COMSATS Newsletter

Commission on Science and Technology for Sustainable Development in the South (COMSATS)

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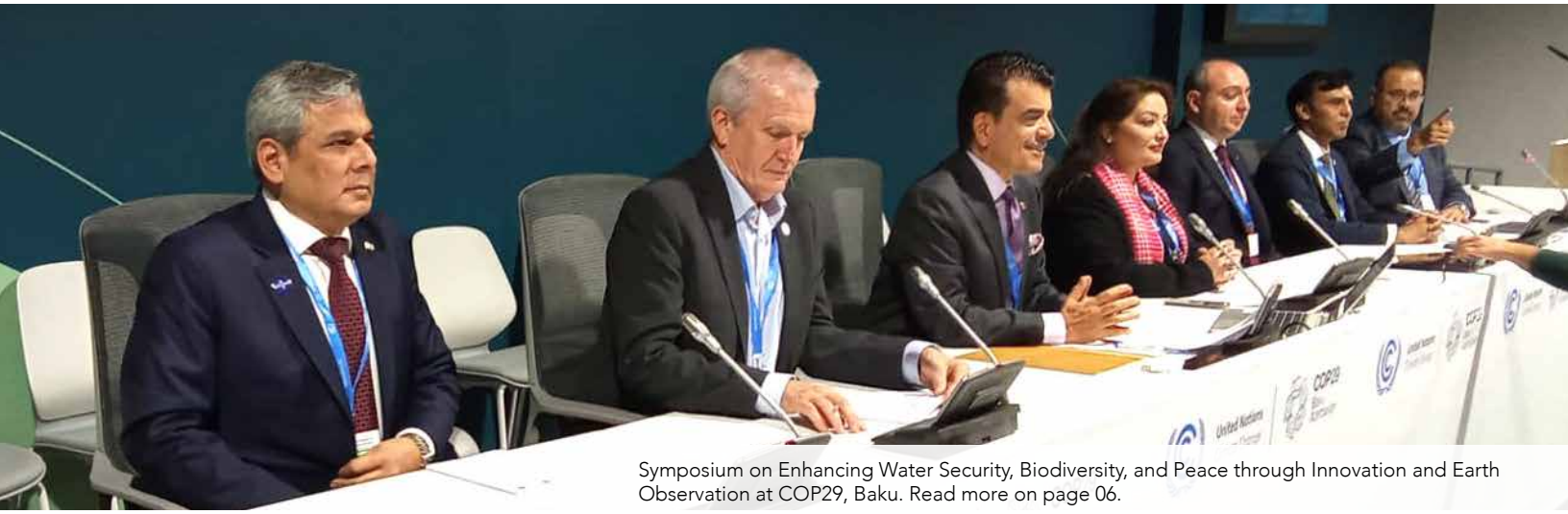

Symposium on Enhancing Water Security, Biodiversity, and Peace through Innovation and Earth Observation at COP29, Baku. Read more on page 06.

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From the Executive Director's Desk

The complex global challenges related to climate change, food security, tech & digital divide, equal access to healthcare, etc., warrant urgent need for international S&T collaboration and collective action, especially by the Global South. COMSATS, as an intergovernmental organization created for South-South and triangular cooperation in science and technology, is a platform that facilitates such intra South cooperation. COMSATS offers tech-based solutions to its Member States to assist them in their pursuit for sustainable socio-economic development.

COMSATS remains vibrant in terms of global engagement, scientific collaboration and knowledge exchange. At COP29 in Baku, COMSATS organized and co-hosted several sideline events and panel discussions, with support of international partner institutions/ organizations, including ICESCO, TÜBİTAK, NDMA, NDRMF, FACE, and others. These events focused at themes such as emerging energy technologies, climate finance, climate change - antimicrobial resistance nexus, predictive modeling in agriculture, water security, sustainable food systems, and decarbonization of transport through hydrogen and electric vehicle technologies. Of particular mention is COMSATS' activity to give spotlight to youth leaders in climate action. By encouraging young voices from its Member States and beyond, COMSATS aimed to empower youth as the key agents of change for sustainable development.

COMSATS' collaboration with Kohsar University and the National Disaster and Risk Management Fund (NDRMF) enabled bringing together experts, academics and policy makers for addressing the growing challenge of smog in mountainous regions. Recognizing the compounded impacts of air pollution on health, environment, and local economies, the event emphasized the need for indigenous solutions, policy reforms, and scientific interventions tailored to vulnerable regions.

In the arena of international scientific cooperation, COMSATS' participation in the 9th Governing Board Meeting of the Alliance of National and International Science Organizations for the Belt and Road Regions (ANSO) held in Bangkok is a major highlight. As a member of ANSO Governing Board, the opportunity to advocate for greater support to the developing countries in strengthening their scientific infrastructure, scientific initiatives and adaptability was aptly availed. The meeting afforded opportunity to me for a keynote address titled 'Future of Sustainable Development and the Role of Technology' at the Science Seminar on 'Emerging Technologies for Sustainable Development' jointly organized by ANSO and

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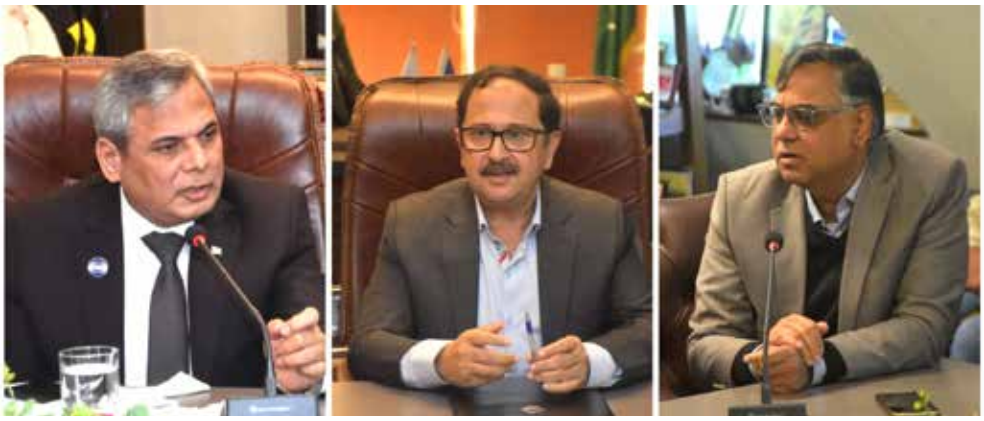
Collaborative Action Against Smog: COMSATS and Partners Address Mountain Region Challenges



COMSATS, in collaboration with the National Disaster and Risk Management Fund (NDRMF) and Kohsar University, held an impactful event on the theme "Addressing Smog and Its Challenges in Mountain Regions" at Kohsar University, Murree on 6th December 2024. The event brought together leading experts, academics, and policymakers to discuss the multifaceted impacts of smog on public health, the environment, and economic resilience, particularly in mountainous areas.

The inaugural remarks were delivered by Prof. Dr. Syed Habib Bokhari, Vice Chancellor of Kohsar University, who shed light on the devastating health impacts of smog. He highlighted that globally, smog contributes to an alarming 7 million premature deaths annually, with Pakistan's urban centers such as Lahore and Karachi experiencing drastic reductions in life expectancy. Vulnerable populations—including children, women, and the elderly—are at greater risk of respiratory and cardiovascular diseases, strokes, and cognitive impairments. Dr. Bokhari stressed the need for robust and immediate actions to mitigate these risks, especially in mountainous regions where the implications of smog are compounded.

Ambassador Dr. Mohammad Nafees Zakaria, Executive Director of COMSATS, emphasized the cross-cutting nature of smog and its wide-ranging impacts on Sustainable Development Goals (SDGs). He underlined that smog disrupts education, tourism, and economic productivity—challenges that are magnified in mountain regions. Ambassador Dr. Zakaria called for government to incentivize cleaner transportation, promote electric vehicles (EVs), and enforce sustainable tourism and waste management practices. He also highlighted COMSATS' initiatives to leverage scientific expertise in addressing climate change and air quality issues, such as the conversion of internal combustion engine (ICE) vehicles to electric vehicles using indigenous resources. This transformation, he noted, would not only reduce smog but also cut Pakistan's fuel import bill, freeing resources for other industrial necessities.

Dr. Zakaria further underscored the importance of academic and business collaboration in tackling climate change-related challenges like smog. "The integration of academia's research capabilities with the resources and innovation of businesses is crucial for creating scalable and sustainable solutions," he stated.
Mr. Bilal Anwar, CEO of NDRMF, acknowledged the critical importance of addressing smog in Pakistan and highlighted the need for authentic data, robust infrastructure, and reliable

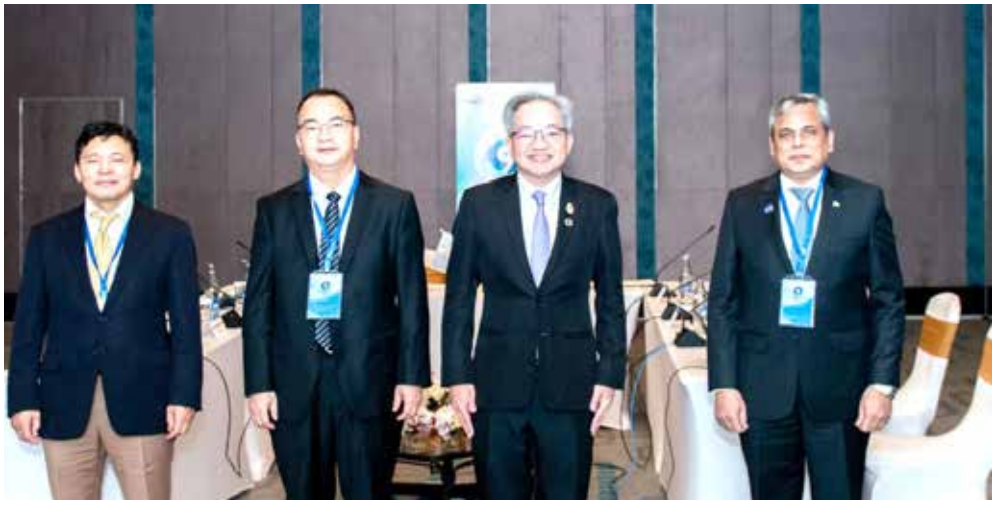
air quality monitoring systems to drive informed decision-making. Mr. Anwar advocated for the use of advanced technologies, including satellite data integrated with ground sensors, to enhance the accuracy and reliability of air quality measurements. He emphasized the role of scientifically driven solutions in combating smog and building resilient communities.
Dr. Qaiser Imran, Environmental Specialist, National Institute of Disaster Management (NIDM) delivered a presentation highlighting the National Emergency Operation Centre's role at NDMA in monitoring the ongoing smog situation in Pakistan and the surrounding region. The Centre utilizes advanced ground-based and space-based monitoring tools, enabling the analysis and projection of sectoral pollution emissions from various sources, including industry, transportation, and agriculture.
The event concluded with a call to action for stronger collaboration among government, academia, and the private sector to address the root causes of smog and implement effective mitigation strategies. The discussions reaffirmed the urgency of adopting science-based, innovative, and sustainable approaches to safeguard public health and protect the environment, especially in vulnerable regions like Murree and other mountainous areas.

9th ANSO Governing Board Meeting held in Bangkok

The 9th Governing Board meeting of the Alliance of National and International Science Organizations for the Belt and Road Regions (ANSO) was held in Bangkok, Thailand on December 11, 2024. The meeting was hosted by the National Science and Technology Development Agency (NSTDA), Thailand, and it was Chaired by Prof. Sukit Limpijumnong, President of NSTDA and incumbent President of ANSO.

COMSATS joined ANSO as a member in 2019 and its Executive Director, Ambassador Dr. Mohammad Nafees Zakaria, was subsequently elected as a member of ANSO Governing Board in November 2023.

As the Governing Board member, Amb. Zakaria participated in the 9th meeting that was also attended by Prof. Hongping He, Vice President of



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NSTDA-Thailand.

Equally significant was the convening of COMSATS' Technical Advisory Committee (TAC), a group of eminent scientists and experts drawn from globally renowned institutions, who review COMSATS' ongoing programs and advise on new strategic priorities. Their recommendations on the operationalization of COMSATS' research clusters, the launch of R&D Fund, and the tailoring of training programs to Member States' evolving needs are guiding our forward momentum.

During the recent times, the global ST&I landscape witnessed encouraging developments. COMSATS' Member State, Türkiye, reported successful trials of indigenously developed hydrogen fuel cells, taking strides toward cleaner transport solutions. Researchers in Japan unveiled a high-efficiency carbon capture material that promises more scalable climate mitigation solutions. Breakthroughs in AI-driven drug discovery were reported by European biotech firms, accelerating the pace of therapeutic development. As an active facilitator of joint ventures and collaborative R&D, COMSATS endeavors to align such global innovations with local capacities and needs, ensuring that technological breakthroughs contribute meaningfully to inclusive growth, environmental resilience, and socio-economic equity in the countries of the South, particularly its Member States.

Further details on the activities of COMSATS Secretariat as well as the key activities and achievements of some of COMSATS' Centres of Excellence are mentioned in this edition of the newsletter. The Secretariat welcomes valuable feedback from the esteemed readers.

Chinese Academy of Sciences; and other Board members belonging to Mongolia, Türkiye, Serbia, Senegal and Brazil. During the meeting, ANSO Progress Report 2024 was presented by Prof. LIU Weidong, Executive Director, ANSO Secretariat. The Governing Board members reviewed the membership applications and selected 9 new member organizations for consideration of the ANSO General Assembly. The Governing board members also reviewed suggested amendments to ANSO's vision and mission, and Statutes, and endorsed the draft Regulations on the use of its logo to protect its intellectual property. The members deliberated upon the organization's ongoing and planned activities, as well as strategies to strengthen collaboration among the member organizations. In all, the meeting provided direction and impetus for setting agenda for the 4th General Assembly Meeting that was decided to be held in Beijing in 2025.

While sharing his views, Ambassador Zakaria stated that the developing countries need support for improving their infrastructure, such as upgradation of laboratories, in order to truly reap the benefits of science and technology. Citing the example of earlier outbreak of COVID-19 pandemic, Ambassador Zakaria stated that those countries, which had adequate IT infrastructure, could offset the associated economic losses. He suggested initiation of programs to facilitate the developing countries in improving their infrastructure to support practical scientific initiatives and easing adaptability. He also proposed collaboration between COMSATS and ANSO for a joint scholarship program.

The meeting concluded with a renewed commitment to harness the collective expertise and resources of ANSO members, ensuring that science and innovation are adequately utilized to serve as key drivers for sustainable development and economic growth.

ANSO-NSTDA organized Science Seminar on 'Emerging Technologies; ED COMSATS delivers Keynote Address

A Science Seminar on 'Emerging Technologies for Sustainable Development' was jointly organized by the Alliance of National and International Science Organizations for the Belt and Road Regions (ANSO) and the National Science and Technology Development Agency (NSTDA) of Thailand, in Bangkok on 12th December 2024.

It brought together leading scientists and researchers, subject experts and policymakers, mainly from Southeast Asia. The seminar highlighted the pivotal role of emerging technologies, the need to build stronger regional collaboration for realizing sustainable development goals and meeting global environmental and social challenges. Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, was invited to deliver a keynote address. His talk titled 'Future of Sustainable Development and the Role of Technology'. Amb. Zakaria identified technology and knowledge gap, inadequate infrastructure, political instability, brain-drain, and financial constraints as the barriers to achieving sustainable development by the developing countries. He emphasized the need for developing countries to create enabling environment that supports knowledge generation and innovation. He made strategic recommendations such as capacity building, technological adaptation, investment in disruptive technologies, customized international legal frameworks, and supportive economic models to encourage local solutions and drive sustainable growth.

Amb. Zakaria suggested that the developing nations must promote cross-sector collaboration, and called for technology transfer and public-private partnerships among the global south. He also proposed establishing a Regional Digital Innovation Fund within COMSATS and other IGOs and regional Institutes in the developing world to support local research and start-ups, focusing on solutions that address the unique needs of the Global South. Earlier, Prof. Sukit Limpijumnong, President NSTDA & ANSO, in his

opening remarks underscored the growing importance of international scientific collaboration in the emerging technologies for addressing sustainable development challenges. He highlighted the role AI can play in addressing global challenges. Prof. Hongping He, Vice President of the Chinese Academy of Sciences (CAS), endorsing Prof. Sukit's remarks stressed innovative solutions as means to addressing future challenges and expressed CAS' support to ANSO for its scientific programs.

The seminar introduced participants to the core concept of sustainable development, helped examine the importance of emerging technologies, and offered practical insights into specific technological innovations that are essential for achieving global sustainability goals.

The leading scientists and experts from Brunei Darussalam, China, Indonesia, Malaysia, Singapore, Thailand and the Philippines delivered insightful talks on topics including AI for Sustainable Future; Achieving Carbon Neutrality: A Sustainable Pathway; Clean Energy Solutions for a Greener Planet; Synthetic Biology: Nature's Solution for Sustainability; and Fostering STI Partnerships in Southeast Asia and Beyond.
The seminar concluded with a panel discussion on Fostering STI partnership in South East Asia and Beyond. The panel comprised experts from Malaysia, Thailand, China and Mongolia.

COMSATS Secretariat Conducted Virtual Session of its TAC

COMSATS convened a virtual session of its International Technical Advisory Committee (TAC) on 18th December 2024, a key platform for guiding the organization's scientific and technological priorities.

The International Technical Advisory Committee (TAC), a significant resource comprising renowned scientific experts selected by The World Academy of Sciences (TWAS), plays a vital role in delivering independent evaluations, science-driven advice, and strategic recommendations to COMSATS Secretariat and its Network of International S&T Centres of Excellence. TAC contributes to the development of foresight frameworks for scientific coordination and technological innovation within COMSATS' member institutions, while also reviewing existing planning processes, policies, and institutional capacities—when required or upon request—to identify and address capacity-building needs.

The session was chaired by the ED COMSATS, Amb. Dr. M. Nafees Zakaria, assisted by the senior officials from the COMSATS Secretariat. The TAC membership comprises eminent scientists and experts, including: Prof. Dr. Ishenkumba A. Kahwa, University of the West Indies, Jamaica; Prof. Dr. Haseena Khan, University of Dhaka, Bangladesh; Prof. Dr. Bolanle Ojokoh, Federal University of Technology, Nigeria; Dr. DJAGOUN Chabi A. M. Sylvestre, University of Abomey-Calavi, Benin; Dr. Wejdan Abu-Elhaija, Royal Scientific Society, Jordan; Dr. Jauad El Kharraz, ECCO Climate, Italy; and Mr. Fernando Santiago Rodriguez, United Nations Industrial Development Organization (UNIDO), Austria.

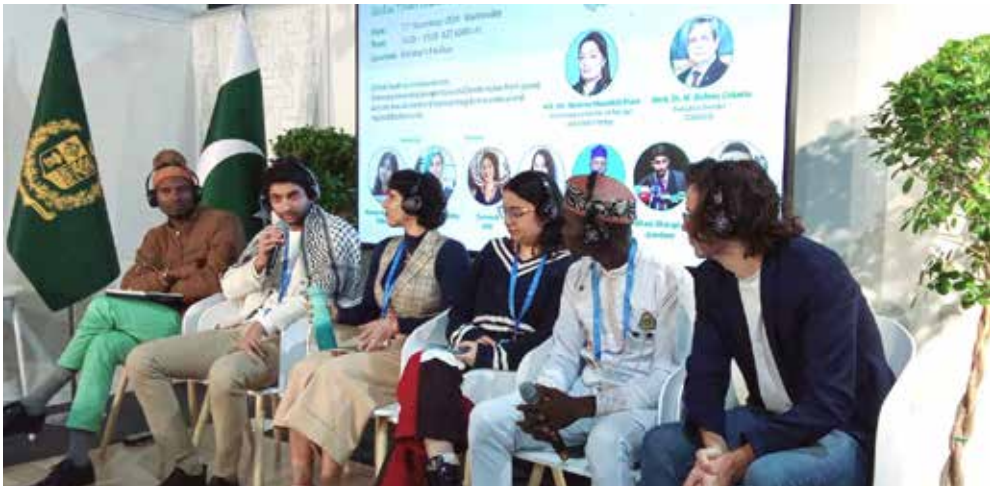
Additionally, Dr. Babar Majid Bhatti, Executive Director of the National Information Technology Board (NITB) and an AI & Cyber Security expert, joined the session as a special invitee, who contributed valuable insights to the discussions. The session addressed key agenda items, including: providing guidance on customizing training programs to meet the evolving needs of COMSATS' member institutions; operationalization of new COMSATS initiatives, such as research clusters, the R&D Fund, and targeted capacity-building programs; strategic alignment of COMSATS' programs and initiatives, as deliberated in the Coordinating Council, to address existing gaps and ensure measurable impact across member countries.

SPECIAL SECTION: COMSATS PARTICIPATION @COP29, BAKU IN HIGH-LEVEL SEGMENT, EXPERT PANEL, AND SIDELINE EVENTS & MEETINGS

COMSATS, as an accredited observer IGO of the UNFCCC, participated in COP29, held from 11-22 November 2024 in Baku, Azerbaijan. Demonstrating its commitment to addressing climate change challenges and supporting its Member States, COMSATS undertook extensive preparations, collaborating with partner organizations to organize several impactful sideline events.

These events focused on critical themes such as climate finance, adaptation strategies, disaster risk management, carbon markets, renewable energy and the role of innovative technologies in fostering resilience and sustainability, particularly for developing countries.

COMSATS, in collaboration with its international partners, Focal Points, and Centres of Excellence, organized sideline events during COP29 at the pavilions of UNFCCC, Pakistan, and Islamic World Educational, Scientific and Cultural Organization (ICESCO).



Global Youth Leadership in Climate Action

COMSATS inaugurated its sideline events at the 29th UNFCCC Conference of Parties (COP29) with a dynamic panel discussion titled "Global Youth Leadership in Climate Action". The event was organized in collaboration with Pakistan's Ministry of Climate Change and Environmental Coordination on November 13, 2024.

The panel discussion featured opening remarks by H.E. Ms. Romina Khurshid Alam, Coordinator to the Prime Minister on Climate Change, followed by an address by Ambassador Dr. Mohammad Nafees Zakaria, Executive Director of COMSATS.

The event brought together young climate leaders from across the globe, including Benin, Chile, India, Jordan, Liberia, Pakistan, and the United Kingdom, showcasing innovative perspectives on climate action through diverse cultural and regional lenses. The panel session was co-moderated by Ms. Emaan Danish Khan, Pakistan's youngest climate actionist and eco-preneur, and Mr. Genaro Matías Godoy, Youth Negotiator for COP29 from Chile.

Notable contributions were made by panelists, Mr. Dossiya Dakou (Benin), Ms. Gunjan Nanda (India), Mr. Ghazi Sharqawi (Jordan), Mr. Peace M. Karnkeh (Liberia), and Ms. Serena B. (UK). Moreover, the young representatives from the HEY Campaign, Plant for the Planet, Care about Climate, and the Youth for Climate were also present in the second round of panel discussion. Speaking on the occasion, H.E. Ms. Romina emphasized that the South Asian region, home to a vibrant, diverse, and rapidly expanding youth population, represents a powerful catalyst for accelerating climate action and achieving sustainable development goals. She further stated that addressing climate crises requires a holistic and broader approach, along with innovative solutions, and called for leveraging the creativity, energy, determination, and momentum of young people to drive meaningful environmental protection efforts.

Ambassador Dr. Zakaria emphasized the urgent need for inclusive and decisive climate action, highlighting the significant role of the youth, particularly in the Global South, where 850 million young people reside in COMSATS' 27 member states. He underlined that these digitally savvy and innovative

young minds can be catalysts for social growth, economic prosperity, and environmental protection if equipped with the necessary skills, knowledge, and opportunities. Citing the devastating impacts of climate change, including floods, hurricanes, and wildfires worldwide, he called for immediate action beyond pledges. COMSATS, through its Network of 25 S&T and R&D Centres of Excellence, is committed to supporting youth through joint research, knowledge sharing, technology transfer, and capacity-building initiatives, ensuring they are empowered to lead meaningful climate action.

Global Climate Finance Mechanisms: Assessing Equity and Effectiveness

On Day Four of the COP29 in Baku, focusing on Finance, Investment, and Trade, COMSATS held its second sideline event, titled "Global Climate Finance Mechanisms: Assessing Equity and Effectiveness" on 14th November 2024.

The event was organized in collaboration with the Islamic World Educational, Scientific and Cultural Organization (ICESCO), the National Disaster Management Authority (NDMA), the National Disaster Risk Management Fund (NDRMF), the Food Security and Agriculture Centre of Excellence (FACE), and the Climate Resourcing Coordination Center (CRCC) from the ICESCO Pavilion.

In his remarks, Ambassador Zakaria simplifying the financing mechanisms, address monopolistic tendencies, enable regional developing and under developed states such as small island developing states and least developed countries to have easier access to the climate adaptation funds. He emphasized that developing countries face hurdles such as limited bankable financial infrastructure and insufficient capacity for the efficient flow of climate finance.

The panelists for this high-priority discussion included Mr. Javier Manzanares, CEO of Allen Manza Inc.; Mr. Ben Vickers, Senior Specialist at the Green Climate Fund; Mr. Amr Sobhy, Senior Climate Change Expert at IsDB; YBRS TS. Shamsul Bahar, Group CEO of MGTC Malaysia; Lt. Gen. Inam Haider Malik, Chairman of NDMA; Mr. Bilal Anwar, CEO of NDRMF; and Dr. Sohail Malik, Technical Team Leader at CRCC.

The discussion aimed to identify key elements for developing robust domestic regulatory frameworks to ensure the stability, integrity, and alignment of climate finance with the specific needs and policies of individual countries. Critical challenges, such as regulatory gaps, capacity-building needs, and ensuring transparency in climate finance mechanisms, were also addressed.

Additionally, COMSATS collaborated with ICESCO for another panel discussion on "Optimizing Small-Scale Renewable Energy Projects and Navigating their Finance," held from the ICESCO Pavilion. During this session,

the Executive Director of COMSATS delivered an address on financing mechanisms for large-scale renewable energy projects.

In his inaugural remarks, Ambassador Zakaria shared his insights on the challenges posed by non-renewable energy and emphasized the urgent need to adopt clean and green energy solutions across domestic, commercial, and transportation sectors. He informed the participants about COMSATS' initiatives in this regard, including a collaborative effort to develop indigenous technology for converting internal combustion engine (ICE) vehicles into electric vehicles (EVs).

Both events were closely aligned with the agenda and theme of Day Four, focusing on Finance, Investments, and Trade to promote Climate Action and achieve sustainable development, thereby paving the way for a resilient and prosperous future.

Enhancing Multi-Stakeholder Collaboration for Advancing Emerging Energy Technologies

On the fifth day of COP29, COMSATS reaffirmed its commitment to advancing sustainable energy solutions by hosting a sideline event in partnership with the Islamic World Educational, Scientific, and Cultural Organization (ICESCO), Morocco on November 15, 2024.

The event, titled "Enhancing Multi-Stakeholder Collaboration for Advancing Emerging Energy Technologies," was held at the ICESCO pavilion. It featured a panel discussion organized in collaboration with COMSATS' Center of Excellence in Türkiye, the Scientific and Technological Research Council of Türkiye (TÜBİTAK); ECCO Think Tank, Italy; and the Food Security and Agriculture Centre of Excellence (FACE).

Ambassador Dr. Mohammad Nafees Zakaria, Executive Director of COMSATS, opened the session by emphasizing the urgency of transitioning to clean energy technologies. He highlighted the ongoing global reliance on fossil fuels, the often-overlooked contributions of military activities to carbon emissions, and the potential of mechanisms like carbon credits to support a sustainable energy transition.

Prof. Dr. Raheel Qamar, Head of the Science and Environment Sector at ICESCO, provided insights into the opportunities and challenges of renewable energy. He pointed out limitations associated with photovoltaic systems, such as their short operational lifespan and potential to exacerbate

local temperatures in regions like the Sahara. Dr. Qamar advocated for prioritizing more efficient energy sources, including geothermal and ocean wave technologies, over traditional renewables like solar and wind.

The discussion, moderated by Dr. Jauad El Kharraz, Advisor at ECCO Think Tank, convened an esteemed panel of experts, including: Mr. Hongpeng Liu, Director of Energy Division, UNESCAP; Mr. Mehmet Aslan, Director of TEYDEB, TÜBİTAK; Mr. Lincoln Teo, Founder of iWise; Dr. Baber Majid, CEO, National Information Technology Board (NITB), Pakistan. Panelists delved into pressing topics, such as fostering regional cooperation for advancing emerging energy technologies, overcoming barriers to market adoption of innovative solutions, and addressing the socio-economic implications of renewable energy transitions.

Dr. El Kharraz underscored the need for a just transition that equitably distributes the benefits and burdens of renewable energy projects, particularly for vulnerable populations. Mr. Liu stressed the importance of aligning policies across diverse economies to drive regional energy collaboration. Mr. Aslan explored strategies to mitigate infrastructure and cost barriers, while Dr. Baber Majid highlighted the role of industrial IoT and behavioral insights in accelerating decarbonization. Mr. Teo emphasized the need to foster public trust and acceptance to ensure the long-term success of emerging energy technologies.

The event concluded with a strong call for enhanced multi-stakeholder partnerships, cohesive policies, and innovative strategies to support the equitable adoption of sustainable energy technologies globally.

Panel Discussion on "Economic Impacts of Climate Change on Agriculture: Predictive Modeling Insights"

On the sixth day of COP29, COMSATS, in collaboration with Islamic World Educational, Scientific, and Cultural Organization (ICESCO), Food Security and Agriculture Centre of Excellence (FACE) – Fauji Fertilizer Company (FFC), International Center for Agricultural Research in the Dry Areas (ICARDA), Living Indus, and the Islamic Organization for Food Security (IOFS), successfully organized a sideline event titled "Economic Impacts of Climate Change on Agriculture: Predictive Modeling Insights" on 16th November 2024. The event was held at the ICESCO Pavilion and brought together leading experts, policymakers, and stakeholders to address one of the most pressing challenges of our time—how climate change is reshaping agricultural systems and impacting food security globally.

The session, moderated by renowned agriculture and sustainability expert, Dr. Minhaj Khokhar, CEO PK2100, focused on predictive modeling and its role in understanding the economic impacts of climate change on agriculture, while also exploring solutions to enhance the resilience of agricultural systems in the face of unpredictable climatic events. In his opening remarks, Ambassador Dr. Mohammad Nafees Zakaria, Executive

Director of COMSATS, underscored the critical importance of rethinking agricultural strategies in the context of climate change. He noted: "The phenomenon of climate change is not new—it has been observed for centuries. However, its intensity and scale of devastation have increased exponentially in recent years. The Green Revolution addressed the food security challenges of a growing population but came at the cost of soil and land degradation. It is now imperative that we adopt methodologies and technologies that are environmentally friendly and sustainable."

Prof. Raheel Qamar, Head of the Science and Technology Sector at ICESCO, highlighted the unpredictability of extreme weather events and their devastating impact on agriculture. He remarked: "We have seen firsthand how, within a span of just two years, same area in Kenya experienced both severe drought and devastating floods, crippling agricultural productivity. Remote sensing and predictive modeling can identify areas suitable for agricultural growth and productivity. It is unfortunate that developing countries, which contribute the least to climate change, are bearing its worst impacts."

Col. Salar Malik, Chief Sustainability Officer at Fauji Fertilizer Company Energy (FACE-FFC), shared insights from FFC's pioneering work in predictive modeling for sustainable agriculture: "At FACE-FFC, we are leveraging predictive models to support farmers by identifying problems such as pest attacks or locust infestations. These tools empower farmers to make informed decisions. As a fertilizer company, we are committed to playing our role in mitigating the economic impacts of climate change on agriculture."

The panelists responded to critical questions addressing the economic and environmental challenges posed by climate change to agriculture, focusing on strategies to enhance resilience, improve productivity, and ensure food security globally.

Dr. Nangia, Director Research Programs (ICARDA) shed light on the vicious cycle between agriculture and climate change, emphasizing the dual role agriculture plays as both a contributor to and victim of climate change. He highlighted the transformative potential of predictive modeling and machine learning technologies to address this dynamic. "Predictive modeling can identify patterns of resource usage, climate variability, and yield fluctuations to guide agricultural practices and policy decisions. By analyzing complex interactions between climate variables and agricultural outputs, these tools can help optimize resource use and mitigate economic losses for farmers. This technology is key to advancing sustainable agricultural systems, especially in regions facing extreme climate variability."

Addressing barriers to technology adoption in agriculture, YBRS TS. Shamsul Bahar Mohd Nor, Group Chief Executive Officer, Malaysia Green Technology Company (MTGC), pointed out the challenges of the digital divide, high costs, and technological complexity in developing countries. "For predictive modeling and advanced technologies to benefit agriculture in developing nations, accessibility and affordability are paramount. Governments and private sector stakeholders must work together to bridge the digital divide through investments in infrastructure and capacity-building programs. Additionally, strategies like public-private partnerships, subsidized access to technologies, and promoting climate-tech entrepreneurship can help overcome financial and technical barriers".

Dr. Abdelaziz Hajjaji, Programme Manager (IOFS) emphasized the critical

role of intergovernmental organizations in addressing diverse regional challenges and facilitating the adoption of climate-resilient technologies across member states.

"The IOFS plays a pivotal role in fostering collaboration among member states to implement tailored climate-smart agricultural strategies. By sharing best practices, providing technical assistance, and facilitating access to funding for climate-resilient technologies, IOFS helping nations address their unique agricultural challenges while collectively contributing to global food security."

Focusing on the importance of soil health and carbon sequestration, Dr. Khokhar elaborated on how predictive modeling can identify the most effective methods for integrating climate-resilient crops with regenerative agricultural practices.

"Predictive modeling offers insights into optimizing crop selection, rotation, and regenerative practices that improve soil health and enhance carbon sequestration. These integrated practices not only reduce greenhouse gas emissions but also strengthen the economic resilience of agricultural systems by ensuring long-term sustainability of farmland and mitigating risks associated with climate variability."

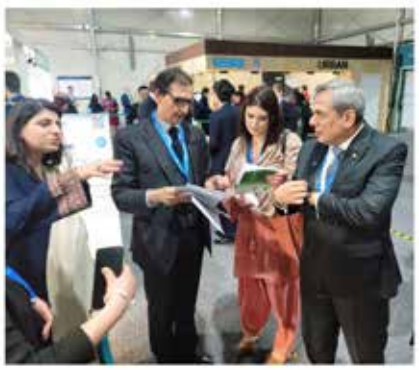
The panelists collectively emphasized the urgent need for collaborative efforts between governments, research organizations, and private sectors to integrate advanced technologies into agricultural systems. They highlighted the importance of capacity-building, knowledge-sharing, and funding mechanisms to ensure that predictive modeling and climate-resilient practices reach the farmers who need them most.

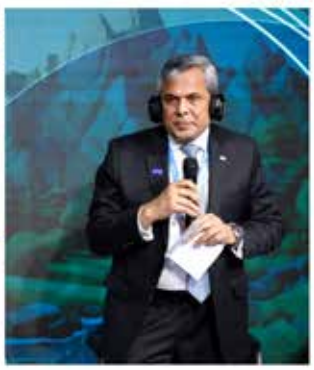
The discussion reinforced the message that addressing the economic impacts of climate change on agriculture requires a multi-dimensional approach—leveraging innovation while promoting inclusivity and sustainability in agricultural practices.

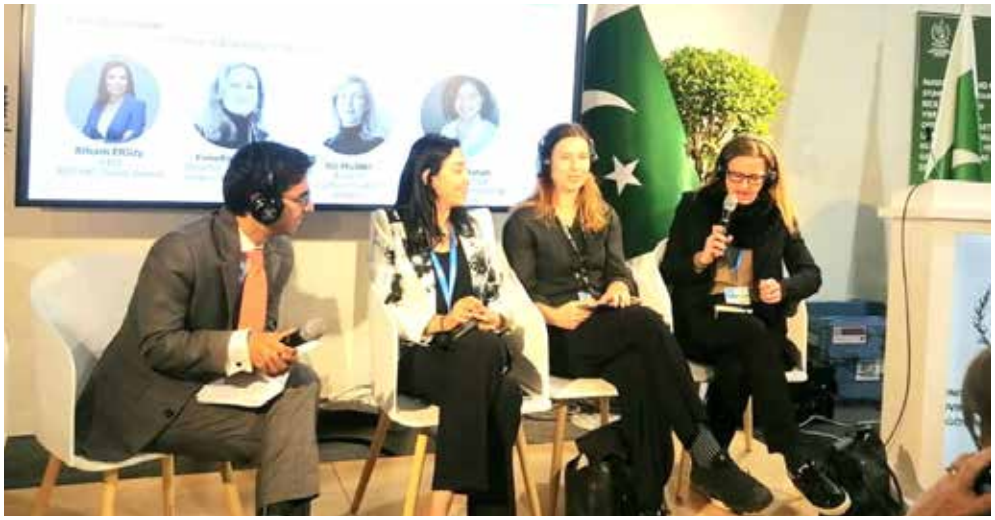
High-level Dialogue on Strengthening governance frameworks for Carbon Markets in Global South

In a significant step toward active participation in international carbon markets, Pakistan marked November 16, 2024, as "Carbon Market Day" at the Pakistan Pavilion during COP29. In this regard, COMSATS and the Ministry of Climate Change and Environmental Coordination (MoCC&EC) jointly organized high-profile two Panel Sessions, "High-level Dialogue on Strengthening governance frameworks for Carbon Markets in Global South" on 16th November during COP29. The panel discussion was part of the event at Pakistan's Pavilion to unveil the nation's Carbon Market Policy Guidelines and chart a course for future engagement.

Two prominent panel discussions held during COP29 delved deeply into the opportunities and strategies for developing Pakistan's carbon market







while ensuring alignment with the goals of the Paris Agreement. These sessions brought together distinguished experts and thought leaders from across the globe to share their experiences, provide strategic insights, and chart a path forward for Pakistan in the evolving landscape of carbon markets.

The first panel, moderated by Mr. Khurram Lalani, focused on identifying the key opportunities and challenges for Pakistan as it embarks on its journey toward establishing a robust carbon market. Ms. Mirey Atallah, Branch Chief at UNEP's Climate Change Division and a senior figure in global climate policymaking, commended Pakistan for the significant progress marked by the unveiling of its Carbon Market Policy. Highlighting the complexities of implementation, she emphasized that the real work begins now and assured UNEP's continued support to Pakistan's Ministry of Climate Change and Environmental Coordination (MoCC&EC).

Ms. Riham Elgizy, CEO of the Regional Voluntary Carbon Market Company (RCVMC) in Saudi Arabia, brought insights from her pioneering work in developing voluntary carbon markets across the Middle East. She underlined the importance of transparency and integrity in establishing credibility for carbon markets. Cautioning against potential pitfalls, she advised Pakistan to carefully learn from the experiences of other nations that faced challenges during the adoption of carbon market frameworks.

Ms. Isa Mulder from Carbon Market Watch, known for her steadfast advocacy for environmental integrity, stressed the importance of ensuring that carbon trading systems deliver tangible environmental benefits. Her perspective underscored the need for stringent regulatory oversight and robust mechanisms to prevent market inefficiencies.

The second panel discussion, moderated by Mr. Mark Kenber, Executive Director of the Voluntary Carbon Markets Initiative (VCMI), centered on innovative financing strategies and the potential of Paris-aligned carbon markets to drive sustainable development in Pakistan.

Mrs. Dawa Chhoeden, Chief Engineer at Bhutan's Ministry of Energy and Natural Resources, shared Bhutan's success in leveraging carbon credits to promote renewable energy projects. Her insights highlighted the importance of tailoring carbon market policies to national priorities while maintaining flexibility to adapt to evolving market dynamics.

Ms. Berioska Quispe, Director General of Climate Change and Desertification in Peru, detailed Peru's initiatives in generating carbon credits through forest conservation and biodiversity projects. Her presentation underscored the value of preserving natural ecosystems as critical carbon sinks.

Mr. Chandra Shekhar Sinha, Global Lead for Carbon Markets and Finance at the World Bank Group, outlined strategies for mobilizing investments into climate projects in emerging economies. Emphasizing the critical role of private sector engagement, he provided actionable recommendations for fostering investor confidence in Pakistan's carbon markets.

Mr. Amr Sobhy, Senior Climate Change Specialist at the Islamic Development Bank (IsDB), introduced the concept of sustainability bonds being launched by the IsDB. These bonds aim to provide financial support for low-carbon initiatives in member countries, offering Pakistan a new avenue for attracting development financing.

Ms. Adidjatou Hassan, President of the Benin National Carbon Projects Registration Authority, shared valuable lessons from Africa's carbon market initiatives. Highlighting the challenges and opportunities faced by nations new to carbon markets, she encouraged Pakistan to adopt an inclusive and equitable approach while building its market structures.

H.E. Ms. Romina Khurshid Alam, Coordinator to the Prime Minister on Climate Change and Environment Coordination, underscored the potential of Article 6 of the Paris Agreement as a foundation for establishing equitable and transparent carbon markets in Pakistan. Acknowledging the nation's vulnerability to climate change, she reaffirmed Pakistan's unwavering resolve to tackle these challenges and capitalize

on carbon market opportunities. "Today's discussions mark an important milestone in shaping Pakistan's climate action strategy," she said. "By implementing Article 6, we can create cross-border cooperation that not only facilitates emissions reductions but also fosters sustainable development. This is a critical step toward ensuring that carbon markets contribute to both economic growth and social equity."

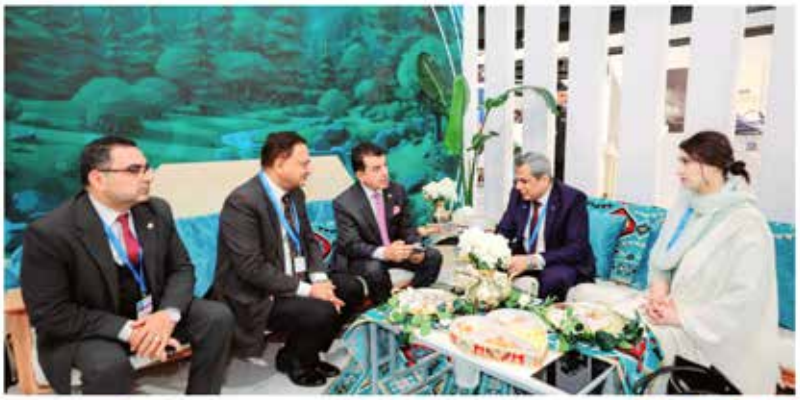
The panels collectively emphasized the importance of creating a unified framework for carbon market operations in Pakistan. Plans to establish a One-Window Carbon Market Facility were unveiled, aiming to streamline transactions, enhance transparency, and support project developers. This facility will adhere to international standards of environmental integrity, ensuring that all activities align with global best practices.

Pakistan's Carbon Market Policy Guidelines reflect a strong commitment to leveraging carbon markets for climate resilience, economic growth, and social inclusion. By incorporating lessons from global leaders and fostering international collaboration, Pakistan is positioning itself as a key player in the global effort to achieve net-zero emissions.

Panel Discussion on Climate Change – Antimicrobial Resistance (AMR) Nexus

Recognizing the interlinked global challenges of Climate Change and Antimicrobial Resistance (AMR) – both independently critical and collectively forming an "alarming alliance" – COMSATS organized a panel discussion titled 'Climate Change – Antimicrobial Resistance (AMR) Nexus' on November 18, 2024. .

The event, held at the ICESCO Pavilion on Day 8 of COP29 in Baku, aligned with thematic focuses on Human Development, Health, Education, and Children and Youth. It was organized in collaboration with the Islamic World Educational, Scientific and Cultural Organization (ICESCO), COMSATS Centre of Excellence in Egypt, the National Research Centre (NRC), and the Food Security and Agriculture Centre of Excellence (FACE), Pakistan.



The discussion aimed to spotlight the exacerbating impact of climate change on AMR and the dual economic risks posed by these threats, emphasizing the urgent need for global action. Moderated by Prof. Dr. Ashraf Shaalan, Chairperson of the COMSATS Coordinating Council and former President of NRC Egypt, the event featured opening remarks by the Executive Director of COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, and Chief Operating Officer of FACE, Mr. Hassan Akram.

The technical session included insightful contributions from Ms. Anamaria Bejar, Director of Public Policy Engagement, Gavi, The Vaccine Alliance; Ms. Madiha Latif, Country Director, The Pathfinder, Pakistan; and Mr. Mohsin Hafeez, Director of Food and Ecosystems, International Water Management Institute (IWMI). Panelists called for an inter-sectoral approach to address AMR, leveraging WASH (Water, Sanitation, and Hygiene) practices to minimize antibiotic misuse. They stressed a people-centric, preventive health focus and the integration of AMR into national and global climate strategies.

In his opening remarks, the Executive Director COMSATS, Ambassador Zakaria, highlighted the disproportionate burden of climate change and AMR on the Global South, describing AMR as a "silent pandemic." He urged nations to incorporate AMR strategies into climate agendas, emphasizing the need for interdisciplinary research and cross-sectoral partnerships that unite microbiology, environmental sciences, economics, and public health.

Following the opening address by the Executive Director of COMSATS, the

Chief Operating Officer of FACE, Mr. Hassan Akram, underscored the critical need for a "One Health" approach. He emphasized how interconnected human, animal, and environmental health systems are vital in combating infectious diseases and AMR.

The technical session featured diverse perspectives from experts on water quality, vaccination, public health, and gender equity. Mr. Mohsin Hafeez highlighted the alarming state of water quality in developing countries, including Pakistan. He noted that only 36% of Pakistan's population has access to safe drinking water, while poor sanitation contributes to widespread health vulnerabilities. Citing the 2022 floods, he shared how stagnant water left over one million women at heightened risk of infections and waterborne diseases. Mr. Hafeez stressed the need for multilateral collaboration, robust financial investments in AMR research, and leveraging Water, Sanitation, and Hygiene (WASH) practices to reduce antibiotic misuse.

Ms. Anamaria Bejar elaborated on Gavi's multi-sectoral efforts in collaboration with WHO and UNICEF to deliver 19 life-saving vaccines across 57 developing countries. She warned against the over-prescription of antibiotics, which exacerbates AMR, and advocated for integrating WASH, nutrition, and immunization practices into health systems to prevent infections and reduce antibiotic reliance.

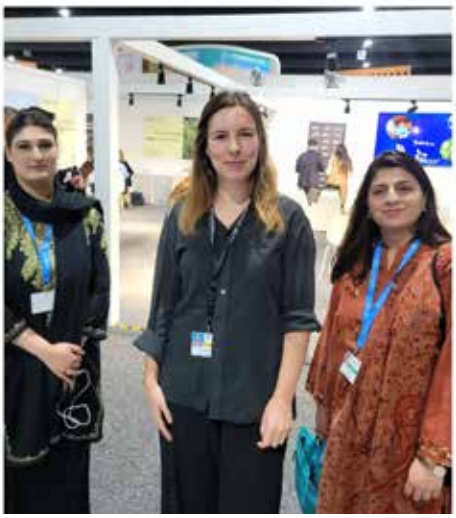
Ms. Madiha Latif emphasized the dangers of siloed approaches in tackling interconnected challenges like AMR. She highlighted the disproportionately high impact of AMR on women due to biological, cultural, and socio-economic factors and advocated for prioritizing women's access to sexual and reproductive health rights (SRHR). Integrating SRHR into national strategies, she noted, would strengthen women's roles across key sectors such as agriculture, water management, and climate change.

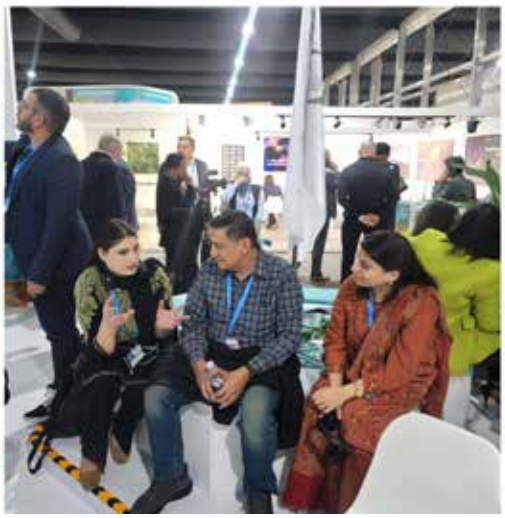
The discussion concluded with actionable recommendations to address AMR effectively. These included leveraging key practices such as Water, Sanitation, and Hygiene (WASH), nutrition, sexual and reproductive health rights (SRHR), and immunization to reduce antibiotic use. Emphasis was placed on adopting people-centric, preventive health approaches to combat rising resistance and prioritizing interventions in vulnerable regions and identified hotspot areas. Participants also highlighted the need for robust public-private partnerships to foster inter-sectoral collaboration and deliver sustainable, cross-cutting solutions. Furthermore, the integration of AMR into the national policy frameworks of both Global North and South countries was deemed essential for comprehensive and coordinated action.

The event reflected COMSATS' steadfast commitment to promoting sustainable socio-economic development and its efforts to combat the dual burden of climate change and AMR.

Integrating Permaculture and Predictive Modeling for Climate-Resilient Agriculture

On Day 9 of COP29, COMSATS organized a sideline event titled "Integrating Permaculture and Predictive Modeling for Climate-Resilient Agriculture" on 19th November 2024. The event was held at the pavilion of the Islamic World Educational, Scientific, and Cultural Organization (ICESCO), with notable collaboration from the Living Indus Initiative, International Center for Agricultural Research in the Dry Areas (ICARDA), and the Food Security and





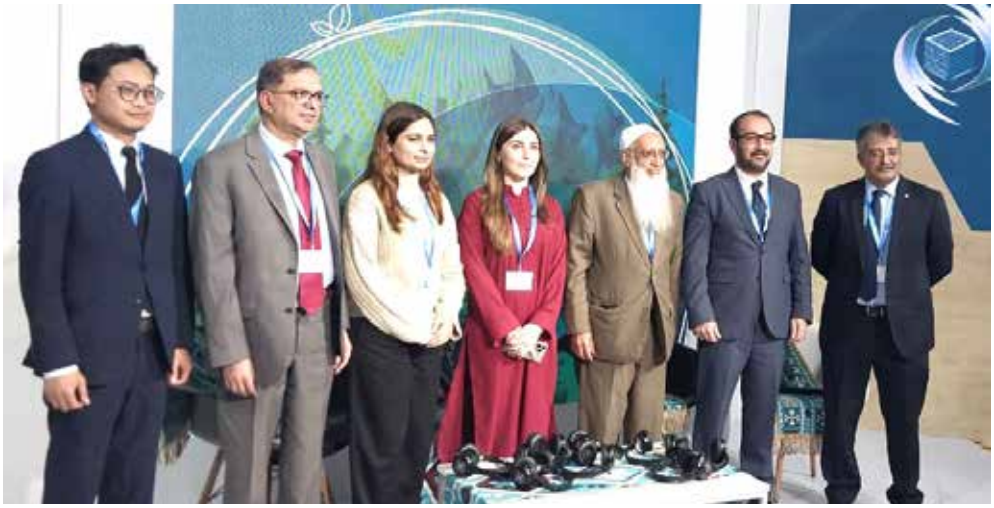
Agriculture Centre of Excellence (FACE) in Pakistan. The Panel brought together experts, policymakers, and thought leaders to explore innovative solutions to one of the most pressing challenges of our time: ensuring sustainable agriculture in the face of climate change.

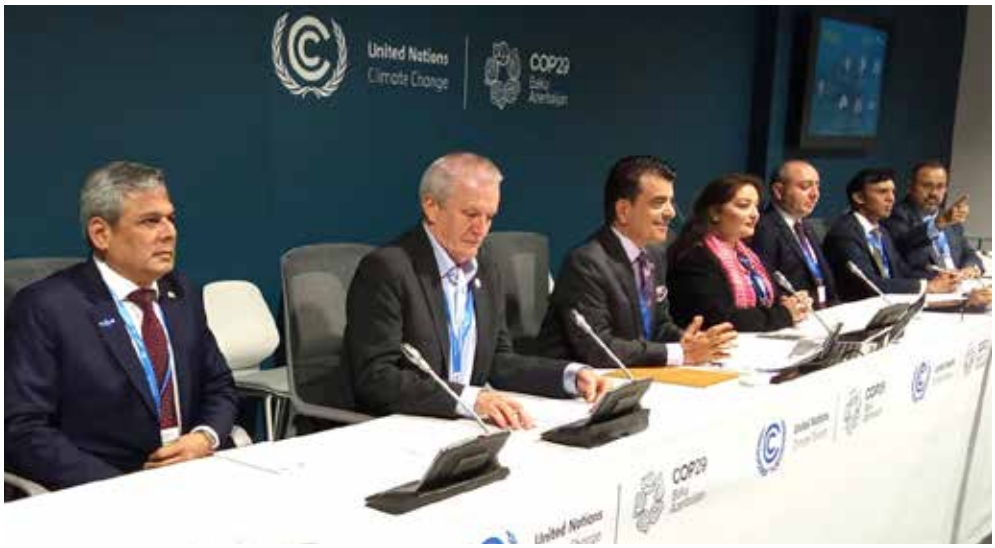
In his opening remarks, the Executive Director of COMSATS, Ambassador Dr. Nafees Zakaria, shared transformative examples of permaculture's potential, citing projects such as Greening the Desert in Jordan. He emphasized, "Permaculture offers a critical shift toward sustainable, resilient, and resource-efficient agriculture. It is not merely a set of techniques but a guiding philosophy that enhances biodiversity, soil health, and ecosystem balance. With projects like these, barren landscapes have been transformed into green oases, providing a model for regions facing similar challenges globally."

Ms. Azka Abdur Rehman, Executive Sustainability and Innovation, Fauji Fertilizer Company Limited, highlighted the connectivity between permaculture and predictive modeling. In her remarks, she stated, "Permaculture represents a philosophy of resilience and regenerative agriculture, while predictive modeling brings data-driven precision to this approach. Together, they form an unparalleled combination for fostering climate-resilient agricultural practices."

Ms. Humaira Jahanzeb, Team Lead of the Living Indus Initiative, delivered a detailed presentation on securing the Indus River under the framework of the initiative. She described it as a flagship project of the UN World Restoration Flagship Programme, addressing the three planetary crises of biodiversity loss, pollution, and climate change. Her remarks emphasized the initiative's integrated approach, including partnerships with UN agencies, academic alliances, global climate finance mechanisms, and community outreach.

The panel session, moderated by Mr. Faraz Ahmed Toor, Information Management Specialist, Living Indus Initiative, featured a distinguished panel of experts who explored the intersection of permaculture and predictive modelling. Dr. Vinay Nangia,





Director Research Program (ICARDA) discussed how predictive modeling and digital tools can scale permaculture practices by enhancing community engagement, reducing costs for resource-limited farmers, and ensuring economic viability. He emphasized the importance of ICARDA's conservation agriculture models in boosting resource efficiency and yield.

Mr. Faisal Syed, Project Development Technical Expert (Living Indus Initiative) shared insights on balancing social, environmental, and economic sustainability within permaculture practices, particularly in resource-scarce regions. He highlighted the role of predictive modeling in optimizing yields while maintaining this delicate balance.

Mr. Mohsin Hafeez, Director Food and Ecosystems (IWMI) underscored the importance of integrating local ecosystem data into predictive models, noting how this synergy supports long-term sustainability and resilience in areas facing harsh climatic conditions.

Mr. Minhaj Khokhar, CEO (PK2100) discussed scaling permaculture from small farms to large operations. He shared insights from predictive modeling that reveal which aspects of permaculture adapt well to large-scale farming and which may require more nuanced approaches.

The discussions reiterated the need for holistic, interdisciplinary approaches to achieve climate-resilient agriculture. By combining the regenerative power of permaculture with the precision of predictive modeling, stakeholders can unlock solutions that are both innovative and impactful. The event concluded with a collective call to action: governments, research institutions, private sector actors, and local communities must collaborate to implement these transformative approaches. As the moderator of the event, Mr. Faraz Toor noted, "Together, we can lead a global movement toward climate-resilient agriculture, setting an example for regions grappling with similar challenges worldwide."

Symposium on Enhancing Water Security, Biodiversity, and Peace through Innovation and Earth Observation

As part of its activities at COP29, the Islamic World Educational, Scientific and Cultural Organization (ICESCO) held an international seminar on enhancing water security, biodiversity and peace through innovation and Earth observation, in partnership with the Islamic Organization for Food Security (IOFS) and COMSATS. The panelists gathered to discuss the mechanisms to address water scarcity challenges through the use of technology and environmental peacebuilding.

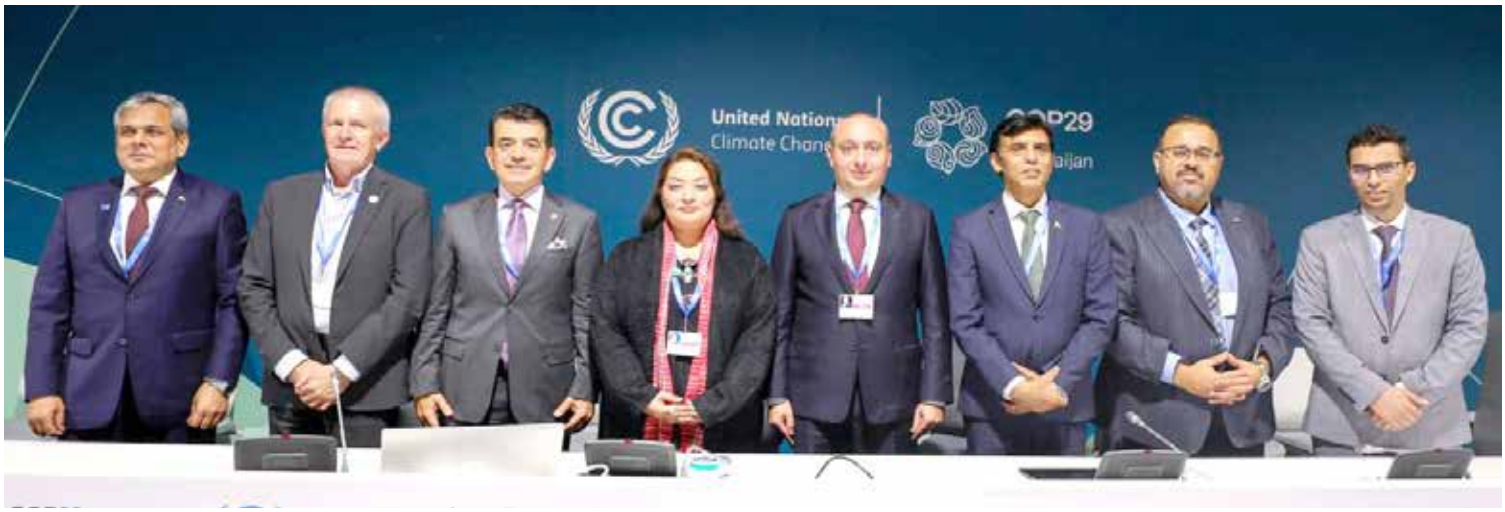
The symposium marked the launch of ICESCO's new water sustainability collaboration platform.

The symposium kicked off on 16 November 2024 with Dr. Hisham Al-Askari, Advisor to ICESCO Director General, who presented an overview of its topics and highlighted the importance of discussing this vital topic, praising the expertise and visions of the speakers, before initiating the discussion.

Answering a question about ICESCO's efforts on water security, biodiversity and peacebuilding, Dr. Salim Al-Malik, Director General of ICESCO, underlined that the Organization is leveraging the vast knowledge and cultures of Member States to address pressing challenges, noting that ICESCO's innovative platform will serve as a cooperation and knowledge exchange hub by harnessing Earth observation technologies and data analytics to monitor water resources.

Regarding ICESCO's approach to merging technology and heritage, Dr. Malik stressed that this approach is at the core of the Organization's sustainable development strategy, believing that the integration of modern technologies with the Islamic world's rich heritage will contribute to building resilience between cultural identity and future preparedness.

H.E. Ms. Romina Khurshid Alam, Coordinator to the Prime Minister of Pakistan on Climate Change, shared Pakistan's experience and government initiatives to achieve water security.



In his intervention, Ambassador Mohammad Nafees Zakaria, Executive Director of COMSATS, emphasized the importance of cooperation to achieve water security and provided examples of hostile acts throughout history that have threatened water security.

For his part, Mr. Stewart Maginnis, Deputy Director General of the International Union for Conservation of Nature, highlighted the importance of integrating solutions to conserve natural resources and employ technology in this framework; while Mr. Samaddin Asadov, Chairman of the Board of the Azerbaijan Space Agency (Azercosmos), tackled the role that satellites can play in addressing the challenges of water poverty.

Mr. Abid Qaiyum Suleri, Executive Director of Pakistan's Sustainable Development Policy Institute (SDPI), emphasized the importance of adopting appropriate policies and using available technologies to support water security initiatives.

Dr. Al-Askari outlined the key aspects of ICESCO's Water Sustainability Collaboration Data Solutions Hub, pointing out that this platform aims to bring together various stakeholders to develop innovative solutions to address water and biodiversity challenges by integrating modern technologies and environmental practices.

Panel Discussion on Towards More Resilient Food Systems: Sustainable Food Systems, Supply Chains, and Nutritious Food

In collaboration with the Sustainable Development Policy Institute (SDPI) and the Ministry of Climate Change and Environmental Coordination (MoCC&EC), Government of Pakistan, COMSATS co-organized a panel discussion titled "Towards More Resilient Food Systems: Sustainable Food Systems, Supply Chains, and Nutritious Food" at the Pakistan Pavilion. Experts and policymakers convened to discuss the pressing challenges and actionable strategies for fostering climate-resilient food systems in Pakistan.

The session began with Dr. Abid Qaiyum Suleri, Executive Director of SDPI, who stressed the critical role of resilient food systems in bolstering Pakistan's overall climate resilience. He highlighted the importance of empowering subnational governments, particularly local leaders, to address food security and integrate climate action into regional frameworks. Dr. Suleri underscored the untapped potential of Balochistan, with its rich coastlines and fertile plains.

Mr. Nadeem ur Rehman, Secretary of Climate Change, highlighted Pakistan's paradoxical position as one of the most climate-vulnerable nations despite contributing minimally

to global emissions. He pointed out that Balochistan, while heavily affected by climate-induced disasters, offers immense agricultural potential due to its diverse agro-ecological zones and natural resources, including river basins and irrigation systems. However, he emphasized the underutilization of arable land and discussed efforts such as the plantation of 10 million olive saplings to harness the region's agricultural capabilities.

Addressing the issue of malnutrition, Mr. Bilal Anwar, CEO of the National Disaster Risk Management Fund (NDRMF), drew attention to the 48% malnourishment rate among children in Pakistan. He emphasized the critical link between water management, food production, and disaster risk reduction, particularly in drought-prone regions like Sindh. Mr. Anwar highlighted NDRMF's commitment to integrating nutrition-focused strategies into disaster response planning.

Mr. Bilal Azhar Kayani, Member of the National Assembly of Pakistan and Convener of the SDGs Parliamentary Taskforce, stressed the need for stronger legislative and parliamentary advocacy to advance climate-resilient food systems. He discussed the challenges of transitioning hard-to-abate sectors, such as agriculture, toward sustainable practices and called for expert-led strategies to drive this transformation.

On an international front, Dr. Saul Morris, Director of GAIN, emphasized the importance of improving nutrition for vulnerable populations. Drawing from GAIN's work in food systems policy development in Pakistan, he discussed the impact of rising carbon emissions and heat on nutrient loss and called for robust interventions to combat these challenges.

Dr. Minhaj Khokhar, an ecosystem and food specialist, proposed innovative farming techniques such as vertical gardening, regenerative agriculture, and organic meat production to reduce reliance on chemicals and improve yields. He advocated for inclusive farming practices as a pathway to long-term food security.

Focusing on global food security challenges, Dr. Khalid Mahmood, CEO of SAWiE, emphasized the need to adopt sustainable agricultural practices to address the challenge of feeding a projected global population of 10 billion by 2050. He highlighted the potential of regenerative agriculture, particularly in Balochistan, to deliver both environmental and economic benefits to small-scale farmers.

Representing the private sector, Mr. Khurram Shah of PepsiCo shared insights on the company's initiatives in Pakistan, where they collaborate with over 30,000 farmers. He outlined PepsiCo's efforts in promoting soil health, water conservation, and resilient seed varieties to empower farmers in adopting sustainable agricultural methods.

Mr. Niaz Khan Kakar, Project Director of Upscaling Green Pakistan, emphasized the importance of preserving native plant species in Balochistan, a region known for its rich biodiversity. He cautioned against the promotion of exotic species and advocated for policies supporting ecosystem conservation.

The session concluded with Mr. Naseem ur Rehman, Advisor to the Government of Balochistan, who reiterated the province's vulnerability to climate-induced disasters despite its vast resources. He expressed gratitude for international support and reaffirmed Balochistan's commitment to climate resilience. He also emphasized the importance of global platforms like COP29 in raising awareness and

fostering collaborative action.

This impactful discussion brought together key stakeholders from government, international organizations, academia, the private sector, and local communities. It underscored the need for coordinated efforts at all levels to build sustainable and climate-resilient food systems, ensuring a secure and nutritious future for Pakistan amidst the growing threats of climate change.

Decarbonizing Road Transport: Innovations and Policies for Electric and Hydrogen Vehicle Technologies

COMSATS successfully hosted a high-impact panel discussion titled "Decarbonizing Road Transport: Innovations and Policies for Electric and Hydrogen Vehicle Technologies" on November 20, 2024. The event was held at the pavilion of the Islamic World Educational, Scientific, and Cultural Organization (ICESCO), with notable collaboration from the Economic Cooperation Organization Science Foundation (ECOSF), COMSATS' Centre of Excellence in Türkiye – TÜBİTAK (Scientific and Technological Research Council of Türkiye), and the Food Security and Agriculture Centre of Excellence (FACE) in Pakistan.

The panel addressed the pressing need to transform the transport sector, which remains a significant contributor to global greenhouse gas (GHG) emissions, focusing on technological innovation, policy frameworks, and equitable adoption pathways for electric and hydrogen vehicle technologies.

In his opening remarks, the Executive Director COMSATS, Ambassador Dr. M. Nafees Zakaria, underscored the historical roots of climate change, citing the Industrial Revolution, the Green Revolution, world wars, and advances

in transportation as pivotal moments that contributed to the current state of environmental degradation. He emphasized that the decarbonization of road transport is not just a technological endeavor but also a socio-economic and health related challenge.

"Millions of individuals in developing countries face affordability barriers in transitioning to cleaner vehicles," Dr. Zakaria noted. "Addressing this inequity is vital to ensure the widespread adoption of sustainable transport solutions." He also called for stronger international oversight, proposing that organizations like the UNFCCC mandate annual reporting on member states' progress in decarbonizing their transport sectors.

The technical session, moderated by Dr. Fahman from ICESCO, featured distinguished experts: Dr. Gizem Çakmak, Chief Researcher at TÜBİTAK; Eng. Khalid Salmi, Sustainable Energy Management Expert at RCREEE; and Eng. Khalil Raza, Sustainable energy professional & Programs Manager at ECO Science Foundation.

Panelists discussed critical topics, including: the role of regulatory frameworks in reducing transport sector GHG emissions; financial mechanisms to foster the adoption of electric vehicles (EVs) in developing countries, and the potential of green hydrogen as a transformative energy source.

Eng. Salmi highlighted the economic potential of green hydrogen production in Africa, particularly in countries like Morocco and Namibia, and the need for developing nations to leverage domestic technologies to remain competitive. Dr. Çakmak addressed the persistent barriers to EV and hydrogen technology adoption, including infrastructure gaps, high costs, and limited technical expertise.

Engr. Raza called for robust policy frameworks and capacity-building initiatives.

In his closing remarks, Prof. Syed Komail Tayebi, President of ECOSF, emphasized that many developing nations lack the technological and financial resources to produce EVs locally, making them reliant on costly imports. "Collaboration between governments, international organizations, and private stakeholders is essential to overcome these challenges," he stated.

Dr. Zakaria reiterated COMSATS' commitment to supporting its 27 member states and 25 Centres of Excellence in advancing EV and hydrogen vehicle technologies. "COMSATS is ready to play a leading role in this global transition, combining our expertise and resources to decarbonize the transport sector," he concluded.

SOME ACTIVITIES OF COMSATS' CENTRES OF EXCELLENCE

HRH Princess Sumaya bint El Hassan – UNESCO Goodwill Ambassador

Her Royal Highness Princess Sumaya bint El Hassan, has been reappointed for another term as UNESCO Goodwill Ambassador for Science for Peace. Since her original appointment in 2020, she has worked tirelessly to promote science as a tool for peace and understanding. This renewed recognition reflects her inspiring leadership.

RSS – Champion in Addressing Plastic Pollution

The Royal Scientific Society has been recognised as the "Champion in Addressing Plastic Pollution in the Mediterranean Region." This prestigious award is endorsed by leading organisations, including the European Commission (EU), the Union for the Mediterranean (UfM), the United Nations Environment Programme (UNEP), and the Mediterranean Action Plan (MAP) under the Barcelona Convention.

Dr Diya AlSafadi, Director of the Research for Industry Centre at RSS, was recognized for his outstanding leadership and steadfast commitment to this mission. This achievement highlights RSS dedication to creating effective actions and pioneering solutions to tackle plastic pollution in Jordan and across the Mediterranean.

Laboratory of Applied Microbiology inaugurated at KazNU

On November 21, 2024, Al-Farabi Kazakh National University (KazNU) hosted the international conference "Sustainable Future-2024: Biotech, Ecology, Energy" dedicated to the University's 90th anniversary. As part of the event, the International Laboratory of Applied Microbiology, established through a Kazakh-German-Chinese partnership, was inaugurated.

The event was attended by representatives of management, scientists, professors, teachers and students of universities. Prominent scientists from leading universities in Germany, China, Pakistan and Kazakhstan delivered presentations. More than 60 students and young scientists from different countries of Central Asia showcased their research through reports and booklets.

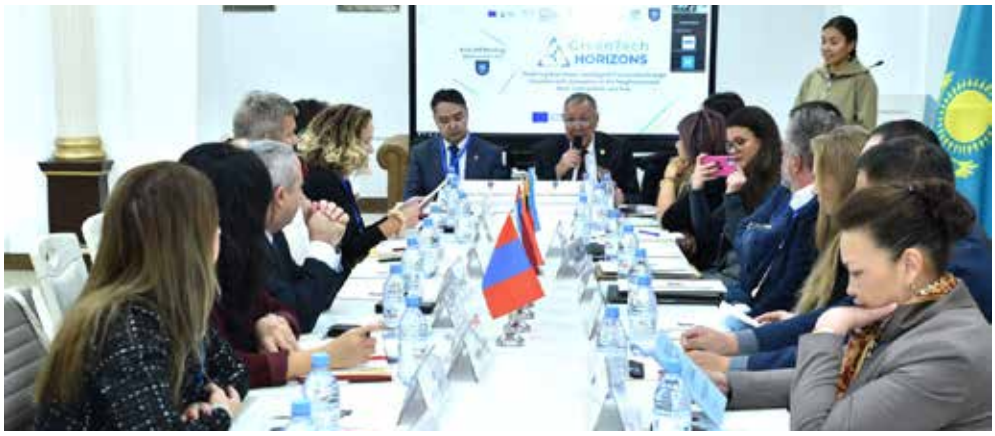
The laboratory's activity is aimed at the development of scientific research in the field of biotechnology on the international level, introduction of innovative biotechnologies and increasing the scientific potential of Kazakhstan. The scientific center was established as a result of joint work of Kazakh, German and Chinese scientists, focusing on applied branches of microbiology - agriculture, ecology, medicine and industry. The project will be a great contribution of Kazakhstan to the competitiveness of science and the realization of the Sustainable Development Goals.

Strengthening ties with French universities

Chairman of the Board – Rector of Al-Farabi Kazakh National University Prof. Zhanseit Tuimebayev held a meeting with Ambassador Extraordinary and Plenipotentiary of France to Kazakhstan Sylvan Guiaugue.

The two sides discussed a wide range of issues of mutual interest, particularly the prospects for strengthening and expanding cooperation between universities in Kazakhstan and France.

During the meeting, the Ambassador was briefed on the key activities of KazNU, including ongoing efforts to create favorable conditions for youth development. Prof. Zhanseit Tuimebayev also highlighted the university's existing partnerships with French higher education institutions.



Seminar on GreenTech Horizons Project Begins at KazNU

One November 28, 2024, a two-day seminar on the GreenTech Horizons project commenced at Al-Farabi Kazakh National University (KazNU), aimed at facilitating the transition to green and digital technologies through education and innovation in the countries of the Eastern Partnership, Central Asia and the Far East.

Welcoming the participants, Prof. Yerkin Duissenov, Deputy Chairman of the Board and Acting First Vice-Rector of KazNU noted that the Erasmus+ program is the most important strategic tool for improving the quality of education and scientific research. "In recent years, KazNU has been actively participating in this program, which resulted in 86 concluded contracts under the Erasmus+ International Credit Mobility (ICM) program. These agreements open up unique opportunities for our students and teachers to share experience, knowledge and culture with leading universities and research centers around the world".

The project coordinator, Prof. Daniela Ciric Lalic, UNS, Coordinator of the National Office of Erasmus+ in Kazakhstan, Laura Paluanova, and others made a welcoming speech.

Prof. Daniela Ciric Lalic presented a detailed presentation on the importance of the dual green and digital transitions and cooperation between Europe and Central Asia. She said: "The main goal of the project is the development and implementation of competencies that contribute to sustainable economic growth, job creation, and ensuring the competitiveness of the modern workforce".

Professors Daniela Grakanin and Milena Savkovic from UNS highlighted that the GreenTech Horizons project involves a multilateral interregional partnership with the participation of educational and industry partners. As the speakers emphasized, the project will create a sustainable platform for integrating innovative technologies into educational processes and will contribute to socio-economic development by enhancing qualifications and expanding opportunities for youth and professionals in the target countries.

Science Day Observed at ICCBS-Pakistan

The International Centre for Chemical and Biological Sciences (ICCBS) celebrated Science Day to inspire and motivate students to become the next generation of scientists and thinkers.

The event acknowledged the achievements of young scholars and their mentors with certificates of appreciation. Participants were briefed on the Centre's research productivity, which led to the graduation of 83 M.Phil and Ph.D scholars in 2024, showing the highest research and academic productivity over the last 10 years. Students from various research fields, including chemistry and molecular medicine, presented e-posters highlighting their findings and accomplishments.

The inaugural ceremony featured a special lecture titled "Amazing Developments in Science" by Prof. Dr. Atta-ur-Rahman, former Federal Minister for Science and Technology. The event also included addresses by Prof. Dr. Farzana Shaheen, Director of ICCBS; Prof. Dr. Syed Ghulam Musharraf; and Dr. Imran Malik.

Prof. Farzana Shaheen expressed her pride in the young scholars, calling them the "real assets" of ICCBS. She commended their outstanding research productivity over the past year and congratulated the students who recently completed their higher degrees.

The day was jointly organized by the ICCBS, and the American Chemical Society (ACS), Pakistan Chapter.

TWAS elected ICCBS-Pakistan Professor as a Fellow

Prof. Dr. M. Raza Shah, a senior Professor at ICCBS, University of Karachi, has been elected as a Fellow of The World Academy of Sciences (TWAS), Italy.

Prof. Shah has been honored with this prestigious fellowship in recognition of his outstanding contributions to Nanomedicine and Supramolecular Chemistry.

It is noteworthy that Prof. Shah was recently appointed as a member of the Expert Advisory Committee of the WHO International Traditional Medicine Clinical Trial Registry. Additionally, he received the Iranian Khwarizmi International Award from the Ministry of Science, Research, and Technology of Iran, earning the prestigious title of Khwarizmi International Laureate.

ICCBS Signs MoU with Aga Khan University Hospital

ICCBS-Pakistan has signed a Memorandum of Understanding (MoU) with the Aga Khan University Hospital and Medical College Foundation.

The MoU aims to establish collaboration in the field of Artificial Intelligence (AI), with a focus on applications in healthcare and related areas.

The agreement was signed by Prof. Dr. Farzana Shaheen, Director of ICCBS, and Prof. Dr. Syed Ather Enam, Professor of Neurosurgery and Director of the Centre for Regenerative Medicine and Stem Cell Research at the Aga Khan University Hospital, during a meeting held at the Dr. Panjwani Center for Molecular Medicine and Drug Research, University of Karachi.

The two institutions have agreed to collaborate on joint research programs, co-author scholarly publications, share health and clinical research data, and develop technology-based healthcare solutions. The MoU also includes provisions for exchanging scholars, faculty members, and postdoctoral fellows.

CSIR-Ghana introduces integrated soil fertility management technology to boost maize production

The Council for Scientific and Industrial Research-Savanna Agricultural Research Institute (CSIR-SARI) organized a field day and visit for farmers at Nabuli in the Gushegu Municipality of the Northern Region to showcase to them the integrated soil fertility management (ISFM) technologies. The event was for maize farmers to enhance maize yields through the adoption of ISFM.

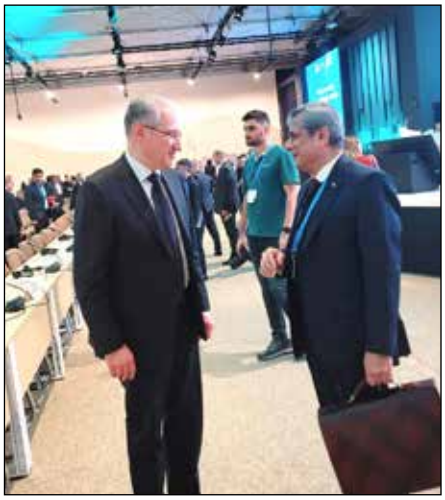
During the field day, farmers were introduced to climate-smart maize variety "Bihilifa" and various mineral fertilizer combinations, which aimed to improve their understanding of nutrient management and decision-making for optimizing crop production.

ITS-Indonesia Drives Waste Management Transformation through Technology at IEEE Tech4Good 2024

Institut Teknologi Sepuluh Nopember (ITS), through its Faculty of Intelligent Electrical and Informatics Technology (ELECTICS), demonstrates its commitment to sustainability-driven innovation. As part of the IEEE Tech4Good 2024 program, the ELECTICS ITS team successfully developed a waste management solution that integrates advanced technology with the local wisdom of Bali, supporting the region's zero-carbon emission mission.

The project titled "Self-sustaining and Environmentally Friendly Composters as a Clean Traditional Ceremonial Waste Treatment Solution to Support Zero Carbon Emissions in Bali" is one of ITS' flagship community service initiatives.

GLIMPSES OF SOME EVENTS



Scholarships offered by COMSATS University Islamabad (CUI), Pakistan

COMSATS University Islamabad (CUI), Pakistan, offers MS & PhD Scholarships for students and researchers belonging to COMSATS' Member States and prospective members. The scholarships are offered in the following key programs: Computer Science, Management Science, Electrical Engineering, Biosciences, Mathematics, Physics, and Meteorology.

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Forthcoming Events

27 May 2025	Training Workshop (online): Enhancing University-Business and R&D-SME Collaboration for Innovation and Growth (www.comsats.org)
29 May 2025	e-Conference on 'Modern MRI: From Core Principles to AI-Driven Applications' (www.comsats.org)
17 June 2025	Webinar titled 'Towards Digital Transformation: Ensuring an Equitable and Inclusive Society" (www.comsats.org)
17-20 June 2025	4th African Symposium on Big Data, Analytics and Machine Intelligence, and 18th TYAN International Thematic Virtual Workshop, 17-20 June 2025, Akure, Nigeria (www.comsats.org)

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