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Iran-Pakistan gas pipeline project back to life? Most say yes

Iran-Pakistan (IP) gas pipeline project is back to life? It seems so as the reports claim the landmark deal between Iran and Western nations has apparently brought the multibillion-dollar back to life.

An Iranian team, comprising legal and technical experts, will visit Pakistan soon after the general election to discuss the project with the political government, a report says.

Moreover, Pakistan now hopes to invite China and Russia to finance the project. They had backed out in the past for apparent reasons.

This deal will also help Pakistan import oil from Iran, which was suspended in 2010 after the US and European Union imposed sanctions on Tehran. As a result, international banks also refused to open Letter of Credit to import oil, and therefore supplies were suspended.

Yet another report said Pakistan would deliberate on further extension of the deadline of September 2024 to avoid Tehran's moving to the Paris-based International Arbitration, seeking a penalty of $18 billion, the sources in Petroleum Division further stated. In order to avoid the imposition of the penalty, Pakistan was already in contact with the Iranian side to find a way out and to avoid a legal battle in the International Court of Arbitration.

Now the officials believe the Geneva deal would help Pakistani and Iranian energy ministers, who are scheduled to meet for the first time in Turkey, to resume talks positively.

"We hope the agreement between Iran and the world powers would revive the confidence of countries like China and Russia to finance the IP gas pipeline project," a senior government official was quoted as saying in the report. The Pakistani government has been requesting the US to exempt the project from possible sanctions. During

Contd on page 2

Information technology services export shows over 5 pc growth

Pakistan earned $1,151.956 million by providing different information technology (IT) services to various countries during the first five months of the current fiscal year 2023-24.

This shows a growth of 5.89 percent as compared with the $1,087.929 million earned through the provision of services during the corresponding months of the last fiscal year 2022-23, the Pakistan Bureau of Statistics (PBS) reported. During the months under review, the export of computer services grew by 8.17 percent as it surged from US $864.429 million last year to US $935.016 million during July-November 2023.

Among the computer services, the exports of software consultancy services witnessed an increase of 46.67 percent, from $1.710 million to $2.508 million this year while the export of hardware consultancy services also surged by 4.15 percent, from $318.041 million to $331.231 million.

The export of repair and maintenance services however decreased by 40.74 percent from $1.485 million to $0.880 million whereas the export and imports of computer software services surged by 4.05 percent, from $239.473 mil¬lion to $249.179 million.

Meanwhile, the export of information services during the months under review dipped by 22.91 percent from $1.790 million to $1.380 million.

Among the information services, the exports of information-related services increased by 12.37 per cent, from $0.485 million to $0.545 million whereas the exports of news agency services however decreased by 36.02 percent, from $1.305 million to $0.835 million.

The export of telecommunication services dipped by 2.77 percent as these went down from $221.710 million to $215.560 million, the data revealed. Among the telecommunication services, the export of call center services increased by 11.11 percent during the months as its exports increased from $87.327 million to $97.026 million. In contrast, the export of other telecommunication services witnessed a decrease of 11.798 percent, from $134.383 million to $118.534 million during this year, the PBS data revealed. -- APP

Iran-Pakistan gas pipeline project back to life? Most say yes

Contd from page 1

his recent visit to the United States, Prime Minister Nawaz Sharif asked the Obama administration to exempt the project from sanctions, but he was non-committal.

Islamabad has been facing a delay in the important energy project as the government failed in securing funds for the project. The incumbent PML-N government was also forced to request the Iranian government to completely finance the project.

The first gas flow was scheduled for December 2014. However, the possibility of US sanctions caused such trepidation that even the Oil and Gas Development Company Limited (OGDCL) and the National Bank of Pakistan (NBP) had refused to provide funding for the project.

A petroleum ministry official said Islamabad had earlier approached Moscow and Beijing for a solvent solution – but even Russian banks backed out. "Now, we are hopeful that those institutions would have some confidence and they would sponsor the IP project after Iran and Western nations inked the agreement," another official said.

Likewise, Pakistan would now be able to import pipeline material and compressors required for its development. Officials claim that the country can now buy material at competitive rates as the Geneva deal has opened way to award the contract to any party.

As there was no progress on the IP pipeline, Tehran was also unable to develop its South Pars field, the source of the gas supply for the project. "But now, Iran will be able to develop the field by importing technology," said an official. "Moreover, the Geneva agreement would help improve trade ties with Iran."

Despite a lot of optimism, some officials are still skeptical. When contacted, one of the senior aides to the prime minister was cautious about drawing any conclusion at this stage. "It is too early to say anything. The impact of the relief in sanctions will be very limited."

He said Pakistan would continue to observe the situation closely and hoped that the accord on Iran's nuclear program would eventually lift all economic sanctions. -- ERMD

Bijli Ghar Engineering Review

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Saudi Arabia's NEOM: $500 bn project unveils new mega resort and nature sanctuary

Saudi Arabia's NEOM – the Kingdom's $500 billion mega business and tourism project –announced last month plans to develop a new mega luxury resort amid a restored sanctuary filled with animals and wildlife.

Spread across four square kilometers, 'Zardun' will be a "carefully restored haven filled with native plants and animals", which will feature an exclusive nature-based resort that will host four ultra-luxury signature buildings, NEOM said in a statement.

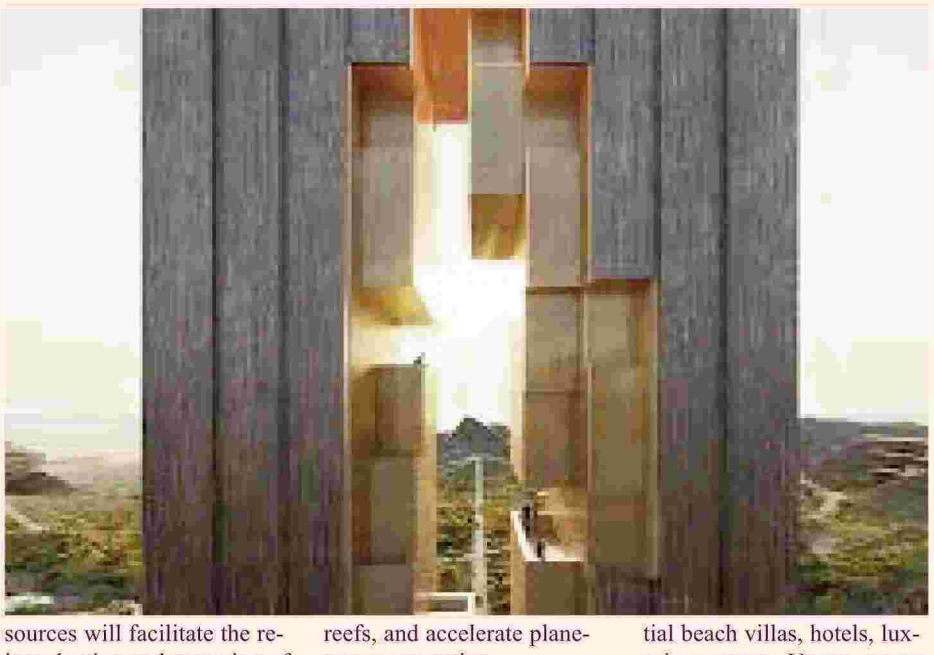
NEOM said Zardun will actively support the local ecosystem with a project that will regenerate the coral reef and restore the landscape by introducing native animals such as the Arabian oryx.

Stretching down from the mountains to the seashore, Zardun will comprise three boutique and themed hotels, offering a total of 100 rooms and suites and a 360-degree observation deck that takes in views down a valley and out over the sea.

Zardun will also offer trekking, mountain biking, rock climbing and a variety of other sports and leisure pursuits, including stargazing, meditation and yoga.

In addition, guests will also be invited to join in educational and field programs on nature protection, conservation and re-wilding.

"Zardun's sustainability strategy encompasses all aspects of environmental stewardship and will include the creation of a series of oases to support diverse habitats," said NEOM. "These life-giving water sources will facilitate the reintroduction and nurturing of native animals, tree and plant species."



"Along its coast, Zardun will support a vibrant ecosystem, including the conservation of coral reefs and other marine life in the Gulf of Aqaba, emphasizing NEOM's continuing commitment to environmental preservation."

According to the head of NEOM Nature Region, Dr. Paul Marshall, a vast conservation effort is currently underway across the Red Sea and Gulf of Aqaba, with experts utilizing AI to track critical marine species native to the area, safeguard its extensive essential coral reefs, and accelerate planetary regeneration.

Saudi Arabia's NEOM is working to swell the population of rare species and sea life at the futuristic business and tourism project, from sea turtles to sooty falcons, dugongs to dolphins.

The latest asset to be announced by NEOM, Zardun joins a host of sustainable tourism destinations within the Gulf of Aqaba.

They include mountain resort Aquellum, exclusive 'tourism escape' Siranna, the new sustainable tourism destination Leyja, which will be home to three boutique hotels led by luxury hospital group Habitas, Epicon, - which will feature residential beach villas, hotels, luxurious resort - Utamo, a new destination for art and entertainment which aims to host performances from the globe's biggest artists, and Norlana, an ultra-modern active lifestyle community.

Meanwhile, work is continuing on NEOM's flagship regions, including vertical city THE LINE, business hub Oxagon, luxury yachting destination Sindalah and the mountain resort of Trojena, which will all be powered entirely by renewable, clean energy. – AA/ERMD

The Engineers Pakistan to support engineer candidates contesting Feb 8 general elections

The Engineers Pakistan (TEP) will support all engineer candidates contesting the February 8 elections in the country. A TEP's moot said the organization will support them irrespective of their political affiliation.

A TEP communication says that the TEP Core Committee and Executive Council meeting was held on January 24, 2024, in Lahore. The following points were unanimously resolved:

1. TEP members & all Engineers will support Engineers candidates irrespective of their political affliction who are contesting in Forthcoming National/ Provincial Elections on February 08, 2024.

2. TEP fully supports the struggle of Power Sector Engineers for the Supply of energy units which is a part of their service contract. Since the court has given a stay against the government orders to stop supply. Thus, any deviation by WAPDA or Discos in noncompliance will be considered as contempt of court. Which they should avoid.

3. TEP is fully focused on the issues of young Engineers;

A) Unemployment of all Engineers will be addressed in six months.

B) Arrangements of Free Training for Engineering graduates which they couldn't get in universities to meet the present industry and world market demand.

C) Emergent improvement of the curriculum of respective disciplines of undergraduates to meet the global challenges.

D) Setting up incubation centers in all big cities of Pakistan for engineers' career development.

E) Arrange Exhibitions of Engineers' innovative projects to add value to the growth of Engineers and the country.■

Sir Syed University organizes '39th All Pakistan IEEEP Students' Seminar

Sir Syed University of Engineering and Technology (SSUET) in collaboration with the Institution of Electrical and Electronics Engineers in Pakistan (IEEEP) organized the 39th All Pakistan IEEEP Students' Seminar at the campus.

The event provided a platform to enhance industry-academia linkage and it was attended by the Chairman of IEEEP Karachi Centre, Engr. Khalid Pervez, Convener IEEEP Student Seminar, Dr. Shaheena Noor, Engr. Navaid Ansari, Engr. Ishtiaq ul Haq, Engr. Moonis Siddiqui, Deans, Chairpersons, faculty members, and the students. The Chief Guest of the seminar was the Chief People Officer, Karachi Electric, Mr. Rizwan Dalia.

Addressing the closing ceremony, Mr. Rizwan Dalia, Chief People Officer, K-Electric, said that we have not correctly evaluated the importance of engineers yet. Instead of an internship, students should properly join an industry for training during education for a 6-month or 1-year period. Young teachers also need to enhance their skills and knowledge through training in the industries. We are following the predictive model in our organization. Now we repair or replace transformers before they burst using the help of current technologies.

Speaking on the auspicious occasion, Prof. Dr. Vali Uddin, Vice Chancellor of Sir Syed University of Engineering & Technology said that the event has been an incredible journey of knowledge sharing, collaboration and collective commitment as we have witnessed students' presentations on key areas of Artificial Intelligence and Machine Learning, IoT, Cyber Security, TechControl Solution and Embedded System.

Elaborating further, he said that the students are the ambassadors of knowledge and progress and the projects designed by them went beyond institutional boundaries, contributing to the collective efforts of research and innovations in our institutions of higher education. Together we can transform the landscape of higher engineering education in Pakistan.

Registrar SSUET, Cdr. (R) Engr. Syed Sarfraz Ali said that the event has been a testament to the spirit of innovation, research, and collaboration, and provided a platform for the brilliant minds of our final-year students and Postgraduate scholars to showcase their research endeavors and contribute to the ever-evolving landscape of Electrical, Computer & Software Engineering, Computer Science, Electronics, Biomedical, and other ICT-related fields.

Presenting a vote of thanks, Prof. Dr. Muhammad Aamir, Dean, Faculty of Electrical & Computer Engineering, said that the two burning issues demand our collective awareness in the contemporary world. In Pakistan, the current prevalence of B thalassemia is staggering, ranging from 5% to 8%, constituting almost 5% of the total global cases. These alarming statistics emphasize the urgent need for increased awareness and educational campaigns to address this health challenge. The next challenge is climate change which is affecting our communities, ecosystems, and the overall sustainability of our planet. As a responsible academic community, we need to incorporate sustainable practices in our research and daily lives.

In the end, the results of the competition were announced in 2 categories, Gold and Silver. The winners of the Gold category included Rohail Rasheed (SSUET), Muhammad Basit (Mehran University), and Mahnoor Mahmood (NUST), while the winners of the Silver category were Kashan Khan (SSUET), Jawad Malik (SSUET) and Manahil Kamal (Riphah University). Sir Syed University won the running Trophy because its students achieved the highest overall marks in the paper presentations among the top 6 positions. -- PR

Distinction for Ex-Chairman WAPDA Syed Raghib Abbas Shah

Congratulations to Dr. Raghib Abbas Shah on receiving his Doctorate at the Convocation at Mehran University of Engineering and Technology, Jamshoro. It's a significant achievement in his academic journey.

Mustafa Habib Sadiqi joins ER

Mustafa Habib Sadiqi is a seasoned journalist with a rich career spanning various esteemed media outlets. Starting at Jang London Desk, he held pivotal roles, including Editor positions at ARY News, Aaj News, and Dunya, making significant contributions to the field.

His international experience includes serving as News Editor for the official Saudi Arabian government TV channel KSA2 in Riyadh. During this time, he produced a notable report on the life of Saudi King Abdullah, showcasing his prowess in storytelling and journalism. His influence extended to establishing the first Urdu channel in Saudi Arabia and producing the inaugural Urdu bulletin.

Upon returning to Pakistan, Sadiqi took on the role of Editor Forum at Dunya News, organizing over 500 forums on national, economic, political, and social issues. These forums, addressing topics like Blue Economy, Occupied Kashmir, and opportunities for Pakistani students abroad, garnered recognition from the government and involved Pakistani ambassadors, fostering direct interactions with students.

His dedication to social issues brought a fresh perspective to print journalism, and in 2021, he hosted the official partner event of the Dunya Forum on Pakistan Navy's AMAN Exercise, earning appreciation from Navy commanders. Mustafa Habib Siddiqui's career reflects a commitment to insightful reporting and facilitating meaningful discussions on diverse subjects ■

NESPAK Breaks Ground in 40th Country: Papua New Guinea; wins five United Nations' projects

NESPAK, a leading global consultancy firm, takes a significant step towards achieving the United Nations' 2030 Sustainable Development Goals (SDGs) by securing five projects and signing two Long Term Agreements (LTAs) with the United Nations Office for Project Services (UNOPS), it was stated by Mr. Zargham Eshaq Khan, Managing Director NESPAK.

The LTAs, awarded to NESPAK, span across the Asia Region and Pacific/Oceania Region, leading to the firm's presence in its 40th country, Papua New Guinea. In a groundbreaking move, NESPAK has actively pursued projects contributing to the UN's SDGs both within Pakistan and globally. The comprehensive LTAs with UNOPS cover a wide spectrum of initiatives aimed at sustainable development,

with a particular focus on infrastructure, environmental impact assessments, climate adaptation, and community engagement.

NESPAK has successfully secured five UNOPS projects under these LTAs, including two in Papua New Guinea and three in Pakistan. In Papua New Guinea, NESPAK is committed to providing services such as infrastructure mapping, electronic-waste management, construction of electronic waste plant facilities, training centers, port storage structures, environmental and social impact assessments, climate adaptation, and community engagement in key urban centers, including Port Moresby, Lae City, Mount Hagen, and Daru Island.

NESPAK's global initiatives, especially in developing nations like Papua New Guinea, highlight the firm's continuous leadership in addressing contemporary challenges related to sustainability, climate change, environmental issues, and the empowerment of underprivileged stakeholders.

In addition to its international endeavors, NESPAK is actively involved in critical projects within Pakistan. These include the structural assessment of Basic Health Units (BHUs) in flood-affected areas of Sindh and Balochistan, as well as the design of Parking Structures for ten Public Health Engineering Department (PHED) Labs in KPK and Punjab. NESPAK's technical assessment of BHUs plays a crucial role in the reconstruction and restoration of health infrastructure in the affected provinces, garnering attention and support from international donor agencies.

Under the LTA of the Asia Region, NESPAK has been awarded the 'Improved Access to Water and Sanitation Project in Tank and Umerkot.' This project aims to upgrade water and sanitation infrastructure to benefit underprivileged communities in these areas. NESPAK's commitment to social responsibilities is evident in its efforts, where technical expertise combines with compassion to make a lasting impact on the well-being of deserving communities.

NESPAK's expansion into Papua New Guinea and the successful procurement of UNOPS projects underscore the firm's dedication to driving positive change on a global scale. The consultancy's role in shaping a sustainable and inclusive future remains unwavering as it continues to lead in addressing the world's most pressing challenges. -- LAHORE: PR

پاکستان انجینئرنگ کونسل (پی ای سی) کی پاکستان ڈویلپمنٹ کمیٹی کی افتتاحی تقریب جس میں آخری سال انجینئرنگ ڈیزائن پروجیکٹ نمائش اسلام آباد میں منعقد ہوئی اس موقع پر پی ای سی کے چیئرمین انجینئر نجیب ہارون کے ہمراہ کنسٹرکٹرز ایسوسی ایشن وائس سندھ چیئرمین ایس ایم نعیم کاظمی، انجینئر اظہر السلام، انجینئر عبدالرحمٰن، انجینئر محسن کے ہمراہ گروپ فوٹو۔■

بقیہ: داؤد انجینئرنگ یونیورسٹی میں فن تعمیر سے متعلق انٹرنیشنل کانفرنس

نے آرکیٹیکچر کے میدان میں اپنا لوہا منوایا، اور دبئی سمیت دنیا بھر میں تاریخی انفرااسٹرکچر کا حصہ رہے۔

نگراں وزیراعلیٰ سندھ نے مزید کہا کہ داؤد یونیورسٹی کی تعمیر نو اور معیار کو دیکھ کر مطمئن ہوں، دعوت نامہ ملا تو میں کانفرنس کے عنوان سے متاثر ہوا، عنوان کا جائزہ لینے کی کوشش کی اور کچھ حقائق جان کر حیران رہ گیا، تکنیکی ترقی اور روزمرہ کی معمولات زندگی میں بتدریج بدلاو آرہا ہے، مصنوعی ذہانت کے کردار نے بین الضابطہ تعاون پر بحث کو ضروری بنا دیا ہے، مجھے اس کانفرنس کے نتائج سے بہت زیادہ توقعات ہیں، میں ملک اور بیرون ملک کے ماہرین کی سفارشات کا بے تابی سے منتظر ہوں، کانفرنس میں عالمی مقررین کی شرکت پر انکا شکریہ ادا کرتا ہوں، امید ہے کہ وہ داؤد یونیورسٹی سے کچھ اچھی یادیں لے کر گھر واپس جائیں گے، تمام شرکاء پر زور دیتا ہوں کہ وہ اس موقع سے فائدہ اٹھائیں، کانفرنس کیلئے فنڈز فراہم کرنے پر چیئرمین ایچ ای سی سندھ کا شکریہ ادا کرتا ہوں، شاندار تقریب کی کامیابی پر وائس چانسلر پروفیسر ڈاکٹر ثمرین حسین، چیف آرگنائزر ڈاکٹر یاسرہ پاشا، ٹیکنیکل کمیٹی کے کنوینر پروفیسر عبدالوحید بھٹو اور پوری ٹیم کو مبارکباد پیش کرتا ہوں۔

اختتامی خطاب کرتے ہوئے وائس چانسلر انجینئر پروفیسر ڈاکٹر ثمرین حسین نے نگراں وزیراعلیٰ سندھ جسٹس (ر) مقبول باقر کی کانفرنس آمد کا شکریہ ادا کرتے ہوئے کہا کہ یونیورسٹی کے امور چلانے میں آپ کے تعاون سے ہمیں سہولتیں ملیں، میں چیئرمین سندھ ہائر ایجوکیشن کمیشن ڈاکٹر طارق رفیع کا بھی شکریہ ادا کرتی ہوں جو ہمیشہ ہماری مدد کیلئے موجود رہتی ہے، ڈاکٹر طارق رفیع کی اصلاحات کی وجہ سے اب یونیورسٹیز کے فنڈ تاخیر کا شکار نہیں ہوتے۔ وائس چانسلر نے کانفرنس کے شرکاء کو مخاطب کرتے ہوئے کہا کہ جیسا کہ نگراں وزیراعلیٰ سندھ نے کہا کہ انہیں کانفرنس بہت امیدیں ہیں تو شرکاء اپنے آئیڈیاز کے ساتھ سوالات و جوابات کا سلسلہ جاری رکھیں تاکہ کانفرنس سے موثر تجاویز سامنے آسکیں۔ انہوں نے طلباء کو مخاطب کرتے ہوئے کہا کہ یہ پوری کانفرنس آپ کیلئے ہے، سنجیدگی سے تمام شرکاء کو سنیں۔

آخر میں وائس چانسلر نے نگراں وزیراعلیٰ سندھ، چیئرمین ایچ ای سی سندھ، کلیدی مقررین، ملکی و غیر ملکی مہمانوں کو اعزازی شیلڈ پیش کی۔ افتتاحی تقریب کے بعد کانفرنس کے 2 سیشن منعقد کئے گئے جس میں ملکی اور غیر ملکی مقررین نے اپنی پریزنٹیشن پیش کرنے کے ساتھ ساتھ پینل گفتگو بھی کی۔■

NED exhibition features diverse collection of 43 IoT-based projects

The Department of Mechanical Engineering introduced the AI and IoT course as an elective in the Mechanical Engineering Curriculum last year.

In support of this initiative, the Intelligent Mechanical Engineering Systems Lab (IMEC) was established within the department. Recently, IMEC Lab hosted the 2nd AI and IoT Exhibition on January 11th, 2024, presenting an impressive showcase of projects and posters developed by students. The event was further enriched with the inclusion of the AI & IoT Quiz competition, adding an exciting dimension to the overall showcase.

This year's exhibition featured a diverse collection of 43 IoT-based projects across four different themes: Smart Energy Management System, Smart Parking System, Water Suction System, and Air Monitoring System. These projects integrated AI algorithms with three distinct datasets. The projects, characterized by their innovation and diversity, garnered widespread attention and appreciation, showcasing the students' dedication and hard work. Notably, students also presented Dashboards on Tableau as part of their contributions.

A significant milestone was reached with the successful securing of sponsorship from the ASHRAE Pakistan Chapter, highlighting the growing recognition of the program's importance and impact.

In expressing gratitude for the collective effort, organizers, including Associate Professor Dr. Haider Ali (In charge of IMEC and course teacher) and Lecturer Syed Umair Hassan Kazmi (course teacher), acknowledged key figures who played pivotal roles in the success of the event. Special recognition was extended to Vice Chancellor Dr. Sarosh Hashmat Lodi, Pro-Vice Chancellor Prof. Dr. Muhammad Tufail, CEO of Engineering Services Mr. Mohammad Abbas Sajid, Dean of Mechanical and Manufacturing Engineering Prof. Dr. Syed Amir Iqbal, and Chairman of the Department of Mechanical Engineering Prof. Dr. Mubashir Ali Siddiqui for their unwavering support and presence at the exhibition.

The organizers expressed immense pride in the students' accomplishments and extended their best wishes for their future endeavors. The event stands as a testament to the continuous growth and excellence in the field of AI and IoT at NED University.■

Ethical Considerations in Engineering: Balancing Innovation with Sustainability and Responsibility

Engr. Dr. Muhammad Nawaz Iqbal

Given that engineers have a significant influence on how the world is shaped, ethical issues in the field are quite important. In addition to leading innovation, engineers also have a social responsibility, safety, and sustainability component to their profession. Infrastructure design and construction are areas where the moral repercussions of engineering projects are most clear. When designing their projects, engineers have to take the environment's long-term effects into account and use sustainable materials and methods. To encourage environmental responsibility, this entails evaluating the ecological impact of building projects, avoiding ecosystem disruption, and implementing green design principles. Technological innovations bring up ethical issues that engineers have to deal with, particularly in areas like biotechnology and artificial intelligence. To avoid discriminating results and unforeseen repercussions, it is imperative to guarantee that AI systems are impartial, open, and devoid of prejudice. Similar to this, bioengineers have to deal with moral issues pertaining to bioethics, genetic engineering, and the proper application of cutting-edge biotechnologies. Engineering's top ethical priority is safety, especially in sectors like aircraft, automobiles, and civil engineering. The public, employees, and end users' safety must always come first for engineers. To satisfy this ethical responsibility, one must conduct thorough testing, comply with safety regulations, and make a commitment to ongoing development.

Engineering endeavors frequently have societal repercussions that impact both people and communities. Engineers must address any socioeconomic disparities that may occur as a result of their projects, take into account the requirements of varied stakeholders, and be involved in significant outreach to the community as a matter of ethics. Ensuring that technical initiatives favorably impact society requires transparent and participatory decision-making procedures.

An essential ethical factor in engineering is environmental sustainability. The responsibility of creating solutions to lessen pollution, slow down climate change, and encourage sustainable practices is falling more and more on engineers. To reduce the influence on the environment, this involves designing systems that are energy-efficient, using waste reduction techniques, and utilizing renewable energy sources. One urgent ethical issue is the proper use of developing technology. Engineers working in domains like robots, autonomous systems, and artificial intelligence have to deal with concerns about security, privacy, and the possible social effects of their innovations. To help engineers responsibly navigate the difficult terrain of technological innovation, ethical frameworks and norms are crucial. Global ethical issues are taken into account, particularly in undertakings with international ramifications. When working on major energy projects, telecommunications networks, or infrastructure projects, engineers have to manage geopolitical difficulties and make sure their work complies with international laws and ethical standards. Respecting the environmental, social, and cultural norms of other societies is a necessary part of this.

One of the most important ethical factors in engineering is professional honesty. Since the public's welfare is entrusted to engineers, they have an obligation to uphold honesty, accountability, and transparency in their work. This entails discussing hazards, appropriately disclosing findings, and maintaining moral principles even in the face of any conflicts of interest.

In engineering projects where large volumes of data must be collected, analyzed, and stored, ethical data use is essential. When it comes to safeguarding the confidentiality and integrity of data, engineers need to be on the lookout for inappropriate use and noncompliance with legal and ethical guidelines. This is especially important for industries like IoT, smart infrastructure, and data analytics. It is the ethical duty of engineers to consider the societal effects of their designs, especially when it comes to inclusion and accessibility. This entails creating systems and products that cater to a wide range of user needs, making sure that technology is usable by people with impairments, and actively working to reduce the social inequalities that are made worse by technical breakthroughs. The duty to pursue lifelong learning is included in the moral considerations in engineering. In an ever-changing technical environment, engineers need to keep up with the latest developments in ethics and continuously improve their knowledge and abilities to handle these difficulties in a responsible manner. In light of changing engineering methods, maintaining ethical standards requires a commitment to professional development.

The impact of engineering on society is greatly influenced by ethical considerations, which are complex and multidimensional. The need for innovation must be balanced with engineers' dedication to sustainability, accountability, and the welfare of people and communities. It takes constant introspection, adherence to moral standards, and proactive dedication to using engineering to improve the world to successfully navigate these ethically challenging situations.■

Bridging the Gap

IEEE EPICS Smart Gloves - Enabling Communication for Deaf and Dumb

Imagine a world where people with certain disabilities effortlessly express themselves and are understood by others, regardless of spoken language. This vision becomes reality with the IEEE EPICS-funded Smart Gloves Project.

This project is led by Engr. Dr Sadiq Ali Khan and his team including Engr. Dr Asim Ali Rizvi, Engr. Zakir Sheikh, and Engr. Dr Kashif Sheikh to develop and design an innovative project empowering the deaf and dumb to communicate through sign language. Deaf and mute individuals often face challenges expressing themselves and understanding others, creating a communication gap that affects their daily lives. This innovative project aims to empower this community by developing a technologically advanced solution that enables them to communicate seamlessly using sign language.

There are certain challenges faced during the development of this project, including the unavailability of hardware in Pakistan, the import of items in a financially crunched situation, and the integration of systems to work and perform accurately. There are also some social challenges being faced during the testing of the project, specifically the interaction of the focus groups with the system, the lack of sign language understanding, and the quick adaptive understanding of the testers with the system.

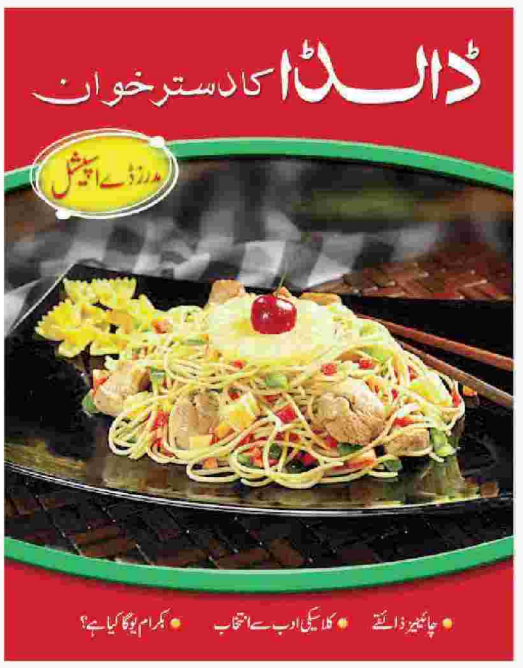
Contd on page 9

Sales blog for or young engineers & entrepreneur's

Content Marketing Vs Traditional Marketing

Muhammad Tariq Huq | ESL

Content marketing and traditional marketing are two distinct approaches to promoting products or services. While traditional marketing focuses on directly selling, content marketing aims to build an environment, to sell the idea creating a connection of the product with the audience.For example, a renowned tractor manufacturer instead of advertising its tractors chose to train farmers on how to increase per acre yield! A leading tyre manufacturer instead of marketing its tyres, spent its marketing budget on promoting countryside recreation! It first created demand indirectly and then catered to it! In Pakistan, classic example is that of "dalda ka dastarkhwan"! It subtly markets its vegetable oil by describing recipes of various dishes. It also presents quick fixes of day to day domestic problems e.g Zubaida Aapa Ke Totke etcThere was a brilliant group of MBA graduates who helped companies to succeed. They operated with the name "The Innovators." Known for its expertise in the industrial sector, "The Innovators" sought to promote a new line of highly priced industrial equipment on behalf of a distribution company (say ESL). The distribution company faced the challenge of marketing expensive machines to the textile industry."The Innovators" recognized that traditional marketing alone would not be sufficient for this high-end equipment. Instead, they decided to employ a content marketing strategy that would not only showcase the capabilities of the machines but also perform environmental building."The Innovators" began by publishing case studies on the distribution company website, their newsletters, LinkedIn etc. Most of these articles were not directly related with the product but focused on image



building of the distributor and the manufacturer it represented. The product related articles explained how these machines could optimize production. By providing detailed technical specifications and real-world examples, "The Innovators" aimed to educate their audience about the value and potential of these machines.To further enhance their content marketing efforts, "The Innovators" directed the distribution company to professionally solicit support of the industry experts and consultants who had firsthand experience of the industrial equipment. By including the endorsements of these experts in the company's websites, articles etc, "The Innovators" aimed to build credibility among the target audience in the textile industry."The Innovators" also organised factory visits to the equipment manufacturer and it's worldwide textile customers, held conferences and training seminars, where they invited textile owners and professionals. Relationship building was one of the main purposes! One particular success story spearheaded by "The Innovators" was about a struggling textile company that was using outdated machinery and was on the verge of shutting down due to inefficiencies and high OPEX.Through their content marketing efforts, "The Innovators" successfully helped to sell not only the high end equipment to the ailing unit but also the solution of staying ahead in the competition.In the end, "The Innovator" not only helped manufacturers understand the value and potential of these highly priced industrial machines but also played a crucial role in driving industry-wide progress and innovation. Their content marketing approach proved to be a powerful tool in selling the idea behind the equipment and inspiring manufacturers to embrace cutting-edge technology for a brighter future.■

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Contd from page 8

However, intense training and a dedicated team effort made it possible.

The Smart Gloves solution is not only an engineering design but an approach to solving an unaddressed social problem using a unique project. The use of feedback sensors in the gloves detects hand gestures and translates them into corresponding sign language symbols. Meanwhile, the ATMEGA-based microcontroller with enhanced programming support provides the learning algorithm to identify the gesture pulses with high accuracy. The text-to-sign conversion input is used to translate the pulse-based input into sign language symbols. The detected sign language symbol has now been relayed as a speech using a speaker with EMIC2 module support, a module that is necessarily used to create a bridge between the signal and the speech.

To us, this project has many impacts significantly related to empowerment by providing the deaf and dumb with a voice, enhancing their independence, and promoting social inclusion. It also embraces an enhanced learning tool whose intuitive interface facilitates sign language learning for both the deaf and hearing communities. Furthermore, it also provides accessibility to the needy because Smart Gloves offer a discreet and portable communication solution for diverse environments.

Beyond just developing a communication bridge between the deprived and others, these smart gloves have the potential to expand into other applications, such as virtual reality gaming and sign language instruction. In another way, if funded more by fostering empathy and understanding, the project can be built on mass production that will surely bridge the gap between the deaf and dumb and the hearing world.

In the end, we are thankful for sponsoring the IEEE EPICS Smart Gloves project to help the community actively seek collaborators and support to bring this revolutionary technology to life. By joining the effort, we believe that we can contribute to creating a more inclusive and communicative world for the deaf and dumb.■

How sustainability can be achieved in 'Textile Processing Industry' in Pakistan

By Adnan Riaz & Zahid Kamal

Achieving sustainability in Pakistan as in other parts of the world involves implementing practices that minimize environmental impact; conserve resources and promote social responsibility. Here are several strategies that the dyeing and printing industry in Pakistan can consider to enhance sustainability.

1- WATER MANAGEMENT

. Invest in water-efficient dyeing and printing processes.

. Implement water recycling and treatment systems to minimize water consumption and reduce pollution.

. Adopt best practices for water conservation and pollution prevention.

. Adopt advanced dyeing and printing machines that utilize water efficiently

2- ENERGY EFFICIENCY

. Upgrade Machinery and equipment to improve energy efficiency.

. implement an energy management system

. consider the use of renewable energy sources such as solar or wind power and implement an energy monitoring system to identify areas of improvement.

3- MATERIAL SELECTION

. Opt for eco-friendly dyes and chemicals that are less harmful to the environment

. Explore the use of sustainable and biodegradable materials.

. Reduce the use of hazardous substances in dyeing and printing process

. Explore and incorporate biodegradable materials into production to reduce environmental impact

4- WASTE REDUCTION

. Implement a waste management system to reduce, reuse, and recycle waste.

. Encourage the use of digital printing techniques which often generate less waste compared to traditional method

. Explore options for the recovery and reuse of byproducts.

5- CERTIFICATION AND STANDARDS

. Adhere to international sustainability standards such as ISO 14000 (environmental) and Oekotex standard (textile sustainability)

. Obtain certifications from verified bodies that verify environmentally responsible practices

6- RESEARCH AND DEVELOPMENT

. Invest in research and development to discover and implement innovative sustainable technology.

. Collaborate with academic institutions and industry experts to stay updated on the latest sustainable practices.

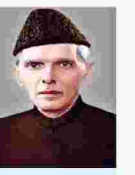
7- SUPPLY CHAIN MANAGEMENT

. Collaborate with suppliers who adhere to sustainable practices.

. Implement traceability systems to monitor and improve the sustainability of the entire supply chain

By adopting a comprehensive approach that addresses environmental, social, and economic aspects the dyeing and printing industry in Pakistan can contribute to a more sustainable and responsible future. Collaboration among industry stakeholders, government bodies, and communities is crucial for the successful implementation of sustainable practices■

Professional Club Engineering Review



فرمانِ قائداعظمؒ

ایمان ، اتحاد ، تنظیم

آزادی اور قربانی

پس جہاں تک ممکن ہو ہمیں اپنے حریفوں کو سمجھانے کے لئے عقل اور دلیل سے کام لینا چاہیے۔ میں جانتا ہوں کہ دلیل اور عقل ہمیشہ ہی کامیاب نہیں ہوتیں لیکن ہمیں اپنی طرف سے پوری کوششیں کرنی چاہیئے۔ جو لوگ فی الحال لاہور کی قرارداد پاکستان کے خلاف ہیں، ہمیں ان کے دل میں غیر ضروری تلخی پیدا نہیں کرنی چاہیے۔ آخر ہمیں ضرورت ہی کیا ہے؟ مجھے پورا پورا یقین ہے کہ ہمارے یہی حریف ایک نہ ایک دن محسوس کر لیں گے کہ ہندوستان کے انتہائی پیچیدہ مسئلے کا واحد اور بہترین حل قیام پاکستان ہے کہ جس کے قیام کی نظیر پوری دنیا کی تاریخ میں نہیں ملتی۔

(پنجاب مسلم سٹوڈنٹس فیڈریشن۔2 مارچ 1941ء)

آوازِ اقبال

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

تو شناسائے خراش عقدۂ مشکل نہیں
اے گل رنگیں ترے پہلو میں شاید دل نہیں
زیب محفل ہے شریک شورش محفل نہیں
یہ فراغت بزم ہستی میں مجھے حاصل نہیں
اس چمن میں، میں سراپا سوز و ساز آرزو
اور تیری زندگانی بے گداز آرزو
توڑ لینا شاخ سے تجھ کو مرا آئیں نہیں
یہ نظر غیر از نگاہ چشم صورت میں نہیں

آہ! یہ دست جو اے گل رنگیں نہیں
کس طرح تجھ کو یہ سمجھاؤں کہ میں گل چیں نہیں
کام مجھ کو دیدۂ حکمت کے الجھیڑوں سے کیا
دیدۂ بلبل سے میں کرتا ہوں نظارہ تر

کراچی بورڈ کا تعلیمی بحران

کیا کراچی بورڈ سے انٹر سائنس اول کا امتحان دینے والے طلبہ کے لیے پیشہ وارانہ تعلیمی اداروں کے دروازے بند ہو جائیں گے؟ پہلے یہ سوال اخبارات کے صفحات پر نظر آیا اور پھر کراچی پریس کلب کے سامنے طلبہ اور ان کے والدین نے احتجاج کرتے ہوئے اٹھایا۔ اس سال بھی حسب روایت انٹر میڈیٹ سال اول کے نتائج بہت دیر سے آئے۔ انٹر سائنس پری میڈیکل کا نتیجہ 36 فیصد رہا۔ انٹر سائنس پری انجینئرنگ کا نتیجہ 34 فیصد کے قریب رہا۔ انجینئرنگ اور میڈیکل کی تعلیم کے اداروں میں انٹر میڈیٹ سال دوئم کے نتائج دیر سے آنے کی بناء پر وقت پر سیشن شروع کرنے کے لیے سال اول کے نتائج کی بنیاد پر مشروط داخلے دیے۔ پیشہ وارانہ اداروں میں داخلہ ٹیسٹ دینے کے لیے 60 فیصد سے زائد نمبر حاصل کرنا ضروری ہے، اگرچہ کراچی بورڈ کے نتائج کے مطابق دونوں فیکلٹیز کا نتیجہ 64 فیصد اور 60 فیصد رہا۔ اس بناء پر کراچی بورڈ سے پاس ہونے والی اکثریت میڈیکل اور انجینئرنگ کے اداروں میں نا صرف داخلوں سے محروم ہو جائے گی بلکہ چین، روس، یورپی ممالک، امریکا اور کینیڈا کی یونیورسٹیوں میں کم اوسط نمبر ہونے کی وجہ سے داخلوں سے محروم بھی ہو جائے گی۔

کراچی پریس کلب پر ہونے والے مظاہروں میں طلبہ کے علاوہ طالبات کی بڑی تعداد بھی شریک ہو رہی ہے۔ ان احتجاجی طلبہ کا کہنا ہے کہ ان میں سے بیشتر طلبہ نے میٹرک کے امتحانات میں 80 سے 90 فیصد نمبر حاصل کیے مگر اب ان میں سے کئی طلبہ کو تین تین پرچوں میں فیل کر دیا گیا۔ اس مظاہرے میں شریک بعض طلبا و طالبات اتنے جذباتی تھے کہ وہ اس بات کا بلا روک ٹوک اظہار کر رہے تھے کہ ان کا مستقبل تباہ ہو گیا تو وہ اس بناء پر ان کے پاس خودکشی کرنے کے سوا کوئی اور چارہ نہیں ہوگا۔ جناح سندھ میڈیکل یونیورسٹی کے وائس چانسلر ڈاکٹر سراج میمن نے اس صورتحال پر تبصرہ کرتے ہوئے کہا کہ پری میڈیکل میں داخلے کے لیے کم از کم 60 فیصد نمبر لازمی ہوتے ہیں، اگر نتائج داخلہ کے کم از کم نمبروں سے کم ہیں تو اس کے اثرات میڈیکل کے تعلیمی اداروں کے داخلوں پر پڑیں گے۔ ایک سائنس کالج کے پرنسپل نے کہا کہ عام خیال یہ ہے کہ طالب علم سائنس کے بنیادی مضامین میں انتہائی کم نمبروں سے پاس ہوتے ہیں۔ وہ سال دوئم میں اتنے زیادہ نمبر حاصل نہیں کر پائے کہ 60 فیصد یا اس سے زیادہ کا ہدف حاصل کریں۔ اس صورت میں طلبہ سال اول کے مضامین کا دوبارہ امتحان دیتے ہیں، اگر پھر سال اول کا نتیجہ کم ہی رہا تو وہ اعلیٰ تعلیم سے یقینی طور پر محروم رہیں گے۔

ایک رپورٹ میں کہا گیا ہے کہ کراچی میں سائنس کی تعلیم کے کچھ کالجوں کا معیار ہمیشہ بلند رہا ہے۔ ان کالجوں میں پی ای سی ایچ ایس کالج، سرسید کالج، گورنمنٹ کالج ایس آر مجید، سینٹ لارنس کالج، آدم جی کالج، ڈی جے سائنس کالج، اسلامیہ سائنس کالج، گورنمنٹ سائنس کالج، کینٹ اور پی ای سی ایچ ایس فاؤنڈیشن شامل ہیں۔ بہت سے تعلیمی بورڈز میں برسوں سے ایڈہاک بنیادوں پر تقرریوں سے کام لیا جا رہا ہے جس سے تعلیمی بورڈز کی مجموعی کارکردگی متاثر ہو رہی تھی۔ پیپلز پارٹی کی حکومت نے اپنی آئینی مدت کے آخری دنوں میں کچھ بورڈز کے چیئرمین، سیکریٹریز اور ناظم امتحانات کے تقرر کیے تھے۔ ان تقرریوں کے بارے میں یہ خدشہ ظاہر کیا جاتا تھا کہ یہ تقرریوں کا عمل شفاف طریقہ سے نہیں ہو رہا۔ سندھ ہائی کورٹ نے بورڈز کے بعض چیئرمین کے تقرر کو غیر قانونی قرار دیا مگر ان حکومتوں نے ان تقرریوں پر غور و خوض کیا اور کسی ذہین افسر نے یہ تجویز پیش کی کہ ڈویژنل کمشنروں کو تمام بورڈز کے چیئرمین کا چارج دیدیا جائے تو اب ڈویژنل کمشنر بورڈز کے نگراں بن گئے۔ یہ ایک ایسا فیصلہ تھا کہ جس کی صرف مذمت ہی ممکن ہے۔ پھر یہ رپورٹیں بھی شائع ہوئیں کہ کراچی انٹر میڈیٹ بورڈ کے سیکریٹری اور ناظم امتحانات کے عہدے خالی پڑے ہیں۔ بعض رپورٹروں نے اپنی رپورٹس میں سارا معاملہ ڈویژنل کمشنر کا بورڈ کا چیئرمین بننے سے منسلک کر دیا، یہ بات حقیقت سے بالکل خلاف ہے۔

تمام ماہرین اس بات پر متفق ہیں کہ امتحانات میں بورڈ کے چیئرمین کا امتحانات میں کوئی کردار نہیں ہوتا۔ اردو یونیورسٹی کے سینئر استاد پروفیسر اصغر علی کا کہنا ہے کہ امتحانات کے انعقاد اور اس کے نتائج کا سارا کام ناظم امتحانات کرتا ہے۔ کنٹرولر امتحانات اور ان کا ذیلی عملہ ہی ممتحن کا تقرر، امتحانی پرچہ کی تیاری اور امتحانی کاپیوں کی جانچ کی نگرانی اور امتحانی نتائج کے اجراء کا ذمے دار ہوتا ہے اس بناء پر کمشنر پر اس کی ذمے داری عائد نہیں ہوتی مگر ماہرین اس بات پر بھی متفق ہیں کہ کمشنر کے پاس بے تحاشا ذمہ داریاں ہیں۔ ان کے بجائے امتحانی کاموں کا برسوں تک فریضہ انجام دینے والے سینئر اساتذہ میں سے کسی استاد کو یہ ذمے داری سونپ دینی چاہیے۔ سینئر اساتذہ کا کہنا ہے کہ امتحانی کاپیوں کی جانچ کا کام کالجوں کے اساتذہ کرتے ہیں۔ اساتذہ کو امتحانی کاپیاں فراہم کرنے سے قبل کاپیوں پر خفیہ کوڈ تحریر کیا جاتا ہے۔ پہلے امتحانی کاپیوں کی جانچ پڑتال کے لیے سینٹر بنائے جاتے تھے مگر اساتذہ کو اب گھروں پر کاپیاں چیک کرنے کے لیے دی جاتی ہیں۔ ایک سینئر پرنسپل کا مشاہدہ ہے کہ نئے بھرتی ہونے والے اساتذہ کا معیار انتہائی پست ہے اور ان میں کاپیوں کی جانچ پڑتال کی اہلیت ہی نہیں ہے۔ اس معاملے کا گہرا تعلق کالجوں کی تعلیم سے مختلف ہے۔ اس حقیقت کا اعتراف کرنا چاہیے کہ اساتذہ باقاعدہ کلاس لینے کلاس رومز میں نہیں آتے، وہ طلبہ کو کوچنگ سینٹروں میں بلاتے ہیں جہاں لاکھوں روپے فیس کے وصول کیے جاتے ہیں۔ کالجوں میں طلبہ کی سو فیصد حاضری پر سختی سے عملدرآمد ہوگا، تو امتحانات میں بہتر نتائج مرتب ہو سکتے ہیں۔ بعض عناصر اس مسئلے کو لسانی شکل دینے کی کوشش کر رہے ہیں۔ ان کا کہنا ہے کہ کراچی کے طلبہ کے ساتھ طے شدہ منصوبے کے تحت زیادتی ہوئی ہے۔ دو سیاسی جماعتوں کے رہنماؤں نے اس مسئلے کو انتخابی مسئلہ بنانے کی کوشش کی ہے۔

کراچی بورڈ نے اس مسئلے پر تحقیقات کے لیے کور کمیٹی تشکیل دی ہے اس کی اہلیت پر بھی سوالات اٹھائے جا رہے ہیں۔ اس مسئلے کا حل ایک شفاف تحقیقات میں مضمر ہے۔ سندھ کے نگران وزیر اعلیٰ کو چاہیے کہ وہ سندھ ہائی کورٹ کے ایک جج پر مشتمل ایک اعلیٰ تحقیقاتی کمیشن کے قیام کے لیے گورنر کو تجویز پیش کرے جس میں ریٹائرڈ پرنسپل اور سینئر اساتذہ کو شامل کیا جائے۔ یہ کمیشن اگر محسوس کرے تو دوسرے بورڈ کی کاپیوں کی جانچ پڑتال کے بارے میں بھی تحقیقات کرے۔ سیاسی جماعتوں کا فرض ہے کہ اپنے انتخابی منشور میں انفارمیشن ٹیکنالوجی کے جدید آلات کے ذریعے امتحانات کے انعقاد کا وعدہ کریں۔ اس مسئلے کو تعلیمی مسئلہ ہی رہنا چاہیے۔■

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داؤد انجینئرنگ یونیورسٹی میں فن تعمیر سے متعلق انٹرنیشنل کانفرنس

نگراں وزیراعلیٰ سندھ جسٹس (ر) مقبول باقر کی افتتاحی سیشن میں بطور مہمان خصوصی شرکت

چیئرمین ایچ ای سی سندھ ڈاکٹر طارق رفیع اعزازی مہمان، وائس چانسلر ڈاکٹر ثمرین حسین نے استقبال کیا

داؤد یونیورسٹی آف انجینئرنگ اینڈ ٹیکنالوجی میں 2 روزہ انٹرنیشنل کانفرنس بعنوان ''رکاوٹیں ہٹائیں: فن تعمیر کی دیگر بین الشعبہ جات میں اہمیت'' منعقد ہوئی جس کے افتتاحی سیشن میں نگراں وزیراعلیٰ سندھ جسٹس (ر) مقبول باقر مہمان خصوصی تھے جبکہ چیئرمین سندھ ہائر ایجوکیشن کمیشن ڈاکٹر طارق رفیع اعزازی مہمان تھے۔ وائس چانسلر داؤد یونیورسٹی انجینئر پروفیسر ڈاکٹر ثمرین حسین (تمغہ امتیاز) نے معزز مہمانوں کا استقبال کیا۔ اس موقع پر پرو وائس چانسلر پروفیسر ڈاکٹر عبدالوحید بھٹو، رجسٹرار پروفیسر ڈاکٹر سید آصف علی شاہ، ڈین فیکلٹی آف آرکی ٹیکچر اینڈ پلاننگ پروفیسر ڈاکٹر یاسرہ نعیم پاشا بھی موجود تھیں۔ تلاوت قرآن پاک کے بعد کانفرنس کی کنوینر ماریہ ساجد نے اغراض ومقاصد بیان کرتے ہوئے کہا کہ اس کانفرنس کا بنیادی پراکیڈمیا اور پروفیشنلز کے درمیان نہ صرف فاصلے ختم کرنا ہے بلکہ نئے روابط پیدا کرنے ہیں تاکہ تمام شعبوں میں فن تعمیر کی اہمیت کا اُجاگر کیا جاسکے۔

کانفرنس کی چیف آرگنائزر پروفیسر ڈاکٹر یاسرہ نعیم پاشا نے تمام معزز مہمانوں کو خوش آمدید کرتے ہوئے فن تعمیر کی ہر شعبے میں انتہائی اہمیت ہے، انوائرمنٹ، کمپیوٹر، آرٹی فیشل انٹیلی جنس غرض ہر شعبہ آرکیٹیکٹ کی مہارت کے بغیر نامکمل ہے۔ کانفرنس کے کلیدی مقرر برطانوی یونیورسٹی میں سینئر لیکچرار پروفیسر کارلوس مارکوز نے فن تعمیر کی ابتدائی نظریات اور طریقوں پر روشنی ڈالتے ہوئے کہا کہ مستقبل کی تعمیراتی ضرورتوں کے مدنظر رکھتے ہوئے اب ہر شعبے کو فن تعمیر کی اہمیت کو سمجھنا ہوگا، مجھے خوشی ہے کہ داؤد یونیورسٹی کے متحرک فیکلٹی ارکان اس معاملے میں انتہائی پرجوش ہیں۔

بطور اعزازی مہمان سندھ ہائر ایجوکیشن کمیشن کے چیئرمین ڈاکٹر طارق رفیع نے کانفرنس سے خطاب کرتے ہوئے کہا کہ مجھے خوشی ہے کہ داؤد انجینئرنگ یونیورسٹی اس اہم موضوع پر کانفرنس منعقد کرکے ہائر ایجوکیشن کے اپنے عزم پر عمل پیرا ہے، یہ کانفرنس ترقی پسند جذبے اور آگے کی سوچ کے نقطہ نظر کی وضاحت کرتی ہے جو سندھ کے علمی منظرنامے کا تشخص ہے، نگراں وزیراعلیٰ سندھ جسٹس (ر) مقبول باقر حوصلہ افزائی کیلئے یہاں موجود ہیں، بطور چیئرمین ایچ ای سی سندھ صوبے میں ہائر ایجوکیشن کے فروغ کیلئے اپنی خدمات پر روشنی ڈالنا چاہوں گا، سندھ ایچ ای سی کا بنیادی مقصد جامعات کو گرانٹس اور فنڈز کے ذریعے مستحکم کرنا ہے تاکہ وہ تحقیق اور جدت کے نئے تقاضوں سے ہم آہنگ ہوسکیں۔

کانفرنس سے بطور مہمان خصوصی خطاب کرتے ہوئے نگراں وزیراعلیٰ سندھ جسٹس (ر) مقبول باقر نے کہا کہ داؤد یونیورسٹی قیام کے بعد اپنے عصری وژن کیلئے پہچانی جاتی ہے، داؤد انجینئرنگ یونیورسٹی پاکستان کا پہلا ادارہ ہے جس نے تقریباً 63 سال قبل ڈگری پروگرام متعارف کرائے، الیکٹرانک انجینئرنگ اور انڈسٹریل انجینئرنگ اینڈ مینجمنٹ جیسے شعبوں کی بنیاد ڈالی، داؤد یونیورسٹی نے ملک بھر سے عظیم و نامور طلباء پیدا کیے، ان طلباء نے پی ٹی وی، ریڈیو پاکستان، سپارکو، پی ٹی سی ایل اداروں میں اپنی چھاپ چھوڑی، عالمی محاذ پر داؤد یونیورسٹی

بقیہ: صفحہ 6 پر

واجبات کی عدم ادائیگی سے تھر کے کوئلے کی کان کنی رکنے کا خدشہ

سندھ اینگرو کول مائننگ کمپنی کے پاور کمپنیوں پر 55 ارب روپے واجب الادا ہیں، پاور کمپنیاں گردشی قرضوں کو جواز بنا کر ادائیگی سے انکاری

مائننگ کمپنی سالانہ 6 7 لاکھ ٹن مقامی کوئلہ تین پاور پلانٹس کو مہیا کررہی ہے، کان کنی رکنے سے ماہانہ 50 ملین ڈالر کا کوئلہ درآمد کرنا پڑے گا

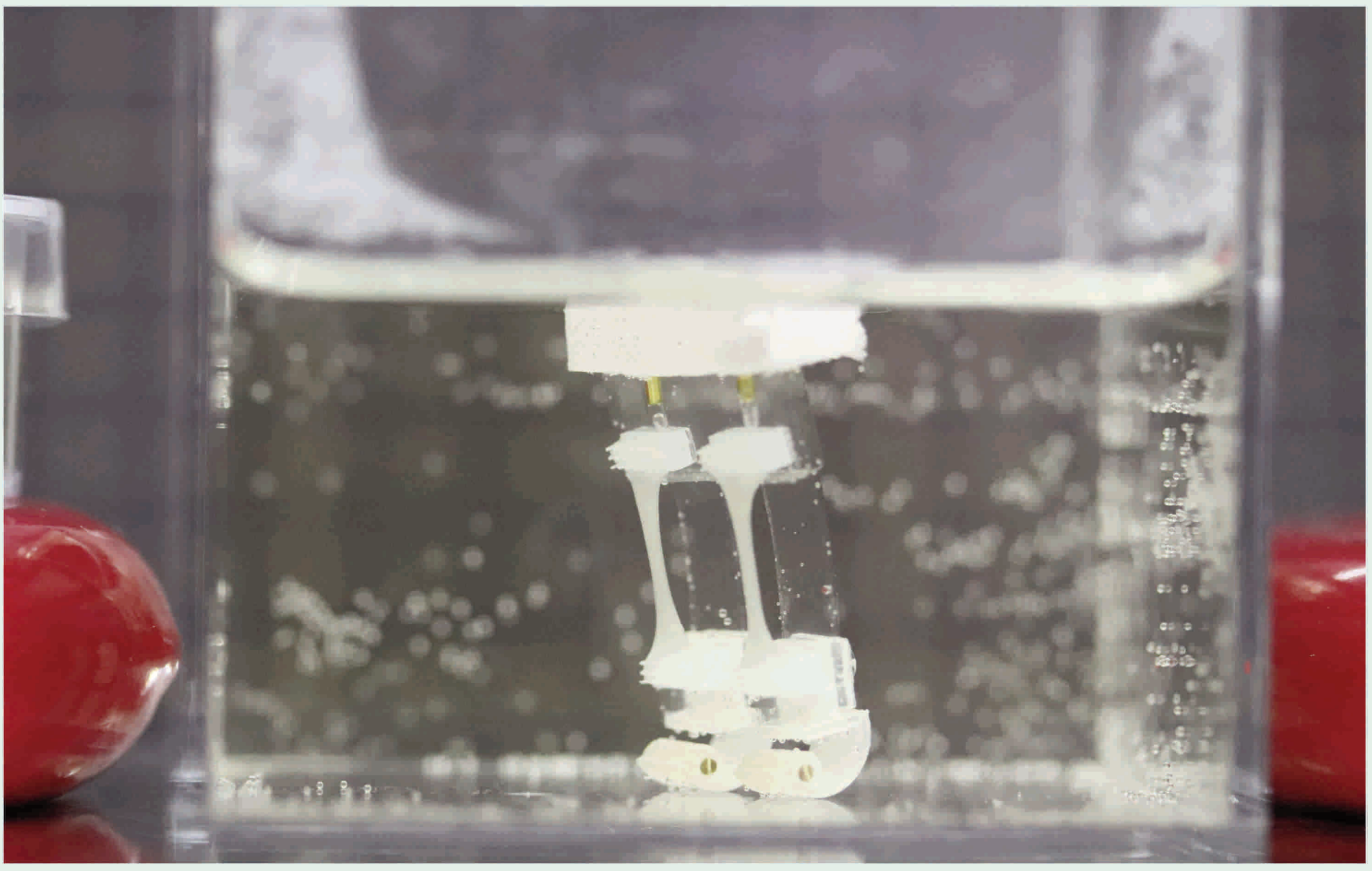
سندھ اینگرو کول مائننگ کمپنی اس وقت تھر سے حاصل ہونے والا سالانہ 76 لاکھ ٹن مقامی کوئلہ تین پاور پلانٹس کو مہیا کررہی ہے اور یہ پاور پلانٹس نیشنل ٹرانسمیشن اینڈ ڈسپیچ کمپنی (این ٹی ڈی سی) کی میرٹ آرڈر لسٹ کے مطابق کفایت بخش بجلی تیار کررہے ہیں، پاور پلانٹس کی جانب سے سندھ اینگرو کول مائننگ کمپنی کو 55 ارب روپے کی ادائیگیاں زیرالتوا ہیں، جس سے سندھ اینگرو کول مائننگ کمپنی کو سرمائے کی شدید قلت کا سامنا ہے اور کان کنی کے آپریشنز رکنے کا خدشہ ہے۔

ادائیگیوں کے لیے پاور پلانٹس چلانے والے آئی پی پیز سے رجوع کرنے پر آئی پی پیز کی جانب سے گردشی قرضوں کو انرجی انڈسٹری کے لیے ایک بڑا چیلنج قرار دیا جاتا ہے اور یہ آئی پی پیز حکومت اور ریگولیٹرز پر نکلنے والے اپنے واجبات کی ادائیگی کے منتظر ہیں جن کی عدم ادائیگی آئی پی پیز کی سندھ اینگرو کول مائننگ کمپنی سمیت پوری انرجی ویلیو چین کی بروقت ادائیگیوں کی صلاحیت کو محدود کرنے کا سبب بن رہی ہے۔

ذرائع کے مطابق واجبات کی عدم ادائیگی سندھ اینگرو کول مائننگ کمپنی کے آپریشنز کو پائیدار بنیادوں پر جاری رکھنے کے لیے آپریشن اینڈ مینٹی نینس پر اٹھنے والے اخراجات، ایندھن، آلات اور پرزہ جات کی خریداری کی صلاحیت کو بری طرح متاثر کررہی ہے۔ یہ صورتحال ملک کی قومی انرجی سیکیورٹی کے لیے بھی ایک خدشہ ہے۔

سندھ اینگرو کول مائننگ کمپنی کے آپریشنز رکنے کی صورت میں حکومت کو بجلی کی طلب و رسد کا توازن برقرار رکھنے کے لیے کوئلہ درآمد کرنا پڑے گا، جس پر ماہانہ 50 ملین ڈالر خرچ ہونگے۔ ■

Scientists design a two-legged robot powered by muscle tissue



Compared to robots, human bodies are flexible, capable of fine movements, and can convert energy efficiently into movement.

Drawing inspiration from human gait, researchers from Japan crafted a two-legged biohybrid robot by combining muscle tissues and artificial materials. Publishing on January 26 in the journal Matter, this method allows the robot to walk and pivot.

"Research on biohybrid robots, which are a fusion of biology and mechanics, is recently attracting attention as a new field of robotics featuring biological function," says corresponding author Shoji Takeuchi of the University of Tokyo, Japan.

"Using muscle as actuators allows us to build a compact robot and achieve efficient, silent movements with a soft touch."

The research team's two-legged robot, an innovative bipedal design, builds on the legacy of biohybrid robots that take advantage of muscles.

Muscle tissues have driven biohybrid robots to crawl and swim straight forward and make turns -- but not sharp ones.

Yet, being able to pivot and make sharp turns is an essential feature for robots to avoid obstacles.

To build a nimbler robot with fine and delicate movements, the researchers designed a biohybrid robot that mimics human gait and operates in water.

The robot has a foam buoy top and weighted legs to help it stand straight underwater.

The skeleton of the robot is mainly made from silicone rubber that can bend and flex to conform to muscle movements.

The researchers then attached strips of lab-grown skeletal muscle tissues to the silicone rubber and each leg.

When the researchers zapped the muscle tissue with electricity, the muscle contracted, lifting the leg up. The heel of the leg then landed forward when the electricity dissipated.

By alternating the electric stimulation between the left and right leg every 5 seconds, the biohybrid robot successfully "walked" at the speed of 5.4 mm/min (0.002 mph). To turn, researchers repeatedly zapped the right leg every 5 seconds while the left leg served as an anchor.

The robot made a 90-degree left turn in 62 seconds. The findings showed that the muscle-driven bipedal robot can walk, stop, and make fine-tuned turning motions.

"Currently, we are manually moving a pair of electrodes to apply an electric field individually to the legs, which takes time," says Takeuchi.

"In the future, by integrating the electrodes into the robot, we expect to increase the speed more efficiently."

The team also plans to give joints and thicker muscle tissues to the bipedal robot to enable more sophisticated and powerful movements.

But before upgrading the robot with more biological components, Takeuchi says the team will have to integrate a nutrient supply system to sustain the living tissues and device structures that allow the robot to operate in the air.

"A cheer broke out during our regular lab meeting when we saw the robot successfully walk on the video," says Takeuchi.

"Though they might seem like small steps, they are, in fact, giant leaps forward for the biohybrid robots."

This work was supported by JST-Mirai Program, JST Fusion Oriented Research for disruptive Science and Technology, and the Japan Society for the Promotion of Science. -- SD

Advancement in thermoelectricity could light up IoT

Imagine stoplights and cars communicating with each other to optimize the flow of traffic. This isn't science fiction -- it's the Internet of Things (IoT), i.e., objects that sense their surroundings and respond via the internet. As the global population rises and such technologies continue to develop, you might wonder -- what will power this digital world of tomorrow?

Wind, solar, yes. Something all around us might not immediately come to mind though -- heat.

Now, in a study recently published in Nature Communications, a multi-institutional research team including Osaka University has unveiled a breakthrough in clean energy: greatly improved thermoelectric conversion.

One of its many potential applications? That's right, the IoT.

Large-scale, global integration of the IoT is limited by the lack of a suitable energy supply.

Realistically, an energy supply for the IoT must be local and small scale.

Miniaturization of thermoelectric conversion can help solve this energy-supply problem by applying the otherwise wasted heat from microelectronics as a source of electricity.

However, for practical applications, the efficiency of current thermoelectric-energy conversion is insufficient.

Improving this efficiency was the goal of the research team's study.

"In our work, we demonstrate a two-dimensional electron gas (2DEG) system with multiple subbands that uses gallium arsenide. The system is different from conventional methods of thermoelectric conversion," explain Yuto Uematsu and Yoshiaki Nakamura, lead and senior authors of the study.

"Our system facilitates better conversion from temperature (heat) to electricity, and improves the mobility of electrons in their 2D sheet. This readily benefits everyday devices like semiconductors."

Incredibly, the researchers were able to improve the power factor of thermoelectric conversion by a factor of 4 compared with conventional 2DEG systems.

Other technologies like resonant scattering have not been as efficient for thermoelectric conversion.

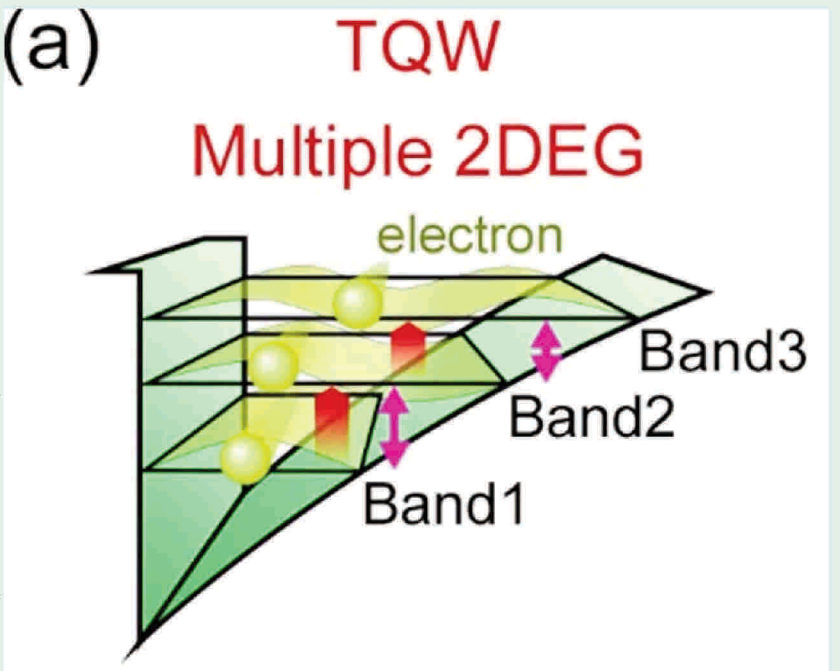
The team's findings could open the way to a sustainable power source for the IoT.

Thin thermoelectric films on substrates made of gallium arsenide would be suitable for IoT application.

For example, these could power environmental monitoring systems in remote locations or wearable devices for medical monitoring.

"We're excited because we have expanded upon the principles of a process that is crucial to clean energy and the development of a sustainable IoT," says Yoshiaki Nakamura, senior author.

"What's more, our methodology can be applied to any element-based material; the practical applications are far reaching."



This work is an important step forward in maximizing the utility of thermoelectric power generation in modern microelectronics and is especially suitable for the IoT. As the results are not limited to gallium arsenide, further advancements to the system are possible, with sustainability and the IoT potentially benefitting greatly. – SD

Rising sea levels could lead to more methane emitted from wetlands

As sea levels rise due to global warming, ecosystems are being altered. One small silver lining, scientists believed, was that the tidal wetlands found in estuaries might produce less methane -- a potent greenhouse gas -- as the increasing influx of seawater makes these habitats less hospitable to methane-producing microbes.

However, research from biologists at Lawrence Berkeley National Laboratory (Berkeley Lab) and UC Berkeley indicates that these assumptions aren't always true. After examining the microbial, chemical, and geological features of 11 wetland zones, the team found that a wetland region exposed to a slight amount of seawater was emitting surprisingly high levels of methane -- far more than any of the freshwater sites.

Their results, now published in mSystems, indicate that the factors governing how much greenhouse gas is stored or emitted in natural landscapes are more complex and difficult to predict than we thought.

"We looked at how many methanogens, the organisms that make methane, are present in soils at these sites and it wasn't really well correlated with the amount of methane observed," said senior author Susannah Tringe, director of Berkeley Lab's Environmental Genomics & Systems Biology Division. "And even if you look at the amount of methanotrophs, organisms that eat methane, in combination with methanogens, that doesn't seem to fully explain it."

Tringe and her colleagues took soil samples from the 11 sites and used high-throughput sequencing to analyze DNA from organisms found in the samples, including bacteria, viruses, and fungi. They examined what genes were present in the sequences and mapped them to known functions -- for example, identifying genes known to be involved in metabolizing nitrogen or genes from bacteria that use sulfate during respiration. Then they worked to model how the genetic information they found, combined with chemical factors in the soil and water, could result in the methane emissions they observed.

Across most of the sites, which ranged from freshwater to full seawater salinities, the amount of methane emitted was inversely related to the amount of salt water that was flowing in and mingling with the river water. But at one site, which had been restored in 2010 from a seasonal grassy pasture for livestock grazing back to its original wetland habitat, the team saw high methane emissions despite the moderate amount of salt water.

Seawater contains more sulfate (an ion with sulfur and oxygen) than freshwater, leading to the assumption that increased influx of seawater in these environments would lead to less methane production as the methanogens that use CO_2 to make cellular energy are outcompeted by the bacteria that use sulfate instead.

"Ultimately, we found that there were significant influences from other bacterial groups like the ones that break down carbon and even organisms that are better known as nitrogen cyclers, and we couldn't readily explain the methane emissions by something as simple as, for example, how much sulfate is available or how many methanogens are there," said Tringe.

Another concept in ecology is that restoring habitats to their native state can boost carbon storage, improve water quality, and increase wildlife populations. In recent decades, wetlands have been increasingly recognized as critical ecosystems for these environmental services, leading to widespread efforts to restore ecosystems by removing barriers, pollution, and non-native organisms.

Modeling work by co-author Dennis D. Baldocchi, Executive Associate Dean and professor of Biometeorology at UC Berkeley, suggests that although the restored wetland is adding greenhouse gas to the atmosphere currently, the ecosystem will stabilize and begin to serve as a net carbon sink within 100 to 150 years. This may not be the timeline that stakeholders were hoping for when they restored the area with the goal of carbon sequestration.

"We want to know if these systems will act as long-term carbon sinks," said Baldocchi. "And these microbiological investigations can help refine our models and predictions."

Tringe noted that other labs have observed increased methane production from wetland soils with increased salinity. Scientists from Duke University took soil core samples from a coastal freshwater wetland and exposed them to artificial seawater, and artificial seawater lacking sulfate. In both cases, methane production went up. Tringe's lab recently collaborated with Marcelo Ardón of North Carolina State University to analyze the microbial communities in those soils.

"There was this expectation that sulfate would be the most important thing. And in those studies, not only did salt water stimulate methane production, which again is kind of counter to the dogma that sulfate is important, it happened whether you had sulfate there or not; in fact the sulfate didn't have a big effect on the methane emissions," said Tringe. "So I think these experimental manipulations are reconfirming the story that there's more nuanced effects of seawater intrusion than just a sulfate addition, and also more nuanced factors behind ecosystem restoration."

This work was supported by the Department of Energy (DOE) Early Career Research Program award to Tringe and the DOE Joint Genome Institute. -- SD