coming back

The project resurfaced repeatedly. In 2013, the Sindh government signed agreements with a Japanese company for two 660MW coal-fired power plants at Keti Bandar, with an estimated investment of around \$2.2 billion. The proposal also included a jetty, transmission lines and a railway connection.

In 2016, another major Chinese company, China Machinery Engineering Corpora-

tion (CMEC), became associated with a proposal for indigenous coal-based power plants at Keti Bandar, with an eventual capacity of up to 10,000MW.

The Keti Bandar concept was also brought into discussions surrounding the China-Pakistan Economic Corridor (CPEC). Again, the plan was larger than a port. It involved a power park, coal handling, railway infrastructure and transmission facilities.

Again, it did not become the transformational project its promoters had imagined.

The pattern is difficult to ignore. Keti Bandar has never suffered from a shortage of plans. It has suffered from a shortage of continuity.

A different Keti Bandar is now being proposed

The latest proposal is different from the coal-dominated schemes of the 1990s and 2010s.

The Sindh government now wants Keti Bandar to become the center of a maritime,

fisheries, petroleum, logistics and industrial corridor.

Chief Minister Syed Murad Ali Shah has directed the Sindh Investment Department to prepare a bankable public-private partnership model for the development of Keti Bandar.

The proposed corridor is estimated by the provincial government to have the potential to attract between \$1 billion and \$2.5 billion in investment.

The vision includes a deep-sea port, logistics and warehousing facilities, indus-



al becomes important. CHEC's conceptual master plan provides a concrete starting point for the port component. Its proposed first phase carries a preliminary engineering estimate of \$522.34 million, with a 500-metre multipurpose terminal.

But this figure needs to be understood carefully.

It is not yet a confirmed \$522 million foreign investment commitment. It is a preliminary engineering cost estimate associated with the proposed first phase. The project still requires decisions on its financing, implementation structure, connectivity and wider commercial model.

That distinction is important because Pakistan has seen many large infrastructure proposals announced with impressive investment figures that never reached financial close.

Keti Bandar cannot afford to become another example.

Why Keti Bandar still matters

The economic argument for developing another major port is nevertheless compelling.

Karachi Port and Port Qasim already handle the overwhelming majority of Pakistan's maritime trade. Both are surrounded by a rapidly expanding metropolitan and industrial area.

A properly designed port at Keti Bandar could provide additional maritime capacity while creating a new industrial and logistics cluster along the Sindh coast.

The potential goes beyond cargo. The Indus Delta has an established fishing economy. A modern fishing harbor, cold-storage facilities, seafood processing plants and export infrastructure could allow Sindh to capture more value from its fisheries rather than simply selling raw products.

The proposed petroleum and energy facilities could create another source of

demand for the port. Industrial zones could attract businesses that depend on imported raw materials or export markets. And the combination of port, road, rail, energy and industrial infrastructure could create jobs in a part of Sindh that has historically remained economically marginal.

That is the promise. But there are equally serious risks.

The Indus Delta question

Keti Bandar sits in one of the country's most environmentally sensitive coastal regions.

The Indus Delta has already experienced enormous ecological changes due to reduced freshwater flows, sea intrusion, degradation of mangroves and pressures on fisheries.

A major port and industrial complex would inevitably change the coastline.

Dredging, shipping traffic, industrial discharge, petroleum handling and changes in coastal flows could have consequences for marine ecosystems and fishing commu-

*Contd on page 9*

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## Waseem Nazir Takes PEC Reform Message to Sindh, Says Breaking Status Quo Is Key to Staying Relevant

By Manzoor Shaikh

Pakistan Engineering Council (PEC) Chairman Engr. Waseem Nazir's five-day visit to Sindh appeared to be as much about communicating his reform agenda as it was about listening to the engineering community.

From Karachi to Rohri, Nazir met academics, students, young engineers, contractors, consultants, builders and other stakeholders, repeatedly making one point: an institution that refuses to change will eventually lose its relevance.

"If you will not change, you will never be relevant," he told participants during his interactions in Sindh.

The PEC chairman used the visit to explain the reforms he said he had initiated.

**Breaking the status quo**  
Speaking about his two-year tenure, Nazir said he had focused on PEC without distractions and had travelled extensively to understand the problems facing engineers and other stakeholders.

"I focused on PEC for the last two years without distractions and now have come

also brought merit and transparency into programs such as international training and the GET scheme.

"Now this PEC is no more the same PEC," Nazir said, while inviting engineers, academics, contractors and other stakeholders to question and critically evaluate the reforms.

applying for their first jobs.

"Now we have the experience," she said.

Nazir described GET as a kind of permanent "house-job" program for engineers, saying around 2,300 young engineers had so far been trained. He said many trainees were now securing employment.



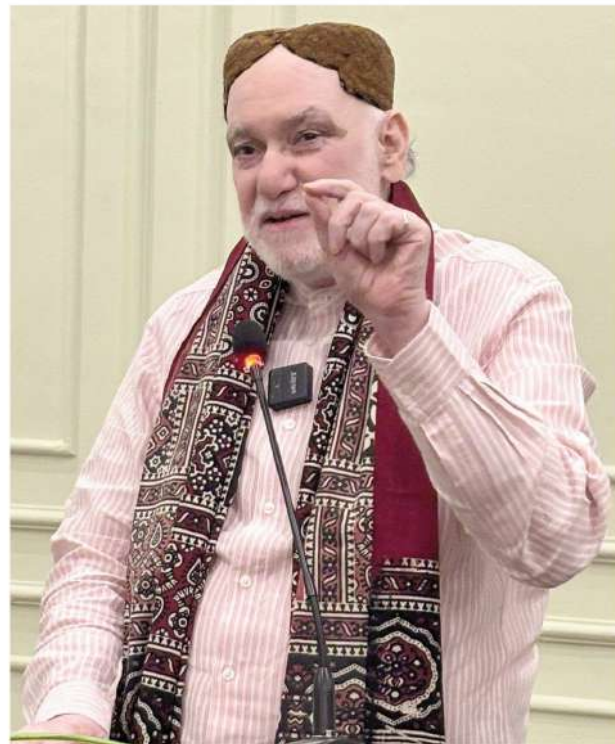
here. I have worked for the professionals only," he said.

He said he had consulted 64 stakeholders, held 254 sessions and travelled around 110,000 kilometers as part of

**GET: Giving young engineers their first experience**

The GET program emerged as one of the most discussed initiatives during

He stressed that the program was digital from the initial application and selection stages through placement, employer interaction and salary payments, with the process managed through the



PEC portal.

He also recalled the case of a young female engineer selected for training in China whose family initially suspected that the program might

be a gimmick. Her parents and brother, he said, eventually visited PEC because they could not believe she had been selected without any

*Contd on page 7*



ed since assuming office, including the Graduate Engineer Trainee (GET) program, changes in contractor registration and renewal, reforms in engineering education and curriculum, professional development initiatives, international collaborations, training opportunities for young engineers and efforts to improve coordination between academia and industry.

He said the reforms were aimed at moving PEC away

his engagement with the engineering community.

"I wanted to tell you what we have done so far. Statistics are important, but the status quo must also be changed. It is time for fast-track changes," he said.

According to Nazir, the changes were necessary because the engineering profession could not remain isolated while countries such as China and those in Europe continued to move ahead rapidly.

the visit.

Young engineers who benefited from the program shared their experiences, saying it had given them something that was often difficult to obtain at the beginning of their careers: practical experience.

One young engineer said she was sent to an international industry through the program, where she received practical exposure and developed confidence and professional skills.



from the traditional role of an inspector towards that of a facilitator for the country's engineering fraternity.

"I have worked hard to create an ecosystem in which the whole engineering fraternity can flourish," Nazir said, stressing that fairness and transparency were the basic principles behind the changes.

"We do not want to become inspectors; we want PEC to be a facilitator."

"We want to remain relevant, which can only happen if we break the status quo. It was a must for me," he said.

He cited PEC registration as one example of the changes. In the past, he said, young engineers sometimes needed recommendations to obtain registration. Under the new system, he claimed, an engineer can receive the registration card on the day he or she qualifies.

He said the reforms had

"There was no recommendation involved. It was on merit and there was equal opportunity," she said.

Engineer Atya recalled receiving an SMS informing her of her selection.

"I did not know that I would be selected. When I received the offer letter, I could hardly believe it," she said, describing the program as a major support for young engineers who are frequently asked for experience when

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## Najam Ul Islam elected as president of PSPP

The oath ceremony of the Office Bearers and Board of Directors of Pakistan Society of Plumbing Professionals (PSPP) was held in Karachi on 13th August 2026. The event was attended by many professionals from the

Sohail Bashir, Chairman, IEP, and Hassan Bakhshi, Chairman, ABAD, are the keynote speakers.

Abbas Sajid, outgoing Secretary of the society, provided an overview of the event. Aftab Gillani, Member BOD, has given an insight on PSPP's activities so far.

Chairman, IEP Engr. Sohail Bashir and Chairman, ABAD, Hassan Bakhshi,

A vote of thanks was presented by Engr. Fahad Hassan, the outgoing Vice President, BOD of PSPP.

All outgoing office bearers were given certificates of appreciation for their services.

Najam Ul Islam, elected president of PSPP has expressed his gratitude for electing him as president and given his willingness to make



Construction Industry. Yousuf Hassan, President, Pakistan HVACR Society was the Chief Guest. Engr.

expressed their willingness to support the society for the purposes it was formed.

PSPP a result-oriented body and will work tirelessly for the betterment of the plumbing profession.

Yousuf Hassan, President, Pakistan HVACR Society, highlighted the need for improvement and importance of plumbing in the construction industry and expressed his support for the purpose on the platform of HVACR Society.

At the end, a cake cutting was held to celebrate the 79th Independence Day of Pakistan. ■

## MUET, TMU Move to Turn MoU into Concrete Academic Collaboration

Pakistani and Canadian universities explore joint research, graduate education and student progression pathways

A highly productive and constructive meeting was held between senior representatives of Mehran University of Engineering & Technology (MUET), Jamshoro, Pakistan, and academic leaders at Toronto Metropolitan University (TMU), Canada, to explore and strengthen avenues for institutional, academic, and research collaboration.

The meeting was held as a follow-up to the Memorandum of Understanding (MOU) previously signed between MUET and TMU by Prof. Lachemi, President and Vice-Chancellor of Toronto Metropolitan University and Prof. Dr. Tauha Hussain Ali, Vice Chancellor of MUET. The meeting provided an important opportunity to translate the MOU's broad framework into concrete academic and research initiatives.

The MUET delegation was represented by Meritorious Prof. Dr. Aneel Kumar, Pro Vice Chancellor, MUET, and Prof. Dr. Bhawani Shankar Chowdhry, Professor Emeritus and Advisor for International Collaboration Development, MUET.

The discussions at TMU included senior academic leaders:

• Dr. Cory Searcy, Assistant Vice-President,

International and Professor of Industrial Engineering;

• Dr. Sri Krishnan, Dean, Faculty of Engineering and Architectural Science (FEAS); and

• Dr. Carl Kumaradas, Dean, Yeates School of Graduate and Post-doctoral Studies (YSGPS).

The meeting focused on developing a stronger, more sustainable institutional relationship between MUET and TMU and on identifying practical mechanisms for implementing mutually beneficial academic and research

cooperation through joint research initiatives, co-supervision arrangements, faculty and student exchanges, academic mobility, seminars, conferences, capacity-building activities, and other mutually beneficial academic engagements.

The discussions reflected a shared commitment by both institutions to develop meaningful and sustainable partnerships that can support high-quality graduate education, research excellence, innovation, internationalization, and capacity building.

Meritorious

Prof. Dr. Aneel Kumar and Prof. Dr. Bhawani Shankar Chowdhry appreciated the warm welcome and highly constructive engagement of the TMU lead-



ership. They noted that the meeting provided an excellent foundation for moving forward with practical collaborative initiatives under the existing MOU, particularly in the areas of graduate education, joint supervision at the Master's and PhD levels, research collaboration, and student progression pathways.

A key area of discussion was the potential development of academic progression pathways for high-achieving MUET undergraduate students towards Master's-level education at TMU. Such pathways could provide talented students with opportunities for advanced studies, international academic exposure, and participation in high-quality research and innovation environments.

The participants also discussed opportunities for strengthening institutional

The meeting marks an important step toward operationalizing the MUET-TMU MOU and strengthening the strategic relationship between the two universities. Both sides expressed optimism that the discussions will lead to concrete initiatives and expanded opportunities for students, faculty members, and researchers at MUET and TMU in the coming years. ■

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## Ahsan Iqbal reviews progress on CPEC Phase-II action plan

Federal Minister for Planning, Development and Special Initiatives Ahsan Iqbal reviewed progress on the implementation of the China-Pakistan Economic Corridor (CPEC) Action Plan for 2025–2029, calling for faster progress on projects and priorities agreed with China.

Chairing a review meeting, the minister assessed the first year of implementation of the action plan, which was finalised during Prime Minister Muhammad Shehbaz Sharif's visit to China in August 2025. He directed ministries to ensure timely implementation of CPEC

Phase-II priorities.

Ahsan Iqbal said Pakistan-China relations had remained strong during challenging periods, highlighting China's investment during Pakistan's energy crisis. He said CPEC Phase-I brought around \$25 billion in Chinese investment and added nearly 8,000 megawatts to Pakistan's power-generation capacity. He also cited the development of Thar coal and the fibre-optic network among the major achievements of the first phase.

He said CPEC Phase-II would build on these foundations by focusing on business-to-business cooperation, industrial development,

agricultural modernisation, minerals, human capital and technology. The priorities, he added, were closely aligned with the five pillars of the government's URAAN Pakistan initiative

capacity and increasing exports, while the Livelihood Corridor will support social development and less-developed regions. The Innovation Corridor will strengthen Pakistan's infor-

mal modernisation.

The minister highlighted a government programme to send 1,000 agricultural experts to China for training in modern farming technologies. He said the initiative

would help develop skilled human resources and support a "Green Revolution 2.0" through improved seeds, mechanisation, efficient water use and climate-resilient crops.

Ahsan Iqbal stressed that the private sector

would have a central role in unlocking the economic potential of CPEC Phase-II, while the government would focus on creating an enabling environment for investment and business partnerships. He

described expanding exports as a "national emergency" and said the target of reaching \$100 billion in exports by 2035 was essential for Pakistan's economic future.

He called for stronger cooperation between the government and private sector to improve competitiveness and establish "Made in Pakistan" as a globally recognised brand. He also stressed the need for political stability, reforms and effective governance to convert Pakistan's recent diplomatic and strategic gains into economic progress.

"Pakistan does not need to heat its roads; Pakistan needs to heat its economy," Ahsan Iqbal said, urging political forces to prioritise economic development and work towards a self-reliant, export-oriented economy. ■



through the Growth, Livelihood, Innovation, Green Economy and Openness corridors.

The Growth Corridor will focus on expanding industrial and agricultural

mation technology sector and provide young people with modern technological skills. The Green Economy Corridor will focus on climate resilience, water and food security and agricultur-

## Minister urges expansion of groundwater recharge efforts in Islamabad

Federal Minister for Climate Change and Environmental Coordination Dr Musadik Masood Malik has called for expanding groundwater recharge

abad's Aquifers" at the USEFP Auditorium on Tuesday, the minister said about 200 recharge wells had been constructed in Islamabad as part of a pilot initiative. He stressed that the programme needed to be expanded to have a meaningful impact on

He said the initiative was an important step but could not be considered a complete solution to the city's groundwater depletion.

The minister also called for better management of surface and groundwater following heavy rainfall in Islamabad, where around 200 millimetres of rain had been recorded. Several areas were affected by flooding, prompting authorities and relevant organisations to respond to the situation.

He also raised concerns over water quality, noting that treatment facilities in Islamabad and Rawalpindi were helping reduce contamination. However, he stressed the need for continued monitoring and improvement of water quality.

Dr Musadik said the establishment of an additional water treatment plant had faced delays for several years despite repeated tendering. He said the project

had recently moved forward, with the tendering process now under way, while noting that delays in development projects were not confined to the Capital Development Authority and occurred across government departments.

Discussing wider water security, the minister stressed the importance of international treaties and legal mechanisms in protecting Pakistan's water inter-

ests. He said respect for international agreements was essential for stability and for safeguarding the rights of countries that depend on shared water resources.

Dr Musadik also highlighted the newly established Clean Environment Fund, which will involve private-sector participation and due diligence to support environmental initiatives. He said the government wanted to encourage innovative solu-

tions and greater private-sector involvement in tackling environmental challenges.

The minister further backed legislation to promote groundwater recharge in new housing schemes and communities, as well as through rooftop initiatives. He said protecting groundwater resources was essential for safeguarding communities and ensuring sustainable water availability. – ER News Desk



initiatives in Islamabad as the capital continues to face a decline in its underground water reserves.

Speaking at an event titled "Protecting Islam-

groundwater levels.

Dr Musadik said the recharge measures had resulted in an estimated 0.4-millimetre rise in the water table, compared with a decline of around 1.5 metres.

## Anthropic Unveils Standard to Connect AI With Robots and Industrial Hardware

Set the framework with industry stakeholders including Amazon Web Services, Danaher, Hugging Face and Raspberry Pi. In one demonstration, Anthropic said a scientist was able to provide Claude with an experimental design, after which the AI assistant carried out the experiment using hardware configured with the MHS specification.

The initiative reflects the Anthropic PBC has introduced a new software standard designed to help artificial intelligence (AI) assistants interact more effectively and safely with robots, scientific equipment and manufacturing hardware.

The AI company has released its Model Hardware Standard (MHS) as a research preview, allowing developers and industry stakeholders to test how its Claude AI assistant can work with physical equipment before the framework is made more widely available.

MHS is designed to provide AI systems with structured information about how hardware operates, reducing reliance on paper manuals or specialised knowledge held by a limited number of experts. For example, a manufacturer

could use the standard to define how an AI system can safely control a factory robot arm by setting limits on its speed, movement and operating angles.

The launch comes as interest grows in applying AI to robotics, manufacturing and scientific research. Anthropic said stakeholders in these sectors can join a waitlist to test the framework, which it eventually plans to open-source, allowing hardware manufacturers to create their own MHS specifications. The company did not provide a timeline for a broader release.

Jonah Cool, a partnerships and deployment executive at Anthropic's life sciences division, said the framework could help scientists operate complex equipment that might otherwise require specialised technical expertise.

Anthropic compared MHS to its Model Context Protocol (MCP), a standard that helps AI assistants connect with third-party software and applications. According to the company, MHS aims to bring similar interoperability to the physical world, particularly in laboratories and facilities that rely on large numbers of devices.

The company has already te growing push by AI companies to move generative AI beyond software applications and into real-world environments, including robotics, manufacturing and scientific research. – TS/ERMD

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## At the Indus Riverside, Waseem Nazir Makes His Case for a New PEC

No one at the venue on the bank of the Indus River had expected such a large number of engineers to turn up to meet Pakistan Engineering Council (PEC) Chairman Engr. Waseem Nazir.

What began as a consultative gathering quickly turned into an unusually open conversation between the PEC chairman and a predominantly young audience. The engineers came with questions about jobs, technical allowance, professional development and the reforms being introduced by the council—and Nazir appeared ready to take them all.

For nearly two hours, he listened, responded and explained his position, often going into considerable detail about what he believes PEC should—and should not—do for engineers.

One message was particularly clear: PEC cannot provide jobs to every engineer, but it can help engineers become capable enough to compete for them.

To illustrate his point, Nazir invited beneficiaries of PEC's Graduate Engineer Trainee (GET) program to the podium and asked them to speak about their experi-

ences.

Their responses appeared to reinforce one of the central arguments behind the program: merit can open doors

For Nazir, this was precisely the kind of system he wanted PEC to build.

A digital route from application to training

engineers had so far gone through the program and that about 30 per cent of trainees had already secured jobs.

The program, he

explained, combines five months of practical industry training with one month of professional and personality development training at the National Defence University (NDU).

"I shall try to make this course permanent," he told the gathering.

Reforming an institution Nazir used his interaction with the engineers to outline what he described as a much wider reform program



that previously seemed accessible only through references.

Several young engineers told the gathering that they had been selected without

Explaining the GET program, Nazir said it had been designed as an end-to-end digital process, from application and selection to placement with employers and



any recommendation or "sifarish".

payment of stipends. He said around 2,300

launched during his tenure.

He said his focus over the past two years had been on transforming PEC into an institution that could respond to the realities of modern engineering rather than remain trapped in old procedures.

The reforms, according to Nazir, cover several areas.

The first is merit and transparency, particularly in the registration and selection of engineers for training pro-

gram. He also referred to the preparation of professional engineering books as part of the effort.

The fourth is international exposure. PEC has expanded collaboration with international engineering organisations and launched opportunities for young engineers to gain exposure to engineering practices abroad.

He specifically highlighted the China program, which

al Development (CPD). He

bring them closer to modern requirements, while strengthening Continuing Profession-

cussion around reforms, the young engineers did not shy away from difficult questions. Technical allowance and service structure remain among the most frequently raised demands of engineers, particularly those working in the public sector.

Nazir said he had pursued the issue of technical allowance at the national level and that recommendations had moved through parliamentary forums. He indicated that the matter would now require follow-up with the relevant government authorities.

That message seemed to

define his entire interaction at the riverside gathering: the institution must change, but so must the profession.

As the meeting drew to a close, what had initially been planned as a consultative session had become something more revealing—a test of how far PEC's new reform narrative could connect with the young engineers it is ultimately meant to serve.




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grams. He said young engineers no longer needed personal recommendations to obtain PEC registration and that the process had been digitized to make registration available as soon as they qualified.

The second is professional development. PEC has introduced training programs aimed at strengthening engineers beyond their technical knowledge, including project leadership and personality development.

The next area is engineering education. Nazir said PEC was reviewing engineering curricula and manuals to

he also discussed with students at Aror University also. The initiative, he said, was designed to expose Pakistani engineers to advanced engineering, infrastructure, technology and professional practices in China.

For young engineers, such exposure can be as important as classroom education, particularly at a time when engineering is increasingly shaped by digital technologies, artificial intelligence, automation and large-scale infrastructure systems.

Engineers still want answers

Despite the upbeat dis-

Whether all the reforms will produce the results promised remains to be seen for the coming years. But at the bank of the Indus, the PEC chairman appeared determined to make one argument clear: the council cannot remain relevant by simply doing things the way they have always been done.

For him, reform is not merely about changing procedures. It is about changing the relationship between PEC and the engineers it represents—and preparing a new generation to compete in a rapidly changing world.

## PEC is like your mother: Engr. Waseem Nazir

### At Aror University, Waseem Nazir Finds a Glimpse of the Future He Wants

Pakistan Engineering Council (PEC)

Chairman Engr.

Waseem Nazir received a warm welcome when he arrived at Aror University of Art, Architecture, Design and Heritage in Rohri.

But the real highlight of his visit was perhaps not the reception itself. It was the unmistakable chemistry between Nazir and the university's Vice Chancellor, Dr. Zahid Khand.

As the two moved through the university, dis-

cussing laboratories, research, education and the institution's plans for expansion, it became clear that they shared something more than a formal interest in engineering education.

They shared a belief that universities cannot prepare young people for the future by remaining prisoners of the past.

At one point, Nazir told faculty members and undergraduate engineers that he had visited many universities, but Aror had made him rethink some of his own assumptions.

"I have visited many universities, but after seeing

Aror University, my mindset has changed," he said. "Dr.

futuristic, and this university is totally futuristic."



Zahid Khand's thinking is

ty was attempting to provide.

He also visited the university's modern library, where the breadth and variety of books and research material available to faculty and researchers caught his attention.

"Look at Aror's library," Nazir said, pointing to the university's resources. "I have also met the faculty. They are very good. You can see the training and education here."

For a chairman whose central argument is that engineering institutions must keep pace with a rapidly changing world, the visit offered a rare opportunity to see those ideas being translated into a physical campus.

Dr. Zahid Khand briefed him on the university's expansion and its plans to establish a complete ecosystem for what the university describes as academia-industry convergence.

A new building is under construction, while the university has also acquired additional land for future expansion.

The vision is considerably larger than simply adding classrooms and laboratories. The university wants to build an environment where education, research, industry and innovation can exist alongside one another.

Nazir seemed particular-

ly interested in that approach.

He said he wanted to develop a roadmap with Dr. Khand that could be presented to PEC's Governing Body as an example of how a new university could be managed and developed differently.

"Dr. Zahid Khand is futuristic," Nazir said. "The first batch of civil engineers coming out of here will be different."

For Nazir, that distinction matters.

Many established universities have accumulated decades of systems, traditions and procedures. A new institution, he suggested, has the opportunity to avoid some of those constraints and design itself around the requirements of the future.

"That is a big achievement for a new university," he said.

"PEC is like your mother"

The chairman's interaction with Aror's students soon moved beyond laboratories and buildings.

He spoke about institutions, professional ethics, the dignity of engineers and the responsibility that comes with being part of the engineering profession.

"If any country wants to develop, it has to improve its institutions," he told the students. "PEC is like your mother. She should be strong." ■

### Waseem Nazir Takes PEC Reform Message to Sindh, Says Breaking Status Quo Is Key to Staying Relevant

Contd from page 3 recommendation.

For Nazir, such cases demonstrated the importance of creating systems where merit, rather than connections, determines opportunity.

**Contractors and consultants part of the ecosystem**

Nazir also held detailed discussions with contractors, consultants and builders during the visit.

At a gathering organized by the Constructors Association of Pakistan (CAP), led by Engr. Afzal-ur-Rehman, and attended by representatives including Engr. Atif Nazir of ACEP and Hassan Bakhshi of ABAD, he argued that contractors and consultants could not be separated from the wider engineering ecosystem.

He said engineers, academia, consultants, contractors, constructors and builders were all interconnected stakeholders and that the problems of one segment ultimately affected the others.

PEC, he said, was moving towards digital solutions for contractors. Instant registration had been introduced, while registered contractors seeking renewal could apply through the portal and expect the process to be completed within two days, he said.

"We have around 80 percent renewal cases. We are starting e-licensing," Nazir said, urging contractors to raise their problems directly with him.

"The solution is going digital," he added.

**Universities, professional development and Brain Gain**

Nazir visited Hamdard University in Karachi and Aror University in Rohri, where he interacted with faculty members and engineering students.

He spoke about proposed reforms in the engineering curriculum and manuals and said professional development and continuing professional development (CPD) needed greater attention. He also mentioned the preparation of five books aimed at strengthening professional engineering knowledge.

At a session in Hyder-

abad hosted by PEC Governing Body Member Engr. Iqbal Qureshi, academicians including Dr. A.Q. Rajput and Dr. Abro, young engineers, contractors, builders and other stakeholders participated.

The Deputy Commissioner Hyderabad, himself an engineer by education, recalled his own experience after graduating from Mehran University and said engineers of his generation had not witnessed such reforms at PEC.

He particularly appreciated the initiative of training project directors at National Defence University (NDU), describing it as an unprecedented step and noting the value of NDU's professional training program.

Nazir said the first batch of project directors had completed the three-month program and that PEC had entered into a five-year arrangement with NDU not only for project director training but also for personality development of young engineers.

The chairman also announced the forthcoming "Brain Gain" platform, which he said would connect Pakistani engineers working abroad with engineers in Pakistan to facilitate the exchange of knowledge, experience and professional expertise. He said the platform was scheduled to be launched on the 15th of the month.

**Service structure and technical allowance**

Technical allowance and the service structure of engineers also figured prominently in the discussions.

Dr. Mansoor Soomro, Assistant Professor at MUET, raised the financial difficulties confronting academia and asked how PEC could contribute.

Nazir said he had secured approval from the National Assembly recognizing technical allowance as a right of engineers, while the Senate Standing Committee had also approved the matter. Recommendations, he said, had been forwarded to the government and would now be followed up by the Secretary of the Ministry of Science and Technology and an MNA

from Sindh.

He nevertheless urged engineers to work on themselves alongside demanding their rights.

His message throughout the visit was that professional recognition should go hand in hand with professional improvement.

**From regulation to an engineering ecosystem**

Nazir repeatedly returned to the idea of an integrated engineering ecosystem, particularly the need to bridge the gap between universities and industry.

"Industry-academia linkage cannot be established until we come out with a practical solution," he said, questioning why university research remained largely confined within individual institutions.

He said PEC was now referring to the concept as "academia-industry convergence" and expressed hope that the Brain Gain initiative and other reforms would help create practical connections between researchers, industry and engineers.

For Engr. Iqbal Qureshi, who hosted the Hyderabad session and a builder himself said builders were also an important part of this ecosystem and needed to be brought into the conversation because many of their problems remained unresolved.

As Nazir concluded his five-day Sindh tour, his central message remained consistent: PEC cannot remain relevant by simply maintaining existing systems. It has to change with the profession, technology, industry and expectations of a new generation of engineers.

"Without breaking the status quo, we will become irrelevant," he said.

Whether the reforms ultimately produce the ecosystem Nazir envisions will depend not only on PEC but also on the willingness of engineers, academia, industry, contractors and government to work together. But during his Sindh visit, the chairman clearly sought to make one thing part of the conversation: change is no longer optional for Pakistan's engineering institution. ■

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# Agriculture Review



## New Water Controversy Emerges Over Proposed Dams on Chenab River

A new water controversy appears to be emerging in Pakistan over a proposed series of dams on the Chenab River, with serious concerns being raised in Sindh over their possible impact on downstream water availability, the environment and inter-provincial relations.

The latest development follows a briefing by the Water and Power Development Authority (WAPDA) to members of the Indus River System Authority (IRSA) on the proposed Chiniot Dam, reportedly held about a week ago.

The multipurpose project is planned on the Chenab River, approximately 100 kilometers downstream of Qadirabad Barrage and around five kilometers upstream of Chiniot city. According to the project proposal, the dam would have a storage capacity of one million acre-feet (MAF) and is intended to store surplus monsoon flows, mitigate floods, generate 80 megawatts of electricity and provide water to Faisalabad.

The proposed infrastructure includes the main dam, a two-gated barrage, a power house and approximately 77 kilometers of embankments on both sides of the reservoir.

Critics, however, argue that Chiniot Dam should not be viewed as an isolated project. They believe it is part of a larger plan to develop a chain of dams and expand water diversions on the Chenab, potentially reviving

elements of the controversial Greater Cholistan project, which was reportedly halted last year following strong opposition and public protests in Sindh.

According to the information available in the project's working paper, around 47,000 acres of land within the Chenab's riverine area could be submerged, raising concerns among local communities about the loss of



agricultural land, homes and livelihoods.

The estimated cost of Chiniot Dam is around Rs298 billion. Under the proposed financing arrangement, approximately 80 per cent would be provided by the federal government, while the remaining financing would be arranged by WAPDA, including through borrowing mechanisms. WAPDA would be the implementing agency.

The project has already attracted substan-

tial questions from the federal Planning and Development Ministry. Its technical review reportedly raised more than 50 objections and queries, including questions concerning the project's cost, implementation period, economic assumptions and technical feasibility.

The proposed construction period of approximately four and a half years has also come under scrutiny, particularly given

Work has also recently begun on the Jalalpur Canal, which is expected to divert approximately 0.5 MAF of water annually.

Water experts argue that such interconnected projects should not be assessed individually. A broader Strategic Environmental Assessment may be necessary to determine their combined impact on the river system, downstream communities and the Indus Delta.

The federal Planning Ministry's technical review has reportedly described the Chiniot project as having national strategic importance because of its implications for transboundary water flows. It has suggested that the Ministry of Water Resources convene a workshop to develop national consensus among stakeholders.

The review has also questioned the project's claimed irrigation benefits. The PC-I reportedly estimates annual irrigation benefits of Rs35.768 billion from around 80,000 acres, equivalent to approximately Rs447,000 per acre. The technical review reportedly found the assumptions behind the projected 18.67 per cent economic rate of return questionable.

Another concern relates to flood safety. With a proposed reservoir holding one MAF of water behind 77 kilometers of embankments, the technical review has reportedly warned that an embankment failure could have catastrophic consequences, particularly for Faisalabad, Pakistan's third-largest city and an important industrial center. An adequate emergency action plan has reportedly not yet been developed.

The concern is heightened by last year's floods, when Chenab flows reportedly reached 1,077,951 cusecs at Qadirabad on August 27, exceeding the barrage's stated capacity of 900,000 cusecs. Authorities were reportedly forced to breach the right-bank protective embankment to protect the barrage structure.

Sindh has expressed serious reservations over the proposed dam.

The province already faces recurring water shortages, particularly at the beginning of the Kharif season. Flow data from 1999 to 2025 reportedly show that downstream Punjab barrages below the Rasul-Qadirabad-Sulemanki link canals have received around 16 per cent less water than their allocations at the beginning of Kharif, with availability falling by as much as 36.4 per cent by early June.

The PC-I reportedly envisages filling the Chiniot reservoir beginning in June—a period when downstream areas are already under water stress.

Sindh fears that additional storage and diversion capacity in Punjab could increase pressure on the Indus system and encourage greater withdrawals through link canals to compensate for shortages in downstream Punjab.

With four proposed Chenab reservoirs potentially operating as part of the same system, Sindh believes the cumulative impact could become considerably more serious.

For Sindh, the issue therefore goes beyond the construction of a single dam. It concerns the future distribution of the Indus Basin's water, the security of its agricultural economy and the ecological survival of the Indus Delta.

The emerging controversy underscores an old problem in Pakistan's water politics: a project that may appear beneficial from the perspective of one region can create serious concerns downstream.

Without transparent technical studies, environmental assessments and meaningful inter-provincial consultation, the proposed Chenab dam program could add another contentious chapter to Pakistan's already fragile water politics. — ERMD

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## Keti Bandar: A 30-Year-Old Dream Returns to Drawing Board

Contd from page 2

nities.

That is why the environmental dimension cannot be treated as an obstacle to be dealt with after the project has been designed. It needs to be part of the design itself.

President Zardari has reportedly stressed the need to protect the Indus Delta and the livelihoods of local communities while considering the port project. That is an important condition.

A Keti Bandar project that damages the ecological foundation of the local economy would undermine the very communities it claims to develop.

The connectivity problem

Then comes another basic question: where will the cargo go? A port is only as useful as its connections to the economy behind it. If containers, coal, petroleum products, machinery or agricultural goods have to travel on inadequate roads or wait for railway connections that do not exist, the commercial advantage of the port quickly disappears.

The government therefore needs to think of Keti Bandar as a single infrastructure system rather than a collection of separate projects.

Port construction without rail and road connectivity will not work. Industrial zones without reliable electricity and water will not work. Energy terminals without storage and distribution networks will not work. And a fishing harbour without cold chains and export facilities will deliver only a fraction of its potential.

The lesson from the past  
Perhaps the biggest lesson comes from Keti Bandar's own history. Benazir Bhutto's government had an ambitious foreign investor, a power-generation plan, a proposed port, infrastructure commitments and



a vision linking Thar coal to the coast.

Thirty years later, Pakistan is still discussing many of the same basic questions. That should make policymakers cautious. The challenge today is not to produce another impressive master plan. It is to create a project structure that can survive political transitions, changes in government and shifts in energy policy.

The financing must be transparent. The

economic model must be commercially credible.

The environmental costs must be properly assessed. Local communities must have a meaningful place in the planning process. And the road and rail infrastructure must be

developed alongside the port rather than promised for some later stage.

From Benazir's dream to today

There is an almost circular quality to the story. Benazir Bhutto's government saw Keti Bandar as part of a huge energy and infrastructure transformation.

Later governments revived elements of the concept through Japanese investment proposals and CPEC-related Chinese plans.

The idea survived even when individual projects did not.

Today, the Sindh government is once again presenting Keti Bandar as part of the province's long-term economic future, while a major Chinese engineering company has produced a fresh port proposal. But this time, the ambition has shifted.

Keti Bandar is no longer being sold simply as a place for coal-fired power plants.

It is being presented as a potential maritime gateway, logistics centre, industrial zone, energy hub and fisheries-export base.

That may be a more appropriate vision for Pakistan's current economic needs. Yet the history of the last 30 years provides a warning. There is a huge difference between a project being announced and a project being built.

Keti Bandar has already had its MoUs, its feasibility studies, its foreign investors, its power plants, its railway proposals and its port dreams. What it has never had is sustained execution.

The latest CHEC proposal could therefore be an important turning point—but only if the government can convert the concept into a financially viable, environmentally responsible and politically durable project.

For Sindh, the stakes are considerable.

If it succeeds, Keti Bandar could open a new chapter in the province's maritime economy, create an industrial and logistics corridor along the coast and give Pakistan another gateway to international trade. If it fails, it will simply become another chapter in the long history of a port that was always promised but never built. After three decades, Keti Bandar does not need another dream. It needs delivery. ■

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# From Engineering Design to Entrepreneurial Value Creation

Engr. Dr. Muhammad Nawaz Iqbal

**T**raditionally, engineering design is linked to meeting technical needs in terms of function, efficiency, reliability and accuracy. Today, however, in the new innovation economy, design is not just about developing better and better products – it's about becoming a business creator.

A technical solution that can become a commercially viable innovation is one that is designed by an engineer who understands the needs of the customer, market dynamics, business models, sustainability and new technologies. There must be a mindset change from asking "How can this be engineered?" to asking "What problem can this engineering solution solve, to whom, how can it be sustainable, and how will it add value?" Engineering design is thus the beginning of an entrepreneurial process, not the end.

The best business ideas to develop frequently occur when engineers step beyond the technical specification and get into the human issues underlying the technical specification. You can go all the way with the technology and product, but if it doesn't solve a real customer problem, it won't be a success. Design thinking puts focus on engineering design in a way that allows engi-

neers to incorporate the elements of empathy, observation, experimentation, and user participation into the engineering process. Engineers can better understand how people really think and act, and not make assumptions as they design, which will reveal unmet needs and opportunities for innovation. In that way, entrepreneurial engineering is most essentially concerned with converting technical information into relevance to people.

as considerations of cost, design accessibility, scalability, impact on the environment, and how well the design will differentiate from the competition. So when the design of an energy-efficient device is linked to an engaging offer of reduced operational expenses, an extended life cycle for the product, easier maintenance, and measurable environmental gains, the device is more entrepreneurial. If engineering excellence is

platform-based services, pay-per-use, franchising or technology partnerships. These can be extended even further by the advent of digital technologies, which allow engineering products to be intelligent, connected, continually updated and service-oriented. That's why the entrepreneurial engineer increasingly is designing not only a product, but an ecosystem which will create economic and social value over time because of the

sembled and reused, remanufactured or recycled for materials. When engineers rethink production systems, waste can be an entrepreneurial resource when products are reimaged as useful by-products of other production processes. This view puts sustainability not only on the compliance agenda but also on the innovation agenda, and shows the ability of engineering design to serve the interests of profitability, environmental protection, as well as the socio-economic resilience of society.

The recent developments in AI, the Internet of Things, advanced manufacturing, robotics and a growing number of digital platforms have continued to create a more indistinct division between engineering and entrepreneurship. Now, engineers can add intelligence to a product, gather real-time data from the operations of that product, forecast failure, tailor services to the individual, and continually evolve the customer experience. Aside from the fact that these technologies can be adopted, the opportunity for entrepreneurs is to combine these technologies creatively to

solve a problem which cannot be solved efficiently with traditional methods. For example, a physical engineering solution could become a smart irrigation system that is turned into an intelligent agricultural service through the addition of sensors, analytics, automa-



tion, and subscription-based support with a combined value proposition.

Another bridge between engineering innovation and entrepreneurial value is intellectual property and strategic commercialization. Innovation can be protected through the patent system, industrial design, proprietary algorithms, technical know-how and unique engineering processes, and can provide opportunities for licensing, partnerships, investment and the creation of new

ventures. However, the aim of IP should not be IP itself, but should be related to the value of the product. A patent alone is not very useful as a tool for entrepreneurial activity unless it's tied to a market opportunity and a business model, has a viable team behind it, and is scalable. The actual trick is to build a commercial and institutional structure that can take a novel idea and make it generate long-term value. ■



In essence, a pivotal shift starts to happen when engineering prototypes start to turn into value

propositions. While a prototype can help someone understand the workability of a concept, a value proposition is required in order to make the concept salient to the person and, potentially, prompt them to pay for it. This distinction helps promote a multi-faceted view of the design from the customer's perspective, as well

intentionally linked to value for the customer, then economic significance is added.

It is also important for engineers to learn the concepts of business models in order to create value in an entrepreneurial manner. Successful inventive technology is not a successful business. Engineers need to be aware of ways of creating, delivering and capturing value. That can be in the form of product sales, subscription-based services, licensing,

technology.

The other key aspect is sustainability as a key factor in engineering entrepreneurship. Performance and cost are often highlighted in traditional design, whereas in entrepreneurial design, resource efficiency, circularity, reparability, recyclability and the impacts of the lifecycle have to be taken into account. New business opportunities can be developed by designing products with the ability to be disas-

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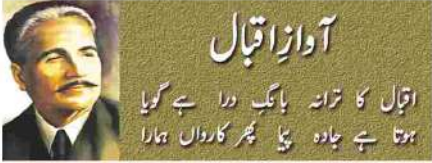
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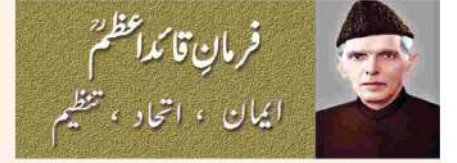
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رپورٹ میں یہ بھی کہا گیا ہے کہ اگر یہ ثابت ہو جائے کہ جولائی  
کی آگ کے بعد متعلقہ افسران کو فائر سینیٹری خطرات سے آگاہ کیا گیا  
تھا، ان کے پاس اصلاحی اقدامات کا اختیار اور مناسب وقت موجود  
تھا، لیکن اقدامات نہیں کیے گئے اور بعد میں یہی خطرات اموات میں  
معاون ہے تو فوجداری تحقیقات کا جواز پیدا ہو سکتا ہے۔ رپورٹ  
کے مطابق معاملہ صرف یہ معلوم کرنے تک محدود نہیں کہ آگ کس

جاسکتی۔ انکوائری رپورٹ کے مطابق پڑکی فراہم کردہ ایس اوپیز  
میں یہ واضح نہیں کہ فائر الارم کون کون فعال کرے گا، ایمر جنسی سروس کو  
کون اطلاع دے گا، ایمر جنسی کمانڈر کس افسر کے پاس ہوگی، ایمر جنسی  
ایگزٹ کون کھولے گا اور تو مولود بچوں کے اخلاقی و فوجداری کس کی  
ہوگی۔ رپورٹ میں فائر سینیٹری انتظامات پر بھی اہم سوالات اٹھائے  
گئے ہیں۔ انکوائری کے مطابق ایمر ای اور نرسری کے لیے ایسا کوئی  
واضح مخصوص اور عملی طور پر مشق کیا گیا فائر اور ایوکیویشن ایس اوپیز  
سائے نہیں آیا جس میں فائر ڈیٹیکشن، الارم، بیرونی اطلاع، کمانڈر،  
فائر ایکس گورنر کے استعمال، آکسیجن اور بجلی کی بندش پر ایمر جنسی ایگزٹس  
اور نومولود بچوں کے اخلاقی طریقہ کار کو تفصیل سے بیان کیا گیا ہو۔

ایمر جنسی نوٹیفیکیشن ان سیٹڈ کمانڈ آکسیجن و برقی نظام کی بندش  
ایمر جنسی راستوں اور مریضوں کے محفوظ اخلاقی سے متعلق واضح عملی  
طریقہ کار نہ ہونے کو اہم ادارہ جاتی کمزوری قرار دیا۔  
عبوری رپورٹ کے مطابق CCTV فون سے آگ کی پہلی  
واضح علامت صبح تقریباً پاکر 38 منٹ 15 سیکنڈ پر سامنے آئی اور  
صرف دو منٹ کے اندر صورتحال انتہائی خطرناک ہو گئی۔ تقریباً بیان کیا  
کر 40 منٹ پر دھماکہ جیسی آواز بھی ریکارڈ ہوئی۔ کمیٹی نے واضح  
کیا ہے کہ آگ گھٹنے کا حتمی نتیجہ سبب تاحال طے نہیں ہو سکا اور  
انکیو بیئر، دارمرداے، پینک، ساکٹ، وارننگ یا کسی دوسرے  
برقی آلے میں سے کسی ایک کو فی الحال ذمہ دار قرار نہیں دیا جاسکتا۔



چیز سے تھی، بلکہ یہ بھی دیکھا جا رہا ہے کہ آگ کو بڑے سانچے میں  
تبدیل ہونے سے روکنے والے حفاظتی نظام کہاں ناکام ہوئے،  
ذمہ داری کس کے پاس تھی اور سپرے سے نشانہ بنی کی گئی خامیوں پر کیا  
اقدامات کیے گئے۔ رپورٹ میں پڑ کے لیے فوری طور پر ہسپتال بھر  
میں آگ اور Life and Fire Audit Safety کرانے، فائر اور  
اسموک ایلیمینیشن، الارم سسٹم، فائر ایکس گورنر، ہائیڈرولکس، ایمر  
جنسی ایلیمینیشن، بجلی کے نظام، انکیو بیئر، وارمرز، اے سی، ساکٹس اور  
تمام فائر ایکسٹنشن کی جانچ کی سفارش کی گئی ہے۔ اس کے ساتھ  
ہنگامی صورتحال کے لیے واضح کمانڈ سسٹم 1122 Rescue کو  
اطلاع دینے کے ذمہ دار افسر کی نامزدگی اور باقاعدہ فائر ڈیوٹیل ایلو  
یو ایلیمنٹ ڈرل کرانے کی بھی ہدایت دی گئی ہے۔ ■

رپورٹ میں بعض ایمر جنسی ایگزٹس کے منتقلی یا رکاوٹ کا شکار  
ہونے اور فائر فائزرز کو کچے دروازے زبردستی کھولنے کی ضرورت  
پڑنے کا بھی ذکر کیا گیا ہے۔ کمیٹی نے خاص طور پر اس امر کو  
تشویشناک قرار دیا کہ پھر میں صرف چند ہفتے قبل جولائی 2026  
میں نرسنگ ہاسٹل میں بھی آگ لگ چکی تھی اور اس واقعے کی  
تحقیقات میں سموک ڈیٹیکٹر، الارم، ایمر جنسی ایلیمینٹ، واضح فرار  
کے راستوں، فائر ایکس گورنر، انکیو بیئر، انکوائری اور فائر سینیٹری  
تربیت کی سفارشات دی گئی تھیں۔ رپورٹ کے مطابق 25 اگست،  
یعنی ازسری میں ملک آگ گھٹنے سے صرف ایک دن پہلے ان  
سفارشات کا جائزہ بھی لیا گیا تھا تاہم بہت سی خامیاں بدستور موجود  
تھیں۔ کمالی نے کہا ہے کہ اگر تحقیقات میں یہ ثابت ہو جائے کہ کسی

عبوری رپورٹ میں فرنٹ لائن طبی اور نرسنگ عملے پر بچوں کو چھوڑ  
دینے کے عمومی الزام کی تائید نہیں کی گئی۔ کمیٹی کے مطابق چارج  
نرس نرسین نے مدد طلب کی، سیورٹی گارڈ مار یہ نے متاثرہ حصے میں  
داخل ہونے کی کوشش کی جبکہ سٹاف نرس رضیہ نے نرسری میں جا کر  
بچوں کو باہر نکالا۔ رپورٹ میں ایک اہم سوال بیرونی ایمر جنسی سروس  
کو اطلاع دینے کے وقت سے متعلق اٹھا یا گیا ہے۔ CCTV کے  
مطابق آگ تقریباً 38:6 پر شروع ہوئی جبکہ CES کے ریکارڈ  
میں پہلی ایمر جنسی کال تقریباً 54:6 پر موصول ہونے کا ذکر ہے۔  
کمیٹی نے تقریباً 16 منٹ کے اس فرق کو پیچیدہ معاملہ قرار دیا  
تاہم یہ بھی واضح کیا کہ ٹیلی فون ریکارڈ کال لاگز اور ریکورڈرول روم  
کے ریکارڈ کی مکمل جانچ سے پہلے کسی فرد پر ذمہ داری عائد نہیں کی

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Lahore

Room # 29, 6th Floor

Goldmine Plaza

105-Ferozepur Road Lahore.

Ph: 042-3540-4622; Mobile: 0322-4881881

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## Poetry Dedicated to the Parents

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May they always sip the finest wine in paradise,  
Camphor blended with water, a blissful delight.

May the mixture flow from a spring in full swing,  
Gushing forth at their will, a cherished drink.

They fulfilled their pledges without fail,  
Dreading the Day when hardships prevail.

They fed the poor, the orphan, and the captives' needs,  
Despite their own shortages, they performed generous deeds.

Saying, "We feed you only for our Lord's sake,  
Seeking no reward, no gratitude, nor praise."

"From our Lord, we trembled in fear,  
Dreading a long, harsh day with end far, not near."

On that day of horror, may they be freed,  
With shining faces, may their joys increase.

May their patience be rewarded with a garden of bliss,  
In paradise, adorned in silk, may they forever exist.

May they recline on thrones set high,  
Where neither intense heat nor bitter chill draws close-by.

Above them, may garden shades softly lie,  
Fruits within reach, may their supply never run dry.

Silver vessels and crystal cups circulate around,  
Filled to their desires, plentiful and profound.

Pure elixirs, tinged with ginger,  
From the spring called Salsabil, may they rejoice forever.

Among them, may eternal youths delight,  
Like scattered pearls, in glory shining bright.

In paradise, wherever they look with their eyes,  
May they witness a glorious kingdom, endless joys.

May they be served a drink, refreshing and cold,  
Adorned in silver, draped in fine silk and gold.

"Fully compensated," may our Lord decree,  
"Your efforts are honored, eternally."

May this prayer be fully granted,  
For every believer who's departed.

## سانحہ گل پلازہ

# کس کے ہاتھ لہو تلاش کروں؟ کوئی قصور وار نہ نکلا، جوڈیشل کمیشن رپورٹ

دکانوں میں آتش گیر سامان کی موجودگی کے باوجود فائر سیفٹی آلات نہ تھے، بجلی منقطع کرنے سے باہر نکلنے کے امکانات کم ہوئے

پلازے کا کبھی آؤٹ ہوانہ انتظامیہ نے معلوم نقائص دور کیے، فائر بریگیڈ تاخیر سے پہنچی، پانی اور اہم آلات کی کمی نے ریسکیو کو متاثر کیا، 78 صفحات پر مشتمل رپورٹ جاری

سے متعلق موثر نگرانی نہ ہونے پر ایس بی سی اے ذمہ دار ہے۔ ریسکیو 1122 ابکار آگ لگنے کے بعد پہنچے لیکن تب بھی ریسکیو کا موثر موقع باقی تھا، سو، 11 سے ساڑھے 11 بجے تک ریمپ سے رسائی بھی ممکن تھی۔ ریسکیو 1122 نے دستیاب وقت کو بڑے پیمانے کے ریسکیو آپریشن میں تبدیل نہیں کیا۔ قانون کے تحت بجلی تنصیبات اور آلات کے معائنے کا قاعدہ کیسے ہونا چاہیے۔ الیکٹرک انسپکٹر کے بیان کے مطابق گل پلازہ کا کوئی باقاعدہ برقی معائنہ نہیں ہوا۔ ذمہ داری کسی ایک ادارے یا ایک حکومت تک محدود نہیں۔ متعدد اداروں میں قانونی اختیارات، آؤٹ کا نظام، بلڈنگ کنٹرول، فائر فائٹنگ اور ایمرجنسی ریسپانس کے ادارے موجود تھے، یہ نظام مجموعی طور پر موثر انداز میں کام نہیں کر سکا۔ گل پلازہ میں لوگ صرف آگ سے نہیں بلکہ تاخیر، اندھیرے، بند راستوں، رکاوٹ بننے والی کھڑکیوں کے باعث جان سے گئے۔ غیر فعال حفاظتی نظام، غیر موثر آؤٹ، بکھری ہوئی ادارہ جاتی ذمہ داری اور بروقت استعمال نہ کیے جانے والے ریسکیو مواقع کے باعث جانی نقصان ہوا۔

قابل رسائی افراد کو بچانے کے امکانات کم ہوئے۔ فائر سیفٹی پر پانی کے ذخائر موجود ہونے کے دعوے کے باوجود ابتدائی مرحلے پر پانی کی موثر فراہمی نہ ہونا اہم انتظامی سوال ہے۔ سول ڈیفنس کی 2024 اور 2025 کے معائنے میں سامنے آنیوالے نقائص دور کرنے کیلئے قانونی کارروائی نہیں کی گئی، 2025 میں عدالتوں کے فعال ہونے کے بعد بھی قانونی کارروائی کو آگے نہیں بڑھایا گیا۔ سول ڈیفنس کی ناکامی خطرے سے لاعلمی نہیں بلکہ معلوم خطرے پر عملدرآمد نہ کروانے کی ناکامی ہے۔ جوڈیشل کمیشن کی رپورٹ کے مطابق ضلعی انتظامیہ نے ہائیکورٹ کی ہدایت پر قائم تین سطحی فائر آؤٹ نظام کو باوجود گل پلازہ کا مشترکہ آؤٹ نہیں کروایا۔ ڈپٹی کمشنر جنوبی آفس آؤٹ اور نگرانی کے دستیاب نظام کو فعال نہ کرنے پر ادارہ جاتی طور پر ذمہ دار ہے۔ ایس بی سی اے شکایت کی بنیاد پر معائنے کے موقع سے ذمہ داری سے نہیں بچ سکتا۔ سندھ بلڈنگ کنٹرول آرڈیننس کے تحت خطرناک عمارت میں اصلاحی کارروائی کا اختیار موجود تھا۔ گل پلازہ کے ناکمل ریکارڈ، فائر سیفٹی

سیفٹی قوانین کی خلاف ورزی کی حالت میں مسلسل تجارتی استعمال میں رہی، گل پلازہ کی انتظامیہ نے معلوم نقائص دور نہیں کیے، 2024 اور 2025 کی سول ڈیفنس کی رپورٹ میں فائر سیفٹی کے آلات کی عدم موجودگی، آتش گیر مادے کی موجودگی اور خارجی راستوں کی خامیوں کی نشاندہی کی گئی تھی۔ آگ کی اطلاع فائر بریگیڈ کو دینے میں انتہائی غیر

سانحہ گل پلازہ میں جانیں صرف آگ نے نہیں لیں، جوڈیشل کمیشن کی رپورٹ نے اس المیہ واقعے میں تاخیر، اندھیرے، بند راستوں، غیر فعال حفاظتی نظام اور اداروں کی ناکامیوں کی طویل فہرست سامنے رکھ دی تاہم کسی فروپڑے داری عائد نہیں کی گئی، 78 صفحات پر مشتمل رپورٹ کے مطابق خطرات پہلے سے معلوم تھے، نقائص کی



نشاندہی بھی ہو چکی تھی، اختیارات اور ادارے بھی موجود تھے، مگر بروقت کارروائی نہ ہو سکی، جسٹس آغا فیصل کی سربراہی میں فائر جوڈیشل کمیشن نے ذمہ داری کسی ایک ادارے تک محدود نہیں رکھی بلکہ مجموعی نظام کی ناکامی کو جانی نقصان کی بڑی وجہ قرار دیا۔

تقصیلات کے مطابق محکمہ داخلہ سندھ نے گل پلازہ پر قائم کیے گئے جوڈیشل کمیشن کی رپورٹ جاری کر دی۔ جسٹس آغا فیصل کی سربراہی میں قائم جوڈیشل کمیشن کی رپورٹ میں حادثے میں فریقین کی ذمہ داریوں کا تعین کیا گیا ہے۔ جسٹس آغا فیصل نے دیباچہ میں مصطفیٰ زیدی کا شعر شامل کیا، ”میں کس کے ہاتھ پہ اپنا لہو تلاش کروں۔ تمام شہر نے سپنے ہوئے ہیں دستائے“۔ رپورٹ میں کہا گیا کہ عمارت خطرناک اور فائر

دکانوں میں بڑی مقدار میں آتش گیر تجارتی سامان موجود تھا۔ فائر بریگیڈ کے اپنے رسپانس کے معیار کے برخلاف فائر بریگیڈ پہنچنے میں تاخیر ہوئی۔ تقریباً 35 سے 40 منٹ بعد موثر فائر فائٹنگ شروع ہوئی۔ پانی کی کمی، برقی فلیک نے فائر فائٹنگ اور ریسکیو کو متاثر کیا۔ فائر بریگیڈ کے پاس اہم آلات کی بروقت تعیناتی نہ ہونے سے عمارت میں چھپنے

وانشندانہ تاخیر کی گئی۔ رپورٹ میں کہا گیا کہ بجلی منقطع کرنے سے اندھیرے کے باعث بالائی منزلوں سے باہر نکلنے کے امکانات مزید کم ہوئے، عمارت میں سپر سسٹم کی موجودگی کے باوجود استعمال نہیں کیا گیا۔ گل پلازہ کے ریگولر انٹرنل پلان میں 1102 دکانیں تھیں لیکن چھپتا 1153 دکانیں موجود تھیں۔

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## سانحہ پمز اسپتال عبوری رپورٹ ایگزیکٹو ڈائریکٹر سمیت 8 افسر معطل، فوجداری کارروائی کا حکم

پمز میں آتشزدگی کے تعلق ایس او پیز ہی نہیں، آگ لگنے اور پورا وارڈا جلنے میں صرف دو منٹ لگے

ایمرجنسی راستے بند، آگ لگنے کا حتمی سبب طے نہیں ہو سکا، عبوری رپورٹ

ڈیوٹی پر موجود نہ تھا۔ واقعے کے وقت دور میں، ایک خاتون گاڑی اور ہاؤس آفیسر وارڈ میں موجود تھے۔ آگ لگنے اور پورا وارڈ جلنے میں صرف دو منٹ کا مختصر وقت لگا۔ ایک نرس نے وارڈ میں آگ پھیلنے سے پہلے اپنی جان کی پروا کے بغیر ایک بچے کی جان بچائی۔ آگ لگنے کے 6 منٹ بعد ایمرجنسی سروسز کو کال گئی جبکہ پہلا ایمرجنسی ریسپانس اس کے 10 منٹ بعد پہنچا۔ صرف ایک ماہ پہلے جولائی میں پمز کے نرسنگ ہٹل میں آتشزدگی کا واقعہ ہوا جس کے بعد بھی ہسپتال میں حفاظتی اقدامات پر تنقید

پمز کے مدیر ایڈیٹر چائلڈ ہیلتھ سینٹر کی نرسری میں 26 اگست کو پیش آنے والے آتشزدگی کے المیہ واقعے کی عبوری انکوائری رپورٹ میں فائر سیفٹی، ایمرجنسی ریسپانس، ایگزٹ کے انتظامات اور انتظامی نگرانی میں نکلنے خامیوں کی نشاندہی کی گئی ہے، ابتدائی تحقیقات میں معلوم ہوا پمز میں آتشزدگی یاہنگامی صورتحال کے حوالے سے کوئی تفصیلی ایس او پیز یا ٹریک موجود نہیں۔ 13 ایس او پیز میں صرف روز کی لیکچر میں آگ یاہنگامی صورتحال کا تذکرہ پایا گیا، بتایا گیا کہ واقعے کے وقت سپروائزری اسٹاف

بقیہ صفحہ 11 پر

# ENGINEERING REVIEW

## Science & Technology

### Nature-inspired 3D printing could improve large-scale renewable energy storage

Researchers have created a 3D-printed electrode that could help make it easier and safer to store large amounts of renewable energy generated by wind and solar farms.

Led by University of

The study, "Enhancing Mass Transport in Redox Flow Batteries with 3D-Printed Triply Periodic Minimal Surface Electrode Structures," appears in the Journal of Energy Storage.

Redox flow batteries work differently from the lithium-ion batteries commonly found in phones, electric vehicles and many ener-

applications. Their water-based electrolytes make them a safer option for storing renewable energy at the scale needed to supply, for example, communities and the electrical grid with continuous renewable energy.

"Instead of storing energy in solid materials, they store energy in liquid electrolytes held in external tanks," said

power are intermittent, as they do not always produce electricity when it is needed, creating a need for technologies that can store excess energy and return it to the grid later.

Printing electrodes with more control

Researchers used 3D printing to create porous RFB electrodes, enabling

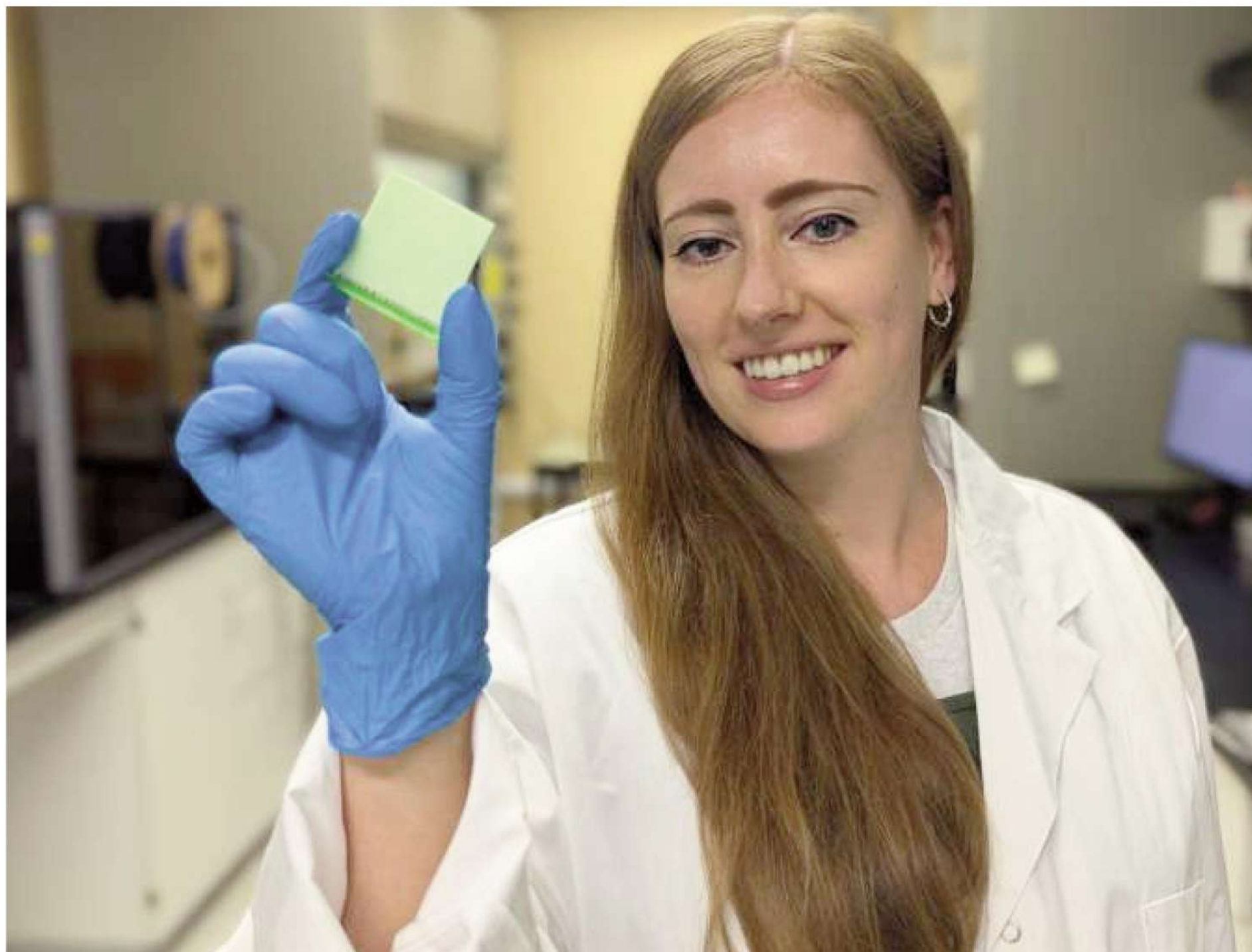
A geometry that boosted performance

A key innovation was the use of triply periodic minimal surface (TPMS) geometries, complex, repeating three-dimensional shapes that can resemble structures found in nature.

The researchers tested several TPMS designs and found that one known as the

redox flow battery, demonstrating that the 3D-printed designs can function in an operating battery. The proof of concept could help pave the way for more efficient redox flow batteries designed for large-scale energy storage.

Future research will focus on increasing the electrodes' surface area, improv-



Waterloo professor Dr. Maxime van der Heijden, the research team drew inspiration from natural structures to redesign a key component of redox flow batteries (RFBs), a technology that can store electricity for later use. The new design helps battery liquid move more efficiently, allowing the chemical reactions that store and release energy to occur more effectively.

gy-storage systems.

These batteries use water-based electrolytes rather than the flammable materials found in lithium-ion batteries, making them a potentially safer alternative for large-scale energy storage.

Safer storage for the grid Redox flow batteries are a complementary technology to lithium-ion batteries for large-scale energy storage

van der Heijden, a chemical engineering professor at Waterloo. "The amount of stored energy can be increased simply by using larger tanks, making them well-suited for large-scale renewable energy storage and grid applications."

That flexibility could become increasingly important as more electricity comes from renewable sources. Wind and solar

precise control over their structure and fluid flow.

"With 3D printing, we can design the internal structure of an electrode in ways that are difficult to achieve using conventional manufacturing," said van der Heijden. "That gives us much greater control over how the liquid moves through the battery and reaches the surfaces where the energy-storing reactions take place."

"diamond" geometry worked best, increasing performance by 52%.

They then used a digital light-processing 3D printer to produce the porous structures, which were heat-treated to form conductive carbon electrodes capable of carrying electricity.

The team successfully tested the electrodes in laboratory flow cell experiments and in a working vanadium

ing manufacturing methods and exploring advanced design tools to create even more effective electrode structures. - TX

## A new kind of AI that does its thinking cheaply without words

There may soon be a new kind of artificial intelligence in town, one that uses a novel approach to thinking that could save massive amounts

through difficult problems step by step. While this may ultimately give us the answers we are searching for, the process can increase response times and use a lot of computing power.

So scientists at AI company Pathway decided to test an alternative approach.

It has just 150 million parameters, which are the internal values that an AI adjusts as it learns patterns. Some of today's largest AI models use hundreds of billions of these settings.

Instead of generating a long chain of written words to work through a problem,

modify recurrent memory at inference time, and the resulting task is solved through iterative continuous computation rather than a verbalized chain of thought."

Putting BDH-CQ to the test

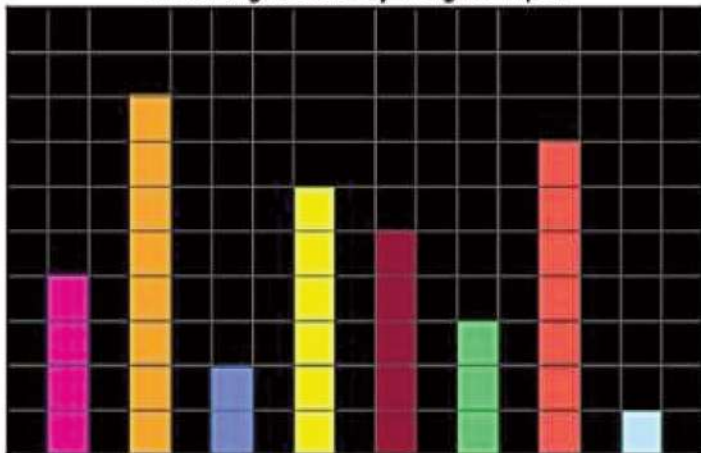
To test the model, the

solved 29.5% of the tasks it was tested on when given two attempts per puzzle. According to the Pathway team, it costs \$0.00070 per task, or less than one-tenth of a cent, setting a new accuracy-cost efficiency record for the ARC-AGI-1 benchmark. An independent

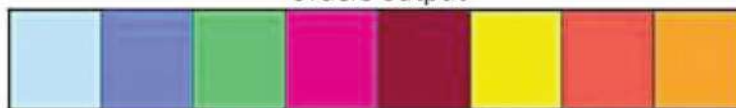
practical system."

As good as this may be, BDH-CQ did have its shortcomings. While it easily handled basic visual tasks like copying shapes or extending lines, it struggled with more demanding tasks, particularly those involving ordering larger sets of

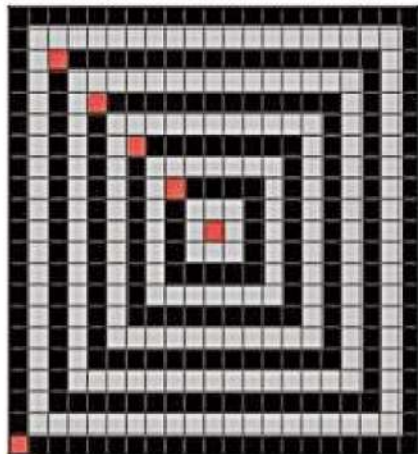
Order eight bars by height: input



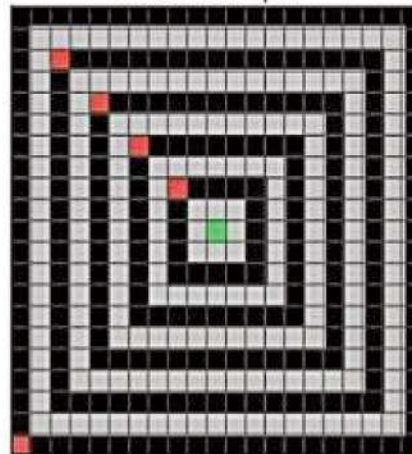
Oracle output



Select inside five nested frames: input



Oracle output



of computing power and money.

The AI that most people use every day, like ChatGPT, Claude or Google Gemini, relies on large language models that can work

The research and technical foundations of the team's work are in a paper posted on the arXiv preprint server.

A new approach to AI thinking

The team developed a new model called BDH-CQ.

BDH-CQ reads information step by step into a constantly updating internal memory. It then runs its reasoning inside an internal workspace before revealing its answer. As the authors explain in their paper, "Demonstrations

researchers used a benchmark called ARC-AGI-1. This test shows the AI a few visual examples on colored grids and asks it to figure out the hidden pattern to complete a new one.

The BDH-CQ model

team from Bielik AI and New York University separately tested the model and confirmed the results.

"BDH-CQ demonstrates that in-context learning and recurrent latent reasoning can coexist in a compact,

objects or several steps of visual reasoning.

The next steps for the researchers are to train larger versions of their model on more complex mathematical, linguistic and visual problems. - TX

## Six-legged robot learns to walk from a stick insect

Do you ever see an ant skittering across your kitchen counter and wonder how this little bug overcame all the obstacles in your home just to get there? Insects use their tiny nervous systems to walk with surprising dexterity—a skill that could be transferred to robots looking to do more productive things than just find bread-crumbs in your kitchen.

An international team of researchers led by Tohoku University in Japan and the Vidyasirimedhi Institute of Science and Technology (VISTEC) in Thailand trained AI on the walking cycle of a stick insect to find the best strategy for walking on different surfaces. This was then successfully implemented in a six-legged robot that learned to walk in just an hour.

In addition, the robot was able to navigate uneven terrain and adapt to a missing limb. At treacherous disaster sites where wheeled

robots are unable to enter, these adaptive six-legged robots could be genuine lifesavers.

The paper is published in

The team used an open data source containing just three or four steps of the insect. From those data, AI worked out two things at the same

Most work asks how to make a robot walk. This study asks what walking is for.

"We never told the robot

entirely on its own."

The robot learned to walk three times faster than with a standard reward. Giving the robot specific instruc-

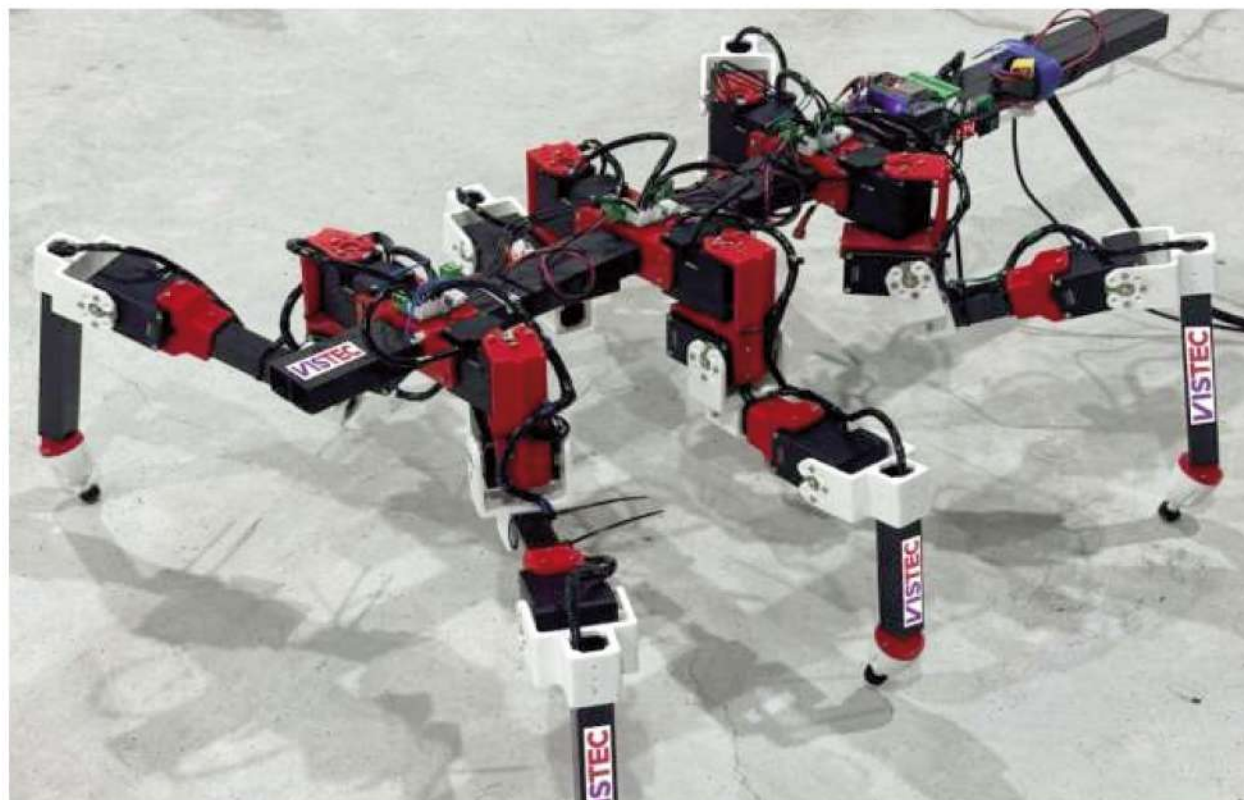
an animal teacher to learn from.

The robot learns in two categories: One part captures information that applies generally. The other part holds information that belongs to one particular machine. This split allows the results to be transferred to other robots. This means each new machine doesn't have to start from zero, which could lead to cheaper and faster production.

"It's remarkable that a few steps from a single stick insect were enough to find a principle that works on a machine five times its size," Owaki says.

The study investigated an inverse reinforcement learning method in which AI isn't explicitly told how to walk—it learns by trying to understand the goal of an ideal example. In the current study, the example is a stick insect, but other animals with high dexterity could also serve as models.

The researchers note that adding memory so the robot can learn and build experience over time will be their next step toward developing highly mobile robots that may one day aid in disaster response efforts. - TX



the journal Bioinspiration & Biomimetics.

Stick insects, named for their uncanny resemblance to small sticks, are a classic model for walking research.

time. First, what the insect seems to be aiming for when it walks (called the "reward"). Second, how the legs should move to achieve it.

how to walk," explains Dai Owaki, associate professor at Tohoku University. "We asked what the insect was trying to achieve, and let the robot chase the same thing

tions about how to move each leg is a slow design process that has to be redone for every new robot. In contrast, this approach removes that step by giving the robot