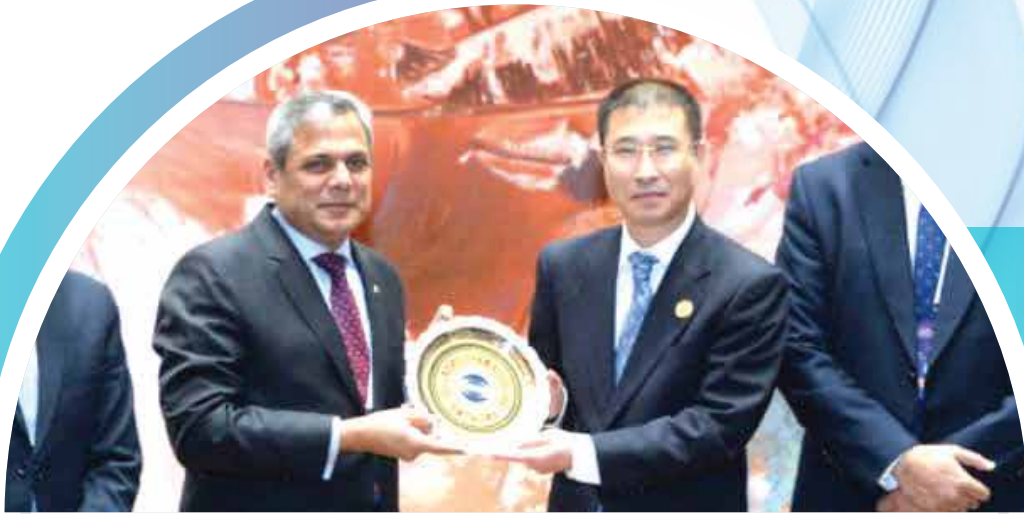




Commission on Science and Technology for
Sustainable Development in the South
(COMSATS)



ANNUAL REPORT 2023



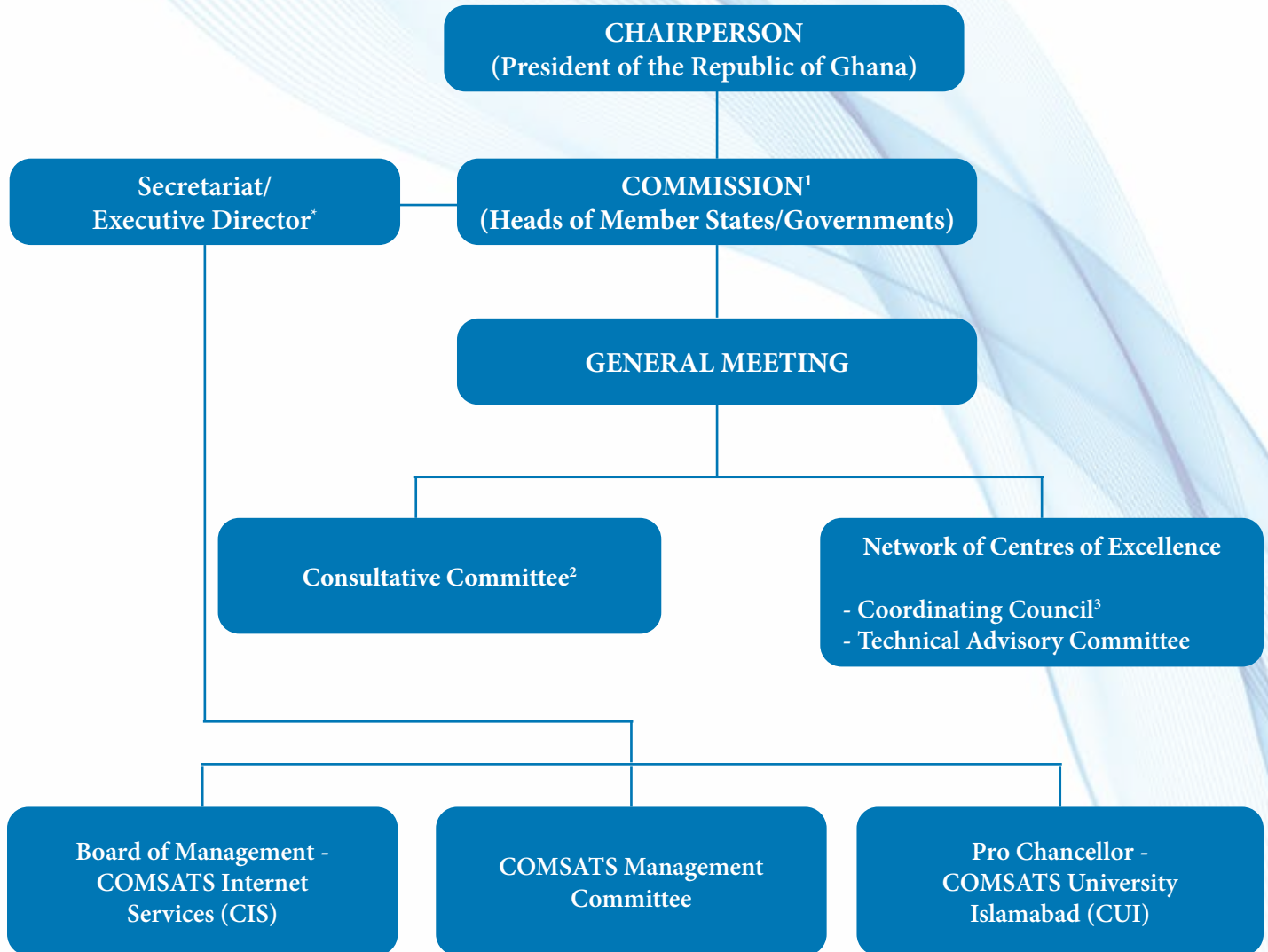
ANNUAL REPORT 2023

July 2024



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

ORGANIZATIONAL STRUCTURE



* Also ex-officio Secretary to 1, 2 and 3



Hon. Nana Addo Dankwa Akufo-Addo

President of the Republic of Ghana
Chairperson COMSATS

The President of Ghana, Hon. Nana Addo Dankwa Akufo-Addo, is the incumbent Chairperson of COMSATS. His Excellency won the country's Presidential Elections for two consecutive terms in 2016 and 2020, respectively. President Akufo-Addo assumed charge as Chairperson of COMSATS upon becoming the President of Ghana (the country then holding COMSATS' Chair) initially on 7th January 2017. He retained the charge of the Chairperson of COMSATS till date upon his re-election as President of the Republic of Ghana. The Chair of COMSATS rotates among the Member States through consensus.

As a lawyer, Mr. Akufo-Addo worked to champion the cause of human rights, rule of law, justice, freedom, and democracy in Ghana. He was also the Co-chair of the UN Secretary-General's SDGs Advocates for two terms (2017-18 & 2019-20) to promote SDGs as part of an ambitious and transformative global development agenda.

He was decorated with highest award within international diplomatic circles by World Federation of Consuls, Internationale des Corps et Associations Consulaires (FICAC), in 2023, in recognition of his contribution to the growth and sustenance of peace, democracy, stability, freedom and his invaluable support to the Honorary Consuls in Ghana. Global Shield praised Hon. Nana Addo's leadership in taking timely policy decision to scale-up financial protection against Climate Risks utilizing Global Shield's tailored support.

During his two terms in office, President Akufo-Addo successfully implemented various important projects and initiatives, including Ghana's National Identification System; '1-District, 1-Factory Initiative'; Africa's first national-scale electronic pharmacy platform; drones for delivery of critical medicines, vaccines and blood to people in remote areas, etc.



Acknowledgement

The editorial team of COMSATS Annual Report thankfully acknowledges contributions of officials from COMSATS Secretariat, COMSATS Internet Services and COMSATS Centres of Excellence, without which this report could not have been possible.

Editor

Ms. Farhana Saleem

Designing & Development

Mr. Imran Chaudhry

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ABOUT COMSATS

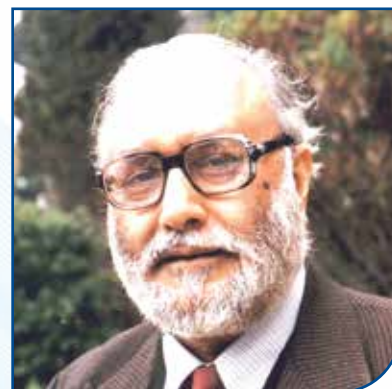
The Commission on Science and Technology for Sustainable Development in the South (COMSATS) was established in October 1994 as an international/inter-governmental organization to act as a global forum of developing countries for their sustainable socio-economic uplift through applications of science and technology. The legendary person behind the idea of COMSATS was a renowned Pakistani Physicist, Scientist and Nobel Laureate, Prof. Dr. Abdus Salam. COMSATS' current membership comprises of 27 countries located in the continents of Africa, Asia, Latin America (and Eurasia), representing a population of over one-third of the world's total.

These countries have diverse social, cultural, economic, political, educational and religious backgrounds, and also differ greatly in their scientific and technological capacities. Their common aspirations for development through cooperation in S&T brought them together on the platform of COMSATS. COMSATS' major source of scientific and technological strength stems from its network of international S&T Centres of Excellence, which comprises of 25 reputed R&D and S&T, and higher education institutes in developing countries, predominantly COMSATS Member States. One European institution – University of Granada – is an addition to the Network since late 2023.

As stipulated in the organization's statutes, COMSATS Secretariat is permanently located in Islamabad, Pakistan, with its operation and expenditures supported through generous grants from the Government of Pakistan. The membership of COMSATS is open to all developing countries. The organization also aspires to further broaden its horizons to all countries and institutions, including those from the North.

MISSION

The mission of COMSATS is to 'help create a world where all nations/states are at peace with one another and capable of providing a good quality of life to their populations in a sustainable way, using modern scientific and



technological means'.

OBJECTIVES

Major objectives and functions of COMSATS are:

- To sensitize the countries in the South to the centrality of science and technology in the development process, to the adequate resource allocation for research and development, and to the integration of science and technology in the national and regional development plans;
- To support the functioning and activities of the Network of International Science and Technology Centres for Sustainable Development in the South, established at the foundation meeting of the Commission;
- To support other major initiatives designed to promote indigenous capacity in science and technology for science-led sustainable development, and to help mobilise long-term financial support from international donor agencies and from government/institutions in the North and the South to supplement the financing of international scientific projects in the South;
- To provide leadership and support for North-South and South-South cooperative schemes in education, training and research, such as the proposal to set up programmes of scholarships for research at centres of excellence in the South; and
- To support the relevant programmes and initiatives of major scientific organisations working for the development and promotion of science and technology in the South.





Ambassador Dr. Mohammad Nafees Zakaria

Executive Director COMSATS

Ambassador Dr. Mohammad Nafees Zakaria assumed charge as the Executive Director COMSATS in November 2022. By virtue of his position, he is also the ex-officio Secretary to COMSATS' statutory bodies, the Commission, the Consultative Committee and the Coordinating Council. Moreover, he is ex-officio Pro Chancellor-II of COMSATS University Islamabad (CUI), and Chairman Board of Management of COMSATS Internet Services (CIS). During his illustrious diplomatic career of over 30 years, he, inter alia, represented Pakistan as High Commissioner to the UK (2019-20), and Malaysia (2017-19). At the Ministry of Foreign Affairs in Islamabad, he held important senior positions, including Additional Foreign Secretary / Spokesperson, Director General for South Asia and SAARC, and Director General for Europe. Amb. Zakaria was awarded honorary degree of Doctorate in Arts & Letters by Forman Christian College, a Chartered University, in recognition of his services to the country and the people irrespective of their religious affinity.

FOREWORD

Socio-economic conditions of the North and the South are marked by some stark differences of incomes, poverty, population, living conditions, educational opportunities, health systems and so on and forth. From higher intellectual and knowledge-economy point of view, adoption, integration and application of new information, data, as well as diffusion and mainstreaming of technology show similar disparities.

Long sustained efforts on the key parameters of development along-side well-designed policies have grossly resulted in the economic supremacy of the advanced nations we refer to as the North. The comparative advantage the nations that have benefitted from best use of the industrial revolution and resources acquired during colonial eras remained with them over the proceeding decades. Their investment in knowledge, Science and Technology, over time, have further compounded the developmental gains for them. It is no surprise that when some new technology emerges, developed countries are more likely to adopt for a better societal diffusion. Similarly, they have been able to better withstand calamities, such as pandemics, and climate catastrophes, and natural disasters, owing to the resilience their comparative and competitive advantage affords them.

These realities are further underscored by the fact that disparities within regions, countries and societies still remain, and have somewhat become more stark in terms of intensity and number of subjects. On one hand, Climate Change endangers the livelihoods and existence of many, especially in the developing countries, on the other, their abilities and capacities vary greatly due to ST&I gaps and knowledge gatekeeping – a modern form of colonialism.

The quote from the last quarter of 20th Century still holds: “At the beginning of a new decade, only twenty years short of the millennium, we must try to lift ourselves above the day-to-day quarrels (or negotiations) to see the menacing long-term problems. We see a world in which poverty and hunger still prevail in many huge regions; in which resources are squandered without consideration of their renewal; in which more armaments are made and sold than ever before; and where a destructive capacity has been accumulated to blow up our planet several times over”¹. With realizations such as this, the world has considerably moved towards a more cooperative model of development, albeit with a lot yet to be achieved, with a strong narrative of sustainability, inclusion and collective efforts, paving way for organizations on cooperation in diverse fields.

A regional trailblazer of international cooperation in S&T advocating the interest of the developing countries, COMSATS continues its mission of sensitizing nations, activating political will, knowledge exchange and sparking policy discussion in key areas of development. An IGO of 27 developing countries, COMSATS utilizes South-South and Triangular cooperation mechanisms for more equitable distribution of the gains to be had from S&T. In this pursuit, COMSATS has paved way for supporting the development of its Member States by initiating programs and activities in various areas of science and technology. COMSATS is facilitating collaboration in the areas of electric vehicles, renewable energy, genomics, precision agriculture, Information Technology (IT) and digital technologies, industrial biotechnology, climate change and environment, micro-chip circuit designing, etc. This Report recaps and showcases activities of COMSATS in this vein, for the year 2023.

¹ North-South, a Programme for Survival: Report of the Independent Commission on International Development, 1980

During 2023, COMSATS has undergone a major upgrade in terms of its thrust areas and expansion of cohorts. In addition to continuing work on clean energy, industrial biotechnology, and climate change, headways and specialized work entered some existing domains, such as Climate change through R&D in EV and highest level participation in COP28, as well as cooperation and liaison with Government entities in Pakistan and abroad. As anticipated, COMSATS' work resulted in meaningful discussions and interactions on right direction of policies, knowledge exchange, R&D, and capacity building young researchers and scientists. COMSATS' seminar, trainings and focused discourses in different member states, have touched a whole array of topics related to green technologies, youth, tech entrepreneurship, technical aspects of climate change.

This comprehensive document is hoped to provide a view at the aforementioned and other 2023 undertakings of the organization during 2023 including COMSATS Network's activity, which would serve the information needs of the readers, stakeholders and prospective partners. My highest regards and gratitude for the Chairpersons of the Coordinating Council and Consultative Committee, whose guidance and support was with us throughout the year. We are grateful to the members of our Technical Advisory Committee for their inputs, as well as the Centres and their heads for delivering on their pledge of technical support and content contribution presenting the spectrum of their work included in this report.

A team-effort, this report draws a lot of its value from all the contributors at COMSATS Secretariat, which I would like to laud and appreciate.

Focal Ministries in Member States



Bangladesh
Ministry of Science and Technology



China
Ministry of Science and Technology



Colombia
Ministry of Science, Technology and Innovation



Egypt
Academy of Scientific Research and Technology



The Gambia
Ministry of Higher Education, Research, Science and Technology



Ghana
Ministry of Environment, Science, Technology and Innovation



Iran
Ministry of Science, Research and Technology



Jamaica
Ministry of Science, Energy and Technology



Jordan
Higher Council for Science and Technology



Kazakhstan
Ministry of Science and Higher Education



Korea DPR
State Academy of Sciences



Morocco
Ministry of Higher Education, Scientific Research and Innovation



Nigeria
Federal Ministry of Science, Technology and Innovation



Pakistan
Ministry of Science and Technology



Palestine
Ministry of Higher Education and Scientific Research



Philippines
Department of Science and Technology



Senegal
Ministry of Higher Education, Research and Innovation



Somalia
Ministry of Education, Culture and Higher Education



Sri Lanka
Ministry of Industry



Sudan
Ministry of Higher Education and Scientific Research



Syria
Ministry of Higher Education and Scientific Research



Tanzania
Ministry of Education, Science & Technology



Tunisia
Ministry of Higher Education and Scientific Research



Türkiye
The Scientific and Technological Research Council of Türkiye (TUBITAK)



Uganda
Uganda National Council for Science & Technology



Yemen
Ministry of Higher Education and Scientific Research



Zimbabwe
Ministry of Higher and Tertiary Education, Science and Technology Development

COMSATS' Focal Ministry in Pakistan Ministry of Science & Technology, Government of Pakistan

The Ministry of Science and Technology (MoST) has been functioning since 1972. It is the national focal point and enabling arm of Government of Pakistan for planning, coordinating and directing efforts; to initiate and launch scientific and technological programs and projects as per national agenda for sound and sustainable S&TR base for the socio-economic development, to achieve the vision for a better Pakistan, in terms of the mandate contained in Schedule-II of the Federal Government Rules of Business 1973.

From the areas of industrial development to renewable energy and rural development, the Ministry suggests technological development for higher growth-rates and to improve standards of living. Its principal focus is on building Pakistan's technological competence in the 21st century as we enter new markets, developing a larger pool of human resources to reverse brain drain, and for integrating the existing technological infrastructure for strengthening of technology institutions, effective governance of S&TR and enhancing the capacity of indigenous innovation systems.

www.most.gov.pk



Prof. Dr. Ashraf Shaalan
Chairperson of COMSATS Coordinating Council

Prof. Ashraf Shaalan was elected as the Chairperson of COMSATS Coordinating Council during its 19th Meeting held in May 2016, in Islamabad, Pakistan, when he was the President of COMSATS Centre of Excellence in Egypt, National Research Centre (NRC). During the Council's 22nd Meeting (2019), Prof. Shaalan was given honorary lifetime membership to the Council. In January 2023 Council Meeting (24th), he was appointed the Chairperson of the Council with unanimous approval. A widely published academician, Prof. Shaalan is member of the Egypt's Presidential Specialized Council for Education and Scientific Research of Egypt and has previously served as the Vice-President of the Academy of Scientific Research and Technology apart from numerous other distinguished appointments and awards.

FROM THE CHAIRPERSON COMSATS COORDINATING COUNCIL

I am delighted to introduce the COMSATS Annual Report for the year 2023. Beyond the tangible and measurable impacts of the efforts exerted by the COMSATS Secretariat together with the esteemed centres of excellence, this year witnessed a full return to research activities after the end of the COVID-19 pandemic at the end of 2022. The commission emerged more flexible and reinvigorated, and our confidence in our capabilities to promote science and technology in the South is reflected in the trust that our human resources and infrastructure are available in most of the member states. I am grateful to our centres of excellence and other stakeholders for their relentless amalgamation and collaboration to achieve our goals. Within the last year, we were able to steer through the challenges of the erratic conditions throughout many regions of the world and proceed forward with our plans. The 24th Meeting of the COMSATS Coordinating Council was hosted and organized by the International Center for Chemical and Biological Science on 25 – 26 January 2023, in Karachi, Pakistan. Great effort has been exerted to proceed further with our vision, focusing persistently on growth for better lives in the South. This includes strengthening interaction with the host country, Pakistan, South-South and Triangular cooperation, collaboration with international organizations, and a number of capacity-building programs.

I would like to thank each member of the COMSATS as well as the 25 Centres of Excellence of COMSATS for their active, continuous, and unwavering support in our sincere work to achieve our target of delivering on our promise for better lives in the South. Thank you all for a wonderful 2023, and I look forward to continuing to break barriers in 2024 with you all.

Members of COMSATS Coordinating Council



Prof. Dr. Md. Aftab Ali Shaikh
Chairman BCSIR, Bangladesh



Dr. Cristhiane Amancio
D.G. Embrapa Agrobiologia, Brazil



Prof. Lin Zhaohui
Director ICCES, China



Prof. Dr. Hua Xiang
Legal Representative, Dy. D.G TIB, China



Prof. Dr. Eduardo Posada F.
Director CIF, Colombia



Prof. Hussein Darwish
Acting President NRC, Egypt



Prof. Herbert Robinson
Vice Chancellor UTG, Gambia



Prof. Paul Pinnock Bosu
Director-General CSIR, Ghana



Prof. Bambang Pramujati
Rector ITS, Indonesia



Prof. Hassan Zamanian
President IROST, Iran



Mr. Charles N. Grant
Director General ICENS, Jamaica



HRH Princess Sumaya bint El Hassan
President RSS, Jordan



Prof. Dr. Zhansait Tuimebayev
Rector KazNU, Kazakhstan



Prof. Promise Mebine
Director NMC, Nigeria



Prof. Dr. Sajid Qamar
Acting Rector CUI, Pakistan



Prof. Dr. Farzana Shaheen
Director ICCBS, Pakistan



Prof. Dr. Imad F. S. Abukishek
President AQU, Palestine



Prof. Ahmadou Aly Mbaye
Rector/President UCAD, Senegal



Prof. Pedro Mercado Pacheco
Rector UGR, Spain



Prof. Ilmi G. N. Hewajulige
Director General ITI, Sri Lanka



Dr. Itmad Awad Al-Hassan
Director General IRCC, Sudan



Prof. Omran Kouba
Director HIAST, Syria



Prof. M. M.A. Mtambo
Director General TIRDO,
Tanzania



Pr. Hakim Gabtani
Director General CERTE,
Tunisia



H.E. Prof. Hasan Mandal
President TUBITAK, Türkiye

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CORE ACTIVITIES OF COMSATS SECRETARIAT

COMSATS Secretariat provides secretarial support to both the Commission and the Network of Centres of Excellence. It is, *inter alia*, responsible for regularly holding statutory body meetings as well as following up on their deliberations and decisions. The Secretariat also executes COMSATS' programmes and activities in partnership with other international agencies, national S&T institutions, R&D organizations, members of academia and scientific community across the world. Other core activities of the Secretariat pertain to: pooling and management of financial resources; enhancing the membership of COMSATS and its Network; and special liaison with the host country, apart from regular engagement with all member states.



Coordinating Council sessions are the most regularly held statutory body meetings of COMSATS, 24th Session was held in Karachi, Pakistan, hosted by the Centre of Excellence, ICCBS, Karachi, Pakistan

Preparations for the Fourth General Meeting of the Commission and Fifth Consultative Committee Meeting

During the reporting period, COMSATS Secretariat continued to make efforts to hold the 4th General Meeting of COMSATS as well as the meeting of the Consultative Committee.

The Executive Director COMSATS coordinated with the Office of the President of Republic of Ghana to seek guidance from the incumbent Chairperson of COMSATS - President of Ghana, Hon. Nana Addo Dankwa Akufo-Addo.

The Executive Director held virtual meeting with the Special Advisor to the President of Ghana on Sustainable Development Goals (SDGs), H.E. Dr. Eugene Owusu, to sensitize the Office of

the President on COMSATS' statutory obligations, programmes and activities, in particular with respect to holding the 4th General Meeting, which was last held in 2015.

As stipulated in COMSATS' Statutes, the General Meeting of the Commission is to be convened by its Chairperson at least once every three years. The General Meeting is the highest forum of COMSATS, with 27 Heads of State/ Government of COMSATS' Member States as its members. The first General Meeting of the Commission that was held in 1994 led to the establishment of COMSATS, while the 2nd General Meeting was held in April 2012 (Islamabad, Pakistan), and the 3rd Meeting in October 2015 (Accra, Ghana).

To gain optimum statutory and policy foresight, it is considered desirable that the Consultative Committee Meeting precedes

the General Meeting of the Commission. The Consultative Committee, *inter alia*, coordinates matters relating to: formulation of general policy of the Network; upgrade of Member countries institutions; sensitization of the Network towards the specific requirements of member countries; and fund-raising for the Centres at national, regional and international levels.

During 2023, the Executive Director COMSATS frequently consulted the Ministry of Science and Technology, Government of Pakistan, which holds the Chair of the Consultative Committee, to emphasize the importance of holding the next Committee Meeting and to offer support of COMSATS Secretariat in this regard.

The Consultative Committee meeting was last held virtually in 2020 during COVID-19 pandemic.



ED COMSATS, Amb. Dr. Mohammad Nafees Zakaria (Podium) and other distinguished speakers of the Inaugural Session

The 24th Meeting of COMSATS Coordinating Council

The Coordinating Council is an important organ of COMSATS' Network of International S&T Centres of Excellence, which comprises the Heads of 25 Centres of Excellence. The Council is an effective platform for South-South and Triangular technical cooperation for realizing the organization's overall objective of achieving sustainable socio-economic development in the South. The Council meets once annually to deliberate on matters relating to the ongoing and future programmes and activities of the organization.

The 24th Meeting of COMSATS Coordinating Council was successfully held on 25-26 January 2023, in Karachi,

Pakistan. The meeting that took place in hybrid mode had been hosted by COMSATS' Centre of Excellence in Pakistan, the International Center for Chemical and Biological Sciences (ICCBS).

The meeting was attended by the Council members or their representatives from 17 Centres of Excellence of COMSATS, including BCSIR (Bangladesh), ICCES (China), TIB (China), CIF (Colombia), NRC (Egypt), UTG (The Gambia), ITS (Indonesia), ICENS (Jamaica), RSS (Jordan), NMC (Nigeria), ICCBS (Pakistan), CUI (Pakistan), ITI (Sri Lanka), HIAST (Syria), TIRDO (Tanzania), CERTE (Tunisia), and TUBITAK (Turkiye).

The Officials belonging to COMSATS' international partner organizations, i.e., COMSTECH, IOFS, SESRIC, The South

Centre, TWAS, ESCAP-SSWA UNESCAP, UNESCO, UNIDO, as well as members of COMSATS Technical Advisory Committee (TAC), and a COMSATS' Focal Ministry in Yemen, attended the meeting as observers.

Inaugural Ceremony

The event was inaugurated on 25th January 2023 by Prof. Dr. Atta-ur-Rahman, ICCBS Patron-in-Chief, and former Federal Minister for Science and Technology, Government of Pakistan. In his address, he urged COMSATS Member States to focus on education, science, technology, innovation and commercialization while their policy formulation. He emphasized the importance of strengthening linkages among state institutions, academic/ research institutions and industry to create knowledge economy.



Council Members and Representatives from Egypt, Jordan, Syria, Tanzania, Sri Lanka, Pakistan and others attending the Inaugural Session



Prof. Dr. Atta-ur-Rahman
ICCBS Patron-in-Chief

Amb. Dr. M. Nafees Zakaria
ED COMSATS

Prof. Iqbal Choudhary
Director ICCBS

Prof. Ashraf Shaalan
Chairperson Coordinating Council

Prof. Khalid Iraqi
VC, UoK

In his inaugural remarks, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, briefed the participants on COMSATS' functioning, and highlighted its aim of benefiting the member states and other countries in the developing world in terms of Science, Technology and Innovation-led development. He further informed that the main objective of the Commission was to bridge the knowledge and technology gap between the global North and South. He underscored the importance of R&D calling it indispensable to attain the objectives of the present forum. He also expressed his confidence in the capabilities and expertise of COMSATS Members States' scientists and Centres of Excellence in realizing the much needed quantum leap in this respect.

Speaking on the occasion, Prof. Iqbal Choudhary, Director ICCBS, welcomed the participants of the meeting and pointed out that the pandemic exposed the gross failure of global cooperation, as countries were left on their own to struggle with a health crisis of unprecedented magnitude. As the head of the host institution, he noted that the participating centres represent the key S&T competencies of COMSATS' Member States, and that their presence at one platform is an excellent opportunity to build global science and technology partnerships for the benefit of people in the South, and address the prevailing and emerging challenges which the world faces today.

Highlighting the mission of COMSATS, Prof. Ashraf Shaalan, Chairperson COMSATS Coordinating Council, considered it important to enhance cooperation in the fields of S&T, particularly for the preservation of climate and environment. He commended

the work being done by COMSATS Secretariat for facilitating socio-economic development of member countries.

Prof. Khalid Iraqi, Vice Chancellor, University of Karachi, welcomed the delegates and participants of the meeting

Some Key Exchanges of the Technical Deliberations

- BCSIR-Bangladesh showed interest in collaborating with other Network Members in the areas of nanotechnology, renewable energy, biotechnology, biochemical and bio fuel (bio refinery) materials, and metallurgical science and engineering among others.
- TIB-China pledged to strengthening collaboration in the field of industrial biotechnology
- ICCES-China pledged to facilitate joint research activities climate change and environmental protection.
- NRC-Egypt expressed willingness to initiate capacity-building initiatives in various areas, including healthcare, water, climate change, renewable energy, agriculture, and food security.
- UTG-The Gambia sought support for research collaboration; staff development and technical support for labs upgradation
- ITS-Indonesia pledged to offer post-graduate scholarships granted by Kemitraan Negara Berkembang (KNB) at ITS
- ICENS-Jamaica showed interest in collaborating in the areas of environmental geochemistry, biogeochemical cycles, forensics, food irradiation, and sterile insect technique, etc.
- RSS-Jamaica showed interest in collaborating with other Network members in various areas including climate change, renewable energy, flood mapping, healthcare, among others.
- CUI-Pakistan expressed interest in initiating capacity-building activities including exchange of students, faculty and staff; as well as training for repair of scientific equipment.
- ITI-Sri Lanka showed interest in undertaking joint research activities as well as initiating exchange programs for scientists for postdoctoral studies and post-graduate training.
- HIAST-Syria showed interest in collaborating with Network members in the areas of nanotechnology, solar and fuel cell technologies, hybrid photovoltaic systems, and cyber security.
- TIRDO-Tanzania desired to establish collaborations with other Network members for Expert Exchange; technology transfer for drug development and value addition on agro-industrial waste; capacity building activities; and joint R&D projects in natural products and industrial biotechnology
- TUBITAK-Turkiye offered collaborations in research areas including Climate Change and Sustainability, Energy Technologies, Life sciences, Materials technologies, chemical process technologies, sensor and system technologies, among others.



Technical Session of 24th Council Meeting in progress

and considered it an honour for the University to host this important statutory meeting of COMSATS at Karachi University campus.

Technical Sessions

The technical sessions of the meeting started with the approval of the Minutes of the previous (23rd) Meeting of COMSATS Coordinating Council. Subsequently, Mr. Farhan Ansari, Deputy Director (Programmes), COMSATS, briefed the Council on the implementation status of the decisions taken by the Council in its previous meeting.

Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, presented COMSATS' Activity Report (2020-2022). The Coordinating Council expressed satisfaction on the implementation status of the decisions of last Council meeting, as well as activity report for (2020-2022).

The Heads/representatives of the Centres of Excellence presented the progress made by their respective Centres during the intervening period of August 2020 to December 2022, including collaborations with other Centres of Excellence, activities related to South-South cooperation, and efforts for achieving UN SDGs. Representatives of the international partner organizations also made

presentations, in which they highlighted their ongoing programmes and activities of their respective organizations as well as possibilities of support from/and collaboration with COMSATS.

A significant decision made at the meeting was re-election of Prof. Dr. Ashraf Shaalan as Chairperson Coordination Council for three years term (2023 - 2026).

A Memorandum of Understanding (MoU) for cooperation in areas of interest was also signed between the National Research Centre (NRC-Egypt) and ICCBS-Pakistan.

The Council endorsed the new initiatives proposed at the meeting, including establishment of COMSATS

International Centre of Excellence (CICE); development of Video Documentary of COMSATS and Virtual Tours of Centres of Excellence; Dashboard/Portal for COMSATS' programmes; catalog of products, technologies and services offered by the Centres of Excellence to Member Countries; Renewable Energy Solutions; establishment of a Model COMSATS Solarized Precision Agriculture Green House; initiation of collaborative programmes for digital skills development of youth; digital transformation, R&D activities to support projects of commercial value, venture into space sciences, satellite development, medicines, industrial applications of chemical and bio-sciences.



ED COMSATS presenting a shield to the Chairperson Coordinating Council

The Council advised the Secretariat to revive its activities related to Repair and Maintenance of Scientific Engineering Equipments, as well as Internet Security in Member Countries. Achieving demand-driven extension of COMSATS' Tele-health Programme to other member countries was also advised. The Council members also underlined that COMSATS' Centres of Excellence were ready to help Member States' governments with solutions to meet challenges related to food security, climate change, pandemics, lethal diseases, economy, and lack of access to emerging technologies.

Under different agenda items, the Council members deliberated upon the ongoing programmes of COMSATS, including Post-graduate Scholarships, Collaborative R&D projects; Post-doctoral Fellowships, Tele-health Programme, capacity building activities, ICT Services, publications, etc.

The Council was pleased to learn about establishment and activity of COMSATS Joint Centre on Industrial Biotechnology (CCIB), at the Tianjin Institute of Industrial Biotechnology (TIB), in order to promote meaningful cooperation among the COMSATS' Member Countries and Centres of Excellence in the field of industrial biotechnology. The Council appreciated the progress made by CCIB under the leadership of Prof. Jibin Sun, Director CCIB, since its establishment in April 2021. The Council also appreciated the progress made by COMSATS Centre for Climate and Sustainability (CCCS) regarding capacity-building of COMSATS member countries and other developing countries in addressing challenges related to climate change that directly impact agriculture, water and food security, health, etc.

Furthermore, the Council noted with appreciation regarding re-composition of COMSATS Technical Advisory Committee (TAC), which consists of 10 renowned experts. It welcomed the new members of the TAC and looked forward to their valuable advice and guidance regarding

Participants of the 24th Coordinating Council Meeting

- Prof. Dr. Ashraf Shaalan, Chairperson of COMSATS Coordinating Council, Former President of the National Research Centre (NRC), Egypt
- Dr. Md. Murshed Hasan Sarkar, Senior Scientific Officer, Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh
- Prof. Lin Zhaohui, Director, International Center for Climate and Environment Sciences (ICCES), China
- Prof. Jibin Sun, Deputy Director-General, Tianjin Institute of Industrial Biotechnology (TIB), China
- Ms. Qianqian Chai, Officer of Foreign Affairs and Academic Exchange, Tianjin Institute of Industrial Biotechnology (TIB), China
- Ms. Zhihong Xiao, Secretary, COMSATS Centre for Industrial Biotechnology, Tianjin Institute of Industrial Biotechnology (TIB), China
- Prof. Eduardo Posada F., Director, International Centre for Physics, Colombia
- Mr. Ousainou Corr, Director of Finance, University of The Gambia (UTG), The Gambia
- Dr. Sri Fatmawati, Assistant Professor, Sepuluh Nopember Institute of Technology (ITS), Indonesia
- Prof. Charles N. Grant, Director General, International Centre for Environmental and Nuclear Sciences (ICENS), Jamaica
- Eng. Abeer Arafat, Senior Assistant to the President for Science Technology & Innovation, Liaison, Royal Scientific Society (RSS) Amman, Jordan
- Prof. Mebine Promise, Director/Chief Executive, National Mathematical Centre (NMC), Nigeria
- Prof. Dr. M. Iqbal Choudhary, Director, International Center for Chemical and Biological Sciences (ICCBS), Pakistan & Coordinator-General COMSTECH
- Prof. Dr. Farzana Shaheen, International Center for Chemical and Biological Sciences (ICCBS), Pakistan
- Dr. Humera Jahan, International Center for Chemical and Biological Sciences (ICCBS), Pakistan
- Prof. Dr. Muhammad Tabassam Afzal, Rector, COMSATS University Islamabad (CUI), Pakistan
- Mr. Ali Tawab, In-charge International Office, COMSATS University Islamabad (CUI), Pakistan
- Prof. Sirimal Premakumara, Chairman Industrial Technology Institute (ITI), Sri Lanka
- Dr. Radhika Samarasekera, Director General Industrial Technology Institute (ITI), Sri Lanka
- Dr. Maher Suleiman, Director, Higher Institute for Applied Science and Technology (HIAST), Syria
- Ms. Jacqueline Mwendwa, Director of Engineering Development and Head, Energy Technologies Division, Tanzania Industrial Research and Development Organization (TIRDO), Tanzania
- Prof. Ahmed Ghrabi, Director General, Water Researches and Technologies Centre of Borj-Cedria (CERTE), Tunisia
- Dr. Osman Okur, Vice President, TÜBİTAK Marmara Research Center (MAM), The Scientific and Technological Research Council of Türkiye (TUBITAK), Türkiye

various programmes and activities of the organization. The Council also discussed the role of TAC.

The Council was pleased to learn that the 4th meeting of COMSATS Consultative Committee was held online during November 2020, in which delegates from 19 member countries participated.

A review of Administrative and Financial matters of COMSATS made by

Ambassador Zakaria was endorsed by the Coordinating Council. The Council appreciated payment of the Annual Membership Contribution by China, Jamaica, Kazakhstan, Nigeria and Pakistan since the last Council meeting held in 2020. Moreover, the Centres pledged to play due role in sensitizing their respective governments regarding the importance of making sustained financial contribution to COMSATS' programmes.

Other matters discussed during the meeting included: joint programmes in collaboration with international/inter-governmental organizations; Programmes for achieving UN SDGs; Agenda of 5th Consultative Committee Meeting; allocation of funds for programmes and activities of COMSATS.

Concluding Ceremony

Prof. Dr. M. Iqbal Choudhary, Director ICCBS, concluded the ceremony with his remarks expressing pleasure on hosting the meeting, and thanking the participants for their active involvement. He looked forward to cooperation among ICCBS and other Centres in areas of mutual interest.

Prof. Ashraf Shaalan, Chairperson Coordinating Council, thanked ICCBS for hosting the meeting, as well as praised the COMSATS' team for their tireless efforts to ensure the success of the meeting. He also expressed gratitude to the Council for placing trust in his leadership, and re-electing him as Chairperson. He pledged to closely work with COMSATS Headquarters for achieving the objectives of COMSATS Network.

Speaking on the occasion, Dr. Zakaria, thanked ICCBS for excellent arrangements for the meeting. He congratulated Prof. Shaalan on his re-election as Chairperson Coordinating Council, and for befittingly steering the deliberations during the meeting. Dr. Zakaria also lauded COMSATS' team for doing excellent job. He stated that COMSATS Headquarters would make all efforts to facilitate mutually beneficial collaboration among the Network members.

At the end of the meeting, a Communiqué was also issued encompassing the spirit and resolutions of the Meeting (Page 08).

China's Leadership Role for Developing Countries Highlighted

On the sidelines of the 24th Meeting of the Coordinating Council of COMSATS,



Mr. Cao Zhouhua and Mr. Mao Zhixia at the Hybrid session on China's Leadership Role for Developing Countries held on the sidelines of 24th Council Meeting hosted in Karachi

a special session on 'China's Leadership Role for Developing Countries' was held on 27th January 2023. During the session, representatives of Chinese government and corporate sectors made presentations highlighting the strategy adopted and initiatives taken by the Government of China to provide congenial environment to private sector for progress in ST&I. The session had in-person participation of Council members from Egypt, The Gambia, Indonesia, Jordan, Pakistan, Sri Lanka, Sudan, Syria, and Tanzania, besides online participants (Page 23).

Technical Advisory Committee (TAC)

COMSATS' Technical Advisory Committee (TAC) is one of the key statutory bodies of the Commission, ensuring that its S&T programs and activities within its Network of International S&T Centres align with its overall mission. TAC provides valuable policy inputs and advice for COMSATS' Centres of Excellence (CoE) on various aspects necessary for COMSATS operations, including technical expertise, R&D strategy, training priorities, international collaboration, and academia-industry linkages.

Veteran experts in TAC enable COMSATS and its Centres to make well-informed assessments and undertake impactful

initiatives. Deliberations regarding re-composition of TAC became a part of the 24th Council Meeting reported earlier.

The role and expectations from august panel entrusted with technical advice on crucial matters as well as its stronger role in technical alignment of the organization's activity were discussed. Coordination with the Committee continues since.

Enhancement of Membership

Network of International S&T Centres of Excellence

In a major development with regard to membership extension of COMSATS Network of Centres of Excellence, a novel development took place in 2023 – a member from Europe.

UGR-Spain Becomes Member of COMSATS Network

The University of Granada (UGR), Spain, became the 25th Member of COMSATS Network of International S&T Centres of Excellence on 23rd September 2023. The Coordinating



Communiqué of the 24th Meeting of COMSATS Coordinating Council 25-26 January 2023

The 24th meeting of COMSATS Coordinating Council was held on 25-26 January 2023, at the International Center for Chemical and Biological Sciences (ICCBS), Karachi. The participants deliberated upon the fourteen-point agenda and are pleased to unanimously adopt the following:

1. The Coordinating Council is pleased with the role played by the COMSATS Secretariat for following up the decisions made at the 23rd Council meeting, which was held online amid peak time of COVID19 pandemic. The Annual Activity Report presented by the Executive Director COMSATS is highly appreciated.
2. The academic, research and capacity-building activities undertaken by Centres of Excellence during the period since the last Council meeting are highly appreciated.
3. The Council is pleased to learn about the establishment of COMSATS Joint Centre on Industrial Biotechnology (CCIB), at the Tianjin Institute of Industrial Biotechnology (TIB), in April 2021, in order to promote meaningful cooperation among the COMSATS' Member Countries and Centres of Excellence in the field of industrial biotechnology. The Joint Centre was established by COMSATS and TIB with financial support of the Chinese Ministry of Science and Technology and Tianjin Government under the framework of the National Center of Technology Innovation for Synthetic Biology (NC SynBio) of China, which is highly appreciated. The Centre's activities pertaining to facilitating collaborative research and development activities, academic exchanges, personnel training, etc., in areas of Biomedicine, Bio-Agriculture, Future Food, Biomaterials, Biochemicals and Bioenergy, are noted with great admiration.
4. Recognizing the significance of the linkages between climate change and sustainable development, the Council is pleased to note with appreciation the progress made by the COMSATS Centre for Climate and Sustainability (CCCS). The Council is pleased that 19 Centres of Excellence have so far joined the CCCS network and are actively participating in the same.
5. The Council appreciates the holding of over 50 physical or online capacity building events in collaboration with Centres of Excellence and international partner organizations, which benefited the scientists, researchers, academicians, engineers and technicians belonging to the Member States.
6. Regular publication of COMSATS' Annual Report, Newsletter and other information material brought out by COMSATS during the reporting period deserves praise. The inputs and support of the Centres of Excellence in this regard is highly appreciated.
7. One of the positive externalities of COVID19 pandemic was the focus shift towards digitalization, which also calls for COMSATS to drastically change its modus operandi and make use of virtual means for its operations. The decisions made by the Council viz the initiatives of creating web-portal, dashboard, and video documentaries of Centres of Excellence is a welcome step in the right direction. Moreover, the Council agrees to hold virtual meetings more often to expeditiously follow up on its decisions and to maintain strong interconnectivity.

8. The Council welcomed the following new initiatives proposed by the Executive Director COMSATS:
 - a. Establishment of COMSATS International Centre of Excellence (CICE)
 - b. Dedicated effort towards Launching of COMSATS Satellite
 - c. Renewable Energy Solutions for COMSATS
 - d. Establishment of a Model COMSATS Solarized Precision Agriculture Green House
 - e. Initiation of collaborative programmes for digital skills development of youth;
 - f. Establishment of R&D fund to support projects of commercial value;
 - g. Developing a Comprehensive COMSATS Resource Persons Directory
9. The Secretariat is advised to revive its activities related to Repair and Maintenance of Scientific Engineering Equipments, as well as Internet Security in Member Countries. Demand driven Extension of COMSATS' Tele-health Programme to other member countries was recommended.
10. The Council is pleased to learn that the 4th meeting of COMSATS Consultative Committee was held (online) on 11th November 2020, in which delegates from 19 member countries participated. It is highly important that governments of Member States, through the forum of Consultative Committee, may support the projects, programmes and collaborative undertakings initiated at the level of COMSATS Network. The outcomes of COMSATS' programmes and activities shall be regularly shared with the governments of Member States (COMSATS Consultative Committee)
11. The Coordinating Council unanimously decided that Prof. Dr. Ashraf Shaalan continues as Chairperson for another term of three years (2023 - 2026), and hopes that he continues to provide new thrust to the Network with regard to achieving its overall objectives. The Council also appreciated the leadership he provided during the earlier two successive terms (2016 – 2022).
12. The Council welcomes the new members of the Technical Advisory Committee and looks forward to their valuable advice and guidance regarding various programmes and activities of the organization. The Technical Advisory Committee has been reconstituted since the three-year tenure of its previous members completed during August 2020.
13. The payment of AMC by China, Jamaica, Kazakhstan, Nigeria and Pakistan during the period since the last Council meeting is also noted with appreciation. The Council encourages all other Network members to sensitize their respective governments regarding the importance of regularly making AMC for the financial sustainability of COMSATS.
14. The Coordinating Council appreciates the excellent arrangements made by the International Center for Chemical and Biological Sciences (ICCBS), for the 24th Council meeting and for providing generous hospitality to its participants. The preparation of necessary documentation by COMSATS Secretariat and the administrative support provided to ICCBS for the successful organization of the meeting is praiseworthy.
15. The Council appreciated the Embassy of China in Pakistan for arranging a special session on China's Leadership Role for Developing Countries on 27th January 2023 for the benefit of Network members. The Centres of Excellence are urged to benefit from the opportunities of collaboration available in this regard.



Campus of UGR, Spain. Source: <https://www.ugr.es/en>

Council, approved the membership upon receiving favourable inputs from the members of COMSATS Technical Advisory Committee.

UGR is the first European institution that has become a part of COMSATS Network, and is expected to boost scientific collaboration amongst the Network members. Formally founded in 1531, UGR is one of the largest universities in Spain having five campuses in Granada while two campuses are in North African cities of Ceuta and Melilla, making it one of the few genuinely intercontinental universities around the world.

The University is ranked 4th in Spain and features among the top 300 universities in the world, as per Shanghai Academic Ranking of World Universities (ARWU 2019). UGR offers 89 bachelor's

degrees, over 100 Master's degrees and 28 doctoral programs through its 129 departments in 27 centers. The R&D focus of the university is on health sciences, geosciences, engineering, psychology, and mathematics.

With induction of UGR to COMSATS Network, its Rector, Prof. Pedro Mercado Pacheco, became ex-officio member of COMSATS Coordinating Council.

Interactions with Host Country, Pakistan

Meeting with the Federal Secretary Ministry of Science and Technology, Pakistan (January 3, 2023)

The Executive Director COMSATS, Ambassador Dr. Mohammad Nafees

Zakaria, called on the then Federal Secretary Ministry of Science and Technology (MoST), Government of Pakistan, Dr. Ghulam Muhammad Memon, at the latter's office in Islamabad. Dr. Memon, who is also the ex-officio Chairperson of COMSATS Consultative Committee, congratulated Ambassador Zakaria on his appointment as Executive Director of COMSATS. Dr. Memon also preceded Dr. Zakaria as the interim Executive Director while the decision regarding full-time incumbent by the Prime Minister of Pakistan had been awaited earlier. The Executive Director apprised the Federal Secretary about the upcoming Coordinating Council meeting – a major statutory function of COMSATS. The 24th meeting of the Council was then to be held in Karachi later in January 2023 hosted by COMSATS Centre of Excellence in Karachi, the International Center for Chemical and Biological Sciences (ICCBS).

Ambassador Zakaria appreciated Pakistan's Ministry of Science & Technology for steadfast support and cooperation with COMSATS being a focal ministry in the host country. Both officials agreed on promoting Science, Technology and Innovation in line with the fundamental objective of the organization by adopting practical approaches to S&T cooperation with tangible outcomes.

Dr. Memon assured Dr. Zakaria of his Ministry's support to COMSATS.

Meeting with Minister for Defence, Government of Pakistan (June 2, 2023)

The Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, called on the then Minister for Defence, H.E. Khawaja Muhammad Asif. During the meeting, the Executive Director presented an overview of COMSATS, an intergovernmental international organization comprising 27 Member Countries and 24 Centres of Excellence.



Dr. Ghulam Memon presenting a shield to Amb. Dr. Zakaria



ED COMSATS Meeting with Pakistan's Minister for Defence, H.E. Khawaja Asif and Federal Minister for Overseas, H.E. Sajid Hussain Turi

He briefed the Defence Minister on the latest initiatives including the signing of a Memorandum of Understanding (MoU) with Syndesis Health Inc. USA for the Genome Sequencing, which will enable better and cost-effective healthcare, development of new drugs and scientific interventions in related fields. He also mentioned the Telehealth program, steps taken towards promotion of modern agricultural techniques, his vision for Research and Development (R&D), and alignment with the industrial sector.

Expressing his appreciation, Mr. Khawaja Asif recognized the importance of COMSATS and its potential in promoting Science Technology and Innovation. Minister Asif assured Dr. Zakaria of his support to COMSATS' activities. He supported the idea of R&D and expressed interest in the identified areas for R&D projects.

Meeting with Federal Minister for Overseas Pakistanis & HRD (July 26, 2023)

The Federal Minister for Overseas Pakistanis & Human Resource Development, Honorable Sajid Hussain Turi, visited COMSATS Secretariat, on July 26, 2023.

The Executive Director briefed the Minister on the COMSATS' operations aimed at benefiting its members in

the fields of Science, Technology, and Innovations.

Their discussions encompassed potential avenues of collaboration, particularly in skill-development with a specific focus on the Information Technology sector. The Minister welcomed the idea of establishing Telehealth clinics in Khyber Pakhtunkhwa. Pakistan, with its 64 % young population, is one of the world's youngest nations. The importance of empowering the youth through training and skill development was emphasized in order to foster sustainable economic growth.

The Minister appreciated the role played by COMSATS in promoting S&T in the member states.

Meeting with Minister of Railways, Government of Pakistan (November 28, 2023)

On November 28, 2023, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, called on the Federal Minister for Railways, Communication and Maritime Affairs, Government of Pakistan, Mr. Asif Ashraf Tarar.

Dr. Zakaria introduced COMSATS as an intergovernmental organisation of 27 member states and discussed matters of common interest between COMSATS and esteemed Ministry of Railways, Communication & Maritime with a

potential to lead to mutually beneficial cooperation in future.

The Minister appreciated COMSATS' mandate being pursued under Dr. Zakaria's leadership and reciprocated the intent to working towards possible cooperation.



Mr. Asif Ashraf Tarar receiving COMSATS' shield from Amb. Zakaria

Consultative Session of Malala Fund, Pakistan Office (July 12, 2023)

Senior officials of COMSATS, Dr. Mehwish Durani, Additional Director (Coordinator for IOs & Climate Change) & Head CCCS, and Dr. Huma Baloch, Deputy Director (Programmes), participated in a consultative session organized by the Malala Fund, Pakistan Office, on July 12, 2023.

The session aimed at gathering valuable insights and expertise from participants



Consultative Session Meeting of Malala Fund Pakistan being led by Dr. Adil Najam, Dr. Mehwish Durani and Dr. Huma Baloch representing COMSATS

for a paper addressing "Climate Change and Girls Education in Pakistan," then intended for presentation at COP28 in Dubai, UAE. Dr. Adil Najam, global President of the Worldwide Fund for Nature, and Dean Emeritus, Pardee School of Global Studies, Boston University, alongside representatives from international and local development agencies, education authorities, multilateral financial institutions, and local and inter-governmental organizations dedicated to addressing climate change impacts, contributed to the event.

Discussions primarily focused on the urgent need for funding in STEM education for girls and potential for women's empowerment for improved socioeconomic and environmental outcomes.

During the discussions, Dr. Durani highlighted the significant disparity between policies and their implementation related to climate action, education equity, and gender equality. She emphasized the importance of robust coordination and governance among different government ministries, including health, science, environment, and education. Furthermore, she advocated for the appointment of subject-experts in relevant ministries to address such cross-cutting challenges.

Dr. Baloch emphasized the need for comprehensive and reliable databases for populations most at risk from climate change. She noted that under-privileged sections are more vulnerable to climate crises due to lack of access to technological and financial resources, hindering their effective response to these challenges.

Other participants also shared insights on various challenges, exchanged information, and discussed potential strategies to ensure continuity of education for girls in both normal and threatening conditions. The session concluded with a consensus on accelerating education equity as the best strategy to address globally emerging

issues of climate change.

Support to Pakistan's Plantation Campaign (March 1, 2023)

The Government of COMSATS' Host Country, Pakistan, launched a nationwide spring tree plantation campaign to address the challenges posed by climate change. The initiative aimed to promote a green Pakistan by planting trees across the country to reduce carbon emissions, protect ecosystems, and create a sustainable environment for future generations.

In alignment with the Government of Pakistan's drive and the United Nation's



Amb. Dr. M. Nafees Zakaria planting a tree to support GoP's plantation drive in company of COMSATS Secretariat Employees



Executive Director COMSATS, Amb. Zakaria, received British Parliamentarians Lord Qurban Hussain (left); Ms. Naz Shah (right)

Sustainable Development Goals, the Executive Director COMSATS, Ambassador Dr. Mohammed Nafees Zakaria, planted the national plant of Pakistan, Jasmine, in the lawn of COMSATS Secretariat building situated in the heart of Pakistan's scenic capital city, Islamabad. Joined by his colleagues from COMSATS Secretariat and CIS Technology Park, Dr. Zakaria emphasized the importance of tree plantation for mitigating the adverse effects of climate change. Planting more trees, he added, can help cool the planet, reduce the impact of extreme weather events, and improve air quality.

The current global climate emergency necessitates action by every country, organization, and individual. He lauded the active approach of COMSATS' host country, Pakistan, and considered it a commendable step towards ensuring a greener and sustainable future.

Dr. Zakaria's message to his colleagues at COMSATS was a call to action for taking responsibility for the environmental preservation.

Other Important Interactions

Visit from British House of Lords' Member, Lord Qurban Hussain (January 6, 2023)

Honorable Member of the House of Lords

of the United Kingdom, Lord Qurban Hussain, visited COMSATS Secretariat on 6th January 2023, to meet Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS.

Warmly welcomed, Lord Hussain congratulated Dr. Zakaria on his appointment as Executive Director COMSATS. Lord Hussain is a Pakistan heritage British Liberal Democrat politician. He is also a recipient of the *Sitara-i-Quaid-i-Azam* by Government of Pakistan.

Dr. Zakaria introduced the honorable guest with COMSATS and its usefulness to the Member States. Dr. Zakaria informed Lord Hussain that COMSATS' mission of S&T-led development is not only beneficial for the Global South but also the

international efforts towards addressing crucial challenges of the world.

Lord Hussain expressed keen interest in and appreciated COMSATS' activities.

Visit of Member of Parliament of Britain (MP), Ms. Naz Shah (September 28, 2023)

On 28th September 2023, the honorable Member of Parliament of Britain (MP), Ms. Naz Shah, visited COMSATS Secretariat Islamabad to meet the Executive Director COMSATS, Amb. Dr. M. Nafees Zakaria. As a politician, Ms. Shah is associated with the British Labour and is MP for Bradford West.

Discussion between the honorable MP and Dr. Zakaria, former High Commissioner



Amb. Dr. Nafees Zakaria with Representatives of DeafTawk, a Pakistani Startup



CUI, Pakistan, faculty and students introduced to COMSATS Telehealth by Dr. Azeema Fareed and Dr. Nadia Rasheed (CIS)

of Pakistan to the UK, pertained to matters of mutual interest, including how technological approaches may be promoted to address common challenges and to support young talent in this regard.

Support to Innovative Tech Solutions for Inclusive Societies (August 14, 2023)

On August 14, 2023, the Executive Director COMSATS, Ambassador Dr. M. Nafees Zakaria, met a team of incredible young Pakistani innovators and co-

founders of DeafTawk. DeafTawk is a tech company working for inclusion and prosperity of differently abled members of the society, through its real-time sign language tech app, bridging gap for 466M deaf people worldwide.

The meeting with DeafTawk's CEO, Mr. Ali Shabbar, CTO, Mr. Wamiq Hassan, and COO, Mr. Abdul Qadeer, resulted in exchange of views on advancements being made on technological front and the breakthrough digital technologies are making in the present-day world.

Student Visit to COMSATS Telehealth Project (June 8, 2023)

A group of students pursuing MS-Health Informatics from COMSATS University, led by Dr. Nighat Sultana, Associate Professor, visited the COMSATS Telehealth Resource Centre hosted at COMSATS Internet Services Technology Park, on June 8, 2023. The purpose of the visit was to gain insights into the workings of COMSATS' Telehealth Project. (Details on Page 79).

Messages and Views from Members of the Technical Advisory Committee (TAC)



Prof. Dr. Haseena Khan

*Professor Department of Biochemistry and Molecular
Biology, University of Dhaka, Dhaka, Bangladesh*

COMSATS Annual Report for the year 2023 is impressive with an account of lots of endeavors made in different scientific research areas of interest among the COMSATS' nations. These activities, which ranged from agriculture to health to IT solutions of problems afflicting the member countries will help the associated countries, solve the problems and will bring them together.

However, there are other areas for example climate change led disasters, like excessive heat, rainfall and low temperature that need to be addressed together. For example, plastic pollution has become one of stressing environmental issues in our region. It is altering habitats and natural processes, decreasing the abilities of the ecosystems to adjust to climate change that has brought an enormous impact on the livelihoods, agriculture and the wellbeing of millions of people of our region. Then there is antimicrobial resistance (AMR), which is one of the top global public health and development threats. Programs could be executed to work on these problems together.

The Bangladesh Academy of Sciences (BAS) in collaboration with the Association of Academies and Societies of Sciences in Asia (AASSA), organized a hybrid Symposium on 'Nature for Sustainable Development' from October 7-8, 2023 in Dhaka, Bangladesh. The Academy is now organizing another international symposium (hybrid mode), in association with the Science Council of Asia on 4IR and the Future Society from October 26-28, 2024, in Dhaka, Bangladesh.



Prof. Dr. Bolanle Ojokoh

*Professor Department of Information Systems,
Federal University of Technology, Akur, Nigeria*

Dr. Bolanle expressed satisfaction with COMSATS' progress in advancing sustainability efforts, particularly highlighting the numerous MoUs signed with various institutions in the realm of digital health. During 2023, she worked on developing AI-enabled digital solutions for contact tracing, tailored for infectious diseases. As a Professor of Computer Science specializing in AI, Dr. Bolanle delivered an inaugural lecture titled "Intelligent Traversal through the Information Wilderness: Towards Knowledge Discovery and Decision Making" on June 25, 2024. She recommended leveraging the significance of AI as a tool to tackle global challenges such as climate change and food security, advocating for increased international cooperation to develop AI expertise for institutional and cross-cultural infrastructural development.

Mr. Fernando Santiago Rodriguez

*Industrial Policy Officer, UNIDO Research and Industrial Policy
Advice Division Vienna, Austria*



During 2023, Mr. Fernando Santiago devoted significant efforts to improve UNIDO's policy advisory services at the interplay of science, technology and innovation policy and industrial policies. Key activities included the production of diagnostic methodologies, including one dedicated to assess readiness for industrial innovation in developing countries, with pilot trainings conducted in countries such as Paraguay and Cote d'Ivoire. Capacity building activities emphasized innovation policy for the achievement of the SDGs, including in context of the UN Inter-agency work on STI for the SDGs, which benefited hundreds of policymakers from Africa and Latin America. Regarding research, Mr Santiago and colleagues are exploring ongoing efforts to build foundational capabilities for the digitalization of manufacturing in Africa and Latin America. He has also contributed to emerging debates around nature-based solutions to development challenges, including through new approaches to natural-resource-based industrialization, and the rethinking of

approaches to build policymaking capacities to foster industrial development in developing countries.

Recommendations for COMSATS Member States:

Several Centers of Excellence hosted by COMSATS Member States work on areas related to biotechnology and technologies suitable to advance natural resource based industrialization. COMSATS may wish to explore how these different centers and their research activities can contribute to opening new venues to underpin industrial development, particularly in Africa. Benefiting from its unique position, COMSATS could foster South-South collaboration, including through knowledge-sharing events, joint research programs and even joint training activities targeting its Member States.

Similarly, COMSATS may wish to explore opportunities to enhance its ability to broker relationships between its network of Centres of Excellence and policymaking in critical areas of work thereby promoting the Organization's contribution to science-policy interphase. This is an area where the UN, particularly through the STI Forum, is usually interested in documenting and promoting, as the basis to improve the contribution of STI to solving pressing development challenges.



Dr. DJAGOUN Chabi A. M. Sylvestre

*Associate Professor Ecology and Natural Resources Management
University of Abomey-Calavi, Benin*

Significant advancements in biodiversity conservation, climate change adaptation, and sustainable ecosystem management have been reported. Recent efforts have focused on enhancing ecosystem resilience in the face of climate change by integrating advanced methodologies for assessing and mitigating its impacts. During the year 2023, Dr. Chabi provided guidance on strengthening partnerships between parks and the scientific community, optimizing the use of research databases, and facilitating mechanisms for national and international research collaborations on pressing or contentious issues.

Dr. Chabi's work has included advising on strategies to adapt ecosystems to climate change, ensuring that protected areas are managed effectively to meet evolving biodiversity goals. This has involved evaluating and proposing innovative approaches to sustainable ecosystem management and incorporating advanced molecular tools to better understand and address ecological challenges.

To benefit COMSATS Member States, it has been recommended to foster cross-disciplinary research and enhance the integration of cutting-edge scientific tools for more effective biodiversity management. Promoting collaborative projects and establishing robust knowledge-sharing platforms will facilitate the application of pioneering research in practical conservation efforts. Dr. Chabi commends COMSATS for its dedication to scientific excellence and international collaboration and encourages a continued focus on integrating innovative research with policy to maximize impact.



Prof. Rahmat Sotudeh-Gharebagh

College of Engineering, University of Tehran, Iran

Here is a description of some of my selected actions in the popularization of science:

I have made a significant contribution to the field of pharmaceutical engineering by founding the graduate program at the University of Tehran. This program, established in 2002, is the first interdisciplinary program in Iran that integrates chemical engineering and pharmacy. It trains engineers and pharmacists to design, develop, and optimize pharmaceutical products and processes using advanced tools and techniques. By establishing this program, I have bridged the gap between science and society, promoting the well-being of people who require medication. I have also inspired and educated numerous students and professionals who can apply their knowledge and skills to create innovative and sustainable solutions for the pharmaceutical industry.

Chemical products and processes play a vital role in sectors such as agriculture, energy, health, manufacturing, and transportation. However, they also pose significant environmental and social challenges. Therefore, sustainability remains a key goal for global development. To contribute to this goal, I co-founded and currently serve as the Editor-in-Chief of Chemical Product and Process Modeling (CPPM) (<http://www.degruyter.com/view/j/cppm>), an international journal that publishes theoretical and applied research on product and process design, modeling, simulation, and optimization. CPPM provides a platform for researchers and practitioners to share their knowledge and experiences, with a particular focus on developing countries. The journal's international editorial board represents 22 top institutions from Africa, Europe, Asia, America, and Oceania/Australia. Occasionally, special issues are organized to honor the remarkable careers and scientific legacies of top scientists who originated from less developed countries, serving as role models for others. CPPM aims to bridge the gap between developed and developing countries in sustainable chemistry by fostering cooperation that considers their different levels of focus, capacity, and innovation. By working together, these countries can create a win-win and sustainable situation to improve economic growth, competitiveness, innovation, and well-being. They can also contribute to achieving the UN Sustainable Development Goals (SDGs), which aim to end poverty, protect the planet, and ensure peace and prosperity for all by 2030.

I have made significant efforts to popularize science through the development and delivery of numerous lectures on various topics, including engineering, applied research management, governance, and soft skills. I have reached diverse audiences at universities, schools, conferences, seminars, webinars, and other platforms. Additionally, I have written insightful editorials in journals dedicated to the popularization of science, covering a wide range of subjects. To engage with my audiences, I have incorporated interactive activities, demonstrations, and feedback sessions.

In the field of process engineering, I have made a significant contribution by designing and delivering practical workshops for professionals in the oil, gas, and petrochemical industry. These workshops, conducted in collaboration with Professor Navid Mostoufi and Professor Reza Zarghami, have trained over 2000 engineers and managers. The workshops cover topics such as process design, optimization, simulation, and environmental management. They provide hands-on experience with software tools and equipment used in the industry, enabling professionals to enhance their skills, solve real-world problems, and contribute to the popularization of engineering in the oil, gas, and petrochemical industry. Through fostering dialogue and collaboration among different actors in the engineering-society interface, I have stimulated interest and curiosity in engineering among the participants. I have also contributed to the advancement of engineering and technology for sustainable development.

I have made efforts to popularize science by inviting practitioners, engineers, and managers to share their expertise with students and the public. I believe that practitioners, who have dedicated their careers to society and willingly choose to impart their experience in an academic setting, bring a distinct and invaluable perspective to the classroom. By exposing students to real-world challenges and opportunities that textbooks often fail to convey, they gain a profound understanding. This exposure undoubtedly benefits them as they embark on their future careers and provides a platform for sharing knowledge and addressing common problems among scientists, practitioners, students, and others. All lectures have been recorded and published on my channel (<https://www.youtube.com/@RahmatSotudehGharebagh>).

I have made remarkable efforts to popularize science and sustainable development by producing content and sharing my knowledge and expertise with a wider audience on LinkedIn ([linkedin.com/in/sotudeh](https://www.linkedin.com/in/sotudeh)). Through LinkedIn, I have prepared over hundreds of posts per year that create valuable interactions and foster interest and curiosity in science. I write comments, reviews, and recommendations on various science-related topics, including sustainability, the importance of education and public awareness, the environment, diversity, inclusivity, and my activities. I have also connected with other professionals, experts, students, enthusiasts, and followers on LinkedIn, exchanging ideas, opinions, insights, experiences, advice, and support. Consequently, I have built a network of ~ 21k connections and followers on LinkedIn, who regularly engage with my posts and appreciate my contributions. I have also received endorsements and recommendations from my peers and colleagues for my skills and expertise in engineering, research, education, management, and communication. This allows me to contribute highly to the advancement of science and technology for sustainable development.

I have been honored with multiple prizes and awards that acknowledge my exceptional achievements in research and education, as well as my unwavering dedication and enthusiasm for popularizing science. Some notable accolades include the Allamah Tabatabaei Award presented by the Iranian Elite Foundation in 2015, the Alborz Prize from the Alborz Foundation in 2021, the Distinguished Award from the Iranian Association of Polymer and Chemical Engineers in 2016, and four Distinguished Awards from the University

of Tehran in recognition of my research accomplishments in 2019, educational contributions in 2023, and international collaborations in 2015 and 2022. These prestigious honors serve as a testament to my significant contributions to the advancement of science and engineering both within Iran and internationally. They also affirm my ability to effectively communicate complex scientific concepts to a diverse audience, inspire young individuals to pursue scientific careers, and promote international cooperation and dialogue among scientists.

I had the privilege of organizing and serving as a guest editor for a special issue of the Canadian Journal of Chemical Engineering dedicated to honoring the distinguished career of Professor Jamal Chaouki (Can J Chem Eng. 2021;1–4). Professor Chaouki, a renowned Moroccan Canadian chemical engineer, has made remarkable contributions to the fields of process design, biomass conversion, and environmental engineering. The special issue not only celebrates his impressive scientific legacy but also sheds light on current research trends and challenges in the areas of process and environmental engineering. By showcasing Professor Chaouki's accomplishments, this special issue serves as an inspiration to the young generation, particularly in the South, who aspire to share their knowledge and passion with the public. Such initiatives serve as catalysts, motivating young individuals to actively engage in science, innovation, and the pursuit of excellence and impact.

I organized a memorial ceremony to honor Eng. Mousavi Rahpeyma, an exceptional alumnus of the University of Tehran (UT), who has made significant contributions to society by applying his knowledge and scientific expertise to create businesses, generate wealth, and promote well-being. Mr. Mousavi is a philanthropist who generously constructed and donated the Fouman Faculty of Engineering to the University of Tehran. He serves as an inspiration and role model for other entrepreneurs and graduates who aspire to share their wealth, knowledge, and passion with the public and contribute to the advancement of higher education, awareness, and sustainability. The primary objective of this ceremony was to showcase Eng. Mousavi as a role model for the younger generation and to highlight the untapped economic and social resources within our country, paving the way for its development.

Through my various endeavors, I have made significant contributions to science communication and engagement within the science-society interface. By actively popularizing science and being a member of the Iranian Academy of Science, I have played a pivotal role in bridging the gap between scientific knowledge and society. I have effectively promoted the values of scientific culture and fostered a greater understanding and appreciation for science among diverse audiences. Furthermore, I have served as an inspiration to numerous young individuals, encouraging them to pursue scientific careers and empowering them to tackle global challenges through innovative solutions.

STRENGTHENING SOUTH-SOUTH AND TRIANGULAR COOPERATION

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STRENGTHENING SOUTH-SOUTH AND TRIANGULAR COOPERATION

One of the main functions of COMSATS is to support major initiatives designed to promote indigenous S&T capacity through synergies among relevant Governments in the North and the South. Dignitaries, officials and delegations from a number of countries are engaged on regular basis to establish and promote linkages to help strengthen South-South and Triangular cooperation in a number of fields, including education, training and research, climate change, SDGs, and emerging technologies.



COMSATS' Delegation to China led by Amb. Dr. M. Nafees Zakaria with H.E. Zhang Guangjun, Chinese Vice Minister for Science and Technology and his team

Meetings with Diplomats/ Delegates/Officials of Member States

Vice Minister for Science and Technology, China (November 7, 2023)

On November 7, 2023, the Executive Director COMSATS, Ambassador Dr. M. Nafees Zakaria, called on the Chinese Vice Minister for Science and Technology, H.E. Zhang Guangjun, in Chongqing, China. The two exchanged views on areas of mutual interest with the view to further expand and diversify cooperation under the existing MoU between COMSATS and Ministry of Science and Technology (MoST), China.

The meeting was organized on the sidelines of the launch of 1st Belt and Road Conference on Science and Technology

Exchange (BRST), hosted by Ministry of Science and Technology, China (MoST), Chinese Academy of Sciences (CAS), and other governmental and provincial departments of China.

China is one of the founding members of COMSATS with two Chinese institutions as part of COMSATS' Network of Centres of Excellence (CoE); Tianjin Institute of Industrial Biotechnology (TIB) and International Centre for Climate & Environmental Sciences (ICCES). Association with Chinese Academy of Sciences (CAS) and Alliance of International Science Organizations (ANSO) further strengthens the cooperative bond with Chinese institutions. This Vice Minister was of the view that institutional linkages may be increased to broaden the scope of cooperation.

His Excellency appreciated COMSATS'

participation at BRST event and its efforts towards promoting South-South Cooperation.

Amb. Zakaria congratulated successful launch of BRST with significant international participation and thanked MoST-China for their hospitality. He also expressed gratitude to the leadership of MoST, and the Government of People's Republic of China for the support extended to COMSATS. He appreciated the spirit of BRI – shared progress and prosperity – which he found in line with COMSATS' mandate.

Both sides identified areas pertaining to the emerging technologies and scientific fields for exploring the potential for cooperation. Amb. Zakaria also proposed cooperation between academia and educational institutions. He termed such a cooperation crucial for bringing people of different origins and cultures closer.



The Vice Minister receiving COMSATS Shield from Amb. Dr. M. Nafees Zakaria

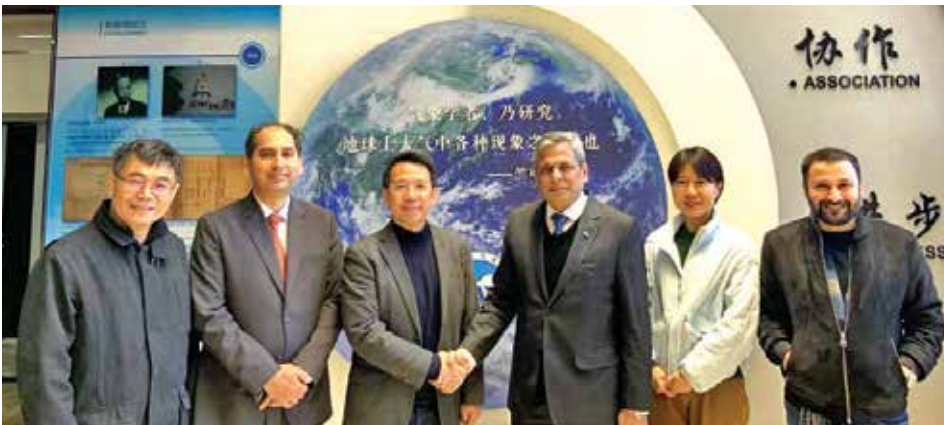
The Vice Minister Zhang welcomed the proposals and follow-up.

Interactions at ICCES-China (November 12, 2023)

On 12 November 2023, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, Mr. Irfan Hayee, Additional Director (Programmes), and Mr. Qaisar Nawab, Staff Officer to Executive Director, visited the International Center for Climate and Environmental Sciences (ICCES), Institute of Atmospheric Physics, Chinese Academy of Sciences. Prof. Zhaohui LIN, Director of ICCES, Prof. Xiaodong ZENG, Deputy Director of ICCES and Ms. Bo HAO (Scarlett), Program Officer for International Cooperation attended

the meeting being held with researchers of ICCES.

Prof. Zhaohui LIN welcomed delegation of COMSATS, Ambassador Zakaria highlighted the contribution of ICCES as a center of excellence for COMSATS, and expressed his hope to further strengthen cooperation with ICCES in areas related to climate research. It was hoped that ICCES can take the lead in coordinating COMSATS collaborative research in the field of climate and environmental protection. Prof. Zhaohui LIN introduced scientific research work progress and international activities carried out by ICCES, and laid emphasis on the importance of further strengthening cooperation with COMSATS' network in the future. In addition, Ambassador Dr. Mohammad Nafees Zakaria also referred



Amb. Dr. Zakaria with Chinese Member of COMSATS Coordinating Council, Prof. Zhaohui Lin, Director ICCES, during visit to COMSATS CoE in Beijing

to the 2023 United Nations Climate Change Conference (COP28) held from 30 November to 01 December 2023 in Dubai. COMSATS' expert panel discussion on Leveraging South-South Cooperation: De-Risking Climate Security on that occasion was to include ICCES experts as technical advisors. Prof. Lin pointed out that Prof. He ZHANG, Deputy Director of ICCES, would attend COP28 in Dubai.

Two parties had in-depth discussion on cooperation in the field of climate and environment science research, including strengthening personnel exchanges and joint research programs.

Special Advisor to the President of Ghana on Sustainable Development Goals (SDGs) (March 3, 2023)

On 28 February 2023, a virtual meeting was held between the Executive Director COMSATS, Ambassador Dr. M. Nafees Zakaria, and Special Advisor to the President of Ghana on Sustainable Development Goals (SDGs), Dr. Eugene Owusu. Views were exchanged between the two officials on fostering Science, Technology and Innovation (ST&I) led regional development. The Republic of Ghana holds the Chair of COMSATS and the President of Ghana, Hon. Nana Addo Dankwa Akufo-Addo is the incumbent Chairperson of COMSATS' Commission and Dr. Owusu is Liaison between COMSATS and the Office of the Chairperson.

The other participants of the meeting from COMSATS Secretariat included, Mr. Irfan Hayee, Additional Director - Programmes; Mr. Nisar Ahmad, Additional Director - Systems; Mr. Farhan Ansari, Deputy Director - Programmes; and Mr. Qaiser Nawab, Staff Officer.

Ambassador Nafees briefed Dr. Owusu about the number of initiatives taken by him since assuming charge as the Executive Director. He apprised the Advisor on the outcomes of the 24th



A virtual meeting between ED COMSATS, Amb. Dr. Zakaria, and Special Advisor to the President of Ghana on SDGs, Dr. Eugene Owusu

meeting of COMSATS Coordinating Council (comprising heads of International Centres of Excellence affiliated with COMSATS Network), held in January 2023, in Karachi, Pakistan.

Both underlined that the expertise of the Centres of Excellence need to be fully utilized. They agreed that R&D fund was essential to support the talent in the Member States. The two expressed firm resolve for working closely in order to strategically planning and mobilizing scientific and technological resources for transformational development.

Dr. Owusu appreciated the ideas shared by the Executive Director and considered them useful for leveraging the overall operations of COMSATS as intergovernmental organization focused at

ST&I-led sustainable progress. Recognizing the importance of ST&I, he termed it as the new currency of development, and called for making collective effort in rightly utilizing it. Recalling the visit of the previous Executive Director COMSATS to Accra in 2019, he shared that it was agreed with the Honorable Chairperson of COMSATS that the Government of Ghana will host the 4th General Meeting of COMSATS' Commission in Accra and also the 'Accra Forum on S&T for Sustainable Development' with an aim to bring prominence to COMSATS' programs and activities.

In view of the various avenues of scientific collaboration, cooperation and offers from COMSATS' forum, the Executive Director desired to have greater engagement with

and participation of Ghanaian scientific organizations, academic institutions, as well as individual scientists and scholars. Dr. Owusu noted that he is in full agreement with the vision given by Ambassador Nafees and looked forward to working in close coordination with COMSATS Secretariat in order to increase participation from Ghana.

Furthermore, Dr. Owusu invited the Executive Director COMSATS to visit Accra to personally meet and brief the Chairperson COMSATS, and to avail the opportunity to plan the organization of General Meeting and Accra Forum in Ghana.

Flags Hoisting of COMSATS' Member States and Launching of COMSATS' New Website (April 18, 2023)

On April 18, 2024, a ceremony was held to mark Flags Hoisting of COMSATS Member States and Launching of COMSATS' New Website at COMSATS Secretariat, Islamabad. The event was attended by over 60 representatives from Ministries and Government departments, diplomatic missions in Islamabad, international and regional organizations, national scientific institutions, and universities.

Diplomats of COMSATS' Member States



(L to R) Delegates attending the flag hoisting ceremony, ED COMSATS, Amb. Nafees Zakaria, and Foreign Secretary of Pakistan, Amb. Dr. Asad Majeed Khan



Foreign Secretary, Amb. Dr. Asad Majeed Khan, addressing the flag hoisting ceremony

hoisted their respective country's flag, and expressed their strong commitment to support the organization in meeting its objectives.

Addressing the audience, Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, recalled some of the achievements of COMSATS' Centres of Excellence in the areas of space sciences, IT and telecommunications, bio-sciences, chemical engineering, telemedicine, industrial applications and software solutions. Ambassador Zakaria apprised the audience of the organization's recent initiatives since his assuming charge as the Executive Director COMSATS that pertained to genome-sequencing, IT training and tech hub. These initiatives, he informed, are meant to support innovations, patents, commercialization of scientific products and solutions, and developing R&D culture in the Member States to ensure sustainability and self-reliance.

Ambassador Dr. Asad Majeed Khan, the then Foreign Secretary of Pakistan, highlighted the importance of digitalization in the context of socio-economic development and called for enhanced cooperation among COMSATS Member States, particularly for human resource development. He noted with pleasure that Pakistan is among the fastest growing exporters of IT products

and services, and has one of the highest numbers of IT freelancers in the world. At the occasion, the Foreign Secretary of Pakistan launched COMSATS' new website that serves as a comprehensive online resource and effective means for information dissemination.

Delegates, Scientists & Academics Briefed on the Sidelines of the 24th Coordinating Council Meeting (January 27, 2023)

On 27th January 2023, a special session entitled 'China's Leadership Role for Developing Countries' was held on the sidelines of the 24th Meeting of the Coordinating Council of COMSATS. Representatives of Chinese government and corporate sectors made presentations

highlighting the strategy adopted and initiatives taken by the Government of China to provide congenial environment to private sector, and helping the country advance in ST&I. The session had in-person participation of Council members from Egypt, the Gambia, Indonesia, Jordan, Pakistan, Sri Lanka, Sudan, Syria, and Tanzania, besides online participation.

Mr. Cao Zhouhua, Science Commissioner, Embassy of China in Pakistan, shed light on policies adopted by Chinese government to encourage private sector investments in ST&I, as well as shared the opportunities of collaboration under China's Belt & Road Initiative (BRI). Moreover, Mr. Mao Zhixia, Chief (South Asia) of BGI Group – a genomics research institute, which is among top ten life sciences corporations globally – shared information on corporation's products and services, inter alia, related to agriculture & food security, and healthcare (particularly detection and treatment of neonatal diseases).

Mr. Zhao Liru, Director of ZTE Pakistan – a leading telecom company-shed light on the company's products and services related to 5G technologies, communication network products, databases, operating systems, and architecture, etc, which have applications in various sectors, including smart cities, big data, transportation, oil and gas, mining, etc.



Mr. Cao Zhouhua, Science Commissioner, Embassy of China in Pakistan, and Mr. Mao Zhixia, Chief (South Asia) of BGI Group at the sideline session on 'China's Leadership'



Glimpses of Official interactions between ED COMSATS, Amb. Dr. Nafees Zakaria and H.E. Vice Admiral Mohan Wijewickrama, H.E. Mr. Borhene El Kamel, and H.E. Seyed Mohammad Ali Hosseini

Moderated by the Executive Director of COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, the session generated a great interest and enthusiastic discussions among the participating scientists, and opened new avenues for collaboration from the platform of COMSATS. China's rapid advancement in Science, Technology and Innovation (ST&I) was lauded by heads and representatives of COMSATS Centres of Excellence.

High Commissioner of Democratic Socialist Republic of Sri Lanka to Pakistan (March 9, 2023)

The Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, called on the Sri Lankan High Commissioner, H.E. Vice Admiral Mohan Wijewickrama, at his office on March 9, 2023. The High Commissioner congratulated Ambassador Zakaria on his appointment as Executive Director of COMSATS.

Expressing his gratitude, the Executive Director COMSATS briefed the High Commissioner on the ongoing programs of COMSATS as well as informed him about the new initiatives proposed in the 24th Coordinating Council of COMSATS. The High Commissioner reaffirmed his support for enhancing cooperation among the Member States of COMSATS. He also invited the Executive Director to visit Sri Lanka in the near future to strengthen relations with Sri Lankan Focal Ministry of COMSATS, Ministry of Industry, as well as the Centre of Excellence, the Industrial

Technology Institute (ITI), Colombo.

Ambassador of the Republic of Tunisia to Pakistan (March 1, 2023)

The Executive Director of COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, paid the Ambassador of the Republic of Tunisia, H.E. Mr. Borhene El Kamel, a courtesy call.

The Ambassador of Tunisia congratulated Ambassador Zakaria on his appointment as Executive Director of COMSATS. The Ambassador informed Dr. Zakaria of the high value Tunisia attaches high with its association with COMSATS, its mandate and operations aimed at South-South Cooperation in S&T.

The Executive Director COMSATS thanked the Ambassador and apprised him of the current activities of the organization, the outcomes of recently held Coordinating Council meeting at Karachi, Pakistan, and ongoing programmes of COMSATS' Centres of Excellence.

Ambassador Dr. Zakaria shared his ideas on ways to encourage young talented researchers and scientists for more effective and useful research and innovation. Ambassador Borhene proposed to the Executive Director a working visit to Tunisia in near future.

Ambassador of the Islamic Republic of Iran to Pakistan (April 12, 2023)

On April 12, 2023, the Executive Director

COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, met the Ambassador of the Islamic Republic of Iran, H.E. Seyed Mohammad Ali Hosseini in the latter's office.

Meeting Dr. Zakaria for the first time since his appointment in Nov 2022, Ambassador Hosseini congratulated him on assuming charge and wished him well. The Ambassador emphasized on the significance of COMSATS' role and mandate if S&T-led development that is of great value to Iran as a member state. He assured the Executive Director of his complete support to promoting the activities of COMSATS.

Thanking Amb. Hosseini, Dr. Zakaria apprised him about the current programs being carried out by the COMSATS, especially those executed through the organization's Centres of Excellence. He also briefed him about the outcomes of the 24th Coordinating Council Meeting held in Karachi, in January 2023.

Amb. Hosseini was also apprised about COMSATS' groundbreaking work in the field of genome-sequencing, support to the R&D by young scholars and promotion of startups and entrepreneurs. His Excellency considered it a good idea for the Executive Director to visit Iran to further explore areas of cooperation.

Ambassador Hosseini assured COMSATS of his country's steadfast support.



Amb. Dr. Nafees Zakaria calling on Ambassador of the Syrian Arab Republic, H.E Dr. Ramez Alraee

Ambassador of the Syrian Arab Republic to Pakistan (April 13, 2023)

On April 13, 2023, the Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, paid the Ambassador of the Syrian Arab Republic, H.E Dr. Ramez Alraee, a courtesy call in his office.

The Syrian Ambassador congratulated Ambassador Zakaria on his appointment as Executive Director of COMSATS, and expressed appreciation of COMSATS' mandate, operations and Syria's membership to the organization. The Ambassador was apprised about the current programmes carried out by COMSATS Centres of Excellence and briefed about the Coordinating Council meeting held in January 2023, Karachi, Pakistan.

Ambassador Dr. Zakaria highlighted the importance of identifying ways to encourage young talented researchers and scientists for a stronger knowledge economy. Ambassador Alraee proposed Executive Director a working visit to Syria.

Ambassador of Palestine to Pakistan (January 4, 2023)

The Ambassador of the State of Palestine, H.E. Mr. Ahmed Amin, called on the Executive Director COMSATS, Ambassador Dr. Mohammed Nafees Zakaria, on January 4, 2023. The two

officials discussed collaborations between COMSATS and Palestinian institutions and other matters of mutual interest.

Dr. Zakaria briefed the Ambassador on the COMSATS' activities aimed at benefiting its member states in the field of Science, Technology and Innovation in a variety of ways.

The Ambassador expressed keen interest in COMSATS' activities and hoped for Palestine to benefit from these through effective cooperative measures. He informed that Palestine attaches high importance to COMSATS' membership and expressed desire for promoting mutually beneficial cooperation programmes among different Centres of Excellence under the ambit of COMSATS. Future course of COMSATS' activities

for the benefit of its members was also discussed.

Matters discussed during the meeting also included briefing on undertakings of COMSATS' statutory bodies, including 24th Meeting of COMSATS Coordinating Council then planned for January 25 to 26, 2023.

Earlier, on December 22, 2022, Dr. Zakaria had also paid a courtesy call to the Ambassador at the esteemed Embassy of Palestine in Islamabad. The Ambassador had congratulated Dr. Zakaria on his appointment as Executive Director COMSATS and pledged his office's support to COMSATS' mission.

Meetings with Diplomats of Potential Member States

Minister for Digital Development and Transport of Azerbaijan, H.E. Rashad Nabiyeu (July 18, 2023)

On 18th July 2023, the Minister for Digital Development and Transport of Azerbaijan, H.E. Rashad Nabiyeu, visited COMSATS Secretariat. On official visit to Pakistan, the Minister, inter-alia, held a bilateral meeting with the Executive Director COMSATS, Amb. Dr. Mohammad Nafees Zakaria, and discussed a range of ideas pertaining to technology projects for cooperation, particularly in the field of IT and digitalization.



Ambassador of the State of Palestine, H.E. Mr. Ahmed Amin with ED COMSATS at the latter's office



Ambassador Zakaria briefing Minister for Digital Development and Transport of Azerbaijan, H.E. Rashad Nabiye, and his colleagues

The Minister also witnessed signing of the Memorandum of Understanding on ICT and Technology Training Program for skill development between COMSATS and the Innovation and Digital Development Agency (IDDA) of Azerbaijan (Page 32).

The Minister also had an interactive session with the technology experts.

Ambassador of Azerbaijan to Pakistan (August 25, 2023)

The Ambassador of the Republic of Azerbaijan, His Excellency Mr. Khazar Farhadov, undertook a visit to COMSATS and held a substantive meeting with the Executive Director of COMSATS, Ambassador Dr. Mohammed Nafees Zakaria, on 25th August 2023.

During the meeting, Ambassador Zakaria

recalled the fruitful visit of the Azerbaijan Minister for Digital Development and Transport the previous month, during which an important MoU had been signed between COMSATS and an Azerbaijani Tech company – IDDA.

He briefed the Ambassador on diverse range of initiatives and activities being pursued by COMSATS for the advancement of Science, Technology, and Innovation (STI) among its member and non-member countries. He underscored COMSATS’ commitment to facilitating the exchange of knowledge, expertise, and best practices among its member states and others.

Expressing profound interest in the endeavors of COMSATS, Ambassador Farhadov highlighted the Republic of Azerbaijan’s strong commitment to

international cooperation in the fields of Science and Technology.

Ambassador Farhadov also visited COMSATS Telehealth resource center in COMSATS Internet Services Technology Park and took keen interest in its operations.

Ambassador of Ethiopia to Pakistan (May 20, 2023)

The Executive Director COMSATS, Ambassador Dr. Mohammed Nafees Zakaria, called on the Ambassador Extraordinary and Plenipotentiary of the Federal Democratic Republic of Ethiopia, H.E. Jemal Beker Abdula, on May 20, 2023.

Congratulating him on the inauguration of Ethiopian Embassy in Islamabad, Ambassador Zakaria lauded Ambassador Jemal’s dynamism that led to this significant development.

He apprised the Ambassador about initiatives by COMSATS in Genome-Sequencing, Precision Agriculture, EV, Renewable Energy and Digitization. Ambassador Jemal appreciated the briefing and said the Ethiopian leadership would be interested in taking part in and benefiting from COMSATS’ activities.

The Ambassador invited the Executive Director to visit Ethiopia to explore further prospects of cooperation.



H.E. Mr. Khazar Farhadov, Ambassador of the Republic of Azerbaijan during his meeting with ED COMSATS



Amb. Zakaria with H.E. Jemal Beker Abdula, Ambassador of Ethiopia



Amb. Dr. M. Nafees Zakaria with other distinguished participants of World Government Summit, UAE

Meetings on the Sidelines of the 10th World Government Summit, UAE

During the World Government Summit, UAE, Amb. Zakaria met UAE Ministers, including H.H. Sheikh Nahyan bin Mubarak Al Nahyan, Minister for Culture, Youth and Social Development, H.H. Omar bin Sultan Al Olama, Minister of State for Artificial Intelligence, Digital Economy and Remote Work Application, H.E. Sarah Amiri, Minister of State for Advanced Technology and Chairwoman of UAE Space Agency.

In his meeting with His Highness Omar Sultan AlOlama, Dr. Zakaria thanked UAE government for the invitation to attend the Summit and praised UAE Leadership's vision and successful organization of the Summit. The Minister welcomed

Amb. Zakaria and appreciated his active participation.

In his meeting with Ms. Amiri, Amb. Zakaria apprised Her Excellency about COMSATS and highlighted potential for cooperation. The UAE's commitment to ensure the peaceful use of space for humanity was lauded.

Dr. Zakaria admired the visionary leadership of the UAE and the strides the country had made in diverse fields in recent years, most prominently in education, and Science & Technology. He extended sincere thanks to the UAE Government and its Ambassador to Pakistan, H.E. Mr. Obaid Alzabbi, for facilitation and courtesies.

Dr. Zakaria also met H.E. Jessica Alupo,



ED COMSATS with Nobel Laureate, Prof. Roger Kornberg at 10th WGS, Dubai

Vice President of Uganda, and apprised her of COMSATS' activities and Uganda's active participation as a member country. The Vice President appreciated the briefing and expressed interest in learning more about COMSATS.

Dr. Zakaria also exchanged views with



Amb. Dr. M. Nafees Zakaria's interactions at 10th World Government Summit: (From L to R) His Highness Omar Sultan AlOlama, H.H. Sheikh Nahyan bin Mubarak Al Nahyan, and Sir Nick Clegg, Former Deputy PM, UK currently VP-Facebook



Dr. Ahsan Iqbal, Minister for Planning, Development, and Reform with Dr. Nafees Zakaria and others in attendance of Dubai Summit

Sir Nick Clegg, Former Deputy Prime Minister UK. During his career as a diplomat, Amb. Zakaria had represented Pakistan as High Commissioner to the U.K. in 2019-20.

Ambassador Zakaria also met the Nobel Laureate, Prof. Roger Konrad, who accepted the Executive Director's invitation to visit Pakistan. In his meetings, Ambassador Zakaria discussed various aspects pertaining to the theme of the summit, growing relevance of AI in every sphere of life, the role of science, technology and innovation in

shaping the future of governments. He underlined the importance of cooperation among countries to address common challenges and achieve shared goals. He expressed COMSATS' keenness towards collaborating on such endeavors.

Amb. Zakaria also had fruitful interaction with the Ministerial delegation from Pakistan, including Minister for Planning, Development, and Reform, Prof. Ahsan Iqbal, Minister for Petroleum Senator Musadik Malik, Minister for Overseas Pakistanis and Human Resource Development, Mr. Sajid Hussain Turi, and

Senior Officials.

Sharing his thoughts with the lead media in the UAE, Dr. Zakaria appreciated the UAE Leadership's vision that was evident, inter alia, from successfully holding the Summit, fostering necessary international cooperation. He also underlined relevance of science and technology in every sphere of life and the necessity of policy intervention by the governments to regulate, encourage and benefit from the potential of ST&I.



Dr. Nafees Zakaria sharing his views on Summit proceedings and the event's theme with media persons covering the international event

COLLABORATIONS WITH NATIONAL AND INTERNATIONAL ORGANIZATIONS

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COLLABORATIONS WITH NATIONAL AND INTERNATIONAL ORGANIZATIONS

Over the years, COMSATS has expanded its cohort of national and international partners to foster broader and more effective collaborations in Science and Technology and launch new programmes and activities with its Centres of Excellence for sustainable socio-economic development of the Member States. Still growing, these partnerships aim to complement the programmes of COMSATS focusing on capacity-building of Se&T community in developing countries.



ED COMSATS, Dr. M. Nafees Zakaria and Founder of Eurasian International University (EIU) also the Former Prime Minister of Kyrgyzstan, H.E. Zhumaliyev Kubanychbek Myrzabeckovich, Kyrgyzstan, at the signing ceremony of COMSATS-EIU MoU (page 34)

Islamic Organization for Food Security (IOFS), Kazakhstan

Collaboration between COMSATS and the Islamic Organization for Food Security (IOFS), Kazakhstan, was initiated in 2022 through meetings and correspondence to identify common areas of interest and foster related synergies to benefit their members. Memorandum of Understanding (MoU) was signed the same year with IOFS, Kazakhstan, to formalize working arrangements. The purpose of this MoU was to pave way for a cooperation aimed to enhance the capacities of both organizations' Member States in Climate Smart Agriculture, to achieve sustainability goals related to food security and resilient livelihoods. The MoU was signed by the then Executive Director COMSATS, Dr. Ghulam Muhammad Memon, and the Director General of IOFS, Mr. Yerlan Alimzhanuly Baidautet on behalf of their organizations.

The agreement opened avenues for collaboration between COMSATS and IOFS, focus on sustainable development projects related to agriculture and food security. Through this cooperation, both the parties focus on implementing climate-smart technologies and practices to address challenges posed by climate change. This includes enhancing

productivity, connectivity, and resilience for vulnerable groups in the Global South through capacity-building projects, knowledge sharing, and technology transfer initiatives.

Both COMSATS and IOFS view the agreement as vital means for developing synergy based on their expertise and



A click from COMSATS-IOFS-COMSTECH event held in Kazakhstan under 2022 COMSATS-IOFS Collaboration Agreement



Amb. Dr. M. Nafees Zakaria addressing during the IOFS 2nd High Level Forum on Food Security

priority areas, as well as for their ongoing contributions to promoting South-South and Triangular Cooperation through innovative regional and cross-regional initiatives.

So far, the collaboration between COMSATS and IOFS has proven mutually beneficial, particularly in advancing climate-resilient agricultural development aligned with Sustainable Development Goal 2, while also focusing on cutting-edge technologies for Climate Action.

During the reporting period, both organizations jointly undertook the following collaborative activities under the framework of the aforementioned MoU:

- i. COMSATS-IOFS-COMSTECH joint International Forum for Agri-Biotechnology, held in Kazakhstan

(04-05 July 2023) (page 49);

- ii. COMSATS Participation in the IOFS' 2nd High Level Forum on Food Security, held in Qatar, (01-03 October 2023).

The MoU established a strong foundation for collaboration between COMSATS and IOFS to tackle the pressing challenges of climate change and its serious impact on food security. The events organized under the cooperation agreement are helping enhance capacity development of common members for implementing the technology-based interventions to promote climate-smart agriculture to address the nutritional needs of a rapidly growing population amidst the threats of global recession and climate change.



Dr. Zakaria addressing the participants of 3rd ANSO General Assembly, China

Alliance of International Science Organizations, China

COMSATS has been a member of the Alliance of National and International Science Organizations for the Belt and Road Regions (ANSO), China, since

COMSATS Election as Member of ANSO Governing Board (November 5, 2023)



COMSATS, being an international/ inter-governmental organization, has been elected as a Member of the Governing Board of Alliance of National and International Science Organizations for the Belt and Road Regions (ANSO). The decision was made during the 3rd ANSO General Assembly, held in Chongqing, China, on 4 and 5 November 2023. The six elected members of ANSO Governing Board also include two Centres of Excellence of COMSATS, the Scientific and Technological Research Council of Türkiye (TUBITAK), Türkiye, and the National Research Centre (NRC), Egypt.

ANSO is an international scientific organization in China, aligned with China's 'Belt and Road Initiative' of shared development and achievement of the UN SDGs. ANSO members include research institutes and international organizations apart from the academic institutions. COMSATS is a member of ANSO.

The Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria participated in the 3rd ANSO General Assembly, and made recommendations on ANSO's future development strategy and priorities. He expressed pleasure on COMSATS becoming a part of ANSO Governing Board, and undertook to play an active role in this regard. The ANSO Governing Board, inter alia, formulates the annual plan of the organization; implements the decisions made by the General Assembly; approves programs, activities and their budgets; and carry out fund-raising activities.



Technical session of 3rd ANSO General Meeting in progress in China, ED COMSATS participated on behalf of COMSATS as a member organization

2019. The two organizations are working together in the fields of mutual interest for the benefit of COMSATS and BRI member countries.

During 2023, the Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, visited China to participate in the 3rd ANSO General Assembly, during which COMSATS was elected as a Member of the Governing Board of ANSO. The ANSO Governing Board, inter alia, formulates the annual plan of the organization; implements the decisions made by the General Assembly; approves programs, activities and their budgets; and carry out fund-raising activities.

With a view to benefit from ANSO's programmes and activities, COMSATS submitted nomination of four candidates from the Industrial Research and

Consultancy Center (IRCC), Sudan, for availing ANSO Scholarships for Young Scholars (2023).

Moreover, COMSATS supported a project titled 'Free online training courses for sustainable water, land use in arid regions with RS-GIS applications based on Chinese expertise' led by COMSATS University Islamabad (CUI), Pakistan, and having participation of relevant institutions from China, Kazakhstan and Iran, for consideration under ANSO Call for Proposals on Collaborative Research and Training Projects (2022-23). The project was selected by ANSO for a grant of US\$ 30,000/-.

From the platform of ANSO-BIDI Institute Network, COMSATS co-organized the 6th and 7th terms of ANSO-BIDI School titled 'Innovation, Sustainable Development

and Leadership Enhancement' (online trainings), during 2023. These benefitted 130 trainees nominated by COMSATS belonging to its various Member Countries.

Innovation and Digital Development Agency (IDDA), Azerbaijan

COMSATS and the Innovation and Digital Development Agency (IDDA), Azerbaijan entered into an agreement for collaboration in ICT and Technology Training Program for skill development through an MoU signed on July 18, 2024 in Islamabad.

The signing ceremony had the auspicious participation of the Minister for Digital Development and Transport of Azerbaijan, H.E. Rashad Nabiye, who witnessed the signing during his official visit to Pakistan.

The ceremony was also attended by the Ambassadors and diplomats of COMSATS' Member States and a large number of internationally recognized technology experts and innovators in Pakistan belonging to the COMSATS' affiliates and partner organizations. The participating technology experts head state-of-the-art software houses, technology parks, incubation centres, data centres, and renewable energy and electric vehicles (EVs) enterprises.

Speaking on the occasion, COMSATS'



Meeting between Minister for Digital Development and Transport of Azerbaijan, H.E. Rashad Nabiye, and ED COMSATS, Amb. Dr. Nafees Zakaria



Inaugural Session of COMSATS-ICESCO joint Training Workshop on Renewable Energy and Energy Efficiency: Green Hydrogen, Cairo, Egypt

signatory, the Executive Director, Amb. Dr. M. Nafees Zakaria, reiterated COMSATS' commitment to bridging the technology and knowledge gap between the global North and the global South through South-South and Triangular Cooperation.

Islamic World Educational, Scientific and Cultural Organization (ICESCO), Morocco

Building on their two-decades long partnership, COMSATS and the Islamic World Educational, Scientific and Cultural Organization (ICESCO) have continued to advance Science, Technology, and Innovation (STI) in their member states to promote sustainable socio-economic development with special focus on Climate Action. During the calendar year 2023, under the COMSATS-ICESCO MoU signed in 2004, both organizations are collaborating on the following event:

- COMSATS-ICESCO joint Training Workshop on Renewable Energy and Energy Efficiency: Green Hydrogen, Cairo, Egypt (July 12, 2024) (Page 52).

COMSATS and ICESCO are maintaining cordial working relations with each other in terms of organizing capacity-development events in areas but not limited to: science and technology, information and communication

technologies, Nano technologies, renewable energy, climate adaptation and mitigation, food security, biosafety, intellectual property, mathematical modelling, internet security, and environment.

Standing Committee for Scientific and Technological Cooperation (COMSTECH), Pakistan

In line with their common interests and shared goal of promoting Science, Technology, and Innovation (ST&I) through South-South Cooperation and sustainable socio-economic development, COMSATS and the Standing Committee for Scientific and Technological Cooperation (COMSTECH) have been collaborating since 1999. Both the Secretariats maintain long-term bilateral relations and support each other to effectively advance their agendas at local and regional levels. Moreover, COMSATS-COMSTECH partnership has been further strengthened by the active role and dual support of Prof. Dr. M. Iqbal Choudhary, who serves as the Coordinator General of COMSTECH and the former Director of COMSATS Centre of Excellence in Pakistan, the International Center for Chemical and Biological Sciences (ICCBS).

This collaboration ensures reciprocal representation in each other's advocacy

and capacity-building events, courses, and statutory body meetings. COMSTECH supported COMSATS by identifying resource persons for latter's capacity-development event. Moreover, both organizations collaborated for the following capacity-development event:

- IOFS-COMSATS-COMSTECH Joint International Forum for Agri-Biotechnology in Astana, Kazakhstan (July 4-5, 2023) (Page 49).

World Business Angels Investment Forum (WBAF)

COMSATS signed a Letter of Intent





MoU signing by Amb. Dr. M. Nafees Zakaria, ED COMSATS, and Mr. Baybars Altuntas, Chair WBAF, being witnessed by Dr. Ghulam Memon, Secretary, MoST and Amb. Shahid Kamal

(LoI) with the World Business Angels Investment Forum (WBAF) to set in motion a process towards formalizing cooperation in science and technology through concluding an MoU, subsequently. The MoU this LoI would lead to will be framed around supporting R&D institutions, research scholars, innovators, start-ups, academics and entrepreneurs in COMSATS' member states.

The LoI was signed by Amb. Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, and Mr. Baybars Altuntas, Chair WBAF, on behalf of their organizations.

Federal Secretary Ministry of Science and Technology, Dr. Ghulam Muhammad Memon, witnessed the signing as the Chief Guest of the Ceremony. He, along with Ambassador Shahid Kamal, a seasoned diplomat of Pakistan, and former Advisor to COMSATS, also participated in the signing ceremony alongside senior officials of COMSATS.

WBAF – an affiliate partner of G-20 Global Partnership for Financial Inclusion (GPII) – engages policy makers and partners to develop smart policies that will provide financial support to startups, scaleups, SMEs and all entrepreneurs to help them transform their business. It has ten country offices in five continents.

Eurasian International University (EIU), Kyrgyzstan

On September 01, 2023, COMSATS and the Eurasian International University (EIU) signed a Letter of Intent (LoI) aimed at a long-term partnership in diverse scientific and technological fields. Cooperation in the area of Telehealth is the first field chosen for joint work. The signing ceremony was held at COMSATS Secretariat, Islamabad.

The LOI was signed by the Founder of Eurasian International University (EIU), His Excellency Zhumaliev Kubanychbek Myrzabeckovich, who was the 4th Prime Minister of Kyrgyzstan during 1998, and the Executive Director COMSATS, Amb.



MoU with EIU, Kyrgyzstan, being signed by Amb. Dr. Mohammad Nafees Zakaria and H.E. Zhumaliev Kubanychbek Myrzabeckovich

Dr. Mohammad Nafees Zakaria. H.E. Zhumaliev appreciated Amb. Nafees for his deep understanding, support and encouragement to formalize cooperation agreement and immediately getting on with an innovative project in Telehealth. Moreover, the Ex PM assured his personal support in strengthening COMSATS' relationship with Kyrgyzstan.

EIU is an innovative educational and scientific research institution of higher education with international status located in Bishkek, Kyrgyzstan, that primarily aims to improve quality and delivery of healthcare, predict illnesses and promote the health of entire community through education and research.

The LoI will lead to the signing of specific agreements for cooperation and collaboration in a variety of areas. It will enable establishment of Telehealth clinics in Kyrgyzstan that will be linked to the Telehealth Resource Centre in Pakistan, as the first initiative. This service will provide tech-enabled access to quality healthcare for the people in Kyrgyzstan.

SeQuenX, Denmark

On September 20, 2023, COMSATS signed an MoU with SeQuenX, an IT solution providing Dutch Company. The MoU aims at establishing a Technology Corridor between Netherlands and Pakistan – COMSATS host and member country. In



MoU between COMSATS and SeQuenX, Denmark, being signed by Amb. Dr. Mohammad Nafees Zakaria (L) and Mr. Shurjeel Tauseef (R)

a ceremony that took place at COMSATS Secretariat, Islamabad, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS and Mr. Shurjeel Tauseef, Managing Director SeQuenX, signed the Memorandum.

SeQuenX provides software development and consulting services with a strong focus on software quality and engineering excellence. Its service portfolio includes Software Licensing Governance & Cyber Security Compliance; Scientific Software Research & Development; and IT Consulting.

SeQuenX has a global presence with offices in Europe (Netherlands), the USA (San Jose), and Asia (Pakistan).

Collaboration in technology applications and solutions between CSS and SeQuenX will be in the areas of cutting-edge technology research; Artificial Intelligence and Machine Learning; Data Science and Analytics; Cybersecurity and Network Solutions; Software Development Methodologies; Cloud Computing and Infrastructure; Internet of Things (IoT) innovations; User Experience (UX) and Interface Design; Quantum Computing; Advanced Software Engineering Practices; and Training and Theoretical understanding.

Syndesis Health Inc.

Letter of Intent (LoI)

On April 03, 2023, COMSATS signed a Letter of Intent (LoI) with the Syndesis Health Inc. The letter is a stepping stone to a Memorandum of Understanding to offer ‘turnkey’ solutions to COMSATS’ Member States and pave way for establishing, financing and managing “National Genomic Sequencing Programs” for the interested Members.

Syndesis Health Inc. is a company in Delaware, USA, with its business office at New York. The company aims to accelerates research and innovation for healthcare, life sciences, and biotechnology companies. On behalf of COMSATS, the LoI was signed by its Executive Director,

Amb. Dr. Mohammad Nafees Zakaria, while for Syndesis Health Inc, its Co-Founder & Director, Mr. Kamil Mehmood, did the signing.

This collaboration will enable healthcare organizations of the Member States to provide their populations personalized medical recommendations based on their unique genetic makeup, provide better healthcare to the citizens, support development of new drugs and treatments, and devise guidelines and regulate pharmaceutical products manufacturing, within the country or and through import.

Some of the technical activities of the program will entail upgradation of existing Labs, promoting research, identification of ‘genetic markers’ for certain diseases, helping structure and combine ‘genomic sequencing with the existing ‘health records’ with hospitals across the country, and providing AI-powered software and analytics.

Memorandum of Understanding (MoU)

On May 5, 2023, a Memorandum of Understanding (MoU) was signed with the Syndesis Health Inc., for “Genomic Sequencing Programs”.

The MoU provides a broad framework for collaboration aimed at providing better healthcare to the citizens, supporting



Amb. Dr. Nafees Zakaria and Mr. Kamil Mehmood signing COMSATS-Syndesis Health Inc MoU in presence of H.E. Mr. Mohamed Karmoune, H.E. Mr. Ibrahim Yala M. Almadani, H.E. Mr. Ahmad Rabei, H.E. Mr. Mohammed Motahar AlaShabi, and Mr. Usman Akhtar Bajwa



curative drugs development, and devising guidelines to help in managing pharmaceutical products.

Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, and Mr. Kamil Mehmood, Co-Founder & Director Syndesis Health Inc., signed the MoU.

Held at COMSATS Secretariat in Islamabad, the signing ceremony had participation from Heads/Representatives of diplomatic missions of COMSATS' Member States in Islamabad, Secretary Incharge Ministry of Science & Technology – focal ministry of the host country for COMSATS, Mr. Usman Akhtar Bajwa, senior officials of relevant ministries, as well as representatives from print and electronic media.

Speaking on the occasion, the Executive Director COMSATS shed light on the agreement and its prospects for research, impact on the industrial sector, and economy. The MoU represents the two organizations' willingness to support each other, inter alia, in ensuring better healthcare for all through effective utilization of modern-day technologies.

While highlighting the activities and achievements of his organization, Mr. Kamil assured full support to COMSATS

in implementing the related programmes.

Ambassador Zakaria and Mr. Mehmood briefed the media and the distinguished participants on how the collaboration would utilize the latest technological know-how for strengthening the healthcare sector, reducing healthcare costs, and contributing to the national economy.

Carol Technology, Pakistan

On August 20, 2023, COMSATS signed a Memorandum of Understanding with the Carol Technology, aimed at facilitating joint R&D projects for technological advancements.

Carol Technology is dedicated to offering cutting-edge technical expertise, a team of skilled personnel, and specialized knowledge to actively contribute to the collaborative research projects addressing the particular needs of industries and

academia. It is one of the pioneers in Pakistan to introduce inspection of wind turbines through Unmanned Aerial vehicles (UAVs).

The MoU was signed by Executive Director COMSATS, Amb. Dr. Mohammad Nafees Zakaria, and Head of R&D, Consultant, Carol Technology, Prof. Dr. Zeeshan Ali. This agreement would serve as a means to make joint efforts in facilitating Research and Development for advancing research in areas of Vertical Axis Wind Turbines (VAWT), Internet of Things (IoT), and a range of innovation projects.

Spectre Solutions, Poland

COMSATS and Spectre Solutions, a Polish tech company specializing in drones/unmanned aerial vehicles (UAV), have entered into an agreement for cooperation in drone technology and its diverse applications.

During an online ceremony held on September 27, 2023, a Memorandum of Understanding (MoU) was signed in this respect by the Executive Director COMSATS, Ambassador Dr. M. Nafees Zakaria, and the Chief Information Officer of Spectre Solutions, Mr. Sebastian Konkol, on behalf of their organizations. The visiting representative of Spectre Solutions





The witnesses of the MoU wit Spectre Solutions

and Founding Partner of Oxon Global Consultants, Mr. Ali Ehsan attended the ceremony in person.

Spectre Solutions excels and specializes in development of customized drones/UAVs. The tech company aims to solve important logistics and control problems with the help of latest drone technologies, providing a sense of security for people in need, particularly in emergency situations.

The MoU will pave the way, inter-alia, for research and development, knowledge sharing with eventual joint production of drones; collaboration for projects involving use of Spectre UAVs; exchange of experiences, knowledge and contacts; collaboration on pilot and other relevant trainings; conducting studies, and holding conferences, meetings and trainings.

The collaboration reflects shared

commitment of COMSATS and Spectre Solutions to push the boundaries of technology and innovation, contributing to sustainable development on a global scale.

Food Security & Agriculture Center of Excellence (FACE), Pakistan

In a bid to enhance partnerships at national level of the host country, COMSATS, through COMSATS Centre for Climate Change and Sustainability (CCCS), initiated collaboration with the Food Security and Agriculture Centre of Excellence (FACE), Fauji Fertilizer Company (FFC) Limited. An inaugural technical meeting was held with FACE officials on October 2, 2023, at COMSATS Secretariat, with an aim to formalize contact and explore potential collaboration

areas. Those identified included food security, agriculture, and resilient crop technology.

FACE delegation included Mr. Hasan Akram, Chief Operating Officer, and Mr. Hamid Majid, Manager Outreach and Partnership, while COMSATS was represented by Ambassador Dr. Mohammad Nafees Zakaria, the Executive Director, and Dr. Mehwish Durani, Additional Director for International Partner Organizations and Head CCCS. During the meeting, both parties shared their organizational objectives, focus areas, ongoing projects, and other operations. Both organizations discussed and underscored the need for a coordinated approach to address food security challenges exacerbated by global warming, extreme weather patterns, and socioeconomic disparities. A formal agreement was proposed for joint work to combat food insecurity, leveraging the expertise and resources of both organizations to develop technology-driven solutions and promote climate-smart agricultural practices in the host country of COMSATS, i.e., Pakistan.

Representatives from the both sides are eager to continue dialogues, joint research, training workshops and capacity-development initiatives. Moreover, discussions during the meeting underscored the need for alignment between academia, innovation, and the industrial sector in creating sustainable food security solutions.

Following the meeting, COMSATS signed a Memorandum of Understanding with the Food Security & Agriculture Center of Excellence (FACE), Pakistan, on November 17, 2023. The agreement aimed at strengthening the capacities of both organizations to address challenges in agricultural productivity posed by climate change and ensure food security.

The agreement focuses on enhancing food security, capacity development, knowledge sharing, collaborative research, and policy



COO FACE, Mr. Hasan Akram with Amb. Dr. Nafees Zakaria and Dr. Mehwish Durani



Amb. Dr. M. Nafees Zakaria, ED COMSATS, and Mr. Hasan Akram, Chief Operating Officer of FACE, signed COMSATS-FACE MoU on 17th November 2023

advocacy. It aims to streamline collective efforts, enhance resource mobilization, and foster innovation to achieve sustainable food security goals.

The MoU signing ceremony was held at COMSATS Secretariat, where Ambassador Dr. Mohammad Nafees Zakaria, the Executive Director of COMSATS, and Mr. Hasan Akram, the Chief Operating Officer of FACE, signed on behalf of their respective organizations. Senior representatives from both organizations witnessed this institutional arrangement of a significant collaboration.

The agreement between COMSATS and

FACE offers a framework for capacity-development on climate-smart agriculture with a focus on technology-based interventions to ensure food security. Specific objectives of the MoU include mutual facilitation for:

- i. Activities for promoting application of technology to increase yield by soil fertility method with optimum use of water;
- ii. Activities pertaining to capacity development of farmers to increase the awareness regarding the adoption of best and smart practices in agriculture in order to obtain high-

yield quality crops from limited resources (seeds and land, etc);

- iii. Collaboration for co-organizing lectures, meetings, training workshops, seminars/webinars, symposia on the latest trends and best practices around the globe to tackle the challenge of inadequate supply of food especially in the areas vulnerable to climate.
- iv. Conducting joint-research in the following areas (but not limited to): integrated pest management, quality seed, CRISPR-Cas9 technology, scientific solutions for reclamation of land, water resource management) and replicate the successful practices and models for food security.
- v. Exchanging knowledge, technologies (i.e., biotechnology, genome editing, data-driven and climate-smart agricultural practices), data (i.e., agricultural statistics/crop production data and weather/ climate data) and approaches on identifying food security needs, increasing productivity and resilience.
- vi. Joint policy research and development for the host country (Pakistan) and will also collaborate for preparation of joint publications for increased



MoU Signing Ceremony between COMSATS and FACE held at COMSATS Secretariat, Islamabad



COMSATS and AGECO partnership formalized through MoU signed by Amb. Dr. M. Nafees Zakaria and Mr. M. Aslam Azad

advocacy in the areas of mutual interest and collaboration.

Within the framework of this MoU, COMSATS and FACE are committed to fostering the adoption of innovative technologies and implementing sustainable farming practices. Their joint endeavor aims to help tackle confront the dynamic challenges presented by climate change in the agricultural sector, promoting smarter, more adaptive, and resilient agriculture to bolster food security. This strategic partnership aligns with the shared commitment of COMSATS and FACE to address critical challenges in agriculture,

leveraging technology and sustainable practices to ensure a more resilient and food-secure future.

AGECO, Pakistan

On August 25, 2023, a Memorandum of Understanding was signed with the AGECO Pvt. Ltd., for collaborative work to strengthen Electric Vehicle (EV) industry in Pakistan and other COMSATS Member States.

AGECO holds multiple patents of Solar Electric Vehicles' Design and has developed and manufactured

these vehicles as per global road safety standards.

The MoU was signed by Executive Director COMSATS, Amb. Dr. Mohammad Nafees Zakaria, and CEO AGECO, Mr. M. Aslam Azad. This cooperation is facilitating joint ventures for development of Electric Vehicles, as well as creation of employment opportunities.

Directorate General of Science and Technology, Government of Khyber Pakhtunkhwa (DGST-KP), Pakistan

On November 22, 2023, an agreement between COMSATS and Directorate General of Science and Technology, Government of Khyber Pakhtunkhwa (DGST-KP) was signed by Ambassador Dr. M. Nafees Zakaria, Executive Director of COMSATS, and Dr. Sajid Hussain Shah, Director General of DGST-KP on behalf of their respective institutions. The areas of cooperation, inter-alia, include: IT and Digitalization, Climate Change and Environment, Human Resource Development, Skills Development, Electric Vehicles, Renewable Energy, Natural Resource Exploitation (Gemstones and Mines), Micro Hydro Plants, and Biomedicine.



MoU signed by Amb. Dr. M. Nafees Zakaria, ED COMSATS, and Dr. Sajid Hussain Shah, DG, DGST-KP on behalf of their respective institutions



MoU signing by Amb. Dr. M. Nafees Zakaria, ED COMSATS, and Mrs. Saleha Khaqan, Co-Chairperson Board of Directors RIHS

The signing ceremony was witnessed by the Provincial Minister for Science and Technology and Information Technology, KP, H.E. Dr. Najeebullah Marwat, and Ambassadors and diplomats of Azerbaijan, Ethiopia, Jordan, Kazakhstan, Morocco, Nigeria, Syria, Yemen, as well as Heads and senior officials of government departments.

Rawal Institute of Health Services (RIHS), Pakistan

An MoU was signed with Rawal Institute of Health Sciences (RIHS), on November 22, 2023. Co-Chairperson Board of Directors RIHS, Mrs. Saleha Khaqan,

signed the MoU that aimed at cooperation in the field of health and education.

Health sector areas covered by the MoU, inter-alia, include AI-based solutions, people's health and environment, internationalization of medical education and facilities, human resource development, electric vehicles for persons with physical disabilities.

The KP Minister for ST&IT informed that his government is creating one-hundred million dollar venture fund to facilitate realignment of R&D with the contemporary needs of the province and the country. He informed that a research agenda for academia in the province is

being launched soon that will allow for standardizing and establishing centralized and regional labs on the model of Innovate UK.

Addressing the gathering, Executive Director COMSATS informed that COMSATS has recently signed agreements with a number of Government departments and private companies that are primarily focused on facilitating R&D and technology transfer.

Co-Chairperson RIHS, being a part of the private sector, looked forward to collaborating with COMSATS for strengthening of health sector in the country.

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CAPACITY-BUILDING EVENTS AND INTERNATIONAL OBSERVANCES

Capacity-building constitutes an important aspect of COMSATS’ programmes for South-South Cooperation. Events in important scientific areas and those related to SDGs are regularly held to strengthen scientific linkages; build indigenous capacities; and promote S&T as a tool for development. These events provide a useful platform to the members of the scientific community, development experts, donor/development agencies, and the decision-makers in particular from Member States, to share their views and experiences on contemporary issues of importance for S&T-led socio-economic development, as well as for achieving SDGs. Advocacy of other international agenda and issues is also done, inter alia, through observance of International Days bearing various themes.



Webinars and Trainings

Collaboration for ANSO-BIDI Events

During the reporting period, three events were held under COMSATS collaboration with ANSO-BIDI platform. These were training courses organized under umbrella theme entitled School for ‘Innovation, Sustainable Development and Leadership Enhancement’. Sixth, Seven and a part of the fifth Course of the vein were conducted during the reporting period.

The program presented an outstanding platform for participants hailing from various part of the world to acquire valuable skills and knowledge while fostering potential research and development collaborations in the realms of Innovation, Sustainable Development

and Leadership Enhancement. The training course encompassed a diverse range of topics, aligned with the shared objectives of the collaborating organizations. The aim of these courses was to provide

a forum to the leaders and senior management of scientific institutions in the developing countries to enhance their knowledge and skills on advance concepts related to innovation, sustainable development and leadership enhancement.



Amb. Dr. Zakaria addressing the participants of the Fifth Term of ANSO-BIDI School

Fifth Term of ANSO-BIDI School on ‘Innovation, Sustainable Development and Leadership Enhancement’

From 9th November 2022 to 11th January 2023, the Center for Environmental Economics of the University of Chinese Academy of Sciences (CEE-UCAS), in collaboration with COMSATS, the Alliance of International Science Organizations (ANSO) and other collaborating institutions, held the fifth term of online ANSO-BIDI School on ‘Innovation, Sustainable Development and Leadership Enhancement’. Held from the platform of ANSO-BIDI Institute Network, the training included eight weekly modules, covering a wide breadth of topics to hone leadership skills of the trainees. The school trained about 80 participants, including 47 trainees recommended by COMSATS belonging to its Member Countries (Iran, Kazakhstan, Nigeria, Pakistan, Palestine and Syria).

The closing ceremony of the two-month long training course was held on 11th January 2023. Speaking on the occasion,

Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, thanked the distinguished subject experts belonging to various prestigious organizations and universities for sharing knowledge, experiences, and best practices on the related topics with the participants.

Ambassador Zakaria remarked that COMSATS is proud of being a strong pillar of ANSO-BIDI Institute Network, having collaborated to organize all five terms of the online training course since 2020. He recalled that this initiative overall benefited more than 700 scientists/leaders from various developing countries, over 300 of which had been nominated by COMSATS belonging to its various Member Countries and Centres of Excellence. He stated that the demand and participation of large number of trainees indicate success of these training courses, and COMSATS looks forward to enhancing collaboration with ANSO, UCAS and other partner organizations for capacity building of the common member countries. He appreciated the untiring efforts of Prof. Desheng Wu and his team at CEE-UCAS

for necessary arrangements, as well as the team at COMSATS Secretariat for facilitating the participation of relevant trainees from the Member Countries.

The topics covered during the training, inter alia, included: communicating spatial data (carto) graphically; disruptive technologies: the case of autonomous vehicles; basic science for facing global challenges; sustainable ecological economy; carbon sink projects; business development strategies; development of organizational leadership; management decisions under public emergency; and impact and response of epidemic on economy and society.

The ceremony concluded with the distribution of certificates among the resource persons and participants.

Sixth Term of ANSO-BIDI School on ‘Innovation, Sustainable Development and Leadership Enhancement’ (from 23rd March to 5th May 2023)

From 23rd March to 5th May 2023,



International participation of 5th ANSO-BIDI School including those from COMSATS Member States

the 6th term of ANSO-BIDI School (online training) on ‘Innovation, Sustainable Development and Leadership Enhancement’ was held under the Belt & Road International Innovation Development Institute Network (ANSO-BIDI Institute Network). The training course was jointly organized by the Centre for Environmental Economics of the University of Chinese Academy of Sciences (CEE-UCAS), China; COMSATS, the Alliance of National and International Science Organizations in the Belt and Road Region (ANSO), and other members of ANSO-BIDI Network.

The training program was structured as nine weekly modules, offering participants a well-rounded curriculum. Distinguished subject experts from renowned universities and international organizations in Canada, Belgium, Brazil, Germany, Sweden, Thailand, and the United States served as esteemed lecturers, sharing their expertise and insights on a wide range of topics. Over 150 participants from different countries benefited from the training course, including 75 trainees recommended by COMSATS Secretariat belonging to various Centres of Excellence and Member Countries of COMSATS, including Kazakhstan, Nigeria, Pakistan, Palestine, Sri Lanka, Sudan, Syria and Tunisia.

The online opening ceremony of the event was held on 23rd March 2023 which was chaired by Prof. Desheng Wu, Dean of the Belt and Road College of UCAS, Director of the Research Centre for Environmental Economics of UCAS, China. Moreover, various leaders from collaborating organizations, including Prof. Xiaowei Nie, Assistant Executive Director, the Secretariat of ANSO, China; Dr. Guo Lugang, Vice President of Beijing Association for Science and Technology (BAST), China; Prof. Luiz Davidovich, President of the Brazilian Academy, Brazil; Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, Prof. Dr. Hasan MANDAL, President, The Scientific and Technological Research



Amb. Dr. M. Nafees Zakaria addressing the inaugural session of Sixth Term of ANSO-BIDI School



Council of Turkey (TUBITAK), Turkey; Mr. Vardan Sahakian, Deputy president of National Academy of Sciences, Republic of Armenia (NAS RA), Armenia; Prof. Regdel Duger, President of the Mongolian Academy of Sciences, Mongolia; Dr. Niguse Bekele, Dean of College of Agriculture and Veterinary Science, Ambo University; Ethiopia; Dr. Yong Xie, Director of International Cooperation Office of the University of Chinese Academy of Sciences, China; and Prof. Dr. Philippe De Maeyer, Senior Professor, Department of Geography, Ghent University, Belgium, participated in the opening ceremony and delivered speeches.

During his address, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, emphasized that

creating a critical mass of experts capable of taking on leadership roles in innovation and sustainable development is imperative for driving the socio-economic growth of a country. Amb. Zakaria stated that innovation is essential for driving economic growth and social progress. He stated that Leadership Enhancement is a vital requirement for driving innovation and sustainable development, and effective leaders must possess key attributes such as vision, empathy, communication, and collaboration skills to inspire and empower individuals towards a shared goal. Amb. Zakaria underscored the importance of collaborative efforts among nations, institutions, and stakeholders in identifying sustainable and effective solution. He stated that COMSATS has been promoting South-South and

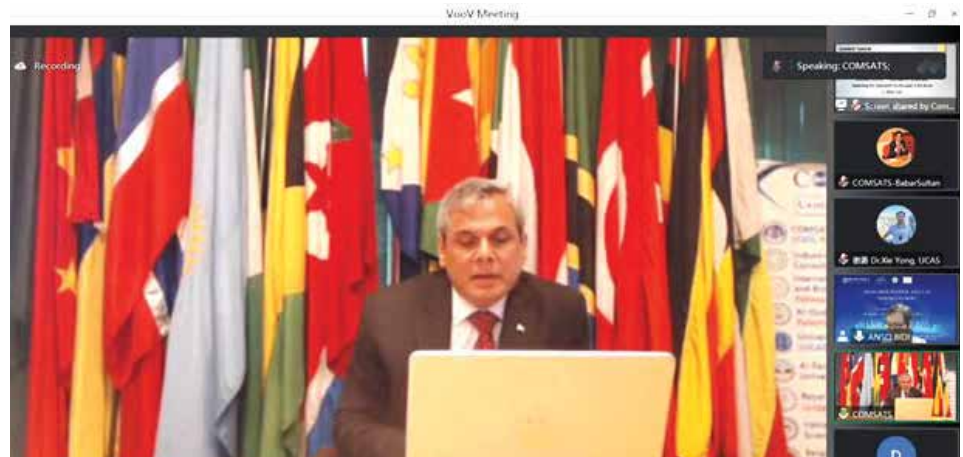
Triangular collaboration in science and technology through a variety of initiatives related to capacity-building; collaborative research and development; as well as exchange of knowledge, experiences, good practices and technological resources among the member countries. Amb. Zakaria highlighted upon the ongoing mutually advantageous cooperation between COMSATS, ANSO, and UCAS, and reaffirmed COMSATS' dedication to sustained active collaboration with the ANSO-BIDI Institute Network in promoting scientific excellence, capacity-building, and nurturing leadership development among individuals in developing countries.

Amb. Zakaria conveyed his sincere appreciation to the organizing committee, trainees, and subject-experts for their invaluable contributions to this highly significant event, and also expressed gratitude to the leaders of the partner organizations for their support to the event.

The diverse range of topics covered in the training program included communicating graphically; technology and manufacturing; sustainability of business operation from three dimensions of environmental, social and corporate governance (ESG); risk management & green finance; disruptive technologies: the case of autonomous vehicles; risk management; brand value upgrading and sustainable development growth; and supply chain responsiveness and resilience. These topics enriched participants' understanding, equipping them with the skills and strategies necessary to navigate leadership challenges, drive innovation, and foster sustainable growth in their professional endeavors.

Seventh Term of ANSO-BIDI School on 'Innovation, Sustainable Development and Leadership Enhancement' (September 20, 2023)

The seventh term of ANSO-BIDI School (online training) on 'Innovation,



The inaugural session of Seventh Term of ANSO-BIDI School in progress



Sustainable Development and Leadership Enhancement' from 20th September to 29th November 2023.

The online opening ceremony of the event was held on 20th September 2023 that was chaired by Prof. Desheng Wu, Dean of Sino-Danish College, UCAS, Director of the Research Centre for Environmental Economics of UCAS, China, Elected member of Academia Europaea, Elected member of European Academy of Sciences and Arts, and Elected member of International Eurasian Academy of Sciences. Moreover, leaders from collaborating organizations of ANSO-BIDI Institute Network including Prof. Xiaowei Nie, Assistant Executive Director, the Secretariat of ANSO, China; Prof. Luiz Davidovich, President of the

Brazilian Academy, Brazil; Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, Prof. Dr. Hasan MANDAL, President, The Scientific and Technological Research Council of Turkey (TUBITAK), Turkey; Dr. Yong Xie, Director of International Cooperation Office of the University of Chinese Academy of Sciences, China; Mr. Zoran Djikanovic, President, University of Donja Gorica, Montenegro; and Prof. Luis Seco, Professor, Department of Mathematical and Computational Sciences, Rotman School of Business, Department of Statistics, University of Toronto, Canada; participated in the opening ceremony and delivered speeches.

In his address, Amb. Dr. Mohammad Nafees Zakaria, Executive Director

COMSATS, highlighted the complexities of the modern world, marked by rapid changes in technology, demographics, environment, and geopolitics. He highlighted the multifaceted array of challenges and opportunities presented by this dynamic environment. Amb. Zakaria stressed the importance of giving top priority to high-quality education, research, development, and innovation in the fields of science and technology. He underlined the significance of nurturing visionary leaders in scientific research and development (R&D) organizations. Keeping in view that nations' socio-economic development and industrialization are closely linked to its scientific and technological capabilities, he asserted that contemporary challenges extend beyond boundaries and demand cooperative efforts on national, regional, and global scales, making international science and technology collaboration essential in addressing these issues.

Amb. Zakaria reaffirmed COMSATS' commitment to ongoing collaboration with the ANSO-BIDI Institute Network, focusing on advancing scientific excellence, capacity building, and leadership development in developing countries. He conveyed his sincere appreciation to the organizing committee, trainees, and subject experts (Resource Persons) for their contributions towards

this significant event.

The online training featured 10 weekly modules spanning over 2.5 months during which distinguished professors/experts belonging to well-known universities in USA, Sweden, Belgium, Brazil, Poland, Canada, Switzerland and Germany shared knowledge and insights on wide range of topics. Over 100 participants from various countries participated in the training course. These included 55 trainees belonging to various Centres of Excellence and Member Countries of COMSATS, i.e., Egypt, Iran, Nigeria, Pakistan, Syria and Uganda.

The topics covered in the training programme provided participants with valuable insights and practical knowledge in areas, such as including supply chain risk management, basic science for facing global challenges, green finance, using real-options reasoning to value supply chain responsiveness and resilience; communicating (spatial) 'data' (carto) graphically; sustainability of business operation from three dimensions of environmental, social and corporate governance (ESG); disruptive technologies: the case of autonomous vehicles; brand value upgrading and sustainable development growth; manufacturing for the 21st century; etc.

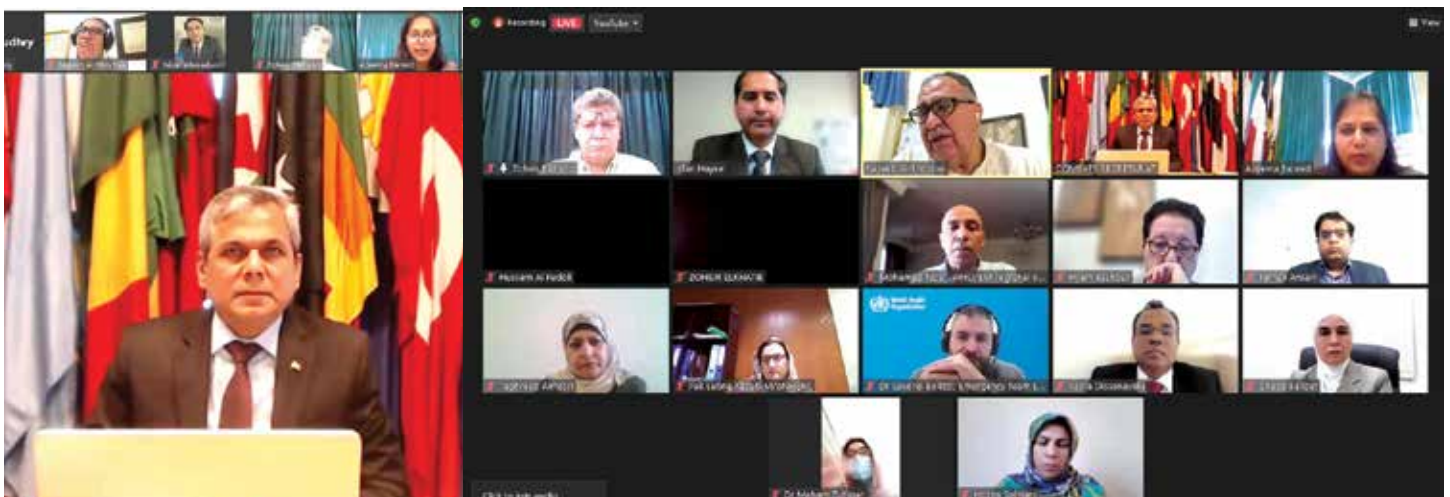
Following the successful conclusion of all ten training modules held weekly, certificates of honor were distributed to the subject experts who conducted the training program. Similarly, the trainees who successfully completed the training course were awarded certificates of participation.

Webinar on 'Health for All through Digitally Enabled Efficient Health Systems in Middle East and Central Asia'

Continuing its series of initiatives aimed at advocating for digital health across its member states, COMSATS held the third regional webinars on Digital Health on April 11, 2023. Aligned with the World Health Day, the webinar that brought together health experts from the Middle East and Central Asia.

Dr. Azeema Fareed, Additional Director Health/Incharge Telehealth at COMSATS, emphasized the necessity of such activities in her opening remarks. She underscored the importance of keeping pace with the decentralization and digitalization of healthcare, particularly in developing countries.

Speaking at the inaugural session, Ambassador Dr. M. Nafees Zakaria, Executive Director of COMSATS, noted



Amb. Zakaria and other Participants of Webinar on Health for All through Digitally Enabled Efficient Health Systems

the pivotal role digital technologies in healthcare delivery. He expressed optimism about leveraging these technologies to enhance healthcare access and outcomes, emphasizing the importance of collaboration to achieve the "Health for All" vision.



Dr. Najeeb AL Shorbaji

The technical session of the event was moderated by Dr. Najeeb AL Shorbaji, President of the eHealth Development Association of Jordan and former Director, Department of Knowledge, Ethics and Research WHO. He highlighted the challenges and opportunities of ICT in healthcare.

Representatives from organizations including WHO, Commonwealth Centre for Digital Health (CWCDH), and UNRWA shared insights on digital health developments in Jordan, Iran, Syria, and Palestine.

In his keynote address, Dr. Vajira Dissanayake, Chair for Commonwealth Centre for Digital Health, (CWCDH) highlighted the potential benefits and opportunities of digital technologies in healthcare systems prepared by CWCDH. These include enhancing diagnostics and



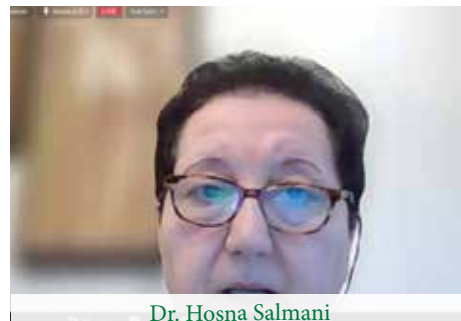
Dr. Vajira Dissanayake

monitoring of vulnerable, health workforce data collection and training, dissemination of information to people and equitable access to the healthcare. He also shared the potential risks and challenges of IT in health that include lack of standardization, privacy of data and poor accessibility. He stressed the need of effective interventions from the Governments and organizations like WHO and ITU to move forward. He shared that CWCDH is running technical support program benefitting many of its member countries.



Dr. Saverio Bellizzi

Dr. Saverio Bellizzi, Emergency Team Lead, WHO, Jordan, informed that COVID-19 had acted as accelerator for the digital health in the region. He showed the results of a survey conducted in 2021-22 that showed multiple digital health apps developed for vaccinations, telemedicine, diagnostics, mHealth, etc. during the period. Dr. Saverio shared that very few countries in the EMRO region of WHO have digital health policy implemented. He presented the scenario of digital health in Jordan and informed the participants that a unified platform with dashboards for all Health indicators has been planned for the country in 2024-25.



Dr. Hosna Salmani

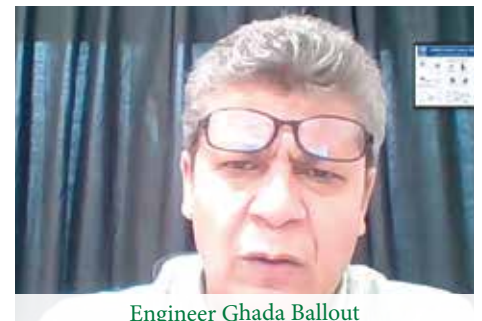
In her presentation, Dr. Hosna Salmani, a PhD scholar in Health Information Management, Iran University of Medical Sciences, Tehran, Iran, highlighted the key features of SEPAS, biggest electronic Health record project of Iran. She informed that currently there is 90 percent EHR coverage of the Iranian citizens.



Dr. Hyam Bashour

Dr. Hyam Bashour shared the recent interventions of digital health in her political and economic crisis hit country that has major health healthcare challenges. The interventions include; Health resource and Services Availability Monitoring System (HeRAMS) and Early Warning Response System (EWARS), rapid mortality surveillance with ICD coding, health Information system for Primary care and Electronic medical records for hospitals.

Introducing the participants with the UN Relief Work Agency's (UNRWA) eHealth system, Engineer Ghada Ballout, UNRWA eHealth Project Manager, Palestine, underlined the main feature of the software that includes modules for non-communicable diseases, Maternal & Child Healthcare, and outpatient care. She also informed that during COVID-19, a



Engineer Ghada Ballout

telemedicine and emergency mode were also added.



Dr. Zoheir EL-Khatib

Continuing with the elucidation of UNRWA's eHealth System, Dr. Zoheir EL-Khatib, Deputy Field Health Program in UNRWA, Gaza field, presented the situation of software's implementation in Gaza. He apprised the audience that all health centres of UNRWA in Gaza are using the eHealth System. He also explained the features of the system being used by Gaza field office.

The webinar highlighted that EHR is at the core of digital health. Lack of modern infrastructure, resource constraints, untrained human resource, absence of policy direction and lack of standards were identified as some of the challenges in digitalization of healthcare. Region specific issues highlighted included power cuts and technological barriers, sanctions and crisis and conflict.

The webinar concluded on the note of promoting Digital Health and building synergies amongst various stakeholders for effective implementation of digital health applications in developing countries. They called for joint efforts in promoting digital health as means to achieving citizen centric healthcare systems that reaches out far and wide with efficiency and cost-effective access for all.

Webinar on Advancing Climate Diplomacy in the Global South: The Road to COP28 (22nd June 2023)

COMSATS Centre for Climate and

Sustainability organized a webinar titled "Advancing Climate Diplomacy in the Global South: The Road to COP28" on June 22, 2023. This significant event, hosted at the COMSATS Secretariat in Islamabad, brought together approximately 50 participants, including representatives from UN agencies, government bodies, research and development institutions, civil society, and academia from more than fifteen countries. Held in hybrid format, the webinar featured insightful presentations and speeches from subject experts, exploring into crucial facets of climate diplomacy.

Speaking on the occasion, Executive Director COMSATS, Ambassador Dr. Muhammad Nafees Zakaria, expressed that although one cannot control nature's forces, collective efforts rooted in experience have allowed formulation of strategies to prepare for and mitigate the impact through scientific, political, social, and cultural measures. He emphasized that developing countries possess the strengths and capabilities to address environmental challenges, and the way forward involves investment in research and development, exchange of expertise, resource sharing, and the development of necessary infrastructure and technology.

Prof. CAO Jinghua, Executive Director of ANSO Secretariat, China, discussed

"Opportunities and Strengths of the Global South in Advancing Climate Action". Prof. CAO Jinghua emphasized the growing significance of the South emerging as a center of economic growth, providing substantial potential for developing countries to share experiences and best practices in addressing global climate challenges. He highlighted China's commitment to achieving carbon neutrality by 2060, citing China's leading contributions to global renewable energy, including being number one in hydropower generation and contributing to 48% of global renewable energy, 45% of solar, and 50% of wind energy.

Prof. Dr. Enrique Forero, Chair of the Regional Focal Point for Latin America and the Caribbean at the International Science Council (ISC), Colombia, gave presentation on "Climate Diplomacy and its Significance in the Global Climate Governance." Prof. Forero highlighted related challenges of the contemporary era, including complexity, climate crises, geopolitical realignment, and the aftermath of COVID-19. He emphasized the importance of protecting and restoring vast forest ecosystems and rich biodiversity in the Global South, contributing to carbon sequestration and preserving invaluable habitats and species.

Dr. Zitouni Ould-Dada, Deputy Director



(1) Dr. Huma Balouch; (2) Prof. Dr. Enrique Forero; (3) Dr. Sohail Malik; (4) Dr. Zitouni Ould-Dada; (5) Amb. Dr. Nafees Zakaria; (6) Dr. Aneel Salman; and (7) Dr. Mehwish Durani at COMSATS Climate Diplomacy Webinar



IOFS-COMSATS-COMSTECH Joint International Forum for Agri-Biotechnology (July 4-5, 2023)

Jointly organized by IOFS, COMSATS, and COMSTECH, the 2nd International Forum for Agri-Biotechnology, took place from 4th – 5th July 2023, in Astana, Kazakhstan. The event was hosted by the Islamic Organization for Food Security (IOFS) under the auspices of the Ministry of Education and Science of the Republic of Kazakhstan. The event was also supported by the National Center for Biotechnology (Kazakhstan).



The forum catered to information needs of policymakers and implementers, creating a platform for knowledge-sharing on recent developments in agri-biotechnology. It brought together stakeholders from educational institutions, research organizations, industry, and commercial establishments to explore innovative solutions for sustainable agriculture and food security in the Islamic World.

The forum covered significant subjects under broad categories, including green biotechnology, microbial biotechnology, food biotechnology, animal biotechnology, breeding tools, policy, and roundtable discussions. Eight technical sessions and a poster exhibition session facilitated in-depth discussions and knowledge exchange.

Held on July 4, 2023, the inaugural session was presided over by H.E. Prof. Yerlan A. Baidalet, the Director General of IOFS. Prof. Baidalet emphasized the importance of investing in agri-biotech research to enhance the nutritional value of daily food. He highlighted the need for balanced regulatory frameworks to ensure safety and address public concerns about biotechnology. Prof. Baidalet called for more cooperation to maintain biosecurity through the advancement of biotechnology in OIC countries and endorsed the idea of creating an international biosafety agency in Kazakhstan proposed by H.E.

of the Office of Climate Change, Biodiversity, and Environment at FAO, Italy, shared insights on the "Successful Climate Diplomacy Efforts of FAO for the Global South." Dr. Zitouni Ould-Dada emphasized on collaborating with fellow developing countries for sharing knowledge, technology, and financial resources, to help enhance efforts towards climate resilience and mitigation efforts. Dr. Ould-Dada highlighted the association of peace and conflict in the region with climate change, underscoring the need to address these issues through diplomacy and international cooperation. He further stressed the importance of utilizing indigenous capacity to address local challenges.

Dr. Sohail Malik, Technical Team Lead at the Climate Resourcing Coordination Centre (CRCC), Pakistan, addressed the "Key Expectations and Priorities of the Global South for COP28." Dr. Sohail Malik emphasized the valuable knowledge and practices in adaptation measures held by many developing countries, including water management, drought-resistant agriculture, and community-based disaster risk reduction.

Dr. Aneel Salman, Chair of Economic Security at the Islamabad Policy Research Institute (IPRI), Islamabad, Pakistan, explored "Non-Traditional Partnership for Effective Climate Diplomacy." Dr. Salman proposed non-traditional partnerships, focusing on sub-national leaders, especially at the city level, as a key strategy to swiftly reduce emissions and enhance resilience to climate change. He outlined nine crucial prerequisites to achieve related objectives, including partnerships, leadership, clear goals, funding sources, tracking, management, governance, policies, political and social impacts, and problem identification.

The panel discussion covered key topics including international cooperation, indigenous capacity enhancement, climate finance, food security, nature-based solutions, South-South cooperation, and emission reduction. Panelists shared success stories and case studies from their respective regions. The webinar concluded with a commitment to strengthen climate diplomacy and South-South cooperation ties among developing countries. The speakers emphasized the need for working out nature-based solutions sensitive to the needs of locals and concerted efforts to put them into action.



Participants of IOFS-COMSATS-COMSTTECH Forum for Agri-Biotechnology

Kassym-Jomart Tokayev, the President of Kazakhstan.

Distinguished speakers, including Dr. Darkhan Zhumakanovich Akhmed-Zaki, Chairman of the Committee of Science of the Ministry of Science and Higher Education of the Republic of Kazakhstan; Prof. M. Iqbal Choudhary, Coordinator General of COMSTTECH; H.E. Mr. Tlektes Yespolov, President of the Academy of Agricultural Sciences of the Republic of Kazakhstan, H.E. Zehra Zümür SELÇUK, Director General, Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC); and Dr. Ahmad Kawesa Sengendo, Assistant Secretary General for Economic Affairs, OIC, also made welcome remarks during the opening session.

The session concluded with a signing ceremony of a Tripartite Memorandum of Understanding (MoU) involving IOFS, the Academy of Agricultural Sciences of the Republic of Kazakhstan, and the Tajik Academy of Agricultural Sciences (TAAS).

About 60 subject specialists, researchers, and students from nine countries, including Bangladesh, Egypt, Jordan, Malaysia, Pakistan, Saudi Arabia, Turkey, Tunisia, and the USA, presented their

research studies and actively engaged in the technical proceedings. The event also featured keynote lectures, plenary sessions, oral and poster presentations, and discussions, fostering numerous networking opportunities among the participants.

A round-table session was also convened. He focused on fostering an enabling policy environment to promote the adoption of new technologies for enhancing food security. During this session, two pivotal panel discussions were also organized: Panel Discussion on Green and Microbial Biotechnology; and Panel Discussion on Animal and Food Biotechnology.

Workshop on 'Green Biomanufacturing of Future Food' (July 6, 2023)

On July 6, 2023, the Tianjin Institute of Industrial Biotechnology (TIB), in collaboration with COMSATS, organized a workshop titled 'Green Biomanufacturing of Future Food' from the platform of the COMSATS Joint Centre for Industrial Biotechnology (CCIB). Established in 2021, CCIB has been providing sound grounds for forging collaborations in joint R&D and strengthening industrial biotechnology sector of the Member

States. The Centre has so far hosted a series of five technical workshops in Synthetic Biotechnology in line with its thrust areas: Bio-medicine, Bio-agriculture, Biomaterials, Bio-chemicals and Bio-energy, thus driving forward the frontiers of industrial biotechnology.

This workshop was organized by CCIB's Joint R&D Group on 'Future Food' with the aim of promoting the exchange of ideas and knowledge between representatives of R&D organizations and industry, and exploring potential cooperation opportunities for research and development, and technology demonstration on future food.

The event brought together a diverse group of researchers, scientists, academicians, government officials/policy makers and entrepreneurs to explore the potential of biomanufacturing of future food for achieving food security. About 50 participants belonging to different COMSATS' Member States/Centres of Excellence participated in and benefited from deliberations at the workshop. The event featured a keynote address by a subject expert from China, and five technical talks by resource persons from China, Pakistan, and Nigeria.



Glimpses from China and Pakistan COMSATS-TIB event on Green Biomanufacturing

Opening the event, Prof. Dr. Jibin Sun, Director CCIB, who is also the Deputy Director-General TIB, extended a warm welcome to the subject-experts and participants. He acknowledged the collaboration and support extended by COMSATS for holding this workshop. Prof. Sun gave an overview of the workshop's objectives that included facilitating multidisciplinary collaboration for addressing the pressing global challenges related to food security.

Highlighting the potential of biotechnology in revolutionizing food production, promoting environmental sustainability and economic viability, the Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, noted that cutting-edge

biotechnology opens doors to new possibilities, such as soil-less farming methods, precision agriculture, and the utilization of novel ingredients derived from renewable sources. Amb. Zakaria underlined that Food Security is a common challenge and that climate change is adversely affecting global food production – crop failures and increased vulnerability – threatening food security and livelihoods of small-scale farmers. He stressed the need for prompt and decisive action to foster sustainable agricultural practices that mitigate these challenges and ensure universal access to nutritious food. Amb. Zakaria also highlighted the role being played by CCIB in supporting industrial biotechnology sectors in COMSATS' Member States. He commended CCIB Director and Group

Coordinator for their dedicated efforts in organizing the workshop.

In his keynote address, titled 'Future Food and Synthetic Biology', Prof. Jingwen Zhou, Vice Dean of the Science Center for Future Foods at Jiangnan University, China, highlighted 'future food' as a representative substance for future changes in production methods and lifestyles. He noted that objectives of biomanufacturing of future foods is to address issues, such as food supply and quality, food safety and nutrition, and dietary habits that result in safer, more nutritious, more delicious, and more sustainable choices. Prof. Zhou was of the opinion that the large-scale industrial application of synthetic biology technology will play an important role in the production of future food. Through synthetic biotechnology, efficient biosynthetic pathways can be constructed in microbial cells to achieve efficient synthesis of fermented foods, food enzymes, microbial proteins, important food ingredients, functional nutrients, artificial proteins (meat/eggs/milk), etc.

First talk of the technical session was made by Prof. Yu Zheng, Professor, Tianjing University of Science and Technology, China. Speaking on the topic of 'Excavation of Core Microorganisms and Engineering of Microbiome for Intelligence Manufacturing of Traditional Vinegar', he noted that due to the variability in microbial communities, fermentation process is primarily guided by empirical knowledge, leads to inconsistent fermentation and unreliable quality of product. Prof. Zheng stressed that in order to achieve controllable fermentation and to enable future intelligent manufacturing of traditional vinegar, it is crucial to establish a stable and fully functional microbial community. Advancements in intelligent computing and high throughput screening technology have opened up possibilities for constructing an engineered microbiome through systematic analysis of the structure and function of microbial communities involved in traditional

vinegar fermentation.

In her presentation titled 'Biosynthesis and Characteristics of Fibrinolytic Enzyme from *Cordyceps Militaris*', Prof. Yingli Liu, Professor, Beijing Technology and Business University, China, shared her research on obtaining fibrinolytic enzyme gene from *Cordyceps militaris* with the potential to be developed into a new generation of thrombolytic drugs and functional foods.

Prof. Hamid Mukhtar, Professor, Government College University Lahore, Pakistan, gave a talk on 'Biotechnology for Functional Foods', whereby he gave an overview of the recent advances in the applications of biotechnology for the development of different functional foods. Prof. Mukhtar noted that recently biotechnological innovations have re-shaped a number of industries especially agricultural, food and health industries. He also touched upon quality assurance, biosafety, social, legal and regulatory aspects of biotechnology-derived functional foods.

In her presentation titled 'Probiotic Potential and Antioxidant Activities of Lactic Acid Bacteria Isolated from Some Nigerian Fermented Foods and Palm Wine', Prof. Oladipo Iyabo Christianah, Professor, Ladoko Akintola University of Technology, Nigeria, shared her research on *Lactobacillus* species that was identified from some Nigerian fermented foods and

palm wine, and their functional properties evaluated in order to better understand their usefulness as starter cultures or probiotics.

Prof. Ting Shi, Coordinator of CCIB Joint R&D Group on Future Food, in her talk on 'Bio-manufacturing of Future Food Boosted by in-vitro Synthetic Biology', noted that recently the advantages of in-vitro multi-enzyme molecular machines on the precise control of reaction process and the enhancement of product yield have demonstrated great application potential in biomanufacturing. She noted that studies on in-vitro multi-enzyme molecular machines have become an important branch of synthetic biology, and are gaining increasing attentions.

Ms. Qianqian Chai, Officer of Foreign Affairs and Academic Exchange at TIB, China, made closing remarks. She expressed satisfaction over the success of the workshop in fostering meaningful discussions and nurturing multidisciplinary collaborations in the realm of future food. Ms. Chai felicitated the experts and participating researchers for their active engagement and contributions.

COMSATS-ICESCO Joint Training Workshop on Renewable Energy and Energy Efficiency: Green Hydrogen

A training workshop on Renewable Energy

and Energy efficiency: "Green Hydrogen: The Future of Renewable Energy and Energy Efficiency" was organized by COMSATS, from the platform of its initiative COMSATS Centre for Climate and Sustainability (CCCS). The workshop was held in collaboration with the Islamic World Educational, Scientific and Cultural Organization (ICESCO); Egyptian National Commission to UNESCO – ICESCO – ALESCO; Regional Center for Renewable Energy and Energy Efficiency (RCREEE); and COMSATS Centre of Excellence in Egypt, National Research Centre (NRC), under the auspices of the Egyptian Ministry of Higher Education and Scientific Research. Held from 10th to 12th July 2023, the workshop was hosted by NRC, Cairo, Egypt.

The Workshop was organized with the objectives, inter alia, to: provide an overview of renewable energy and energy efficiency concepts and their importance in addressing climate change; develop an understanding among the participants about the various applications of green hydrogen in energy production and storage, transportation, and industrial processes; and to discuss the economic and policy frameworks needed to promote the adoption of green hydrogen.

The inaugural session was jointly chaired by Prof. Dr. Mohamed Samir Hamza, Head of the Cultural Affairs and Missions Sector – Supervisor of the Egyptian



Distinguished Speakers & Participants of COMSATS-ICESCO Joint Training Workshop on Renewable Energy & Energy Efficiency: Green Hydrogen



COMSATS-ICESCO Event Inaugural Session in progress

National Commission; Dr. Foued El Ayni, Expert – Science and Technology Sector, ICESCO, Morocco; Dr. Kamel Al-Khateeb, Professor, National Research Centre; Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS (online); Dr. Omar Farouk, Assistant President of the Academy of Scientific Research and Technology, Egypt; Dr. Jauad El Kharraz, Executive Director, Regional Center for Renewable Energy and Energy Efficiency (RCREEE); Eng. Ehab Ismail, Vice President of New and Renewable Energy Authority, Egypt; Prof. Dr. Ibrahim Helal, Faculty of Engineering, Ain Shams University, Egypt; Prof. Dr. Mona Hagras, Supreme Council of Universities, Egypt. The speakers emphasised the importance of building and expanding institutional capacity of entities in utilizing green hydrogen across diverse sectors.

Speaking on the occasion, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, remarked that a shift from fossil fuels to renewable and other clean energy technologies is gaining pace with rapid development of bioenergy, wind and solar energies, geothermal, electric vehicles, and a variety of other technologies. For Global economic recovery, increased demand for energy is

resulting in diversification and innovations towards developing efficient energy sources seem inevitable.

The Workshop was attended by more than 50 participants from different departments and institutions of Egypt ranging from the Ministries and national R&D institutions of Energy and industry, and Universities’ engineering and climate technology faculties.

Relevant experts discussed various aspects of the event-theme including Renewable energy and Green Hydrogen principles and production; Decentralized On-Grid PV Systems; Sizing, Challenges, and Best Practices Applied in Egypt; Challenges for Green Hydrogen Production, Storage, and Distribution; Green Hydrogen and Fuel Cells Applications; prospect of green hydrogen and affordable integration in primary energy mix: Fuel of the future from the Past; Green hydrogen production using non precious metal electro-catalyst in alkaline medium; Nanomaterials for water splitting; and Organic and Inorganic Hybrid Materials for Renewable production of Hydrogen.

The 12 speakers of the three-day Workshop belonged to Ain Shams

University; New and Renewable Energy Authority; RCREEE, National Research Centre, Egypt; Dawood University of Engineering & Technology (DUET), Pakistan; National University of Sciences & Technology (NUST), Pakistan; and University of Malaya, Malaysia.

The workshop provided an opportunity to the researchers and engineers to gain insights to current and future trends and opportunities for green hydrogen from various case studies and projects across the hydrogen value-chains including production, distribution, storage.

Webinar on El-Nino: Understanding the Weather Phenomenon; Opportunities for Resilient Future in the Global South

The COMSATS Centre for Climate and Sustainability (CCCS) successfully convened a significant virtual gathering on August 8, 2023, titled “El-Nino: Understanding the Weather Phenomenon; Opportunities for Resilient Future in the Global South”. This event convened a diverse group of experts and stakeholders from across the globe to engage in insightful discussions regarding the intricate dynamics of El-Nino and its

implications for vulnerable regions in the Global South. The valuable insights shared by esteemed experts enriched experience for over 60 participants worldwide.

In his welcome address, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director of COMSATS, emphasized the critical role that science and technology play in solving these difficulties as well as the socio-economic ramifications of El Nino. He highlighted the urgency of the global climate crisis and its acceleration, projecting that the El-Nino episode would likely breach UNFCCC's global average temperature limit of 1.5 degrees within the next four years, a milestone initially expected to be reached by 2050. Ambassador Zakaria expounded on the webinar's goals by demonstrating how the knowledge of well-known specialists will support climate change adaptation and mitigation plans. He reaffirmed COMSATS' dedication to advancing technological and scientific solutions in response to this pressing worldwide issue.

Dr. Zaheer Ahmed Babar, Director of the National Weather Forecasting Center, Pakistan Meteorological Department, proficiently guided the webinar's proceedings. The event featured presentations from esteemed experts representing El-Nino vulnerable nations:



Amb. Dr. M. Nafees Zakaria addressing participants of the Webinar on El-Nino: Understanding the Weather Phenomenon; Opportunities for Resilient Future in the Global South

Pakistan, Iran, Thailand, China, and Nepal. Dr. Ahad Vazifeh, Director of the National Center for Climate Services and Drought Monitoring, Iran National Meteorology Organization, provided valuable insights into simulation-based predictions for the upcoming El-Nino event and its anticipated implications.

Dr. Vanessa Surapipith, Deputy Director of Thailand's Hub of Talents on Air Pollution and Climate (HTAPC) at the Collaborating Center for Clean Air and Climate Change (CCCACC), shed light on the meteorological interplay between El-Nino and atmospheric pollutants.

Prof. Dr. Dambaru Ballab Kattel, Associate

Professor at the Institute of Tibetan Plateau Research, Chinese Academy of Sciences, explored the hydrological dynamics exacerbated by El-Nino, highlighting the profound effects of climate change on precipitation.

Dr. Sher Muhammad, Remote Sensing Specialist within the Strategic Group: Reducing Climate and Environmental Risk at the International Centre for Integrated Mountain Development (ICIMOD), highlighted role geo-informatics technologies play in tracking and evaluating historical changes and forecasting future dynamics.

The event concluded with an interactive



(1) Prof. Dr. Dambaru Ballab Kattel; (2) Dr. Sher Muhammad; (3) Dr. Zaheer Ahmed Babar; (4) Dr. Mehwish Durani; (5) Dr. Ahad Vazifeh; (6) Mr. Saifullah Dilazak; (7) Dr. Vanessa Surapipith



Amb. Dr. Mohammad Nafees Zakaria, ED COMSATS, giving remarks at the inaugural ceremony at the International Forum on 'Biomanufacturing'

panel discussion, moderated by Dr. Zaheer Ahmed Babar, fostering vibrant exchanges between participants and experts. The diverse perspectives and inquiries enriched the discourse, contributing to a holistic understanding of El-Nino's far-reaching implications.

In her closing remarks, Dr. Mehwish Durani, Head of CCCS, expressed heartfelt gratitude to the esteemed experts and engaged participants. Dr. Durani acknowledged the invaluable insights shared during the webinar, emphasizing their pivotal role in advancing collective understanding of El-Nino's complex dynamics.

International Forum on 'Biomanufacturing' (November 9, 2023)

Tianjin Institute of Industrial Biotechnology (TIB), COMSATS, and Alliance of International Science Organization (ANSO) organized a 2-day International Forum on Innovative Development of Biomanufacturing in Tianjin, China on 09-10 November 2023 from the platform of COMSATS Joint Centre for Industrial Biotechnology (CCIB).

The importance of international cooperation for developing innovation and

tech-based biomanufacturing and Belt & Road Initiative's spirit of shared future are at the centre stage.

Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, in his remarks at the opening ceremony, underlined cross border ties for strengthening biomanufacturing sector to addressing the multifaceted developmental challenges facing the humanity, like climate change, population growth, environmental degradation, emergence of diseases and pandemics. He said the collaboration will yield tangible outcomes in areas of healthcare, agriculture, and environmental sustainability.

Earlier in his welcome remarks, Prof. Yanhe Ma, Director General, TIB, expressed delight in collaborating with COMSATS. He noted that this collaboration led to the establishment of CCIB in 2021. The 10th anniversary of BRI that preceded the event, marked the prosperous industrial development of biomanufacturing sector in China. In order to facilitate R&D activities in the Member Countries, COMSATS and TIB signed a milestone agreement to launch 'China-COMSATS Belt and Road Joint Laboratory on Industrial Biotechnology' on the occasion. These cooperative arrangements are in line with the goals set out by President Xi, Prof. Yanhe Ma noted.

Prof. Jinghua Cao, Executive Director ANSO, expressed appreciation for Chinese Academy of Sciences, COMSATS and various other agencies and stakeholders for enabling ANSO to play its role in promoting practical ways in building scientific capacity.

Mr. Zhengyu Wang, Deputy Director of the International Cooperation Bureau, Chinese Academy of Sciences, thanked TIB and COMSATS for their good work helping China achieve BRI objectives in line with national agenda of net zero carbon emission. He assured the Academy's continuous support to initiatives, such as those outlined under BRST.

Ms. Rongfang Wang, Director General for International Cooperation, Ministry of Science and Technology of China, expressed satisfaction that TIB has been working closely with ANSO and COMSATS. She reassured her Ministry's strong support to the efforts and initiatives towards such a cooperation.

The Forum was attended by the policy makers, scientists particularly the young scientists, researchers, entrepreneurs, industry representatives, as well as representatives of local, national and international organizations, from COMSATS Member States.



Amb. Dr. M. Nafees Zakaria, ED COMSATS at TIB-COMSATS-ANSO 'Biomufacturing' Event

During the plenary session, Amb. Zakaria made elaborate presentation on COMSATS' contributions to promoting international cooperation and shared his vision on policy guidelines.

The Chief organizers informed the audience that programmes of COMSATS Joint Centre for Industrial Biotechnology (CCIB), that epitomized South-South cooperation, has also been duly recognized as 'Good Practice' by UNOSSC in its publications brought during Global South-South Development (GSSD) Expo 2022.

The experts' presentations focused on Biomufacturing of Chemicals, Materials, Pharmaceuticals, enabling Technologies, Future Food, Natural Products and New Resources. A report on innovative development of biomufacturing in COMSATS Member States was also presented during the event.

On the sidelines of the Forum, 2nd Consultative Committee Meeting of CCIB was held that discussed the future directions for the Centre.

COMSATS-IPO-Pakistan Joint Training Workshop on 'Intellectual Property and Bilateral Agreements'

COMSATS, in collaboration with the

Intellectual Property Organization of Pakistan (IPO Pakistan), organized a two-day workshop on Intellectual Property and Bilateral Agreements hosted at the COMSATS Secretariat from December 19 to 20, 2023, in Islamabad, Pakistan.

The workshop was attended by a diverse group of attendees, encompassing early-career researchers, entrepreneurs, engineers, scientists, government officials, and stakeholders from bilateral and multilateral platforms at both national and international levels. With 24 individuals attending in person and others participating online from COMSATS' focal points and Centres of Excellence in Bangladesh, Ghana, Iran, Kazakhstan, Nigeria, Sri Lanka, Syria, and Yemen, the event aimed to deepen the participants'

knowledge of safeguarding and transferring intellectual property rights.

The Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria emphasized the role of robust Intellectual Property Rights (IPR) protection in fostering the growth of knowledge-intensive industries. He said that expanding the economy's diversification outside of conventional industries promotes greater sustainability and resilience. Academic institutions, research centres, and the commercial sector have been shown to collaborate more with clear and enforceable intellectual property regulations in place.

Chairperson of IPO Pakistan, Ambassador Farukh Amil, delivered an insightful



Amb. Dr. M. Nafees Zakaria

Amb. Farukh Amil

Ms. Shazia Adnan



address underscoring the significance of intellectual property rights (IPR) and agreements in addressing global challenges, alongside their role in the contemporary world. Drawing comparisons between the economic strengths of industrialized and developing nations, Ambassador Amil highlighted the transformative power of intellectual property rights, commending related collaborative endeavors of COMSATS. He recommended that countries in the Global South embrace intellectual property rights as a means to enhance their economies.

Ms. Shazia Adnan, Director-General of IPO Pakistan, acknowledged efforts of the organizing partners and briefed participants on the workshop's rationale and expected outcomes.

The technical sessions touched upon various facets of intellectual property, covering valuable insights from experts in the field, including keynote talks by keynote addresses from Dr. Carlos María Correa, Executive Director of the South Centre, and Mr. Giovanni Zazzerini,

Secretary-General of the International Network for SMEs (INSME), offering valuable insights into IP rights, and related international laws, and treaties.

During his keynote speech, Mr. Giovanni Zazzerini, Secretary General of INSME, emphasized the importance of intellectual property (IP) and highlighted how small firms frequently overlook the tools and protections available to them. Intellectual property rights (IPRs) are crucial for SMEs as they protect their ideas and enable them to establish themselves as technology leaders in their industries by providing access to or ownership of significant patented technologies. Challenges associated with IPRs highlighted by him included the requirement for specialized knowledge, associated costs, and the possibility of prolonged processes in evaluating and enforcing intellectual property rights.

Dr. Owais Hassan Shiekh, a National IP Expert from Pakistan at the World Intellectual Property Organization (WIPO), conducted a thorough

examination of how intellectual property contributes to establishing a sustainable competitive advantage for businesses. He explored various aspects, including the TRIPS agreement, theories concerning public goods and social contracts, and competitive advantages. Dr. Shiekh underscored the importance of IP protection from both producer and consumer standpoints.

Mr. Saifullah Khan, Deputy-Director at IPO Pakistan, provided an overview of intellectual property rights, elucidating different types of IP instruments, such as copyrights, trademarks, patents, trade secrets, and geographical indicators. Ms. Saima Kanwal, Senior Patent Examiner at IPO Pakistan, focused on international IP agreements, particularly highlighting the Patent Cooperation Treaty and patent filing trends in Pakistan.

Dr. Aziz ur Rehman delivered a presentation on the World Trade Organization (WTO) and the TRIPS agreement. Ms. Khushbakht Asif discussed the establishment and progress of



Beneficiaries of COMSATS-IPO Pakistan Event during a technical session



Participants of COMSATS-IPO Pakistan Event with ED COMSATS, Amb. Dr. Nafees Zakaria and Chairperson IPO-Pakistan, Amb. Farukh Amil

Technology Innovation Support Centers (TISCs) in Pakistan, and Mr. Muhammad Ismail, Director Enforcement at IPO, shared strategies for protecting IP rights in different jurisdictions.

Ambassador Farrukh Amil presented "The Significance of IP Agreements and Collaborations: A Case Study of Pakistan at the Bilateral and Multilateral Level", shedding light on Pakistan's involvement in international agreements and treaties. In his talk, Mr. Ghulam Mujtaba, Deputy Director at IPO, focused on licensing and technology transfer, highlighting the crucial role of legal agreements in facilitating this process.

The workshop ended with a closing session chaired by Ambassador Dr. Mohammad Nafees Zakaria, who underscored key technical recommendations of the event, including to:

- Encourage active participation in international IP agreements and collaborations to strengthen innovation ecosystems;
- Develop capacity-building programmes to educate local industries on licensing processes and technology transfer strategies;

- Promote the creation of technology-transfer offices within academic and research institutions to streamline commercialization processes;
- Foster collaboration between local researchers, legal experts, and government bodies to ensure a supportive environment for freedom to operate;
- Raise awareness among SMEs about the strategic importance of intellectual property;
- Establish accessible support networks to assist SMEs in navigating IP landscapes and fostering growth;
- Recognize and incentivize the economic value of IP protection through right policies and funding mechanisms.

International Observances

International Women's Day Event on 'DigitALL: Innovation and Technology for Gender Equality'

COMSATS celebrated the International Women's Day on 8th March 2023 at its Secretariat in a gracious ceremony attended by its officials. This year, the theme of the Day "DigitALL: Innovation and technology for gender equality", which

was aligned with the priority theme of the upcoming 67th Session of the Commission on the Status of Women (CSW-67).

The Executive Director, Ambassador Dr. Mohammad Nafees Zakaria, in his message highlighted the importance of women in the nation building, society and other walks of life. He stated the quotes of the founder of Pakistan, Quaid-e-Azam Muhammad Ali Jinnah, verbatim "There are two powers in the world; one is the sword and the other is the pen. There is a great competition and rivalry between the two. There is a third power stronger than both, that of the women." In this regard, he acknowledged equal contributions being made by female officials and staff working at COMSATS.

The Executive Director encouraged female colleagues working for COMSATS and COMSATS Internet Service (CIS) to share their ideas for bringing improvement in COMSATS' working environment and for its growth.

The event also served as a forum to acknowledge the efforts of women in scientific arena and sustainable development.



ED COMSATS, Amb. Dr. M. Nafees Zakaria, addressing women officers from COMSATS Secretariat and CIS

World Science Day for Peace and Development 2023 'Building Trust in Science'

In a collaborative effort between COMSATS Secretariat, UNESCO Pakistan, Pakistan Science Foundation (PSF), and the ECO Science Foundation (ECOSF), a significant gathering of scientists took place on November 15, 2023, at PSF premises in Islamabad. Held to commemorate World Science Day for Peace and Development, the event revolved around the theme "Strengthening High-Quality STEM Education for Sustainable Development," aligning with this year's broader theme, "Building Trust in Science."

In his welcome address, Professor Dr. Shahid Mahmood Baig, S.I., Chairman of the Pakistan Science Foundation (PSF), emphasized that World Science Day highlights the significant influence of science on our lives, permeating diverse dimensions of our existence. He highlighted how science and technology have become integral component of our daily lives over the years.

Dr. Seyed Komail Tayebi, President of ECOSF, emphasized the critical role that STEM education plays in 21st-century economic development. He underlined the transformative power of STEM education and its critical role in providing people

with the skills they need to succeed in an increasingly technologically advanced and globally interconnected world. The address served as a compelling call to prioritizing STEM education for shaping nations' economic trajectories.

The Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, emphasized the significance of STEM in tackling today's pressing global issues. He emphasized the growing trend of placing high priority on STEM education as a long-term investment, particularly in emerging nations. Ambassador Dr. Zakaria stressed the significance of having international initiatives to support youth education and

develop their potential for a better future. Additionally, he emphasized the critical role of COMSATS in fostering innovation and progress among its member country through information sharing, cooperative research, and capacity building.

Dr. Abida Raza Rao, Technical Director at the National Center of Industrial Biotechnology (NCIB), PMAS-Arid Agriculture University, delivered a keynote lecture titled 'How to Build Stakeholder Trust in Science'. During her presentation, Dr. Rao emphasized the distinctions between high-quality and equitable STEM (Science, Technology, Engineering, and Mathematics) education compared to traditional educational approaches. She



Amb. Dr. M. Nafees Zakaria at the World Science Day Event



Dr. Abida Raza Rao, Technical Director, National Center of Industrial Biotechnology (NCIB), PMAS-Arid Agriculture University, delivering a keynote lecture

underscored the potential impact of STEM education on economic growth and highlighted its critical alignment with the Sustainable Development Goals (SDGs).

Dr. Rao addressed the inherent challenges in STEM education and proposed viable strategies to overcome obstacles to the acceptance and utilization of science in everyday life. By focusing on how STEM education fosters economic development and aligns with global sustainability objectives, her presentation aimed to provide the audience with a comprehensive understanding of the significance of equitable and high-quality

STEM education.

The Chief Guest, Dr. Youssef Filali Meknassi, the Director of UNESCO in Pakistan and Representative, spoke on difficult task of increasing public confidence in research, which is essential for bolstering evidence-based policy and decision making and gaining societal acceptability. In her discussion on the gender gap in STEM fields, Dr. Meknassi emphasized the significance of addressing the social, cultural, and psychological aspects impacting women's underrepresentation in these fields. It was emphasized how UNESCO actively

supports its member nations in tackling these issues and advancing gender equality in STEM disciplines.

Later, six orientation sessions on STEM aimed at sparking interest in science through engaging experiments, were also conducted that had participation of over 250 students. The organizing partners of the event pledged, with hope to work together at all levels to improve fair and high-quality STEM education and to promote it as a model for national development for countries in the Global South.

PARTICIPATION IN IMPORTANT FORA AND MEETINGS

- 28th Conference of Parties (COP28), Dubai, UAE (November-December 2023) 62
- Tenth World Government Summit, UAE (February 12-15, 2023) 67
- The 22nd Session of the Committee of Experts on Public Administration (CEPA) (March 31, 2023) 67
- International Workshop on Ion Beam Applications, Islamabad, Pakistan (September 11-13, 2023) 68
- IOFS' 2nd High Level Forum on Food Security, Doha-Qatar (October 1-3, 2023) 69
- Islamabad Chamber of Commerce and Industry (ICCI), Inter-University Business Plan Competition, Islamabad, Pakistan (October 3, 2023) 70
- 6th Biennial Research Symposium/International Research Symposium, Colombo, Sri Lanka (November 7, 2023) 71

PARTICIPATION IN IMPORTANT FORA AND MEETINGS

Events and organizational meetings of partner and potential partner organizations are utilized as means for aiding efforts for joint work on regional and international development. Based on commonalities of mandates with partner organizations, reciprocal representation in statutory meetings and capacity-building events are encouraged as good networking opportunity. These help garner mutual support, explore avenues of cooperation, and start and foster joint initiatives.



Amb. Dr. M. Nafees Zakaria at the High-Level Segment of UNFCCC at COP28, Dubai

28th Conference of Parties (COP28), Dubai, UAE (November-December 2023)

Executive Director COMSATS, Ambassador Dr. M. Nafees Zakaria, participated in the 28th Conference of Parties (COP28) of the United Nations Climate Change Conference (UNFCCC), held in Dubai, UAE, from 30th November to 13th December 2023. His participation, inter alia, included policy statement presented at the high-level segment of UNFCCC. A glimpse of these is as below:

High-Level Segment of United Nations Climate Change Conference

Leaders/Representatives of the UN member states and Executive Heads of IGOs presented policy interventions on 'Climate Justice Diplomacy' at the High-Level Segment of UNFCCC at Dubai, on December 9, 2023.

Presently COMSATS intervention on the occasion, Ambassador Zakaria stated that the countries in the Global South, particularly the Indus Basin States having population of about 300 million, are grappling with the consequences of climate change. He noted that the changing climate is causing security risks intrinsically linked to the stress on resources, which warrants urgent action, especially on part of technologically advanced countries. He highlighted the environmental toll associated with the Militaries that contribute 5.5% of GHGs emissions but remained exempted from accountability in Kyoto Protocol and Paris Agreements. He stressed the need for an impact assessment of wars and military exercises to make the countries concerned responsible for the damage caused.

Amb. Zakaria stated that a critical review is needed to ascertain how effectively COP process helped in compensating and enabling the countries least responsible for the environmental damage. He considered

it important that the technologically advanced and economically powerful nations share greater responsibility, but also highlighted the need for more efforts by developing states. He lauded the establishment of 'Loss and Damage Fund' and hoped for its early operationalization.

Ambassador Zakaria called for leveraging the collective strength of world leaders, national policy makers, and scientists, under this new era of climate diplomacy to ensure a shared promising future.

He stated that Intergovernmental Organizations like COMSATS can play an important role in this regard. Ambassador Zakaria informed that COMSATS, having dedicated Centre for Climate & Sustainability (CCCS) with Membership of 20 countries and 24 institutions, organizes programs for awareness, capacity building, policy initiatives, and research & development.

Climate Justice Diplomacy (COMSATS Policy Statement at COP28)

Escalating climate crisis has been adversely affecting our planet. Different regions are experiencing different manifestations of climate change.

From frequent floods of biblical proportions to droughts, forest fires to smog, and from unpredictable weather patterns to mindboggling temperature swings. The Global South countries, particularly the Indus Basin states, are grappling with the consequences of climate change. The heat impact has been exacerbating the challenges for those 300 million people.

The glaciers are fast melting. In the long run, the security risks intrinsically linked to the stress on resources may lead to conflicts between states. It warrants urgent action.

The situation should provide food for thought to the world leaders, national policy makers, and scientists. COMSATS with dedicated Centre for Climate Change & Sustainability with Membership of 20 countries and 24 Institutes, organizes Programs, for awareness, capacity building, policy initiatives and R&D under its International Thematic Research Group on Climate Change.

We need to sincerely identify those activities that constantly cause damage to the environment but remain evasive. Militaries contribute 5.5% to GHGs emissions. Unfortunately, they were exempted for accountability from Kyoto and Paris Agreements. While industrial activities have degraded environment over decades, wars destroy environment instantly on much larger scale. An impact assessment of the wars and military exercises need to be carried out to make the countries concerned responsible for the damage caused.

How effectively COP process has helped in last 28 years in compensating and enabling the countries least responsible for the environmental damage, needs a critical view. However, a measure of efforts by developing states is also important.

COP28 commitment has to be steadfast, inclusive and tangible in action. Intergovernmental Organizations like COMSATS could assist. The establishment of 'Loss and Damage Fund' on Day1 is commendable. However, the proof is in the pudding.

Technologically advanced and economically powerful nations need to share greater responsibility on the basis of morality.

Half-hearted measures are not tenable. Leveraging our collective strength under a new era of climate diplomacy is a must to ensure a shared promising future, especially for those in the Global South.



Amb. Dr. M. Nafees Zakaria with Rt Hon. Patricia Scotland KC and other distinguished guests at COP28

Expert Panel Discussion on Leveraging South-South Cooperation: De-Risking Climate Security

COMSATS organized an expert panel discussion on Leveraging South-South Cooperation: De-Risking Climate Security on December 5, 2023, as a sideline event of COP28. The panel discussion was moderated by the Coordinator Youth & Children Pavilion of COP28, Dr. Saad Ukaas. COMSATS had joined hands with Ministry of Climate Change of Pakistan to hold the event at Pakistan Pavilion. The panelists included Mr. Naguib Sawairis, Chairman, Orascom Telecomm



Amb. Dr. M. Nafees Zakaria addressing the audience at COMSATS Expert Session on De-risking Climate Security

giant and Orascom Investment Holding, a significant investor and friend of Pakistan; Prof. Dr. Ashraf Shaalan, Director, Center of Excellence for Climate Change Applied Research, NRC, Egypt; Prof. He Zhang, Deputy Director ICCES, IAP-CAS, China; Mr. Filip Novakovic, Sustainable Finance Specialist, United Nations Climate Advisor; and Dr. Saad Uakkas, Coordinator of the Children, and Youth Pavilion COP28.

Welcoming the guests, Dr. Zakaria briefed the audience on COMSATS' objectives and activities, particularly those related to Climate Change. He highlighted the risks of conflict over resources under stress due to climate change, especially water. He emphasised quantification of and compensation for damage to environment by the militaries and wars.

Emphasising the importance of Climate Change and responsibilities of corporate

sector to address challenges, Mr. Sawairis assured of Ora Development's commitment to catalysing the UAE's progression towards their net-zero targets, through various sustainable and smart investments in the real-estate industry & finance technology sector.

He pledged that 5 billion dollars' worth potential projects will play a pivotal role in ensuring the sustainability and energy efficiency of this massive development, which aligns with UAE's 2050 Strategy to reach net Zero and to reduce its carbon footprint.

A distinguished participant at the event, Ms. Nuzhat Amir Sadiq, Member of the Senate of Pakistan, shared, host country, Pakistan's perspective on climate change.

Prof. Zhang shared China's successful initiatives pertaining to tech-based solutions. He informed that ICCES has

developed a seasonal prediction system based on the Chinese Academy of Sciences Earth system model CAS-ESM. The system can predict sub-seasonal to seasonal climate anomaly, including extreme events, such as heat waves, droughts, flooding and dust storm. He opined that accurately predicting extreme climate events could help in taking necessary measures to reduce the risk due to climate change. He expressed ICCES willingness to share the climate prediction system to other COMSATS' members.

Dr. Filip shed light on the financial impact of climate change and shared his views on how the challenge could be converted to financial opportunities.

Prof. Shaalan, a paediatrician, shared his experience of how climate change impacted the children. He called for stronger political commitments and policy initiatives for tangible outcomes.



Experts of the Session: Mr. Filip Novakovic, Mr. Naguib Sawairis, Prof. Dr. Ashraf Shaalan, and Prof. He Zhang



Prof. Dr. Ashraf Shaalan receiving shield from Amb. Dr. M. Nafees Zakaria



Participants of COMSATS Focused Group Discussion on Youth Voices Matter for Greener World, ED COMSATS in discussion with the young participants

Focused Group Discussion on ‘Why Youth Voices Matter for a Greener World’

Another sideline event of COMSATS was a focused group discussion under the theme, ‘Why Youth Voices Matter for a Greener World’. Organized on 8th December 2023, the event had participation from Global Climate Youth Leaders, from over 30 countries, predominantly from the Global South.

In his welcome remarks, Ambassador Dr. Mohammad Nafees Zakaria underlined the power of the youth and need for focusing their energy to play due role in addressing the formidable global challenges, including the Climate Change. He invited the young participants to share their respective initiatives on climate change, their assessment and ideas. He emphasised that the youth were leaders in their own right and a force to reckon with. During the discussion, participating youth leaders showcased their projects, initiatives and brilliant ideas pertaining to the approaches aimed at combating climate crises in their countries, illustrating the impact of their endeavors.

Ambassador Zakaria assured the attending youth leaders of COMSATS’ unwavering support in promoting their work towards the common goal of ‘curing

the climate pandemic.’ His proposal for the establishment of a Social Group comprising the participating youth leaders was welcomed. He assigned the young COMSATS’ representative, Mr. Qaiser Nawab, to act as a coordinator of “Young Climate Partner Group for COMSATS – YCPGC.”

The discussion at the Pakistan Pavilion focused on empowering youth voices for environmental sustainability, acknowledging the pivotal role the younger generation plays in shaping a greener and more sustainable world.

The event concluded with a group photo.

Participation in Event on ‘Digital Technology and AI for Carbon Neutrality’ at China Pavilion

Amb. Dr. M. Nafees Zakaria participated as Special Guest Speaker in COP28 Dubai event on “Digital Technology and AI for Carbon Neutrality” at China Pavilion.

Speaking to the august gathering, Amb. Zakaria introduced COMSATS as an international organization created in realization of the vision of the renowned Pakistani scientist, Prof. Abdus Salam. He underscored the overarching objective of COMSATS – S&T-led sustainable development of countries through sharing and exchange of scientific resources and



Amb. Zakaria sharing his views at China Pavilion



ED COMSATS having sideline meetings with Rt Hon. Patricia Scotland KC, SG, Commonwealth and Inger Andersen, ED UNEP

knowledge. The organization, he informed, derives its scientific and technological strength from its international network comprising of centres of excellence in a number of scientific fields important for development of member states, and developing countries, in general.

Of special interest to the Pavilion was the information about China being one of the founding members of COMSATS, resulting in a long-haul association of over 29 years with the organization. He appreciated China's valuable contribution to COMSATS' growth over the years, in both financial (through Annual Membership Contribution) and technical terms. Apart from the cooperative work and exchanges with other member states and institutions through a number of means, two Chinese institutions are active members of COMSATS Network: International Center for Climate and Environment Sciences (ICCBS), Beijing, and Tianjin Institute of Industrial Biotechnology (TIB), Tianjin.

Dr. Zakaria laid special emphasis on the role of IT in development as a remover of geographical barriers. He noted that IT and its applications have made ingress into every aspect of human life, especially evident from the exponential growth in IT applications and digitalization during COVID-19. The former High Commissioner of Pakistan to UK, Dr. Zakaria especially cited a practical example of the Kingdom where 70% businesses

have gone digital with widespread remote work. He also delineated the rapidly growing AI trends that have become relevant in almost every field. In the field of medicine, he remarked, AI applications are helping in diagnostics of diseases, forecasts, precision medicines, R&D, and so on.

Guest speakers from China, the United States, Caribbean States, and some IGOs also shared their expert views and analyses with the learned audience at the Pavilion.

Sideline Meetings

Rt Hon Patricia Janet Scotland – Baroness of Scotland, Secretary General of Commonwealth

On sidelines of COP28, Executive Director COMSATS, Amb. Dr. M. Nafees Zakaria, had a meeting with Secretary General of the Commonwealth, Rt Hon Patricia Janet

Scotland – Baroness of Scotland. During the meeting held on December 10, 2023, the two IGO Heads exchanged views on cooperation in areas of common interest.

Inger Andersen, Under-Secretary-General of the United Nations and Executive Director of the United Nations Environment Programme

The Executive Director COMSATS had a brief meeting with the Executive Director of United Nations Environment Programme (UNEP), Ms. Inger Andersen, at Pakistan Pavilion of COP28. Dr. Zakaria briefed Ms. Anderson on COMSATS' activities and COP28 sideline events.

Faisal Tirmizi, Ambassador for Pakistan to the United Arab Emirates

Himself a former Diplomat of Pakistan, Amb. Zakaria called on H.E. Mr. Faisal Tirmizi, the Ambassador for Pakistan to the UAE. Both discussed Pakistan and



Meeting between H.E. Faisal Tirmizi and Amb. Zakaria at Pakistan Embassy in Dubai

COMSATS' participation in COP28, and exchanged views on opportunities in UAE in Science and Emerging Technologies.

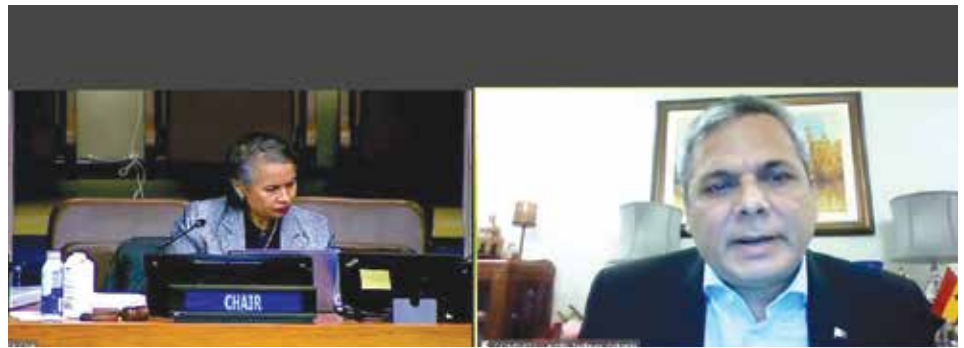
Amb. Tirmizi, a highly professional and committed diplomat, was forthcoming in offering his cooperation for facilitating COMSATS' linkages.

Both well-known personalities, Amb. Zakaria and Amb. Tirmizi, in high spirit undertook to promote and strengthen relations between COMSATS, COMSATS' host country, Pakistan, and the UAE.

Tenth World Government Summit, UAE (February 12-15, 2023)

The Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, was invited by the UAE Government to the 10th World Government Summit at Dubai on 12-15 February 2023.

Attending the Summit bearing the theme "Shaping Future Governments", Ambassador Zakaria was accompanied by COMSATS' experts on Artificial Intelligence, Technology, Science, and Innovation, Mr. Kamil Mehmood and Mr. Parvez Abassi.



Chair of 22nd CEPA Committee Session Hon. Geraldine Fraser-Moleketi and Amb. Zakaria

The Executive Director actively participated in various sessions. He also met experts on Space technologies, AI, and Science and apprised them about COMSATS and its programmes. Other important figures met included Prof. Dr. Ashraf Sobhy, Egyptian Minister for Youth and Sports; Prof. Jaffery Sachs an American Economist, and a number of other dignitaries. Other prominent international figures who attended the sessions, included Presidents of Turkey, Egypt, UN Secretary-General and Elon Musk.

The 22nd Session of the Committee of Experts on Public Administration (CEPA) (March 31, 2023)

Executive Director COMSATS,

Ambassador Dr. Nafees Zakaria participated in the 22nd Session of the Committee of Experts on Public Administration (CEPA). CEPA is a technical advisory body of the UN responsible for supporting the work of its Economic and Social Council (ECOSOC) concerning the promotion and development of public administration and governance among Member States. A key concern of CEPA is relation to the 2030 Agenda for Sustainable Development and in support of the implementation and review progress of SDGs.

The Executive Director COMSATS was invited to share expert views on 'Stimulating public sector innovation through digital technology and measuring the impact of digital government during the thematic session, 'Urgently



Proceedings of 10th World Government Summit, UAE



Amb. Dr. M. Nafees Zakaria addressing the inauguration of Ion Beam Applications event at NCP-Lab, Islamabad

transforming institutions for a greener, more inclusive and resilient world at a time of multiple crises. Dr. Zakaria urged that governments should adopt digitalization as citizen centric national policy for efficient and effective governance.

In view of the looming economic crises, Ambassador Zakaria said that the real challenge would be how we use technology to lessen their impact. He suggested that digitalization should be pursued by the governments as a national policy initiative. He noted that digitalization helped a great deal during the Pandemic COVID-19, and that it bridged the work gap created by mandatory social distancing and isolation by transforming remote working to put the global economy back on track to a great extent.

Noting the widening technological gap and the capacity between the developed and developing countries, he called for joint efforts to bridge knowledge, technology and resource gap. He remarked that COMSATS is pursuing the objective of self-reliance by using the knowledge and scientific strengths of the COMSATS member states.

He also informed the gathering that COMSATS has launched and executed successful transformation citizen-centric programs that enable and improve collaboration between citizens,

government entities, and relevant private sector industry participants, and that COMSATS is open to partnership.

International Workshop on Ion Beam Applications (September 11-13, 2023)

Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, was the Chief Guest at the inaugural ceremony of the 5th International Workshop on Ion Beam Applications (IBA) from September 11th to 13th, 2023, at National Center for Physics, Islamabad. NCP had organized the event in collaboration with The Abdus Salam International Centre for Theoretical Physics (AS-ICTP), Trieste, Italy.

Speaking on the occasion, Dr. Zakaria emphasized the importance of research and development to bridge the knowledge and technology gap and highlighted National Centre for Physics (NCP)'s contribution to the field of physics in the country. He acknowledged NCP's contribution to the field of physics, its well-equipped, state-of-the-art facilities and expertise.

Ambassador Zakaria was of the view that the countries of the Global South are lagging behind for various reasons, one being lower priority to R&D. He stressed

upon developing countries to put together their resources, share knowledge and extend support to promote each other's scientific products. Appreciating the role that NCP has been playing in the R&D of physics and the technical facilities it has for research, he noted that IAEA has accredited NCP's Ion Beam accelerator facility.

The workshop provided a platform for both national and international experts in Ion Beam Applications to deliver a series of informative lectures, conduct hands-on training sessions, and present the latest advancements in this field. Ion beams, spanning various energy levels, are vital tools in fields like fundamental physics, space science, technology, material science, medicine, and more.

The objective of the event was to promote international cooperation, address challenges related to ion beams, and improve the proficiency of ion beam users. Out of 200 applicants, 18 were selected to participate in this workshop. With a team of renowned faculty specializing in Ion Beams managing the event, the agenda encompassed a wide range of topics, featuring 19 engaging talks, including ion beam techniques for material analysis, ion beam modification of bulk materials/nanomaterials, irradiation related to biology, industrial applications, applications of radioactive ion beams,

X-rays and Gamma ray production cross-section studies using heavy ions, and so on.

Dr. Mohsin Siddique, Director NCP, delivered welcome remarks during the ceremony, expressing gratitude to the Chief Guest, Executive Director COMSATS, Ambassador Zakaria and acknowledging presence of eminent guests.

Dr. Ishaq Ahmed, Director-General NCP, thanked the participants and reaffirmed COE Physics' commitment to advancing the field of physics through numerous scientific workshops and international collaborations.

The event also marked the inauguration of an R&D center in collaboration with Universiti Kebangsaan Malaysia.

IOFS' 2nd High Level Forum on Food Security (1-3 October 2023, Doha-Qatar)

COMSATS, through its Centre for Climate Change and Sustainability, participated in the IOFS' 2nd High Level Forum on Food Security that took place in Qatar from 01-03 October 2023 in Doha, State

of Qatar. It was a sideline event of the 6th IOFS General Assembly under the Chairmanship of the State of Qatar. CCCS actively contributed to the deliberations of the event and co-organized one of the sessions titled "Enhancing Agricultural Food Production through Emerging Technologies". The Executive Director COMSATS, Ambassador Dr. M. Nafees Zakaria, was a distinguished panelist.

The ceremony commenced with the opening remarks delivered by His Excellency Mr. Abdullah bin Abdulaziz bin Turki Al Subaie, Minister of Municipality of the State of Qatar. Other esteemed speakers at the inaugural session included: His Excellency Mr. Abdelmonem Belati, Minister of Agriculture, Water Resources and Fisheries of the Republic of Tunisia; His Excellency Mr. Erbol Tazshurekov, Vice-Minister of Agriculture of the Republic of Kazakhstan; His Excellency Prof. Ahmad Kawesa Sengendo, Assistant Secretary General for Economic Affairs of the Organization of Islamic Cooperation (OIC); and His Excellency Dr. AbdulHakim Elwaer, FAO Assistant Director-General and Regional Representative for the Near East and North Africa.

Following the inauguration, the High-Level Forum proceeded with three significant sessions: engaging civil society against food insecurity; advancing agri-tech for sustainable food security; IFPA – enhancing intra-OIC food markets. With participation from over 100 individuals, including more than 60 speakers from diverse sectors such as food, agriculture, science, and technology, the event aimed to address urgent challenges of global food insecurity exacerbated by socio-economic and environmental crises.

The Executive Director COMSATS highlighted the crucial role of farmers in addressing the global food security challenge, emphasizing the need for them to adapt to emerging technologies, access modern equipment, and benefit from supportive government policies. He emphasized the importance of government investments to empower farmers and contribute to the economy. Furthermore, Dr. Zakaria underscored the strengths and opportunities available in OIC member states for advancing the rural economy. Many Islamic countries, he added, possess competitive advantages for agricultural development-led industrialization and have valuable knowledge on adaptation measures, such as water management,



ED COMSATS, Amb. Nafees Zakaria speaking at the inaugural event of IOFS High-Level Forum



Amb. Dr. Zakaria Nafees receiving a shield from Engr. M. Azhar-Ul-Islam Zafar, Vice President ICCI, at ICCI-event

drought-resistant agriculture, and community-based agroforestry. Sharing these experiences and collaborating on innovative agricultural development strategies can benefit other countries facing similar challenges.

The forum benefitted greatly from the diverse perspectives shared by the COMSATS' delegation. Dr. Majid Javanmard, Vice President of Industrial Relations & Commercialization at the COMSATS Center of Excellence in Iran, Iranian Research Organization for Science and Technology (IROST), Iran, provided valuable insights from the Iranian perspective. His presentation "Application of Emerging Technologies for Food Waste Management," offered innovative approaches to tackle food waste challenges and enhance food security through valorization of food byproducts.

Mr. Minhaj Khokhar, CEO of PK2100 and an Agri-Technology and Business Advisor, enriched the discussions with his expertise, offering varied regional and sectoral viewpoints. His presentation focused on "Solarized Precision Agriculture for Indoor Farming and Polarized Regenerative

Agriculture for Outdoor Farming", emphasizing the significance of precision agriculture techniques for indoor farming and regenerative agriculture practices for outdoor farming to promote sustainable food production.

Islamabad Chamber of Commerce and Industry (ICCI), Inter-University Business Plan Competition, Islamabad, Pakistan (October 3, 2023)

Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria was the Chief Guest at the Inter-University Business Plan Competition, jointly organized by the Islamabad Chamber of Commerce and Industry (ICCI) and local universities, in Islamabad, on October 3, 2023.

In his keynote address on the occasion, Ambassador Zakaria highlighted the need for stronger alignment between the education sector and the industrial landscape. He commended the organizers for their visionary initiative and called upon the business community to stand

shoulder to shoulder with the government in supporting budding entrepreneurs. Ambassador Zakaria also praised the young talent participating in the competition and urged the business community to support them.

Ambassador Zakaria lauded ICCI for spearheading this platform that enables university students to showcase their innovative business concepts and attract potential investors for commercialization of their ideas.

The President of ICCI, Mr. Ahsan Zafar Bakhtawari, stated that the primary objective of the competition was to provide a robust platform to young aspiring entrepreneurs to present their innovative business proposals and garner attention of potential investors.

Senior Vice President of ICCI, Mr. Faad Waheed, noted the dearth of skilled work force, which hinders overall industrial productivity. He advocated for having closer ties among academia and industry and supporting young graduates for meeting the needs of the job market.

6th Biennial Research Symposium/International Research Symposium, Colombo, Sri Lanka (November 7, 2023)

The Inaugural Ceremony of the 6th Biennial Research Symposium/International Research Symposium – 2023, was held on 7th November 2023. Hon. Dr. Ramesh Pathirana, Minister of Industries and Health, Government of Sri Lanka, attended the ceremony as the Chief Guest, while the Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, made online participation as a Special Guest.

Speaking on the occasion, Dr. Zakaria highlighted the fundamental role of research, development and innovation in shaping the future. He stated that in order to excel during this Fourth Industrial Revolution, developing nations must devise strategies, embrace digitalization, invest in knowledge and skills. Amb. Zakaria highlighted the pivotal role of collaboration among governments, academia, industry, and society in harnessing the advantages brought forth by Industry 4.0. He introduced COMSATS' initiatives for Member Countries in areas such as AI-based data analytics, digitalization and IT training, precision agriculture, renewable

energy, industrial biotechnology, tech-enabled health sciences, climate and environment, and electric vehicles. Amb. Zakaria conveyed COMSATS' readiness to collaborate with like-minded institutions to aiding Member Countries' technological pursuits in line with United Nations Sustainable Development Goals and for socio-economic development. He also highlighted the mutually beneficial cooperation taking place between COMSATS and ITI.



Inaugural Ceremony of 6th Biennial Research Symposium, Colombo, Sri Lanka

6

SPECIAL ASSIGNMENTS

- COMSATS Telehealth (CTH) 74
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SPECIAL ASSIGNMENTS

For the benefit of its Member States, COMSATS undertakes special assignments, such as conducting scientific studies, undertaking pilot projects, and implementing educational programmes. Other than CUI, two of COMSATS' flagship projects, COMSATS Internet Services (CIS) and COMSATS Telehealth (CTH) continue their operations under the oversight of COMSATS Secretariat. Activities of COMSATS Centre for Climate and Sustainability (CCCS) have grown over the years and are included in this Chapter.



Hon. Zhumaliev Kubanychbek Myrzabeckovich, Founder, Eurasian International University (EIU) and Amb. Dr. Mohammad Nafees Zakaria, ED COMSATS sign Letter of Intent in a ceremony in Islamabad on 1st September 2023

COMSATS Telehealth (CTH)

COMSATS Telehealth under Digital and Global Health Regime

During 2023, COMSATS Telehealth (CTH) underwent a progression in terms of number of clinics and patients served. One of the biggest landmarks for COMSATS Telehealth for the year was development of an indigenous patient information software by COMSATS Software Solutions that has remarkable, changed the dynamics of CTH service provided to the remote areas of Balochistan.

Important features of Telehealth Service in 2023

Teleconsultations

Besides the routine Antenatal and Outpatient cases, a number of interesting and complicated cases presented at Telehealth centres that were either

diagnosed and managed by Telehealth doctors or in many cases were referred to tertiary care for further management. Some of the important features of Teleconsultations during 2023 are being shown in Figure-1, while the current equipment and technical information is present in the 'ComClinic' section of the next report of this chapter.

Patient Information Software Development

CTH's dependence of many years on asynchronous means or third party patient information exchange software posed many challenges and problems during Teleconsultations, such as incomplete access to full database for reports on

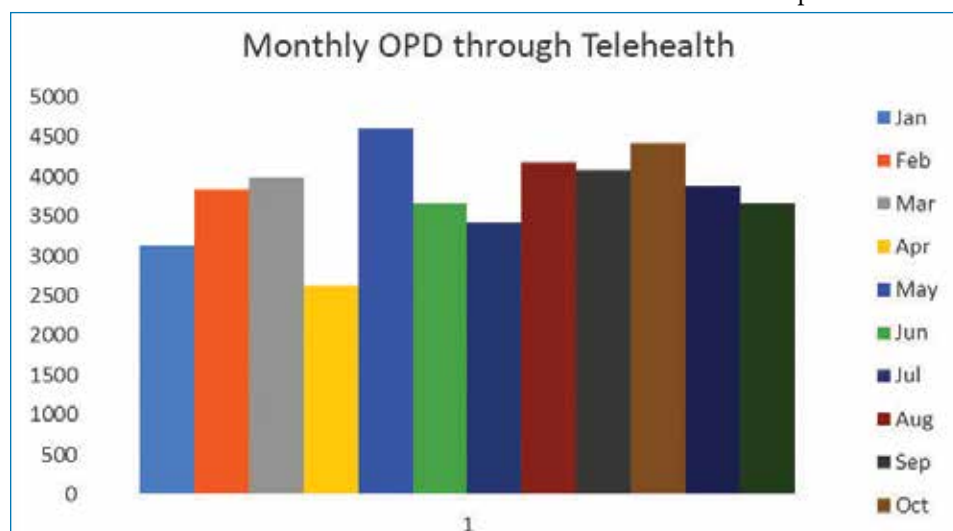


Figure-1: Total number of patients served (2023): 45497



Figure-2: Meningocele diagnosed through TeleUltrasound



Figure-3: Herpes Zoster



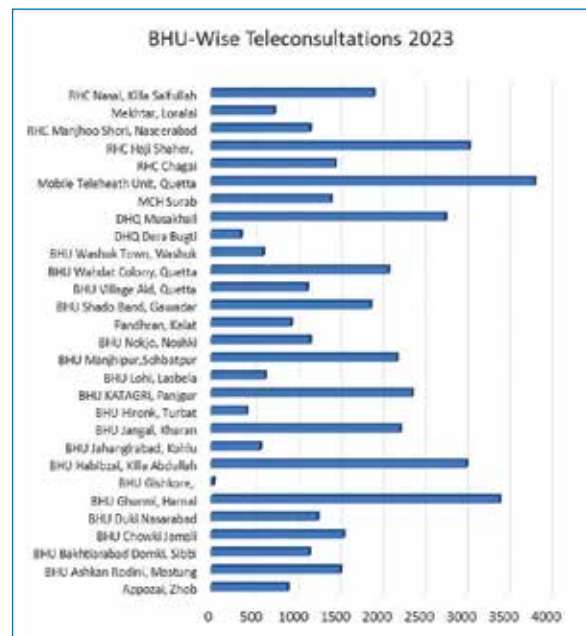
Figure-4: Undiagnosed Cleft palate



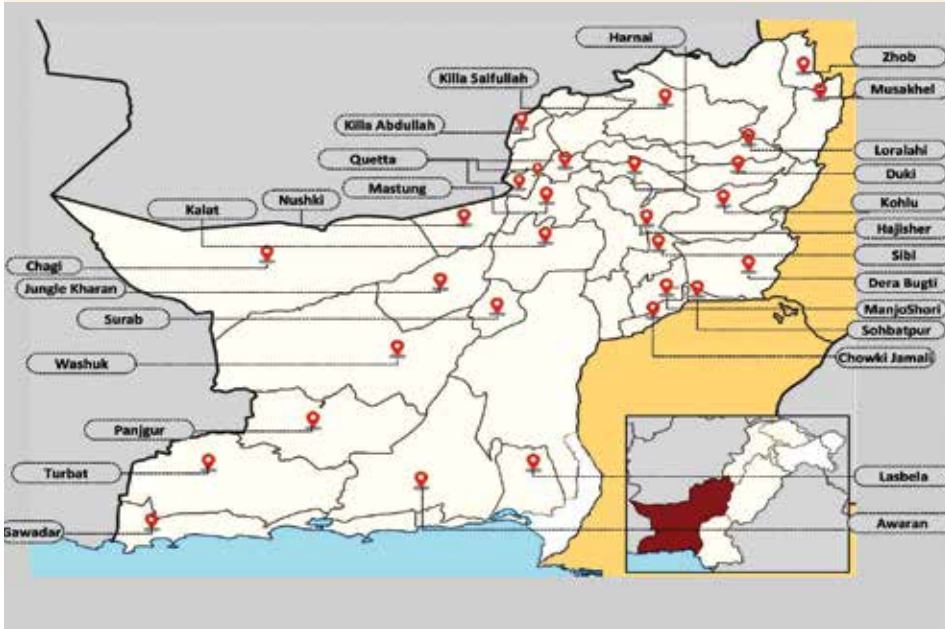
Figure-5: Lamellar Ichthyosis in a child

Percentage Increase in Consultations for last three years		
Years	Number of Consultation	Percentage increase
2021-2022	15199-28790	89.4204
2022-2023	28790- 45497	58.0306

New Clinics established = 5
RHC Mekhtar Loralai
BHU Pandhran Kalat
BHU Jahangirabad Kohlu
BHU Appozai Zhub
BHU Gishkore Awaran



Locations of Current Clinics in Balochistan



Number of doctors serving increased to 15
Family Physicians: 10
Gynecologists: 3
Pediatricians: 2

utilization and effectiveness of Telehealth, as well as important administrative information. Manual (asynchronous) patient data exchange caused issues like tardiness and inaccuracy, and lack of smooth accessibility of previous data etc.

A shift in the earlier paradigm came under the leadership of the current incumbent Executive Director (since November 2022), who constituted and designated a team at COMSATS Software Solutions to develop an indigenous Telehealth information management system, exclusively designed to meet the needs of COMSATS Telehealth. The concerted efforts of the team resulted in development of an initial version of software by June 2023 and showed promising results during live testing on actual patient data by the doctors at Telehealth Centre. Valuable feedback from the end users helped remove anomalies and better streamline the flow of information within the software.

The end-users – doctors at the Resource Centre and the LHV's at the Teleclinics – were trained by the software team and technical team. A single session was



ED COMSATS presenting his welcome remarks during webinar on "Health For All through Digitally enabled Efficient Health Systems in Middle East and Central Asia" organized by COMSATS

initially held for the orientation of the doctors and later each doctor was trained separately. Similarly, training sessions with LHV's of each clinic were also carried out. Hands-on training under the guidance of the Telehealth technical team to all end users helped in better adoption of the software. Formal utilization of software started in mid-July and the system is being used for Telehealth since then, adding to the efficiency and better management of the Services.

Advocacy, Collaborations and Capacity Building for Digital Health

COMSATS has always advocated utilization of digital health with the spirit of widespread awareness of the benefits of IT in health and seeking collaborations and building capacities of relevant stakeholders in parallel with Telehealth services. This section provides relevant information in this context.

Webinar on 'Health for All through Digitally Enabled Efficient Health Systems in Middle East and Central Asia'

Continuing its series of initiatives aimed at advocacy for digital health across its member states, COMSATS held the third of its series of regional webinars on Digital Health on April 11, 2023. This webinar that aligned with the World Health Day brought together health experts from the Middle East and Central Asia, including countries like Italy, Pakistan, Jordan.

Moderated by Dr. Najeeb AL Shorbaji, President of the eHealth Development Association of Jordan & former Director, Department of knowledge, Ethics and Research WHO, the technical session delved into the challenges and opportunities of ICT in healthcare.

Representatives from organizations including WHO, Commonwealth Centre for Digital Health (CWCDH), and UNRWA shared insights on digital health developments in Jordan, Iran, Syria, and Palestine.

The webinar highlighted that EHR is at the core of digital health. Lack of modern infrastructure, resource constraints, untrained human resource, absence of policy direction and lack of standards were identified as some of the challenges

in digitalization of healthcare. Region specific issues include power cuts and technological barriers, sanctions and crisis and conflict. Details of this event can be viewed in Chapter 04.

COMSATS-EIU Partnership

Taking a step forward towards expanding Telehealth program to other developing countries, COMSATS and the Eurasian International University (EIU) formalized a partnership through signing of a Letter of Intent (LoI) at the COMSATS Secretariat in Islamabad. This LoI signifies a commitment to a long-term collaboration across various scientific and technological domains, with Telehealth as the initial focus area. Details of the signing can be found in Chapter 03.

COMSATS has already taken a step forward in this collaboration by sharing a Telehealth proposal aimed to facilitate establishment of Telehealth clinics in Kyrgyzstan to be connected to the Telehealth Resource Centre in Pakistan, as the inaugural initiative. This service will leverage technology to provide accessible, high-quality healthcare to the people of Kyrgyzstan.

Participation in ACDHPR Seminar

In a talk delivered as part of the monthly

seminars hosted by African Centre for Digital Health Policy Research (ACDHPR), Incharge Telehealth and Additional Director (Health), COMSATS, Dr. Azeema Fareed, shared insights on "Good Practices and Lessons Learnt in the Perspective of Telehealth in the Developing Countries". She highlighted comprehensive multi-stakeholder approach with meticulous planning as the cornerstone of good practices in Telehealth. During her talk, she also outlined good practices technological, human resource, policy making, cultural and social good practices for a successful Telehealth program.

The discussion shed light on valuable strategies and experiences aimed at leveraging telehealth in developing nations in the light of years of experience at COMSATS Telehealth. This informative session provided a platform to exchange knowledge and foster dialogue on enhancing healthcare accessibility and delivery through telehealth initiatives.

Scholarly Contribution to South Centre's South Views

Based on the three seminar series on Digital health organized by COMSATS in last few years, an article was produced and published for the South Centres' publication named South views. The



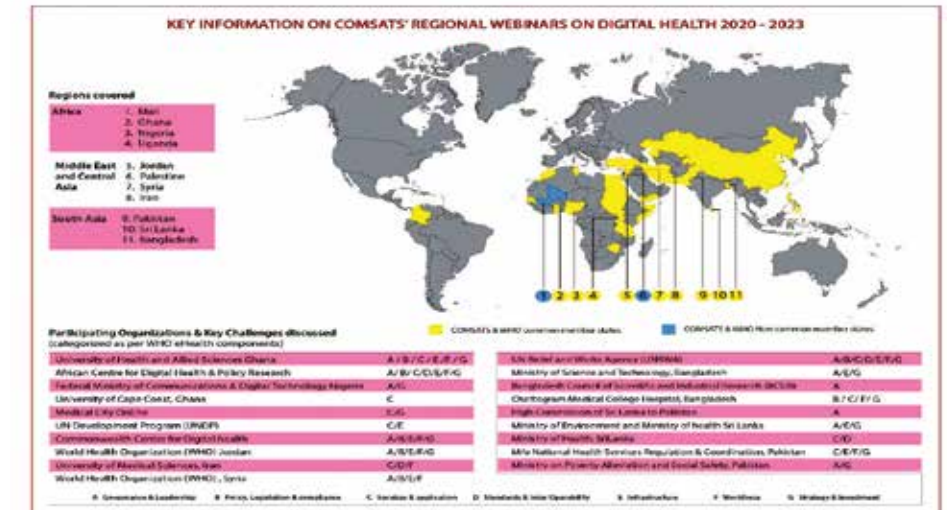
article titled “Digital Health Challenges in the South: Towards Better Integration of Digital Health Practices” highlighted key challenges impacting Digital Health adoption in developing countries using WHO’s e-Health Components like Leadership and governance, services, strategy and planning, human resource and infrastructure etc. Based on the proceedings of the above seminars and COMSATS’ own experiences, the article discussed the challenges of individual component and the lessons thus learnt followed by recommendations.

Visitors

A pioneer in Telehealth work in the region, COMSATS provides learning and exchange opportunities to its visitors. Demonstrations and briefings are given regularly to visitors from Diplomats and government functionaries to students looking to pursue research or careers in digital health technologies.

Distinguished Visitors

During the reporting period, CTH garnered interest of some distinguished visitors, brief accounts of the same are as follows:



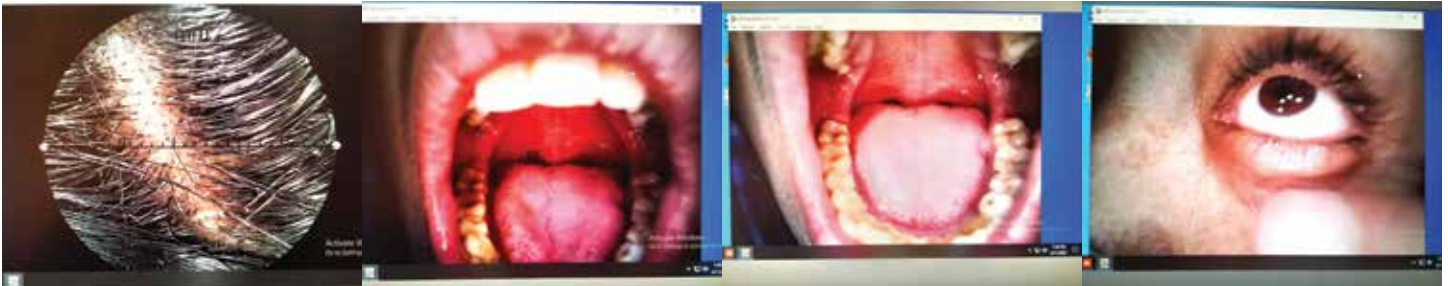
- Federal Secretary, Ministry of Science and Technology, visited COMSATS Telehealth Resource Centre on 7th November 2023. The esteemed visitor took interest in the overall Telehealth system and its operations and the management of technical and medical activities.
- On 10th July 23, Mr. Sajid Turi, Dr. Rubab, a Consultant at DHQ Parachinar, visited COMSATS Telehealth Resource Centre on behalf of Minister of Human Resource, Development and Overseas

Pakistanis. The purpose of the visit was to assess the potential for collaboration in Telehealth. The visitors received a comprehensive briefing on the functions and activities of the Telehealth Centre following which, she met with the Executive Director to discuss her views about the COMSATS’ Telehealth project and explore suitable mode of Telehealthcare in her area.

- The Ambassador of the Republic of Azerbaijan, His Excellency Mr. Khazar Farhadov, visited to COMSATS and



Dr. Azeema Fareed, Incharge Telehealth, Dr. Nadia Rasheed, Project Manager Telehealth with the visiting students of M.S. (Health Informatics) at Telehealth Resource Centre led by Associate Prof. Dr. Nighat Sultana, CUI Islamabad



held a meeting with the Executive Director COMSATS, Ambassador Dr. Mohammed Nafees Zakaria, on 25th August 2023. Ambassador Farhadov also visited COMSATS Telehealth center. He appreciated the quality of Telehealth service and commended the COMSATS pioneering role in this field.

- Chairman of the Board of Directors at Rawal Institute of Health Sciences (RIHS), Khawaja Waheed Khaqan, toured the COMSATS Telehealth Resource Centre on 3rd November 2023. He received a detailed briefing on the Telehealth service and its functioning. After the visit, he expressed admiration for COMSATS' efforts in enhancing healthcare accessibility for remote areas of Balochistan. This visit was followed by a collaborative agreement between COMSATS and RIHS in various fields including Telehealth.

MS Health Informatics Students from COMSATS University Islamabad

A group of students pursuing MS-Health Informatics from COMSATS University, led by Dr. Nighat Sultana, Associate Professor, visited COMSATS Telehealth Resource Centre located at CIS on June 8, 2023. The purpose of the visit was to gain insights into the workings of COMSATS' Telehealth project.

During the visit, Dr. Azeema Fareed, Incharge Telehealth, provided the visitors with an overview of the Telehealth model implemented by COMSATS. She highlighted a number of benefits

associated with this innovative approach and shed light on the medical specialties that are covered through Telehealth in the remote regions of Balochistan. The students were informed about the transformative impact of Telehealth on healthcare delivery in these underserved areas.

Following the briefing, the visiting students were given the opportunity to witness live online teleconsultations between doctors at the Telehealth Resource Centre and patients accessing healthcare services at the remote Teleclinics. Dr. Nadia Rasheed, the Project Manager at the Telehealth Resource Centre, conducted a live demonstration for the students, explaining the teleconsultation process in detail. She also provided insights into the hardware and software employed for Telehealth services.

This visit was a part of the practical field visits that MS-HI students undertake as a component of their curriculum. By experiencing the Telehealth project

firsthand, the students gained valuable knowledge and exposure to the advancements in digital health and its impact on remote healthcare delivery.

COMSATS Internet Services (CIS)

Established in 1996, COMSATS Internet Services (CIS) is the pioneer Internet Service Provider (ISP) of Pakistan. CIS offers diverse IT services, like wireless broadband, domain & web hosting, On demand broadband, data center services, video conferencing, website designing and development, search engine optimization, virtual private servers, networking, IT training, tele-health and internet related research facilities.

Presently, CIS is operating in almost all major cities of Pakistan. CIS has been recognized among the top rated ISPs in Pakistan for the last 28 years. CIS customers belong to prominent public and private sectors organizations, national and international companies and firms,



Patient being examined through COMSATS Telehealth



Training Session to better operationalize a new Tele-clinic

software and business companies, foreign missions, non-governmental organizations, universities, social development and research organizations.

CIS operates within the over-arching structure of the Commission on Science and Technology for Sustainable Development in the South (COMSATS) under the leadership of Executive Director COMSATS. The administrative and financial matters of the ISP are channeled through Chief Operating Officer to the Executive Director COMSATS, who chairs its Board of Management.

CIS is a self-sustaining organization with its income generated through products and services related to provision of Internet bandwidth, value-added and data center services to government and private sector organizations.

Core and Value-added Services

CIS Core Services

CIS offers nine core services known as ‘The Colors of CIS’. These include: Tornado® (Wireless broadband), Hawaii™ (Domain, Hosting, and VPS) and COMSpeed™ (Optical Fiber Connectivity).

Value Added Services

CIS' value added services include:

Hurricane™ (On-demand broadband), Prism™ (Website development), Viacon™ (Video conferencing), COM meeting™ (Web Conferencing Service), COMSATS Innovation- IoT and ComClinic™ (Tele-health).

Data Centers

COMSATS Internet Services (CIS) has well-equipped data centers in Islamabad, Lahore and Faisalabad offering a variety of services including Virtual Private Servers, Domain Registration, Website Hosting, Co-location of Server's and Rack's space to customers. Hosting services are being offered on both Windows and Linux platforms.

The expanded Data Center infrastructure with state-of-the-art technologies is operational at CIS Technology Park building Islamabad for CIS existing and potential customers. The overall capacity of new data center is 1,526 Sq. ft. and approximately 45 server racks can be accommodated. The IPV6 has been implemented accordingly. Additionally, measures has been adopted for precision cooling system alongwith humidity controller, safety measures like fire suppression along with four stage fire alarm, power matters, N+1 electric system that includes UPS and backup electric generators.

The data center has a fully backed cyber security system with round the clock surveillance, installation of biometric security system and protected with advanced Huawei and Juniper firewalls.

Trainings

Comtrain® is a technical training service of CIS. We have delivered technical trainings to more than 2000 IT professionals and students over the last twenty-three years. Training courses include conferences CCNA, CCNP, Microsoft Office, Linux Administration, Window TM Administration, ONO recording Hardware, ITIL TM V3 Foundation, PMP TM, Web Development, Java Development and .Net Development delivered throughout the years.

CIS arranged specialized technical training for reputed organizations.

Video-Conferencing

CIS provides video-conferencing facilities using the traditional equipment and on cloud to corporate customers for video conferencing within the country and abroad. CIS has well-equipped video conferencing studios, two of which are located in Islamabad, while others are located in Lahore, Karachi and Peshawar. During 2023, CIS conducted video conferencing platforms for its potential customers as per requirement and user demand.

Bandwidth Growth

To ensure high uplink and downlink speeds for customers, CIS gets bandwidth from multiple providers. Purchase of bandwidth grew from 10 GBPS in 2022 to more than 12 GBPS (approx) in 2023. This progress reflects the growth of CIS as bandwidth is the fuel for an ISP.

ComClinic

COMSATS Internet Services (CIS) played a key role in expansion of COMSATS

Telehealth Services.

A project in this respect was executed by CIS between 2012-16, whereby a network of 19 Tele-Health clinics was setup at the rural Basic Health Units (BHUs) located in Islamabad, Rawalpindi, Peshawar, Swabi, Lahore, Multan, Khairpur, Quetta, and Gwadar, etc. The facility was extended in 2017 and three clinics were also setup in Mardan, Mansehra and Swabi districts.

Since an agreement was between CIS and PPHI-Balochistan signed in 2020 for establishment of rural Tele Health clinics in far flung areas of Balochistan, 29 Telehealth clinics have been established. These clinics are located in Quetta, Gwadar, Noshki, Dera Bugti, Mastung, Qila Abdullah, Washuk, Jaffarabad, Dukki, Sibi, Kachhi, Sohbatpur, Musakhail, Punjgour, Chagai, Dera Bughti, Sohrab, Lasbela, Quetta, Turbat, Kharan, Harnai, Naseerabad, Killa Saifullah, Awaran, Kohlu, Zhoub, Kalat and Lorlai districts.

All established centers are fully equipped with the latest digital diagnostic equipment including vital sign monitor, digital stethoscope, examination camera, ENT, and derma scope and ultrasound probe.

To run general and specialist consultation smoothly at all established rural sites, a Resource Center was established at CIS, Islamabad, where a panel of doctors sits for five days in a week to provide online consultations to the patients visiting the clinics in remote areas.

Use of digital technologies to deliver health care has proven several advantages for the local community, including cost savings, convenience, and ability to provide care to people with mobility limitations, or those in rural areas who do not have access to a local doctor or clinic.

ComClinic has been appreciated not only by local population but gained recognition at government level due to its usefulness for meeting medical and specialist healthcare needs of local population at

their own door step, and free of cost.

In 2021, ComClinic was recognized for its delivery of digital health services and was awarded the 5th Commonwealth Digital Health Awards in the Telemedicine category by Commonwealth Centre for Digital Health (CWCDH).

So far, more than 150,000 consultations have been provided to the people in rural areas of Pakistan through this service.

COMSATS Centre for Climate and Sustainability (CCCS)

As its ongoing commitment to climate action for environmental protection and sustainable development, COMSATS Centre for Climate and Sustainability (CCCS) continued during 2023 to enhance the capacities of key stakeholders in various climate-related areas. During the calendar year, CCCS has broadened its national and international reach, collaborating with its international members and partners. In addition to COMSATS' representation at the UNFCCC's 28th Conference of Parties (COP28) in Dubai, UAE, CCCS has organized numerous international webinars, dialogues, and capacity-building workshops, aligning its efforts with the global Climate Action agenda.

COP28: In 2023, COMSATS successfully achieved observer status with the UNFCCC, enabling the organization

to expand its international presence by participating in sessions and meetings of the convention's governing bodies and subsidiaries. The observer status affords COMSATS the opportunity to present statements, organize side events and exhibitions, and provide inputs for action plans mandated by COP.

At COP28 in Dubai, UAE, COMSATS was represented by its esteemed Executive Director, Ambassador Dr. Mohammad Nafees Zakaria. Dr. Zakaria was invited to speak at the pavilions of COMSATS' host country, Pakistan, and COMSATS founding member state, China. Amb. Dr. Zakaria highlighted significant gaps in climate change mitigation, adaptation, and resilience, with a particular emphasis on climate finance. He called for an integrated and holistic approach to addressing complex challenges of climate change.

Notable events of COMSATS at COP28 (Chapter 05) included:

- i. Executive Director COMSATS, Ambassador Dr. M. Nafees Zakaria, was invited as a special guest speaker to deliberate upon the role of digital technologies and Artificial Intelligence (AI) to achieve carbon neutrality, at the China Pavilion.
- ii. Ambassador Dr M. Nafees Zakaria, Executive Director COMSATS, participated as a key note speaker in of the events organized by the Global Climate Youth Leaders on COP28.





Amb. Dr. Mohammad Nafees Zakaria, ED COMSATS, and Mr. Hasan Akram, Chief Operating Officer, FACE signing COMSATS-FACE MoU

- iii. Executive Director COMSATS, Ambassador Dr. M. Nafees Zakaria, presented policy statement on Climate Justice at the United Nations High Level Segment.

In addition to these engagements, COMSATS organized an event at the Pakistan Pavilion on “Leveraging South-South Cooperation: De-Risking Climate Security” and held various sideline meetings and discussion sessions with the diplomatic community and relevant stakeholders for global partnerships on climate action (Chapter 05).

Policy Dialogues and Capacity

Development: CCCS organizes high-level events; workshops, policy dialogues, forums and meetings in support of shaping relevant policies and strategies in COMSATS member states, such interventions attempt to address areas including climate smart agriculture, climate finance, green hydrogen, intellectual property rights, carbon credit, energy efficiency, biodiversity, water security, climate diplomacy and so on. For the purpose, COMSATS dedicated efforts include:

Institutional Collaboration

Aligned with COMSATS' mandate to promote South-South Cooperation for sustainable socioeconomic development, CCCS acts as a platform for scientific, technological, and research collaborations. Its goal is to integrate climate action and environmental protection into mainstream efforts through South-South and Triangular Cooperation. During 2023, the organization facilitated exchanges of expertise and technology among its relevant bodies in Member States. Over the calendar year, CCCS is currently implementing various programs and projects in close coordination with its Member States and international organizations/agencies. The scope of CCCS's international cooperation ranges from national to regional and international levels. This cooperation is formalized through bilateral and multilateral Memoranda of Understanding (MoUs), Agreements, and Letters of Intent. Over the calendar year, CCCS has engaged with several organizations, including the Regional Center for Renewable Energy and Energy Efficiency (RCREEE), National Institute of Disaster Management (NIDM), Intellectual Property Organization of

Pakistan (IPO), National Disaster Risk Management Fund (NDRMF), United Nations Educational, Scientific and Cultural Organization (UNESCO), Malala Fund, Worldwide Fund for Nature (WWF), Food Security Agriculture Center of Excellence (FACE), Asian Development Bank, and Living Indus Initiative.

MoU with Food Security and Agriculture Center of Excellence (FACE): COMSATS and FACE inked an MoU in October 2023 with the ambition to enhancing the strengths of both organizations and member states for climate resilient agriculture to ensure food security for sustainable development in the Global South.

Technology Exchange: CCCS offers short- to long-term experts' exchange, technology exchanges to support a broad set of technical issues, technology transfers, sharing of solutions, and other forms of exchanges among member states. COMSATS has recently extended its seamless support towards the green projects related to Electronic Vehicles (EV) and “Vertical Axis Wind Turbine” for production of Clean Energy. Several other projects have been undertaken in the past

S #	Event Title	Date	Partners	Venue
1.	Intellectual Property Rights and Bilateral Agreements Workshop	December 19-20, 2023	Intellectual Property Organization of Pakistan (IPO Pakistan)	COMSATS Secretariat
2.	Convention of Scientists for World Science Day for Peace and Development	November 15, 2023	The United Nations Educational, Scientific and Cultural Organization (UNESCO) Pakistan, Pakistan Science Foundation (PSF), ECO Science Foundation (ECOSF)	Pakistan Science Foundation(PSF), Islamabad
3.	Webinar on "El-Nino: Understanding the Weather Phenomenon; Opportunities for Resilient Future in the Global South"	August 8, 2023	COMSATS (CCCS)	Virtual
4.	Green Hydrogen: The Future of Renewable Energy and Energy Efficiency Workshop	July 10-12, 2023	ICESCO, Egyptian National Commission to UNESCO (ICESCO-ALESCO), RCREEE, National Research Centre Egypt, and the Egyptian Ministry of Higher Education and Scientific Research	National Research Centre NRC, Cairo, Egypt
5.	IOFS-COMSATS-COMSTECH 2nd International Forum for Agri-Biotechnology	July 5, 2023	IOFS, Ministry of Education and Science of the Republic of Kazakhstan, COMSTECH, National Center for Biotechnology (Kazakhstan)	Doha, Qatar
6.	COMSATS webinar "Advancing Climate Diplomacy in the Global South: The Road to COP28"	June 22, 2023	COMSATS (CCCS)	Virtual

under COMSATS International Research Groups.

Joint Research Projects: CCCS, in collaboration with its Centres of Excellence (CoEs) - including the International Centre for Chemical and Biological Sciences, Al Farabi Kazakh National University, Tianjin Institute of Industrial Biotechnology, and COMSATS University Islamabad - designed and submitted a project for the International Centre for Genetic Engineering and Biotechnology's (ICGEB) call for proposals. This project has been awarded a partial grant of 10,000 euros for a training workshop on Metagenomics Surveillance of Viral Diseases, which will be held in September 2024 in Islamabad, Pakistan.

Intellectual Property Rights and Bilateral Agreements: COMSATS through its CCCS desk and the Intellectual Property Organization (IPO) Pakistan, organized a two-day training workshop on

Intellectual Property Rights and Bilateral Agreements on 19-20 December 2023. The training workshop was held at COMSATS Secretariat, a diverse group of participants from government and non-governmental organizations were benefitted by national and international experts (Chapter 04).

Academic Exchange: At the request of COMSATS Secretariat, the Centres of Excellence (CoEs) collaborate on joint research, joint publications, technology transfer, and resource sharing. For example, research fellows from COMSATS CoE at Al Farabi Kazakh National University (KazNU) are currently hosted by the Bio-fertilizer Research Lab at the Tianjin Institute of Industrial Biotechnology (TIB) to conduct research on bio-fertilizers. The Centres of Excellence are actively engaged in facilitating and hosting each other's scientific and research endeavours.

Capacity Building: COMSATS places

a strong emphasis on enhancing the capacity of communities and stakeholders in various domains. Additionally, the organization is committed to continuous professional development of its members. Throughout the calendar year, CCCS team actively engaged in online and physical participation in numerous symposia, conversation sessions, conventions, seminars, and webinars related to climate, economy, science, technology, and innovation, both at national and international levels. In 2023, the CCCS team participated in more than 22 seminars/dialogues and the training workshops related to Science and Technology, Climate Mitigation and Adaption, Health, Digital Technologies, Food Security, Water Management, Waste Management, Clean Energy and Environment.

Initiatives of COMSATS Centre of Excellence in the Area of Climate Change: The member institutions of



Participants of COMSATS-IPO Pakistan Event with ED COMSATS, Amb. Dr. Nafees Zakaria

the COMSATS Network of Centres of Excellence, which are also part of the COMSATS Centre for Climate and Sustainability, are focusing on seven Sustainable Development Goals

(SDGs) deemed central to the nexus between climate change and sustainable development: SDG-2 Zero Hunger, SDG-3 Good Health and Well-being, SDG-6 Clean Water and Sanitation, SDG-7

Affordable and Clean Energy, SDG-11 Sustainable Cities and Communities, SDG-13 Climate Action, and SDG-15 Life on Land.

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ACTIVITIES OF COMSATS CENTRES OF EXCELLENCE

A group of twenty-five S&T/R&D and higher education institutions from different developing countries, predominantly COMSATS Member States, is affiliated with COMSATS constituting its Network of International S&T Centres of Excellence. The Network serves as COMSATS' technical resource for South-South cooperation, in line with these institutions' mandates of having programmes of scientific research and development. This chapter covers reports received from COMSATS' Centres of Excellence, as well as news of some Centres covered in COMSATS Newsletter over the span of the year.



International Centre for Climate and Environment Sciences (ICCES), China

The International Center for Climate and Environment Sciences (ICCES) focuses its research on the key scientific problems relating to global climate and environmental changes.



Established in 1991, ICCES is devoted to establishing the cooperative and innovative research center in the area of climate and environment sciences, and provide services to the developing countries with scientific support, advisory, and capacity building.

International Collaborations and Agreements

The 19th CTWF International Symposium on Earth System Model Development & Application was held successfully

From 17 to 19 November 2023, the 19th CTWF International Symposium on Earth System Model Development & Application was held successfully. The forum had been hosted by ICCES, and supported by the Chinese Academy of Sciences (CAS), The World Academy of Sciences for the advancement of science in developing countries (TWAS), and COMSATS.

The theme of this year's forum was "Earth System Model Development & Application". On 17 and 18 November 2023, a domestic session was held in conjunction with the first Earth System Numerical Modeling Science Conference (CTWF was one of the co-organizers

of the conference). The members of the forum actively participated and discussed the latest research progress of Earth system model, such as Earth system theory and model development, Earth system prediction and data assimilation, Earth system numerical simulation and global change, regional environmental change and regulation, and algorithm and high-performance computing in Earth system numerical simulation.

On 19th November 2023, an international conference session was held in hybrid form. More than 120 people from 30 countries participated in the conference. The event had participation from Australia, Bangladesh, Benin, Burundi, China, Germany, Ethiopia, Ghana, India, Iran, Cote d'Ivoire, Kenya, Mauritania, Mongolia, Myanmar, Nepal, Nigeria, Norway, Pakistan, Rwanda, Senegal, Somalia, Sri Lanka, Sudan, Tanzania, Togo, Uganda, United States, Yemen, Zambia.



Prof. Zhaohui LIN

Director

International Center for Climate and Environment Sciences (ICCES), China

Climate change affects global temperature and precipitation patterns. These effects influence the intensity and the frequency of extreme environmental events, such as forest fires, hurricanes, heat waves, floods, droughts, and storms. The UN 2030 Development Agenda identifies climate change as “one of the greatest challenges of our time” and states that “its adverse impacts undermine the ability of all countries to achieve sustainable development”. So, it urgently requires to take action to combat climate change and its impacts. We would like to acknowledge the continuous efforts from COMSATS to facilitate partnerships and activities for combating climate change in the South. In 2024, ICCES will work closely with COMSATS to promote joint activities such as research programs, capacity building, knowledge-sharing and exchange of research personnels in the area of climate and environment sciences.



Third International Conference on Geography and Geoinformatics (3rd ICGGS) in Vietnam

The 3rd International Conference on Geography and Geoinformatics (3rd ICGGS) was held successfully from 30 November to 2 December 2023 in Can Tho, Vietnam. The conference was co-organized by Department of Geography, Faculty of Social Sciences, Srinakharinwirot University, Thailand and Land Resources Department, College of Environment and Natural Resources, Can Tho University, Vietnam and International Center for Climate and Environment Sciences (ICCES), IAP/CAS, China. More than 100 people from Thailand, China, Malaysia, Germany, France, the United States, India, Vietnam and other countries

attended the Conference.

ICGGS is a series of international conferences aims at providing a platform for scholars around the world to engage in broad spectrum of issues ranging from Natural resources & environment, Socioeconomic, Geography & Geoinformatics application, Geography & Geoinformatics Education, followed by exploring the growth of technological advancement in Geoinformatics and its importance to the environment and society.

Executive Director COMSATS' Visit to ICCES

On 12 November 2023, Ambassador Dr. Mohammad Nafees Zakaria, Executive

Director of COMSATS, Mr. Irfan Hayee, Additional Director, and Mr. Qaisar Nawab, Staff Officer to Executive Director, visited the International Center for Climate and Environmental Sciences (ICCES), Institute of Atmospheric Physics, Chinese Academy of Sciences and held a meeting with researchers from ICCES. Prof. Zhaohui LIN, Director of ICCES, Prof. Xiaodong ZENG, Deputy Director of ICCES and Ms. Bo HAO (Scarlett), Program Officer for International Cooperation attended the meeting. Details are in Chapter 02.

Visit of Thai delegation from Chiang Mai University and Hydro-Informatics Institute

On 12 October 2023, Dr. Chakrit



Chotamonsak and Ms. Duangnapha Lapyai from Chiang Mai University, Dr. Kritanai Torsri Hydro-Informatics Institute, visited ICCES and met with researchers of ICCES, Prof. Zhaohui Lin, Director of ICCES and Dr. Wu Chenglai attended the meeting. In the afternoon, the delegation visited The Earth System Science Numerical Simulator Facility of Miyun campus of Institute of Atmospheric Physics. Dr. Meichun CAO accompanied the visit and introduced the EarthLab.

Prof. Zhaohui Lin, Dr. Chenglai Wu and Dr. Chakrit Chotamonsak had in-depth exchanges and discussions on regional climate prediction, wildfire simulation and climate effects in Southeast Asia, application of new land use data to climate models, soil moisture simulation and the impact of abnormal signals on short-term climate prediction

The two sides agreed to continue carrying out high-quality cooperation in data sharing, utilization of supercomputing resources, personnel training, mutual visits and exchanges, and cooperative research in the future.

Visit of Delegation of Information and Research Institute of Meteorology, Hydrology and Environment, Ulaanbaatar, Mongolia

On June 8, 2023, Dr. Sarantuya, the Director of Information and Research

Institute of Meteorology, Hydrology and Environment, Ulaanbaatar, Mongolia (IRIMHE), along with a delegation of four, visited International Center for Climate and Environment Sciences (ICCES) IAP/CAS. Prof. Tianjun ZHOU, Deputy director of IAP; Prof. Zhaohui LIN, Director of ICCES, Ms. Li YAO, Director of the Science and Technology Division of IAP attended the meeting. Prof. Bouhe Chaolu, Prof. Jingbei PENG, Prof. Geli WANG, Dr. Chenglai WU and Dr. Zuowei XIE also attended the meeting.

Both institutions agreed to collaborate and engage in a wide range of scientific and academic activities. After a welcome address by Prof. Tianjun ZHOU, He and Dr. Sarantuya exchanged the "Framework Cooperation Agreement between the IAP and the IRIMHE." The goal of this Agreement is to continually develop and strengthen scientific cooperation between the two institutions and provide an opportunity to collaborate and exchange experiences in research and training of students, and carrying out research mutually projects beneficial.

Attending the subsequently held workshop entitled "Cross-border sandstorm activities between China and Mongolia in recent years", the participants had discussions on and exchanged views on their common research interests include study of climate change, in particular in the mid- and high latitude Asia, with a focus on abrupt

climate changes and extreme weather events; modeling of possible climate changes and predictabilities of weather and climate anomalies; atmospheric dynamics and high impact weather events in China and Mongolia, etc.

Participation in 6th Biennial Research Symposium of Industrial Technology Institute, Sri Lanka

The 6th Biennial Research Symposium of Industrial Technology Institute was successfully held from 7th to 9th November 2023, along with the World Science Day. Prof. Zhaohui Lin, Director ICCES, Institute of Atmospheric Physics, Chinese Academy of Sciences was invited as special guest attend the inauguration. The Special Guest, Ambassador Dr. Mohammad Nafees Zakaria Executive Director COMSATS had sent a message on the COMSATS activities and the collaborations with Sri Lanka.

ICCES Researchers' Visit to Mongolia

China and Mongolia are deeply affected by desertification and sandstorms, in order to strengthen cooperation in the prevention and control of sandstorms and implement sustainable development goals, on the invitation of Dr. Gomboluudev Purevjav, Director of Information and Research Institute of Meteorology, Hydrology and Environment, Ulaanbaatar, Mongolia, Prof. Bouhe Chaolu and Dr. Zuowei XIE from International Center for Climate and Environment Sciences (ICCES) IAP/CAS visited IRIMHE in Ulaanbaatar from 8 to 12 May 2023. They also made field visits to sandstorm observation stations and meteorological centers in the Central and southern Gobi provinces.

During the visit, the two parties conducted in-depth exchanges on sandstorm monitoring and research. They also discussed the research progress of the China-Mongolia international cooperation cultivation project "Research on severe Sandstorm weather in Mongolia and Northern China". They also held extensive



discussions and exchanges on cooperation in cross-border sandstorm observation, simulation, and prediction systems.

ICCES' Delegation of Visit to Srinakharinwirot University, Thailand

On the invitation of Dr. Poom Moolsilpa, Dean of the Faculty of Social Sciences of Srinakharinwirot University (SWU), Prof. Zhaohui LIN, Director of ICCES with a delegation of 6 people visited Sinakaninvalo University in Thailand, on September 4, 2023. Dr. Tannikarn Soonsinpai, Associate Dean for Academic Affairs and International Relations, Dr. Sathaporn Monprapussorn, Associate Dean for Administration and Human Resources, Dr. Chomchanok Arunplod, Head of the Department of Geography, and over 15 scientific researchers attended the meeting.

In the meeting, SWU and ICCES firstly reviewed the cooperation of both sides in the past. The cooperation between SWU and ICCES has a long history.

Prof. LIN introduced the recent work priorities of ICCES in scientific research and international cooperation, and highlighted the Earth System Numerical Simulation Facility of the Institute of Atmospheric Physics and its role in promoting climate change research and

promoting urban sustainable development research.

The two sides discussed prospects for cooperative research in the areas of urbanization and its environmental impact, land use, geographic information technology to address global issues such as environmental degradation, urban pollution, and climate change, as well as future cooperation exchanges such as short-term visits of scholars, joint training courses or conferences.

ICCES Delegation Visit to Hydro-Informatics Institute, Thailand

On September 5, 2023, at the invitation of Dr. Sutat Weesakul, former Director and General Counsel of Hydro-Informatics Institute (HII), Thailand, Prof. Zhaohui LIN, Director of ICCES and a delegation of 6 people visited HII and visited its Automated Telemetry Station and High-performance Computing Center. Dr. Sornthep Vannarat, Director of Policy Research and Development, Institute of Hydrologic Information of Thailand, Dr. Piyamarn Sisomphon, Director of Innovation Department of Hydrologic Information, Ms. Pensiri Saranrat, Director of Strategic Policy Department, and researchers from various departments of HII participated in the meeting. The two sides, inter alia, discussed cooperation

research in the fields of S2S forecasting, high performance computing, talent training, etc. In addition, the two sides also discussed cooperation plans such as short-term visits of scholars, joint training courses or conferences.

Capacity-Building Activities

ICCES-HII International Training Workshop

On September 6-8, 2023, International training workshop on "Increasing Capability on Drought and its prediction at S2S time scale" (INCAP2023) was held successfully in Thailand. The training workshop was jointly held by ICCES, CAS-TWAS network for sustainable development and Hydro-Informatics Innovation Division, Thailand.

The three-day training consisted of eight presentations and on-site training activities. The workshop invited experts from China and Thailand to give lectures on the spatio-temporal evolution characteristics, occurrence and development mechanism of drought, drought monitoring and S2S prediction, as well as drought management and response. This training workshop attracted more than 90 participants from 28 universities, scientific research and governmental departments in Thailand.



International Training Workshop on Open Science and SDGs 2023

From August 28 to September 8, 2023, the 2023 International Training Workshop on Open Science and SDGs was successfully held in Beijing. It was co-organized by GOSC International Programme Office, ICCES and other organizations. The Chinese Academy of Sciences, the International Data Committee, the World Federation of Engineering Organizations Disaster Risk Management Committee, and other institutions supported this workshop.

The two-week training course covered open science macro policy, open science infrastructure platform, computer and data science technology applications, open science data resources and interoperability, SDGs data resources and application technologies, and global typical application demonstrations. Researchers and scholars from Mongolia, Vietnam, India, Pakistan, Malaysia, Indonesia, Iran, Morocco, Nepal, Sri Lanka, Egypt, Malawi, Nigeria, Kenya and other developing countries, as well as representatives from Germany, the United States, two tutors from CODATA also joined the workshop.

The Global Open Science Cloud (GOSC) SDG-13 International Workshop in Thailand

From 16 to 18 May 2023, ICCES IAP/CAS co-organized The Global Open Science Cloud (GOSC) SDG-13 International Workshop in Bangkok, Thailand. The workshop was also supported by the Committee on Data of the International Science Council (CODATA), National Research Council of Thailand (NRCT), Chinese Academy of Sciences (CAS), as well as START Regional Center for East Asia, and CAS-TWAS Network for Sustainable Development.

The participants discussed the challenges in SDG-13 research, applying Open Science and emerging new technologies in relevant research, and exploring potential collaboration between multiple stakeholders. The technical team reached a consensus on co-building the SDG-13 community and co-developing an open data-sharing platform, focusing on subtopics, such as seasonal and sub-seasonal climate prediction, extreme weather forecasting, and others supporting disaster mitigation.

National Key R&D Program “Artificial Intelligence and Earth System Modeling toward Detection of Extreme Climate Events in the BRICS”

Research group from ICCES IAP/CAS, in collaboration with Brazil National Institute for Space Research and Indian Institute of Tropical Meteorology successfully applied an international project, entitled “Artificial Intelligence and Earth System Modeling toward Detection of Extreme Climate Events in the BRICS”. Teams from China, Brazil and India cooperate to use the characteristics and advantages

of each unit team to realize sharing of observation data from different countries, the integration of multi-models, and the integration of big data and Earth system model simulation based on artificial intelligence and machine learning.

The project aims at meeting needs of sustainable development of BRICS countries, the project reveals the historical evolution of extreme events in BRICS countries represented by China, Brazil and India and the results of future projections, and quantifies the contribution of human activities such as land use to extreme events.

Tianjin Institute of Industrial Biotechnology (TIB), China

Tianjin Institute of Industrial Biotechnology (TIB), Chinese Academy of Sciences (CAS), is a non-profit national research institute jointly established by CAS and



Tianjin Municipal Government in 2012. TIB’s mission is to strengthen capacities in innovation and technology-transfer to become a global



leader for research and development in industrial biotechnology.

The year 2023 marked the eleventh anniversary of TIB. As the vital engine for the development of industrial biotechnology and green bio-economy in China, TIB made further breakthroughs in the related field, including successfully building the pilot platform of tons capacity for starch synthesis from carbon dioxide, constructing new strains and technologies for the synthesis of glutamic acid, lysine and steroid hormone drugs, and finishing the pilot scale tests in tons on the biomanufacturing of microprotein and healthy sugar. Among these, the starch synthesis from carbon dioxide was awarded the Special Prize of Natural Science by Tianjin Municipal Government.

Research and Commercialization

In 2023, TIB got more than 85 research projects funded by the Ministry of Science and Technology, National Natural Science Foundation, Chinese Academy of Sciences, Tianjin Municipality, etc. with a contract fund of about 385 million yuan. TIB also applied for 263 patents including 53 foreign patents, an increase of 39% over last year. 355 articles were published, including 300 SCI. TIB cooperated with Chinese leading biotechnology enterprises in 37 projects with a contract of more than 580 million yuan.

Belt & Road Fellowship

In 2023, with the support of Belt & Road Fellowship Initiative of Tianjin Synthetic Biotechnology Innovation Capacity Improvement Project, CAS President's International Fellowship Initiative, etc. Eight young researchers from developing countries including Pakistan, Iran, Bangladesh, and Malaysia were funded to carry joint research at TIB.

COMSATS and TIB

Cooperation for Bio-Tech and Bio-Industry

As the Center of Excellence of COMSATS, a series of activities were organized in the framework of COMSATS Joint Center for Industrial Biotechnology (CCIB) which was formally established on April 14, 2021 by TIB and COMSATS to build an open, shared, and innovative cooperation platform to promote the development of biotechnology and bio-industry in COMSATS member states and the "Belt and Road" countries.

International Forum on Innovative Development of Biomanufacturing

On the occasion of the 10th anniversary of the Belt and Road Initiative (BRI), TIB, National Center of Technology Innovation for Synthetic Biology (NC SynBio), COMSATS and the Alliance

of International Science Organization (ANSO) jointly hosted the International Forum on Innovative Development of Biomanufacturing. The Forum provided a high-level platform for cross-border exchanges of technologies, talents, resources and information and played a positive role in promoting global industry-university-research cooperation on biomanufacturing.

Over 400 participants, including government officials, diplomatic envoys, experts, scholars, and entrepreneurs from nearly 20 countries gathered under the theme of "Sharing Cutting-edge Biotechnology for the Prosperity of Global Bio-economy". During the forum, some collaboration agreements were signed with COMSATS, the National Research Center, Egypt, and Mahidul University, Thailand.

Academicians of Pakistan and Kazakhstan were appointed as visiting professors. The Report on Innovative Development of Biomanufacturing in COMSATS Member States were released, which provided significant supports for the demand-oriented joint research and industrial collaboration for COMSATS member states.

Workshop on Green Biomanufacturing of Future Food

Besides, the workshop on Green Biomanufacturing of Future Food



was organized to strengthen academic exchanges and explore potential cooperation opportunities for joint R&D and technology demonstration on future food, over 50 from COMSATS member states participated.

Training of Nominees from COMSATS Member States

Also, under the support of the related training program of Chinese Academy of Sciences, the Fourth International Training Course on Industrial Synthetic Biotechnology (ITC-ISB) was hosted by TIB in Tianjin from November 1 to 16, 2023. Almost all the trainees were from COMSATS member states such as Egypt, Pakistan, Nigeria, Zimbabwe and Sri Lanka.

Visits

Mutual exchanges were conducted between TIB and the related research institutions in COMSATS member states, including National Research Center, Egypt, Iranian Research Organization for Science & Technology (IROST) and Al-Farabi Kazakh National University, to promote academic exchanges, talents cultivation and technological demonstration.

COMSATS Joint Centre for Industrial Biotechnology (CCIB) selected as Achievement Display

Based on its achievements, CCIB was recognized by the Chinese government and selected for the Achievement Display at the Belt and Road Conference on Science and Technology Exchange in November 2023.

TIB-China & COMSATS organize International Forum on Biomanufacturing

TIB, COMSATS, and Alliance of International Science Organization (ANSO) organized a 2-day International Forum on Innovative Development of Biomanufacturing in Tianjin, China on 9-10 Nov. 2023 from the platform of COMSATS Joint Centre for Industrial Biotechnology (CCIB).

Prof. Yanhe Ma, Director General, TIB, opened the event and expressed delight in collaborating with COMSATS. He noted that this collaboration led to the establishment of CCIB in 2021. The 10th anniversary of BRI that preceded the event, marked the prosperous industrial development of biomanufacturing sector in China.

In order to facilitate R&D activities in the Member Countries, COMSATS and TIB signed the milestone agreement to launch 'China-COMSATS Belt and Road Joint Laboratory on Industrial Biotechnology' on the occasion.

Prof. Jinghua Cao, Executive Director, ANSO, expressed appreciation for Chinese Academy of Sciences, COMSATS and various other agencies and stakeholders for enabling ANSO to play its role in promoting practical ways in building scientific capacity.

Mr. Zhengyu Wang, Deputy Director of the International Cooperation Bureau, Chinese Academy of Sciences, thanked TIB and COMSATS for their good work done that is helping China achieve BRI objectives in line with national agenda of net zero carbon emission.

Ms. Rongfang Wang, Director General for International Cooperation, Ministry of Science and Technology of China, and Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria also gave remarks on the occasion.

The Forum was attended by policy makers, scientists, particularly the young scientists, researchers, entrepreneurs, industry representatives, as well as representatives of local, national and international organizations, from COMSATS Member States.

During the plenary session, Amb. Zakaria made elaborate presentation on COMSATS' contributions to promoting international cooperation and shared his vision on policy guidelines.

The Chief Organizers informed the audience that the programs of COMSATS Joint Centre for Industrial Biotechnology (CCIB), that epitomized South-South cooperation, has also been duly recognized as 'Good Practice' by UNOSSC in its publications brought during Global South-South Development (GSSD) Expo 2022. The experts' presentations focused on



Biomanufacturing of Chemicals, Materials, Pharmaceuticals, enabling Technologies, Future Food, Natural Products and New Resources.

A report on innovative development of biomanufacturing in COMSATS Member States was also presented during the event.

Royal Scientific Society (RSS), Jordan

The Research Scientific Society (RSS) is the largest applied research institution in Jordan. It, inter alia, provides consultancy and technical support services for scientific capacity-building. The Society serves as the local as well as regional reference point of knowledge for science and technology.



Collaborations

RSS-UNDP joint Climate Security Project

RSS joined hands with the United Nations Development Programme (UNDP)

to implement a Swedish International Development Agency (SIDA)-funded project, 'The Climate Facility to Achieve the Sustainable Development Goals: Climate Action for Human Security in the Arab Region'.

Under the project, 18 water management pilots have been installed by Jordanian start-ups in Jerash and Al-Mafraq. This was done in an effort to consolidate sustainable development goals and water conservation. The project promotes climate change adaptation through water efficiency and smart agriculture, contributing to sustainable water



management and indirectly enhancing climate security.

National Cooling Strategy

In cooperation with the Royal Scientific Society and with the support of Cool Up programme, the Jordanian Ministry of Environment kicked off the development of the National Cooling Strategy. The NCS aligns with climate, energy, and economic strategies, including Jordan's Economic Modernisation Vision, to address cooling needs.

Jordan's National Cooling Strategy (NCS) promotes sustainable cooling through advanced technologies in the Refrigeration and Air Conditioning (RAC) sector and eco-friendly refrigerants. NCS covers all of Jordan, incorporating various cooling sectors like stationary refrigeration, industrial cooling, and more.

Research and Development

New Tests Developed

The Automated Chemistry Laboratories of the RSS developed the following new tests:

- Detection of the traces of the high risk components of ethylene glycol (EG), diethylene glycol(DEG) in both raw materials and finished pharmaceutical products;



- Detection of Nitrosamines (NDMA, NDEA) in medicines for humans.

These contaminants are considered toxic to humans if their quantities exceed the allowed limits in international and national standards. In addition to that, the lab introduced validation studies for medicines used to treat diabetes and hypertension.

Results of the SwitchMed TEST Project

On 18th May, 2023, the RSS unveils results of the SwitchMed Transfer of Environmentally Sound Technology (TEST) project, during a ceremony held in Amman. In two phases (2015-2023), it saved resources in 27 Jordanian industries, annually reducing over 2,000 tons of materials, 30,800 MWh of energy, 179,000 m³ of water, and over 11,400 tons of CO₂ emissions.

Implemented by UNIDO, Water, Environment and Climate Change Centre, and National Energy Research Centre at RSS, the project received European Union funding. It partnered with Jordan and Amman Chambers of Industry, Ministry of Environment, and Ministry of Industry, Trade and Supply.

GreenChemistry Project

On 13 August, 2023, the Royal Scientific Society, Jordan, launched their project

“Global GreenChem (GC) Innovation & Network Inclusion Programme,” funded by the Global Environment Facility (GEF) and managed by UNIDO. This initiative is carried out in collaboration with Yale University and the local partner, Jordan’s Cleaner Production Unit (CP-unit), situated at the Water, Environment & Climate Change Center of RSS.

Within its work plan which extends to year 2028, the project aims to apply the principles of green chemistry to assist participating countries, including Jordan, in promoting green entrepreneurship, and stimulating green research and innovation towards sustainability, in order to achieve the goals of the circular economy.

Capacity Building

Seminar on Reducing Disaster Risk Mitigation

RSS held seminar on “Reducing Disaster Risk for the Poor by Risk-Informed Planning & Evidence-Based Decision Support”, at its premises on February 9, 2023, in connection with catastrophic and deadly series of earthquakes that took place on 6th February 2023 and onwards.

The seminar was conducted by Prof. John McCloskey, Chair in Natural Hazards Sciences, University of Edinburgh. RSS scientists discussed and explored ways of transition from crisis management to

multi-hazard risk-informed planning and decision-making, for low and middle-income countries.

Global Network of Young Mappers

A ‘YouthMappers’ chapter was established through collaboration between Princess Sumaya University for Technology (PSUT) and the Royal Scientific Society’s Research for Sustainability Team. The idea was adopted by Prof. Iain Stewart, Director, El-Hassan Research Chair in Sustainability with the support of the President of PSUT, Prof Wejdan Abu Elhajja.

PSUT YouthMappers, a leading Jordanian-Middle Eastern branch, part of an international student network focusing on open-source mapping and GIS for sustainable development, fostering collaboration between youth, universities, and development organizations.

Climate Finance Workshop

A 4-day workshop on climate finance was held at the RSS in July. The workshop came as part of the NDC Action Project that aims to build Jordan’s capabilities and enable it to raise ambition for climate action.

This project is implemented by the RSS and the National Centre for Agricultural Research in close cooperation with the Ministry of the Environment and supported by the United Nations Environment Program (UNEP) and the Copenhagen Climate Center of the UN Environment Program.

Participation in International Fora

World Science Forum 2024

HRH Prince El Hassan bin Talal, Chairman of the Royal Scientific Society (RSS), met with delegates of the Steering Committee of the World Science Forum 2024 (WSF 2024), which will take place in November 2024. During the meeting, Prince El Hassan, an early supporter of the



World Science Forum, gave a speech in which he addressed the challenges facing the world today and called for action based on intelligence and a shared humanity. In a related context, the RSS also hosted the first meeting of the World Science Forum steering committee at its headquarters.

In her welcoming remarks to delegates, HRH Princess Sumaya, President of the RSS, reiterated the commitment of the RSS and of Jordan to working with international organisations to help improve science policy and science responses to challenges, including climate change, water, energy and poverty.

COP28, UAE

In 2023, RSS was presented by 7 officials and engineers, who presented RSS and Jordan views in COP28.

RSS had a special edition Gazette, titled “Green Innovation in a time of Crisis: Building Resilience for a Sustainable Future through a National Innovation Ecosystem in Jordan”, for COP28.

In the first week Eng Rafat Assi, RSS Vice President, joined a high level event with Inger Andersen, Executive Director of the

United Nations Environment Programme, Clare Dalton, Head of UAE Delegation at the International Committee of the Red Cross, David Harland, Executive Director of the Centre for Humanitarian Dialogue and HE Nickolay Mladenov, Director General of the Anwar Gargash Diplomatic Academy, in a special session at #COP28 titled: “Addressing Climate Risks: Cooperation on transboundary climate adaptation in the MENA region.

Eng. Assi also participated in the “Cool Up” side event at the “Montreal Protocol advancing climate action” pavilion during COP28.

Titled “A Cool Future for Jordan: Upscaling National Policies to Reach Climate Targets - Uniting on Action for Sustainable Development in Jordan”, the panel discussion provided valuable insights into Jordan’s dedication to modernization and its comprehensive approach to climate and sustainability actions. The focus of the discussion revolved around sustainable cooling initiatives and the increasing demand for clean energy in the country.

Prof. Iain Stewart, El Hassan Research Chair in Sustainability at RSS, moderated in collaboration with the University of Plymouth at the Renewable Energy Action

Pavilion during COP28.

Eng. Ruba Ajjour, Manager of Climate Change Studies at the RSS, joined in a session titled: Acceleration models for Energy-Efficiency in developing countries, at UNEP Pavilion. The event addressed two-fold energy efficiency topics related to available regulatory frameworks and the climate action models and the business models-with a special focus on Energy Service Companies.

In the second week, Dr. Hussam Hussein, Executive Director of Partnerships for Development at RSS, joined a panel session with participants from the Interacademy Partnership (IAP), the Global Young Academy (GYA), and the Institute for European Environmental Policy (IEEP) to discuss how senior and young academies around the world can work together to address climate challenges. Dr. Hussam showcased the work of RSS in climate change research and policy advise in Jordan.

In a session co-organized by the Global Young Academy (GYA), the Royal Scientific Society of Jordan (RSS), and the Regional Center for Renewable Energy and Energy Efficiency (RCREEE) and hosted at the RCREEE Pavilion,



Dr. Hussam Hussein, organized and moderated a session titled: Young scientists for interdisciplinary research and climate innovation, with Dr. Almoayied Assayed, Director of Water, Environment and Climate Change Centre at the RSS, presenting on the scope of learning more on how the institutions in the MENA region support young scientists in their pursuit for interdisciplinary research and climate innovations. Dr. AlMoayied, also discussed the concept of food security at the COMSATS' organised panel.

Eng. Ayham Al Rabee, RSS Specialist at the National Energy Research Centre participated in a second session as a speaker in RCREEE pavilion under the framework of MEETMED project. The session entitled "Energy Performance Standards: Optimizing Energy Consumption of Appliances in the Arab Mediterranean Region".

Eng. Ayham also participated as a panelist in Cool Up's side event at the MP Pavilion titled: Progress, Opportunities and Insights of Sustainable Cooling in MENA - launch of Cool Up's 2nd MENA region cooling status report.

This event provided an early glimpse into the report that revolves around the question, "Where do MENA and Türkiye

stand in the transition to sustainable cooling?"

Keynote Speech at 2023 AAAS Meeting, Washington, D.C

HRH Princess Sumaya bint El Hassan, President of the Royal Scientific Society (RSS), delivered a keynote speech at the 2023 meeting of American Association for the Advancement of Science (AAAS) in Washington, D.C. The event, held from 2nd to 5th March, 2023 focused on the theme of "Science for Humanity".

"Humanity is not equally served by knowledge," noted the Princess addressing the urgent need for a boundary-free and equitable approach to knowledge for the betterment of humanity. Princess Sumaya emphasized, "we live in a world where knowledge is so unevenly spread and where the benefits of scientific knowledge are often absent where they are most needed".

Inaugural of Newton-Khalidi Fund Researcher Links Workshop Celebration

On March 21, 2023, the Newton-Khalidi Fund Researcher Links Workshop was held under the patronage of Princess Sumaya, President RSS. The event was jointly organized by the British Council in Jordan, in partnership with RSS and the Higher

Council for Science and Technology, Jordan.

Princess Sumaya awarded certificates to the researchers and project planners under the Newton-Khalidi Fund/Researchers Links Workshop. The event encompassed an exhibition that showcased the projects and their impact, alongside panel discussions focused on Jordanian research strategy and enhancing the effectiveness of Jordanian-International research collaborations.

Awards and Honors

Dr. Hussam Hussein Elected to GYA

On June 6, 2023, the Global Young Academy (GYA) selected Dr. Hussam Hussein, Executive Director of Partnerships for Development, RSS, as one of the 41 new members to join the GYA for a five-year tenure. Dr. Hussein was selected for his research in Middle East water policies, hydrogeology, and the political economy of water.

Dr. Hussein of RSS Recognized in Science and Sustainability Category in UK

Dr. Hussam Hussein received the Finalist Certificate for the category 'Science and Sustainability' at the UK Alumni Awards



Ceremony of the British Council for his impactful work on Water Diplomacy.

Participation in Prize Jury

RSS participated in the Guidance Committee and Technical Committee for the Green Factory Prize launched by the Jordan Chamber of Industry in collaboration with the project promoting green activities in industrial facilities in Jordan implemented by the German Agency for International Cooperation (GIZ) and funded by the German Federal Ministry (BMZ) in cooperation with the Ministries of Industry, Environment and Energy and the Specification Foundation And the Jordanian scales, RSS and local industry chambers.

Al-Farabi Kazakh National University (KazNU), Kazakhstan

One of the world's oldest leading universities established in 1934, Al-Farabi Kazakh National University (KazNU) has made enormous contributions towards the advancement of science and technology in Kazakhstan. Named after Eastern philosopher and scholar, Abu Nasr Al-Farabi, the University is placed 165th by the International QS



World University Rankings (QS WUR). KazNU is the Global Hub of the United Nations Academic Impact (UNAI) Programme on 'Sustainable Development' and has also launched 'Ban Ki-moon Institute for Sustainable Development' to coordinate activities relating to sustainable development and green economy.

During year 2023, Al-Farabi KazNU continued its educational initiatives by offering a diverse range of 554 educational programs, including 412 master's and doctoral programs. The university actively engaged in partnerships with institutions both near and far, home and abroad, fostering joint and double-degree programs through direct agreements. An essential aspect of ensuring educational quality was the international accreditation of programs, with approximately 90%

of educational programs receiving accreditation from both Kazakh and foreign accrediting agencies.

Renowned as a leading among Kazakhstani university, KazNU excels in scientific, technological, and innovative realms. The university has been notably successful in implementing scientific and technical programs, as well as pioneering innovative projects in cutting-edge areas of science and high technology. In the year 2023 alone, the university's scientists undertook and completed 360 research projects. A total of 1076 of 652 scientific papers attributed to Kazakhstani scientists in Scopus during 2023 were contributed by Al-Farabi KazNU scientists.

Important Liaison and Meetings

Meeting with Cultural Advisor of Iranian Consulate General

On September 8, 2023, KazNU hosted a productive meeting between Dr. Bekzhan Meirbayev, the Dean and Associate Professor, and Mr. Hussein Aghazadema, the Cultural Advisor of the Consulate General of the Islamic Republic of Iran in Almaty. The gathering served as a platform for faculty scientists to articulate ideas and prospective plans aligned with the Head of State's address to the people of Kazakhstan.

In a special ceremony held as part of the meeting, the guest of honor, President of





Prof. Dr. Zhanseit Tuimebayev
Chairman of the board – Rector
Al-Farabi Kazakh National University

As we bid farewell to the fruitful year of 2023, I extend my heartfelt congratulations to each one of you for your unwavering dedication and outstanding contributions to the mission of COMSATS. Your commitment to excellence has undoubtedly left a lasting impact on our collaborative endeavors.

In the spirit of the new year, I wish you tireless energy and boundless creativity in your continued pursuit of knowledge and innovative research. May the coming year be filled with groundbreaking discoveries, meaningful collaborations, and unparalleled success in all your academic and scientific pursuits.

The importance of our collective scientific endeavors cannot be overstated, particularly in the context of the Islamic world and countries of the South. Your dedication plays a pivotal role in advancing not only our institutions but also in contributing to the progress and prosperity of our nations. Together, we are fostering a brighter future through the power of education, research, and innovation.

May the 2024 bring forth new opportunities, greater achievements, and the fulfillment of your aspirations. I look forward to witnessing the continued success and growth of COMSATS and its Centres of Excellence in the coming year.

the Association of Iranian Philosophy and Professor of Shahid Bakhshiti University, Avani Gulamreza, was presented with the prestigious "Eren Enbegi Ushin" medal by Al-Farabi KazNU.

International Scientific Conference

The inaugural edition of the International Scientific Conference, titled "New Way of Decarbonization of Economy (KZGT-2023)," commenced at Al-Farabi KazNU on November 8-10, 2023, underscoring a collaborative effort between the host institution and St. Petersburg Polytechnic University in alignment with the objectives of Sustainable Development Goal 13. The conference served as a platform for in-depth discussions on diverse topics, encompassing the enhancement of quality of life, advancements in healthcare, energy conservation, establishment of effective institutions, technological innovations, environmental preservation, inclusive growth, and energy consumption.

Exhibition of People's Republic of China (PRC) Universities

On December 8, 2023, Al-Farabi Kazakh National University also played host to a significant event—the Exhibition of People's Republic of China (PRC)

Universities. About 45 top universities from China participated in the exhibition, showcasing their academic endeavors and sharing noteworthy scientific achievements. The focus extended beyond information dissemination, as these institutions also provided insights into





opportunities for international programs, elucidating admission procedures for prospective students.

Inaugural Meeting of Ministers from the Member States of OIC at KazNU

The first Ministerial Meeting of the OIC-15 Dialogue Platform took place at Al-Farabi Kazakh National University on May 25-26, 2023. Representatives from various countries, including Azerbaijan, Cameroon, Indonesia, Iran, Morocco, Turkey, Qatar, the UAE, and the Kingdom of Saudi Arabia, participated in this significant event. The Minister of Science and Higher Education of the Republic of Kazakhstan, Sayasat Nurbek, and the Chairman of the Board and Rector of Al-Farabi Kazakh National University, Prof. Dr. Zhansait Tuimebayev, warmly welcomed the official representatives of the international organization of Muslim world countries.

During the meeting, discussions centered on the principles and procedures of the OIC-15 Dialogue Platform, with a focus on member countries' initiatives and areas of collaboration. The First Ministerial Meeting concluded with the approval and signing of the document titled "Almaty Rules and Regulations of the OIC-15 Dialogue Platform."

Askar Musinov announced plans to sign a memorandum on this matter in the future and proposed negotiating with representatives from countries such as Qatar and the UAE to foster scientific collaboration.

Visit of Iran's Vice Minister of Science, Research & Technology Visit to KazNU

On May 23, 2023, Vice-Minister, Science, Research & Technology, the Islamic Republic of Iran, Mr. Vahid Haddadi-Asl, visited Al-Farabi KazNU. The meeting included discussions on mutual cooperation in science and education, reflecting shared interests.

KazNU has forged nine agreements with various leading Iranian institutes and universities, fostering a robust partnership.

Capacity-Building Activities

Establishment of 'Institute for the Brain' to Advance Neuroscience Research in the country

Dr. Almira Kustubayeva has been successful in establishing the Center for Cognitive Neuroscience at the Al-Farabi KazNU. This pioneering center conducts fundamental and applied research on the brain and will focus on studying neuromechanisms of emotional

and cognitive functions, as well as consciousness. The Brain Institute's scientific research aims to enhance rationality, develop brain-computer interfaces, emotional state processes, correct deviant development, and prevent cognitive function decline due to aging.

Opening of Northwestern Polytechnic University Branch at KazNU

In May 2023, during the state visit of President Kassym-Zhomart Tokayev of Kazakhstan to China, an agreement was reached to establish a branch of Northwestern Polytechnic University (NWPU) from the People's Republic of China at Al-Farabi Kazakh National University (KazNU).

On October 12, the branch of Northwestern Polytechnic University of China officially launched its operations at Al-Farabi KazNU. Housed on the first floor of the Technological Park of KazNU, the branch offers well-equipped facilities for young learners, including specialized laboratory classes for research endeavors.

Commencement of Second Stage of KazNU Town Construction

On April 13, 2023, a cornerstone ceremony, held marked the initiation of the second stage of construction for the KazNU campus at Al-Farabi KazNU.

According to the outlined plan, the expanded campus will feature academic buildings with a capacity of 14,700 seats, administrative buildings covering 12,000 square meters, a clinic spanning 35,000 square meters, a sports and wellness center occupying 3,000 square meters, housing for employees, an innovation center, a research center, a technopark, and dormitories providing 12,000 beds over a 3-hectare area for students.

On December 15, 2023, the foundation stone was laid for the construction of three modern dormitories.



R&D Activities and Events

Student Startup Increasing Production of Solar Energy

Students from Al-Farabi KazNU have developed VOLT software designed for monitoring solar energy. This innovative startup project is focused on maximizing energy yield. The VOLT software enables optimal placement of solar panels to enhance the absorption of solar energy. The anticipated impact of implementing this project is to harness maximum energy throughout the day. The overarching mission is to accelerate the transition of both the country and the world to clean, green energy.

Contribution to Space Exploration

At the onset of the academic year in Turkestan, KazNU inaugurated the UniSat Educational Hub on space technologies as part of a collaborative initiative with the United Nations Children's Fund (UNICEF). Al-Farabi Kazakh National University actively contributes to space research endeavors. The university's Science and Technology Park, equipped with specialized research apparatus for applied and fundamental studies in natural and technical sciences, dedicates special attention to nurturing and supporting innovative projects.

Research at the Brain Institute

Al-Farabi KazNU's Center for Cognitive Neuroscience is first of its kind interdisciplinary center of Kazakhstan that will conduct both fundamental and applied research on the brain, serving as a nexus that integrates natural sciences, humanities, and hard sciences. The scientific endeavors of the Brain Institute will focus on optimizing rationality and efficiency in thinking, fostering the development of brain-computer interfaces, enhancing processes of cognitive development and emotional states, rectifying deviant development, and preventing the decline of cognitive functions during aging, among other objectives.

Innovation in Filtration Material

Al-Farabi KazNU scientists have pioneered a breakthrough technology for crafting ultra-high molecular weight open-pored polyethylene through foaming under supercritical fluid conditions. This advanced material holds promise for enhancing the quality of domestic products by serving as a filtration medium for water, technical fluids, and food liquids. Currently, the project is progressing toward the final stages for commercialization.

New Filter Material Developed by KazNU Scientists

Scientists, led by Dr. Yerbol Ikhsanov, Head, Laboratory of Chemistry of Medicines and Organic Synthesis at Al-Farabi KazNU, have pioneered a technology for producing ultra-high molecular weight open-pored polyethylene through foaming under supercritical fluid conditions. This innovative material enhances water and liquid filtration, contributing to improved domestic product quality.

Experiments, inter alia, involving sunflower oil filtration have yielded promising results.

Astrophysical Project of KazNU

Scientists at Al-Farabi KazNU are working on a scientific project to study the physical phenomena occurring in the magnetospheres of astrophysical compact objects.

The goal of the project is analytical description and numerical modeling of charged particle dynamics inside the magnetospheres of compact objects, such as black holes and neutron stars. The results are planned to be applied to observe astrophysical phenomena, such as quasi-periodic oscillations from X-ray microquasars and acceleration of ultra-high energy cosmic rays from



TIMES HIGHER EDUCATION IMPACT RANKINGS 2023

supermassive black holes in active galactic nuclei.

Institutional Achievements

Times Higher Education Impact Rankings 2023

Al-Farabi KazNU has achieved a distinctive milestone by being the sole representative among Kazakhstani universities included in the Times Higher Education University Impact Rankings-2023 for all 17 Sustainable Development Goals (SDGs).

Out of the 1,591 universities worldwide featured in the Times Higher Education University Impact Rankings (THE IR), Al-Farabi KazNU secures a place in the Top 400 for several goals, including SDG 1 "No Poverty," SDG 5 "Gender Equality," SDG 6 "Clean Water and Sanitation," SDG 10 "Reduced Inequalities," SDG 14 "Life below water," and SDG 15 "Life on Land."

In the current rankings, Al-Farabi KazNU has notably enhanced its standing in SDG 5 "Gender Equality," progressing from the 401-600 range to the 301-400 range. Additionally, there is improvement in SDG 17 "Partnerships for the Goals," moving from the 801-1000 range to the 601-800 position.

QS Asia Ranking

According to the results of the international QS Asia University Rankings, published on November 8, 2023, Al-Farabi Kazakh National University ranked 29th among 856 participating universities. In the capital of Malaysia, Kuala Lumpur, from November 7 to 9, 2023, during the QS Summit on Higher Education in the Asia-Pacific Region 2023, a solemn ceremony was held to present the certificate of the QS Asia University Rankings to the Al-Farabi Kazakh National University.

According to the results of the international rating "QS Sustainability

Rankings", KazNU is among the 500 best universities in the world, and according to the indicator "Management Model" the university entered the top 200 best universities in the world.

AUR - 2023 Rating

According to the results of the Times Higher Education Asia University Rankings 2023 (THE AUR) rating, Al-Farabi Kazakh National University was the first among universities in Kazakhstan and Central Asia to enter the Top 351-400. At the same time, Al-Farabi KazNU improved its positions on a number of indicators and advanced by 50 positions.

Cooperation Agreements

SOAS, London: The University signed an MoU with School of Oriental and African Studies (SOAS), London, on January 31, 2023. The agreement aimed at mutually beneficial academic cooperation and exchange.

Canadian University, Dubai, Institute of Language and Literature of the Academy of Sciences of Mongolia: A Memorandum of Understanding was signed with the Canadian University, Dubai, in February 2023. Al-Farabi KazNU also signed agreement with the Institute of Language and Literature of the Academy of Sciences of Mongolia.





Turkic Academy: On March 30, 2023, a memorandum of cooperation was signed between KazNU and the Turkic Academy. The memorandum encompasses activities such as training, utilization of library resources, publishing and exchanging scientific work, as well as jointly organizing seminars.

Pennsylvania State University: Al-Farabi KazNU reached MoU with Pennsylvania State University, USA, during the visit of its officials, Prof. Stephen Barnes, Dean of Faculty of Law, and Prof. Dennis Jett, Professor of International Affairs, on April 11, 2023.

The two universities will collaborate in education and research, promote academic mobility for students and faculty, and implement a dual degree program.

Seoul Cyber University, Korea: On 20th May 2023, an MoU was signed with Seoul Cyber University, Korea. The partnership aims to strengthen ties between the institutions through academic cooperation, including joint programs, faculty and student exchanges, and collaborative research.

Jiaotong University for China and Central Asia Legal Studies Center: On July 02, 2023, a delegation headed by Prof. Shang Wenhua, Vice-President, Xi'an Jiaotong University, China, visited Al-Farabi KazNU and signed an MoU for establishment of the Center for Legal Studies of China and Central Asia.

Xinjiang Medical University (PRC), China: On December 14, 2023, an MoU was signed during a meeting with a delegation from Xinjiang Medical University (PRC), paving way for active academic and research initiatives. Another MoU was signed during a meeting with the President of Shandong Huayu Technological University (PRC) on December 18, 2023.

State East China University of Politics and Law (ECUPL), Shanghai: On July 24, 2023, a delegation from the State East China University of Politics and Law (ECUPL), Shanghai, visited Al-Farabi KazNU, where both institutions signed an MoU paving way for cooperation in double-degree education, joint research in environmental conservation, natural resource protection, and collaborative legal research projects between KazNU and ECUPL.

Avenues of cooperation were also explained in important meetings with senior official from:

1. China National Petroleum Corporation (CNPC), on April 4, 2023;
2. Federal Ministry of Education and Research, Germany, on March 16, 2023;
3. Southern Federal University (SFedU), Russia, on April 1, 2023.

International Academic Cooperation

France: From November 1 to 3, 2023, Al-Farabi Kazakh National University played host to a series of events as part of the VIII International Forum of Kazakh-French Higher Education Institutions. Dr. Prof. Zhansait Tuimebayev, Chairman of the Board and Rector of Al-Farabi KazNU, inaugurated the round table, highlighting a significant diplomatic development. In October 2023, President Kasym-Jomart Tokayev engaged in discussions with President of France Emmanuel Macron during the latter's official visit to Kazakhstan.

The leaders deliberated on strategies to fortify trade, economic, investment, and



energy collaborations between the two nations. A pivotal agreement was reached to extend cooperation into the realms of education and science on an international scale.

Indonesia: On November 9, 2023, a distinguished delegation, led by Dr. Fahmi Hamid, the Rector of Darussalam Gontor University in Indonesia, visited Al-Farabi KazNU, marking a significant milestone in the collaboration between these educational institutions. The discussions concluded with the signing of a memorandum outlining the parameters of cooperation and the identified areas of collaboration, symbolizing a commitment to a strengthened partnership between Al-Farabi KazNU and Darussalam Gontor University.

China: On November 15, 2023, Dr. Prof. Zhanseit Tuimebayev, Chairman of the Board and Rector of Al-Farabi KazNU, convened a meeting with a high-profile delegation led by Dr. Jilili Abduwaili, the Deputy Chairman of Xinjiang Institute of Ecology and Geography of the Academy of Sciences of the People's Republic of China. The meeting led to joint commitment to expedite and ensure successful launch of this collaborative initiative.

Japan: On November 20, 2023, Al-Farabi KazNU hosted a visit of Professor Tomonobu Sakurai from Yokohama

Toin University in Japan. Both parties explored opportunities to strengthen cooperation in various scientific domains, including engineering, medicine, law, international studies, physical education, health, and sports science. The meeting resulted in signing of a memorandum of understanding on advancing academic exchange and research initiatives between the two institutions.

Germany: As part of the “New Perspectives and New Ties: Georgia, Kazakhstan, and Uzbekistan” conference held in Bochum, Germany, on November 28, Dr. Prof. Zhanseit Tuimebayev, Chairman of the Board and Rector of Al-Farabi KazNU, engaged in a significant meeting with Professor Jorg Roshol, President of the European School of Management and Technology (ESMT). Discussions resulted in an agreement to implement student and teacher exchanges, introduce dual-diploma programs, and establish joint professional development programs for managers.

China: On December 8, 2023, Al-Farabi KazNU hosted Exhibition of People's Republic of China (PRC) Universities. This collaborative initiative was organized by KazNU, the Scholarship Council of the PRC, and the Consulate General of the PRC in Almaty. Around 45 top universities from China participated in the exhibition. On the sidelines of the Exhibition, Al-

Farabi KazNU formalized collaborations by signing a memorandum of cooperation and understanding with two Chinese universities.

Collaborative Project on SDGs with Hong Kong Polytechnic University:

Researchers from Al-Farabi KazNU and Hong Kong Polytechnic University joined forces in an international project aimed at advancing collaborative action research focused on children, youth, and families living in poverty in Kazakhstan and Central Asia. This initiative aligns with the Sustainable Development Goals (SDGs) and seeks to address the pressing issues associated with poverty.

The collaborative project holds significant potential for enhancing social policies, education, and practices related to children, youth, and impoverished families in Kazakhstan and Central Asia. The project is already underway, with three social service units in Almaty serving as practical sites.

Other International Collaborations

of KazNU: Following the results of the Central Asia-China Forum of Cooperation in Higher Education “The Fourth Industrial Revolution: Integration of Industry and Education”, held at Al-Farabi KazNU, heads of participating universities signed the consensus “Almaty” and adopted a number of initiatives. The main

purpose of signing the document is to develop partnership between universities of China and Central Asia, integration of joint research works, expansion of the sphere of academic mobility of students, systematization of educational programs.

National Mathematical Centre (NMC), Nigeria

The National Mathematical Centre (NMC), Nigeria, is an inter-university organization that promotes research and capacity-building in mathematical sciences.



NMC was established in 1989, inter alia, to train and develop high quality human resource in Mathematical Sciences, for enhancing students' performance in Mathematics and Mathematical Sciences at all levels of Nigerian education system.

Capacity Building and R&D

A workshop was held at the National Mathematical Centre Abuja, with the theme of "Foundation Postgraduate Course in Emerging Trends in Software Engineering Principles and Programming". The event attracted participants from diverse backgrounds and expertise,



fostering collaborative learning in artificial intelligence (AI), machine learning, cybersecurity, and Agile methodologies for problem-solving.

The programme covered both training sessions and group projects, with each project geared towards addressing a specific real-world challenge. Three groups were formed to analyze and propose solutions to those problems. The topics, objectives, and expected outcomes of each group are as follows:

Group A: Artificial Intelligence-Based Enhanced Data Capturing and Verification System to Support National Identity Database Integrity

Objective: To develop a model for National Identity Management Commission (NIMC) that handles amputee verification before enrollment, detects unique patterns in identical twins and minors, and be able

to differentiate between finger prints and toe prints.

Expected Outcome: Building a model that can differentiate fingerprints from toeprints, differentiate facial landmarks in identical twins and minors, and prevent duplicate/multiple registrations by single individuals.

Group B: Alert System for Safety in Taxi Rides

Objective: To design a real-time security alert system capable of detecting and responding to security threats during taxi rides.

Expected Outcome: Development of a security alert system capable of analyzing conversation patterns, sentiment, and language to detect security threats during taxi rides while ensuring all ethical and privacy concerns are considered.

Group C: Alert Monitoring System on Bank Accounts

Objective: To design and implement a mobile application capable of providing alerts for any suspicious activities on bank accounts.

Expected Outcome: Building an application that will effectively detect, report, and raise alarms for suspicious/ unauthorized charges from bank accounts while ensuring security and compliance with relevant regulations.





Technologies Acquired

NMC acquired and implemented the Library Automation Software “New Generation Library” (NewGenLib). This replaces KOHA, which was hitherto used to manage the library cataloguing and user access. NewGenLib addresses the ever increasing sophistication of library cataloguing (including bar coding of books), circulation and the ease of access of our Mathematical library resource by our wide range of Researchers and library Users, most of whom are online. It is also possible to access other library worldwide, such as Library of Congress, for resource sharing.

International Awards

Pan African Mathematics Olympiad (PAMO, 2023)

Candidates trained and presented by the National Mathematical Centre, Abuja, had two gold medals in the year 2023 edition of the Pan-African Mathematics Olympiad. The Mathematics Olympiad took place in Kigali, Rwanda, May 12 – 22, 2023. The special training organized by the National Mathematical Centre to prepare and present candidates for the international mathematics Olympiads among others is the Centre's mathematical and science talent hunting effort.

Other Undertakings

The International Day of Mathematics, IDM (Pi-day) on 14 March, 2024 was organised in the National Mathematical Centre, Abuja. The theme for the year was “Playing with Math”. Mathematics is crucial to technology development which is central to human wellbeing.

The events which took place at NMC premises helped raise awareness on the importance of Mathematics in our day-to-day activities. Other activities to mark the day included a press conference and Math walk among others.

COMSATS University Islamabad (CUI), Pakistan

COMSATS University Islamabad is a public university established in year 1998 as (formerly) COMSATS Institute of Information Technology. – flagship project of the Commission of Science and Technology for Sustainable Development in the South (COMSATS). The University has now grown exponentially with seven physical campuses and six faculties. It has a student body of over 34,646 students including 360 International students, teaching faculty of 2,100+ (including



CUI Key Statistics 2023	
Students	34,646
Graduates	98,942
Faculty	2100+ including 1120 PhDs
Staff	2929
Departments	22
Programs	105
Impact factor publications recorded in national/ international journals	2716

1,120 Ph.D.) and offering more than 105 programmes in 22 academic departments at undergraduate and postgraduate levels. Moreover, in TIMES Higher Education (THE) World Universities Rankings 2023, CUI has been placed among 601-800 world's best universities, and ranked 6th in Pakistan in Federally Chartered Universities. Besides, it was also ranked at #301-400 in THE Engineering & Technology, #301-400 in Business and Economics, #301-400 in Computer Science, #501-600 in Life Science and #401-500 in Physical Sciences subject rankings 2023. Times Higher Education has ranked COMSATS University Islamabad at 151-200 in Young University Rankings 2023. Besides, it was ranked 137th in QS Asian Universities Rankings 2023.

Major Research Activities

To attract the young faculty into the research mainstream, a CUI Research Grant Program (CRGP) is in place to award grants up to Rs. 300,000/- for research proposals of 1-2 years duration.

CUI has developed in-house capacity to provide IP support to its researchers and file patent applications locally and internationally.

Medical Image Processing Research Group, ECE Department

The Medical Image Processing Research Group (MIPRG) was established in 2013 under the visionary leadership of Dr.



Prof. Dr. Sajid Qamar

Rector

COMSATS University Islamabad (CUI), Pakistan

COMSATS University Islamabad (CUI) takes pride in its integral collaboration with the COMSATS Secretariat, actively contributing to societal progress through impactful academic and research endeavors. CUI's commitment to translating academic and industrial research into tangible economic advantages has further solidified its alliance with the COMSATS Network.

We at COMSATS University are committed to fostering an environment that encourages creativity, critical thinking, and a passion for lifelong learning. Our dedication to academic rigor and nurturing well-rounded individuals who are not only equipped with technical skills but also possess a strong sense of ethics and social responsibility.

In this context, COMSATS has played a significant role in enhancing capacity building in emerging fields at CUI. Furthermore, CUI's strategy for global engagement focuses on tackling worldwide challenges by fostering partnerships with Southern countries. CUI has established collaborations with prominent organizations such as the Association of Commonwealth Universities (ACU), TWAS, D-8 Secretariat, ICESCO, and COMSATS to attract students from developing nations. This initiative aims to broaden the international student community at CUI and extend its global reach.

CUI extends a warm invitation to COMSATS Member States to avail themselves of its ongoing opportunity, comprising 100 post-graduate scholarships, and collaborate in achieving the Sustainable Development Goals.

The focus of CUI on advanced biomaterials, climate change, smart and micro grids, sustainable energy, big data, and artificial intelligence demonstrates a forward-looking approach to addressing current and future global challenges. These areas of focus are crucial for the advancement of science and technology, and they align well with contemporary issues.

Finally, CUI appreciates the dedicated efforts of the COMSATS Secretariat, collaborating organizations, and Members of the Network of Centers of Excellence, and anticipates enhancing our collaborative efforts.

Impact factor publications	3197
Research projects	121
Travel Grant applications	18
Seminar/Workshop application	05
Research projects	29
Travel Grants	07
Funded seminar/workshop	01

Hammad Omer, a Tenured Associate Professor at the Department of Electrical and Computer Engineering, and Head, International Office at COMSATS University Islamabad. The primary aim of MIPRG is to spearhead pioneering research endeavors that address both the national and global challenges within the realm of Medical Imaging, with a specific

	Pakistan	European Patent Office (EPO)	Total
Patents Filed	2	-	2
Patents Granted	1	1	2

emphasis on Magnetic Resonance Imaging (MRI).

Six (6) Papers of Medical Image Processing Research Group (MIPRG), ECE Department, CUI were presented at the 2023 ISMRM & ISMRT Annual Meeting & Exhibition, 03-08 June 2023, Toronto, Canada. This is the flagship conference

of International Society of Magnetic Resonance in Medicine, USA (ISMRM) and is a highly competitive conference where more than 6,000 papers were submitted this year and each paper got reviewed by many international reviewers.

Capacity-Building Activities

The Office of Research Innovation and Commercialization (ORIC) maintains a center for entrepreneurial training and professional development i.e., ORIC-PD.

In the year 2023, ORIC-PD has conducted 06 training programs for Professionals/ Researchers and staff.



During 2023, Sixty-Seven (67) renowned researchers, diplomats, delegations, students and faculty members visited CUI. Similarly, twelve (12) individuals, delegations and faculty members also proceeded abroad.

International Collaborations

Foreign Academic Linkages

Multiple areas of collaboration were conceived through the student and faculty exchange, mobility, international admissions, fellowships, joint research projects, publications, conferences, workshops, trainings and other collaborative activities.

During the reporting period, the following five (05) Academic and Scientific Cooperation agreements were signed by CUI. These have gained paramount significance for internationalization. The

internationalization strategy of CUI has set future direction, inter alia, for making more use of potential collaboration opportunities and plans to add significant number of strong, multifaceted collaborations with the leading universities and research centers of the globe.

Exchanges and Mobilities

An Erasmus+ partner university of CUI, Usak University, Turkiye, organized its 4th International Staff Week from May 29 to June 2, 2023, on the topic of Quality Assurance in Education & Research Collaborations. The event provided an opportunity to know more about USAK university, its exchange programs and international activities. An opportunity to meet departmental contact persons and witness cultural activities were also part of the program.

From CUI, Ms. Shazia Shabbir, Senior

Program Officer, Quality Enhancement Cell and Mr. Rafaqat Ali Uppal, Assistant Program Officer, International Office, attended the event.

In the framework of the Erasmus+ Programme-KA107, coordinated by the University of Tuscia (Italy) and funded by the European Commission, a Staff Week (SW) was held at the University of Tuscia in Viterbo from 22 to 26, May 2023.

From CUI, Prof. Dr. Shamsul Qamar, In-charge Islamabad Campus, Head ORIC and HoD Department of Mathematics and Ms. Samira Shah, Senior Program Officer, International Office attended the training.

Building Internationalisation in Pakistan (B-International)

CUI is one of the key partners in the 'Building Internationalization in Pakistan (B-International)' project - a project co-funded by the European Union under the Erasmus+ Programme, Key Action 2 Capacity Building in Higher Education. Other partners are Cardiff Metropolitan University, United Kingdom; Ecole Centrale De Nantes, France; University of Bologna, Italy; University of Salamanca, Spain; National Universities of Science and Technology, Pakistan; Lahore University of Management Sciences, Pakistan; and Pakistan Institute of Fashion and

S #	Training/Workshop Title	Date
1.	Data Analysis and Machine Learning	14-15 February, 2023
2.	Data Analysis for Next Generation Sequencing (NGS)	14-15 March, 2023
3.	Data Analysis for Next Generation Sequencing (NGS)	19-20 October, 2023
4.	Data Analysis and Machine Learning	8-9 December, 2023
5.	Role of Faculty as a Nation Builder: Developing Entrepreneurs for the future	15 December, 2023
6.	Structural Equational Modelling using SMART PLS 4.0	20-21 December, 2023

S #	University	Country
1.	Cardiff Metropolitan University	UK
2.	Federal University of Juiz de Fora	Brazil
3.	Curtin University	Australia
4.	University Tun Hussein Onn Malaysia	Malaysia
5.	University of Applied Sciences and Arts Dortmund	Germany



Design, Pakistan. The British Council is an associate partner. The three-year project examine traditional components of internationalisation such as mobility, TNE and international research, but will also include more contemporary concepts, such as developing international campuses that explore the wide tapestry of international cultures.

B-International Toolkit Launch Event

CUI hosted a Rector/Vice Chancellor Level dissemination event on November 30, 2023, showcasing the successful launch of the 'B-International Toolkit.' As a key partner in the 'Building Internationalization in Pakistan (B-International)' project, COMSATS University Islamabad played a pivotal role in advancing the internationalization

strategies.

'B-International Toolkit' is a comprehensive resource that encapsulates strategies, professional development sessions, online learning programs, and the establishment of Centers for Internationalization on our campus. This toolkit empowers our academic community to navigate the challenges and embrace global opportunities.

Document of Understanding with Cardiff Metropolitan University UK during a B-International Visit

CUI signed a Document of Understanding (DoU) with Cardiff Metropolitan University (Cardiff Met), a Wales-based university established in 1865 in UK on January 31, 2023. The DoU was signed

during a high-profile signing ceremony during the B-International Consortium Meeting Global Collaboration Dinner, hosted by the President and Vice Chancellor of Cardiff Met, Professor Cara Aitchison. According to the DoU, the potential collaborations will be in the following areas:

- Research collaboration leading to joint projects and co-authored publications;
- Staff exchanges to enable co-operation in teaching, workshops and conferences, research enhancement, and access to facilities;
- Student exchange to support the growth of intercultural competencies and soft skills amongst the student population of both the universities;
- Partnership opportunities for further Capacity Building Initiatives; &
- Post Doctorate Fellowships.

International Students

Admission was offered to these students in different undergraduate, graduate and postdoctoral programs under CUI's admission program for international students as well as under various scholarship programs in association with Association of Commonwealth Universities (ACU) for Queen Elizabeth Commonwealth Scholarship programs, The World Academy of Sciences (TWAS) for CUI-TWAS fellowship programs and Higher Education Commission (HEC) Pakistan, different scholarship programs which include Allama Muhammad Iqbal Scholarship program for Afghan Students, HEC Scholarship program for Sri-Lankan students and HEC scholarship program of Least Developed Countries (LDC) of Organization of Islamic Countries (OIC).

For admission procedure, scholarship information and application submission please visit: <http://ww2.comsats.edu.pk/internationalstudents/>

International Students 2023	
New international students	26
Countries	Afghanistan, Algeria, China, Ethiopia, Egypt, Sri Lanka, Somalia, Kenya, Tanzania, Yemen, and USA
Areas of enrollment	Electrical Engineering, Mathematics, Meteorology, Management Sciences, Physics, Pharmacy, Environmental Sciences and Bio-sciences departments.
Students graduated	50



National and International Recognition

- Sitara-i-Imtiaz in respect of Prof. Dr. Jamshed Iqbal, Centre of Advanced Drug Research (CADR), CUI Abbottabad Campus in the field of science.
- Tamgha-e-Imtiaz in respect of Dr. Hammad Omer, Associate Professor, Department of Electrical and Computer Engineering, CUI Islamabad Campus in the field of Engineering.
- Tamgha-e-Imtiaz in respect of Dr. Muhammad Yar, Associate Professor at IRCBM in the field of Education (Chemistry)
- Pride of Performance Award in respect of Ms. Farrah Mehmood Khan, Associate Professor, Department of Art and Design, CUI Islamabad Campus in the field of Arts.

Also, an undergraduate student researcher of MIPRG (Muhammad Atif) also won ISMRM Award to attend this conference, which includes waiver of the conference registration cost (\$500) and a cash award of \$1750.

Engr. Shafique Malik (an HEC-PhD scholar at MIPRG working under the supervision of Dr. Hammad Omer (T.I)) joined the world-renowned 'Cardiovascular Magnetic Resonance

Imaging (CMR)' lab at Department of Biomedical Engineering, Ohio State University, Columbus, USA in March 2023.

International Center for Chemical and Biological Sciences (ICCBS)-Pakistan

One of the leading academic research institutions in Pakistan with a strong international standing, the International Center for Chemical and Biological Sciences (ICCBS) serves as the Centre of Excellence of COMSATS, TWAS, WAITRO, OIC and UNCSTD. Established in 1966, the Centre has also been serving as a UNESCO Category II institution since 2015. Recently, UNESCO Chair on 'Medicinal and Bio-organic Natural Product Chemistry' has been established at ICCBS.



Capacity Building

On March 7-8, 2023, a two-day conference of the Islamic World Academy of Sciences (IAS) on 'Challenges to Promote Science & Technology for Socio-Economic Development in OIC Countries' was held at ICCBS-Pakistan. The conference was jointly organized by ICCBS, IAS and

COMSTECH. Eminent scientists from various countries attended the conference.

A three-day workshop on 'Stem Cells in Skin Regeneration' was organized in partnership with Sindh Innovation Research and Education Network (SIREN) in February 2023. The workshop was held at ICCBS' Dr. Panjwani Center for Molecular Medicine and Drug Research (PCMD), and had participation of more than 70 students, researchers and medical doctors from various universities of Pakistan.

The 8th International Symposium-Cum-Training Course on Molecular Medicine and Drug Research was organized by Dr. Panjwani Center for Molecular Medicine and Drug Research (PCMD), of ICCBS from 27th to 30th November 2023.

The four-day event was inaugurated by Caretaker Minister for Health, Social Welfare, and Public Health Engineering, Government of Sindh Province of Pakistan, Dr. Saad Khalid Niaz. Over 600 scientists, including 70 scientists from 26 countries, including Australia, Bangladesh, Burkina Faso, Cameroon, Canada, China, Greece, Hungary, Indonesia, Iran, Italy, Japan, Jordan, Kazakhstan, Malaysia, Nepal, Nigeria, Oman, Spain, Sweden, Switzerland, UAE, Uganda, UK, USA, Yemen, attended the international symposium held with an aim to bring together the leading experts in the field of molecular medicine.

Scientists at the international symposium highlighted the role of natural compounds in the treatment of cancer and various other diseases, as well as how natural products offer a diverse source of bioactive lead compounds for drug development, especially in the area of cancer therapy.

ICCBS-Pakistan held 2-month long 16th Summer Internship Program-2023 in science and technology during June and July 2023.



Collaborations

Pak-Sino Sci-Tech Cooperation on Medicinal Plants

Prof. Dr. Liu Xinmin, Member, Expert Advisory Panel on Traditional Medicine, World Health Organization (WHO), visited ICCBS, University of Karachi on, 14th February 2023. Dr. Xinmin highlighted the importance of the Chinese-Pakistan Cooperation on Medicinal Plants, especially in connection with the launch of Pakistani herbal seeds into outer space in June 2022 and returned them safely to Earth in December. He said that the hybrid seeds will help scientists to develop new varieties which can help feed the growing population and also treat incurable diseases as China and Pakistan have long history of using traditional medicines.

MoU with SBCG-Karachi

ICCBS signed an MoU with the Systems Biology and Computational Genomics (SBCG), Pakistan on May 30, 2023 to develop academic, scientific, and technical cooperation between both the Institutions. Prof. Dr. M. Iqbal Choudhary, Director ICCBS, and Mr. Muhammad Abbas Ali Iqbal, SBCG CEO, signed the MoU on behalf of their institutions.

MoU with MoITT, Pakistan

An MoU was signed between ICCBS and Ministry of Information Technology and Telecommunication (MoITT), Pakistan, for creating the Health Incubator and Software Technology Park within the ICCBS, UoK. The signing ceremony took place at Prof. Salimuzzaman Siddiqui, ICCBS, University of Karachi on Tuesday, 1st August 2023.

Research and Development

PCMD-ICCBS Lab Gets Prestigious Certification

Federal Ministry of Science and Technology, Government of Pakistan, awarded to the Sindh Forensic DNA and Serology Laboratory (SFDL) of the Dr. Panjwani Center for Molecular Medicine and Drug Research (PCMD) a 'Certification of Accreditation' (ISO/IEC 17025:2017). The Center is one of the specialized institutions of ICCBS. After the accreditation, PCMD has become the first forensic laboratory in the province Sindh to attain this prestigious recognition.

Moreover, the SFDL is the only ISO-accredited forensic lab in the country whose scope of accreditation covers the entire process of forensic DNA analysis.

Cotton Production First Time in Karachi, Pakistan

ICCBS has successfully cultivated multiple generations of cotton in Karachi with low energy costs in a year. This is the first time Organic Cotton has been grown in Karachi, and this experimental production can be expanded with the support of the federal and provincial governments in Sindh and Balochistan. The optimization of weather conditions has provided the ICCBS research team, working under the supervision of Dr. Shahid Mansoor, at the



Biotechnology Wing of the HEJ Research Institute of Chemistry an opportunity to grow multiple generations of cotton in a year.

Awards and Honors

Faculty's New High-Profile Appointments

The Royal College of Physicians of Edinburgh elected Prof. Dr. M. Raza Shah, the senior Professor at the ICCBS as an honorary fellow.

The Pakistan Academy of Sciences (PAS) elected Prof. Dr. M. Raza Shah, the senior professor at the ICCBS, as Secretary of the Sindh Chapter of the Academy.

The American Chemical Society (ACS) elected Dr. Muhammad Imran Malik, Associate Professor at the International Center for Chemical and Biological Sciences (ICCBS), University of Karachi, as the Chair of Pakistan Chapter of the Society for two years (2024-2025).

The World Academy of Sciences (TWAS) elected the prominent Pakistani scientist Prof. Dr. Khalid M. Khan as TWAS Fellow.

Second prize at the 3rd Commonwealth Chemistry Posters Events

A Ph.D. student of ICCBS' H.E.J. Research Institute of Chemistry, Ms. Humira Karim, won the 2nd prize at the 3rd Commonwealth Chemistry Posters event held online in September 2022. The event was organized by the Federation of Chemical Sciences Societies, UK.

41st in the World in Chemistry

Research.com has revealed that the University of Karachi holds the distinction of having the largest count of leading researchers in Pakistan. Four scientists associated with the university have been prominently listed in Research.com's Chemistry ranking.

Research.com has positioned Pakistan at the 41st spot worldwide with 12 scholars in the field. Dr. Iqbal Choudhary, Director ICCBS, has been identified as the top researcher in Pakistan by Research.com, with an impressive D-index of 74.

Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh

Bangladesh Council of Scientific and Industrial Research (BCSIR) is a non-profit multidisciplinary public-sector research organization established in 1973. The main task of BCSIR is to foster R&D sector of the country.



BCSIR has integrated 138 (out of 140) new R&D projects for the year 2023. About 278 R&D initiatives of both basic and applied research are currently being carried out at BCSIR to advance various fields of science and technology development. Additionally, the Council is currently executing five Annual Development Projects (ADP) aimed at enhancing its research and development capabilities and other facilities.

Other activities of the Centre included:

- Development of an affordable 'BCSIR Covid-19 Testing Kit' for the first time in Bangladesh' that could be transferred to the member states of COMSATS;
- Dr. Abdul Gafur, Principal Scientific Officer, BCSIR awarded the 'Bangabandhu Gold Medal Award, 2023';
- Professor Dr. Md. Aftab Ali Shaikh reappointed as the Chairman of BCSIR for the next three years;
- More than 40 research papers published in different international journals in July-August, 2023.

Industrial Technology Institute (ITI), Sri Lanka

Established in 1955, the Industrial Technology Institute (ITI) comprises of research and development divisions, and technical services divisions.

The Institute conducts multidisciplinary scientific and industrial research on technology-transfer for rapid industrial development.



Capacity Building: Organic Agriculture Testing Laboratory Upgraded

With financial assistance from Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (a German development agency), ITI, Sri Lanka, upgraded its existing laboratory. The Institute aims to offer accredited and internationally recognized analytical services for organic agriculture stakeholders, including testing of organic fertilizer, soil, water, residue analysis, and nutrition labeling.

Awards and Honors

At the 9th Biennial Conference of Science and Technology (BICOST), held on March 23-24, 2023, in Colombo, the Industrial Technology Institute (ITI), Sri Lanka, received the prestigious 'Best Science and Technology Institute Award' for the period 2017 to 2021. This prestigious award administered by the National Science and Technology Commission (NASTEC), Sri Lanka, takes into account S&T performances of Sri Lankan institutions.

Industrial Research and Consultancy Centre (IRCC), Sudan

Industrial Research and Consultancy Centre (IRCC), Sudan, is an R&D and consultancy centre that was established with the assistance of United Nations Industrial Development Organization (UNIDO). It is affiliated with the Ministry of Industry, Government of Sudan.



Capacity Building

IRCC and the UNESCO Chair on Transfer of Technology organized a three-day training workshop, titled 'Investment Projects Preparation and Appraisal and

Applications of COMFAR Software' from 30th January to 1st of February 2023.

The Leather Research & Technology Center of IRCC organized 'Foot-wear and leather goods manufacturing training workshop', on January 16-31, 2023, for selected group of local communities interested in manual manufacturing of leather products in Nile River State – a northern state in Sudan.

The Scientific and Technological Research Council of Türkiye (TÜBİTAK), Türkiye

Established in 1963, the Scientific and Technological Research Council of Türkiye (TÜBİTAK) became COMSATS Centre of Excellence in 2019 in lieu of its Centre – TÜBİTAK Marmara Research Centre (MAM). Established in 1963, TÜBİTAK is an autonomous institution of the Prime Ministry. TÜBİTAK has the stated goal to develop science, technology and innovation (ST&I) policies, as well as support and conduct research and development.



TÜBİTAK remains a key institution in supporting the global transformation process and driving force behind science and technology. It plays a leading role in the RDI (Research, Development, and Innovation) ecosystem, supporting Türkiye's 2022 goals. With a strategic approach of "working and succeeding together", focused on co-creation and new knowledge generation, TÜBİTAK fosters innovative solutions for sustainable development. This approach considers global risks, challenges, opportunities, as well as national needs and priorities.

In 2023, TÜBİTAK celebrated its 60th anniversary during the Centennial Anniversary of the Republic of Türkiye and continued to lead the net-zero target

of Türkiye by 2053. Support to researchers and scientists in the R&D and innovation ecosystem increased while raising young human resources for addressing challenges.

TÜBİTAK mobilised the R&D and innovation ecosystem through High Technology Platforms that strengthen a strategic co-creation based collaboration approach involving 73 universities, 109 private sector firms, 16 public R&D centres, 1623 researchers, 726 scholars and 113 collaborations in 252 projects developing 102 targeted technologies. TÜBİTAK presided over the World Association of Industrial & Technological Research Organizations (WAITRO) and provided leadership in international forums on science and technology. TÜBİTAK Researcher Centres, Institutes and R&D Support Units also exhibited multiple advances, including the establishment of the Vaccine and Drug Development Campus of TÜBİTAK and new progress in the Food Innovation Platform of Türkiye.

Further, major developments took place in informatics and information security, space technologies, rail transport technologies, defence industries, metrology, supercomputing and academic networks, industrial management, fundamental sciences, space observation, and test laboratories.

Celebration of the 60th Anniversary of the Establishment of TÜBİTAK

The Scientific and Technological Research Council of Türkiye (TÜBİTAK) celebrated its 60th anniversary on July 24, 2023. As the flagship institution for science and technology in the country and internationally, TÜBİTAK has played a crucial role in strengthening research capabilities, advancing science, and fostering a culture of scientific inquiry, technological advancement, and innovation, now through co-creation based collaboration that is mobilising the innovation ecosystem, including



Prof. Hasan Mandal

President

The Scientific and Technological Research Council of Türkiye (TÜBİTAK), Türkiye

As we conclude a remarkable year 2023, we respectfully mark the 100th anniversary of the Republic of Türkiye and the 60th anniversary of the foundation of The Scientific and Technological Research Council of Türkiye (TÜBİTAK), a leading institution in science and technology internationally. These milestones evoke a sense of reverence and responsibility as we reflect on our nation's journey and achievements and continued outlook for achieving together with collaborating institutions.

The Twelfth Development Plan of Türkiye emphasizes the vision of “a stable, strong and prosperous Türkiye that is environmentally friendly, resilient to disasters, produces high value with advanced technology and shares income fairly in the Century of Türkiye.” Science, technology, and innovation underpins the aim of competitive production based on the green and digital transition as well as the realisation of our National Technology Move. We remain steadfast in our vision to address the myriad of environmental, economic, geopolitical, and societal challenges we face regionally and globally.

The complexities and dynamics of these challenges, including extreme weather events, critical change to Earth systems, biodiversity loss, and natural resource shortages, underscore the pivotal role of science, technology, and innovation. Embracing a collaborative approach of “working together, learning together, and succeeding together,” we tackle these issues multi-dimensionally, recognizing that traditional approaches are inadequate for solving such multifaceted problems. As part of the Centres of Excellence Network of The Commission on Science and Technology for Sustainable Development in the South (COMSATS), TÜBİTAK is committed to deepening our collaboration towards addressing challenges together. After attaining notable accomplishments aligned with our goals for the year 2023, we are now focused on realizing our visions for 2053 and 2071 for a more sustainable, prosperous, and resilient future. Our High Technology Platforms for co-creation based collaboration involve about 200 institutions, 1623 researchers, 726 scholars, and 113 collaborations in over 250 projects with over 100 targeted technologies. We foster collaboration among different disciplines, raise co-creation based human resources, and bridge the basic sciences, engineering, health sciences, and social and humanities sciences. Inclusive, innovative solutions involving universities, industries, public entities, and society at large with a widespread, joint effort can provide the means to overcome present and future challenges.

Many new bilateral scientific and technological cooperation agreements were signed with research and development (R&D) institutions in countries in Asia, the Middle East, Balkans, and Europe – reaching 103 institutions across 72 countries. In the scope of these agreements, 27 different bilateral calls were opened with 14 countries in 2023. Our cooperation with international organizations, including Developing Eight Organization for Economic Cooperation (D-8), The Organisation of Islamic Cooperation (OIC), and COMSATS strengthened in 2023 with joint calls between member countries and 130 new successful projects were funded by the EU Horizon Europe Program in 2023, which shows Türkiye's active participation and contributions in the international R&D and innovation ecosystem.

This Annual Report summarizes our 2023 activities and underscores our dedication to ongoing scientific and technological cooperation with COMSATS. Some of the highlights include raising young human resources for addressing challenges, mobilizing the R&D and innovation ecosystem through High Technology Platforms, presiding over the World Association of Industrial & Technological Research Organizations (WAITRO), and providing leadership in international forums on science and technology. Moreover, TÜBİTAK Research Centres, Institutes and R&D Support Units exhibited multiple advances, including in vaccine and drug development, informatics and information security, space technologies, rail transport technologies, defence industries, metrology, supercomputing and academic networks, industrial management, fundamental sciences, space observation, and test laboratories.

We look forward to taking these advances forward in the path ahead and working together with COMSATS in the Centres of Excellence Network in developing solutions for a more sustainable future.



new platforms. TÜBİTAK has been instrumental in nurturing the next generation of scientists, researchers, and entrepreneurs. The impact of these efforts is evident, as TÜBİTAK provided support to over 24,202 projects since 2002. Additionally, TÜBİTAK supported 2,140 entrepreneurs with an Entrepreneurship Capital Support Program.

Looking ahead, TÜBİTAK aims to strengthen Türkiye's position in key technologies, such as artificial intelligence, big data and cloud computing, cybersecurity, biotechnological drugs, advanced materials and semiconductors, and advanced photonics and quantum technologies. More details at: <https://tubitak.gov.tr/en/node/14594>

Green Transformation Towards the Net-Zero Target by 2053 of Türkiye

In 2023, TÜBİTAK took significant strides in spearheading the green transformation in Türkiye. Through strategic initiatives and collaborations, the institution prioritized combating climate change and promoting sustainable development.

Important national initiatives and collaborations in this area were launched. First, the TÜBİTAK Clean Energy, Climate Change, and Sustainability Research Institute was launched on January 31, 2023. This research institute aims to actively coordinate R&D efforts to combat climate change and promote sustainability.

Second, Türkiye's net-zero emissions target was strengthened with dedicated mobilisation of the R&D and innovation ecosystem. With commitment to achieving net-zero carbon emissions by 2053, TÜBİTAK supports various projects and initiatives that are aligned with the Twelfth Development Plan of Türkiye launched in 2023 to cover the upcoming years 2024-2028. The vision of the Twelfth Development Plan is ensuring "a stable, strong and prosperous Türkiye that is environmentally friendly, resilient to disasters, produces high value with advanced technology and shares income fairly in the Century of Türkiye" as represented in Figure 1.

Among important developments in 2023, the first Hydrogen Valley and Domestic

Green Hydrogen Plant was launched. Projects iclding the HYSouthMarmara Hydrogen Valley and the Southern Marmara Hydrogen Coast Platform took place as pioneering efforts in green hydrogen production. Moreover, in the area of developing clean technologies, TÜBİTAK Research Centres and Institutes made strides in green technology development, including Türkiye's first domestic electrolyser system and a unique diesel engine family for rail vehicles.

From the perspective of international collaboration for sustainability, TÜBİTAK actively participated in international forums in the area of science and technology as well as initiatives promoting sustainability, including the G20 Research and Innovation Initiative Summit. More



Figure 1. Representation of the Vision of the Twelfth Development Plan of Türkiye



details at: <https://tubitak.gov.tr/tr/haber/yesil-donusumun-oncu-kurumlarindan-tubitak-2023-yilinda-da-bu-alanda-onemli-adimlar-atti>.

In this scope, TÜBİTAK has bilateral scientific and technological agreements with 103 institutions that are spanning 72 different countries around the world.

Raising Young Human Resources for Addressing Challenges

In 2023, young human resources were supported by TÜBİTAK through various scholarship and support programs with the purpose of fostering scientific curiosity and developing future scientists. Turkish students achieved remarkable success in international Olympiads, winning 75 medals and 4 Honourable Mentions. Notably, Türkiye ranked second in the European Girls' Mathematical Olympiad and TÜBİTAK hosted prestigious competitions.

TÜBİTAK organized 14 out of 41 competitions at TEKNOFEST, in a number of modern technological topics. These competitions and related events showcased young talent in various fields, fostering innovation and skill development. TÜBİTAK's efforts to cultivate future technology leaders extends to high schools through project-based education at the TÜBİTAK Science High School. TÜBİTAK's commitment to science education reached new heights with

programs like Deneyap Technology Workshops, reaching over 17,000 students. The modules include those on robotics and coding, design and production, material science and nanotechnology, advanced robotics, electronic programming and Internet of Things, software technologies, cybersecurity, and critical thinking and entrepreneurship. Through the United Nations Technology Bank, the Technology Makers Lab as an international version of Deneyap Technology Ateliers is also broadening its reach in closing the digital divide and enhancing access to new technologies.

Innovative Project competitions, such as the High School Students Polar Research Projects Competition with the finals at TEKNOFEST demonstrate TÜBİTAK's dedication to hands-on learning. TÜBİTAK's involvement in research processes through programs like STAR Internship Programme and the Industrial PhD Fellowship Programme underscores a dedicated focus on integrating young human resources into R&D processes in the innovation ecosystem. Another one of TÜBİTAK fellowship programmes is the TÜBİTAK – TWAS Postgraduate and Postdoctoral Fellowship Programmes implemented in cooperation with TÜBİTAK and UNESCO – The World Academy of Sciences (TWAS), it aims to provide financial support to international researchers from developing countries who have received their PhD or are still registered to a doctoral programme abroad

in the natural and the related applied sciences. <https://www.tubitak.gov.tr/en/announcements/the-scientific-evaluation-results-of-20221-2216b-tubitak-twas-postgraduate-and-postdoctoral>

TÜBİTAK's support programmes, scholarships, and competitions empower youth, nurturing their scientific curiosity and paving the way for future achievements. <https://tubitak.gov.tr/tr/haber/tubitak-2023-yilinda-burs-ve-destek-programlariyla-genclerimizin-yanindaydi>

Co-Creation Based Collaboration Approach in High Technology Platforms

In 2023, 12 new High Technology Platforms in the Centre of Excellence Support Programme of TÜBİTAK were supported. The total has now reach 20 to involve 73 universities, 109 private sector firms, 16 public R&D centres, 1623 researchers, 726 scholars and 113 collaborations. This widespread effort with co-creation based collaboration represents 252 projects and 102 targeted technologies based on the research programmes of these platforms.

Table-1 summarises the High Technology Platforms that are supported to date along with their main focus across energy, materials, health, and food.

A new call on High Technology Platforms-Green Transformation Call, which aims



to establish high technology platforms on R&D and innovation that serve the Green Deal and green growth while combating and adapting to climate change in alignment with our Türkiye's 2053 net-zero emission target, are also available. (<https://tubitak.gov.tr/tr/duyuru/1004-mukemmeliyet-merkezi-destek-programi-internet-sitesi-acildi>)

The World Association of Industrial & Technological Research Organizations

The 92nd Executive Board Meeting and 26th Regional Contact Point Meeting of the World Association of Industrial and Technological Research Organizations (WAITRO), which positions itself as being a Global Innovation Family, was hosted by TÜBİTAK in Gebze. Representatives from China, Colombia, Denmark, Germany, Indonesia, Jordan, South Africa, Spain, Thailand and Trinidad and Tobago came together at the TÜBİTAK Gebze Campus under the chairmanship of Prof. Dr. Hasan Mandal, President of WAITRO and TÜBİTAK.

Prof. Dr. Hasan Mandal, President of TÜBİTAK and President of WAITRO, emphasized that the common agenda of the countries is green and digital transformation necessitating common solutions with science and technology against the economic difficulties brought about by the food, energy and water supply

Table 1. Summary of the High Technology Platforms in the Center of Excellence Support Programme	
Area	High Technology Platform
Energy	Turkish Photovoltaic Technologies Platform (TFTP)
	Advanced Technologies Platform for Sustainable Cities (SUIT)
	Environmentally Compatible Sustainable Advanced Vehicle Technologies (İLATERA)
	Battery Technologies Research and Development Platform for Electric Vehicles (BATEG)
Food	Sustainable Agricultural Technologies Platform Compatible with Global Climate Change in Türkiye's Agricultural Production (S-ATP)
	Innovative and Sustainable Practices in Aquaculture within the Framework of Food Supply Security (TR.AQUA)
Health	Regenerative and Restorative Medicine Research and Applications (Re-TIP)
	Development of Biomarkers and Advanced Technology Drugs for the Monitoring and Treatment of Inflammation-Mediated Autoinflammatory Diseases (INFLAM-IST)
	Target-Specific Pan-Cancer Therapies (PAN-TER)
	Development of Diagnostic Kits, Drug Formulations and Vaccines against Infections Caused by HPV and Influenza (INFECTIA)
	Development of Biomarker and Advanced Technological Warning Systems for Diagnosis, Monitoring and Treatment of Neuron Damage Related Diseases (NEURONPLATFORM)
	Neurotechnological Solutions Platform Against Challenges Threatening Human Functions (NTÇP)
	National Platform for Prevention and Treatment (KORTUP)
	Micro Medical Technologies Platform (MAESTRO)
New Generation Biomaterial Technologies Research Network for Healthy Living (BİYOMATR)	
Materials	New Generation 3D Printer Manufacturing Technologies Platform (3B-YIP)
	Strategic R&D Alliance for Electronic and Optical Component Production with Advanced Material High Technology Platforms (A1)
	Integrated, Scalable, Functional Nanostructures and Systems (NANOSIS)
	Quantum Lasers, Devices and Applications (KUANTAY)
	Value-Added Advanced Nanotechnological Materials and Systems for a Sustainable Circular Economy (LignoNANO)



security, migration and a more complex world to live in the future. (<https://www.tubitak.gov.tr/en/news/we-design-the-future-together-as-the-global-innovation-family-waitro>>)

He made a presentation titled “Cooperation Opportunities Based on Succeeding Together for a Sustainable Future.” (<https://www.tubitak.gov.tr/en/news/tubitak-hosts-world-association-of-industrial-and-technological-research-organizations-waitro-mena>)

Leadership of TÜBİTAK at International Fora on Science and Technology

G20 Research and Innovation Initiative Gathering (RIIG) Summit

TÜBİTAK represents Türkiye in various international science and technology

platforms. Among these responsibilities, TÜBİTAK actively engaged in the G20 Research and Innovation Initiative Gathering (RIIG) Summit, bringing together research ministers from G20 member countries, invited guest nations, and international organizations. TÜBİTAK played a significant role in the G20 RIIG Summit. Prof. Hasan Mandal, the President of TÜBİTAK, represented Türkiye at the summit and actively contributed to the discussions on research and innovation collaboration for a sustainable future. Prof. Mandal emphasized the importance of key phrases such as “responsible research and innovation,” “open science,” and “science diplomacy” in achieving collaborative and impactful outcomes.” (<https://www.tubitak.gov.tr/en/news/g20-research-and-innovation-initiative-gathering-summit-fostering-global-collaboration-for-a>).

Global Research Council (GRC)

In 2023, the 11th Annual meeting was held under two main themes: “Rewards and Recognition Initiative” and “Climate Change and Climate Change Initiative.” Represented by TÜBİTAK President Prof. Dr. Hasan Mandal, Türkiye, participated in the meeting, where 175 participants from 81 research organizations serving in 63 countries came together to discuss common issues and explore potential global solutions. (<https://www.tubitak.gov.tr/en/news/together-we-are-developing-the-international-research-and-innovation-ecosystem>)

Moreover, Türkiye is presiding over the Eureka Network during the 2023-24 Türkiye Chairship. (<https://www.tubitak.gov.tr/en/news/turkiye-takes-over-the-chairship-of-eureka>)





Science-Based Approach and Solutions to the Disaster of the Century

In response to national needs after the greatest disaster of a century following consecutive earthquakes centred in Kahramanmaraş, TÜBİTAK launched several support programs, including the “TÜBİTAK Natural Disaster-Focused Field Study Emergency Support Program” aimed at disaster preparedness. Additionally, “We Will Work Together and Succeed Together (BİÇABA)” and “Earthquake Zone Universities Special Call – BİN BİR ÇABA” were implemented to support students and researchers who were affected by the earthquakes and to minimize the societal impact on research activities in the region.

TÜBİTAK also initiated another support program as a special Call for Seismology Research within the Fellowships for Visiting Scientists and Scientists on Sabbatical Leave Program that allows inviting national and international scientists working in the field in a research institution abroad. (<https://www.tubitak.gov.tr/en/announcements/special-call-for-seismology-research-is-opening-within-the-2221-fellowships-for-visiting-scientists>)

Earthquake Relief Efforts

Immediately after the earthquakes in Türkiye, all national institutions were

mobilised for search and rescue operations and subsequent aid efforts. During this time, TÜBİTAK contributed to the process through volunteers on the ground, rapidly adaptable technologies to meet urgent needs, and research programs analysing the disaster. Additionally, new support mechanisms that were tailored to academic, industrial, scientific, and societal needs were designed and implemented.

TÜBİTAK also signed a collaboration protocol with the Disaster and Emergency Management Authority of Türkiye (AFAD) to advance research in disaster management.

TÜBİTAK established the National Earthquake Monitoring Center (DBT) in Kahramanmaraş, equipped with state-of-the-art technology to monitor earthquake activity, understand seismic mechanisms, and develop early warning systems. (<https://tubitak.gov.tr/tr/haber/tubitak-depremler-mucadelede-aktif-destek-sagladi>)

Research and Development

Support to Researchers and Scientists in the R&D and Innovation Ecosystem

TÜBİTAK continues support for researchers and scientists surged in 2023, reflecting the strong commitment to innovation and development. With support given to 5,198 projects, academia and public initiatives were bolstered. Through new scholarships, TÜBİTAK supported 66,989 individuals, including 46,759 new recipients. Efforts to facilitate doctoral and post-doctoral studies abroad continued, alongside initiatives like the Graduate Scholarships Performance Program and the Aziz Sancar Overseas Post-Doctoral Research Scholarship Program. TÜBİTAK’s commitment to attracting global leaders in science and technology remained steadfast, with 201 leading researchers returning to Türkiye through the International Leaders and Young Researchers Programs.





TÜBİTAK also fostered collaborations with leading technology companies and prioritized platforms supporting high-tech innovation, particularly in alignment with the Green Deal. <https://tubitak.gov.tr/tr/haber/tubitakin-arastirmaci-ve-bilim-insanlarina-destegi-artarak-devam-ediyor>

National Polar Science Expeditions Conducted to Antarctica and the Arctic

TÜBİTAK achieved significant milestones in polar research in 2023, conducting successful National Polar Science Expeditions, including the 7th National Expedition to Antarctica and the 3rd National Expedition to the Arctic. High school students participated in these expeditions, conducting fieldwork on innovative projects. Additionally, the 7th National Polar Sciences Symposium brought together experts to discuss research outcomes and future endeavours.

Key highlights from the symposium included the announcement of the Polar Sciences Encyclopaedia, the unveiling of the “2023-2035 National Polar Science Strategy,” and the release of a special issue on polar sciences in the “Turkish Journal of Earth Sciences.”

The approval of the Svalbard Agreement by the Turkish Grand National Assembly marked a significant milestone, opening new opportunities for Turkish citizens, scientists, and companies in the

polar regions. Moreover, TÜBİTAK’s continued support for polar research was evident through project calls and funding allocations, with Yıldız Technical University receiving the most support in 2023. (<https://tubitak.gov.tr/tr/haber/tubitak-2023-yilinda-kutup-alaninda-bircok-ilke-imza-atti>)

In 2023, TÜBİTAK continued robust support for entrepreneurs and technology-based ventures, enhancing programs and fostering collaboration with leading companies. Key highlights include: facilitation of venture establishment through initiatives, such as the TÜBİTAK 1812 Investment-Based Entrepreneurship Support Program, increased focus on Venture Capital Investment Funds, and technology development funds. Collaboration with leading companies resulted in new Frontier R&D Laboratories focusing on technologies for cybersecurity, autonomous networks, and sustainable advanced materials, reaching 10 new laboratories. <https://tubitak.gov.tr/tr/haber/tubitak-2023-yilinda-dagirisimcilerimizin-yaninda-yer-aldi>

TÜBİTAK Research Centres, Institutes and R&D Support Units

TUBITAK has 12 centres and institutes that are conducting strategic R&D projects.

Marmara Research Center (MAM)

TÜBİTAK MAM is engaged in R&D activities for smart agriculture, particularly in irrigation systems, purification and reuse of agricultural drainage waters, and sustainable treatment technologies for domestic wastewater in rural areas, including with COMSATS.

In the last 5 years with the R&D and innovation projects carried out at every point, from generation to transmission and distribution in the Turkish electricity system, a substantial contribution to the “Domestic and National” hardware and software technologies of Türkiye have been realised, such as with the Power Grid Digitalization and Consultancy Projects for Power Grid Planning and Operations projects

TÜBİTAK MAM and COMSATS

TÜBİTAK MAM and COMSATS collaborations can be categorised under four main R&D fields, which are: Energy Technologies; Materials Technologies; Life Sciences and; Climate Change and Sustainability.

- Ongoing collaboration on “Energy and Raw Material Recovery from Treatment Sludge as a Conceptual of Zero” project.
- TÜBİTAK MAM Vice President Dr. Osman Okur attended the 24th

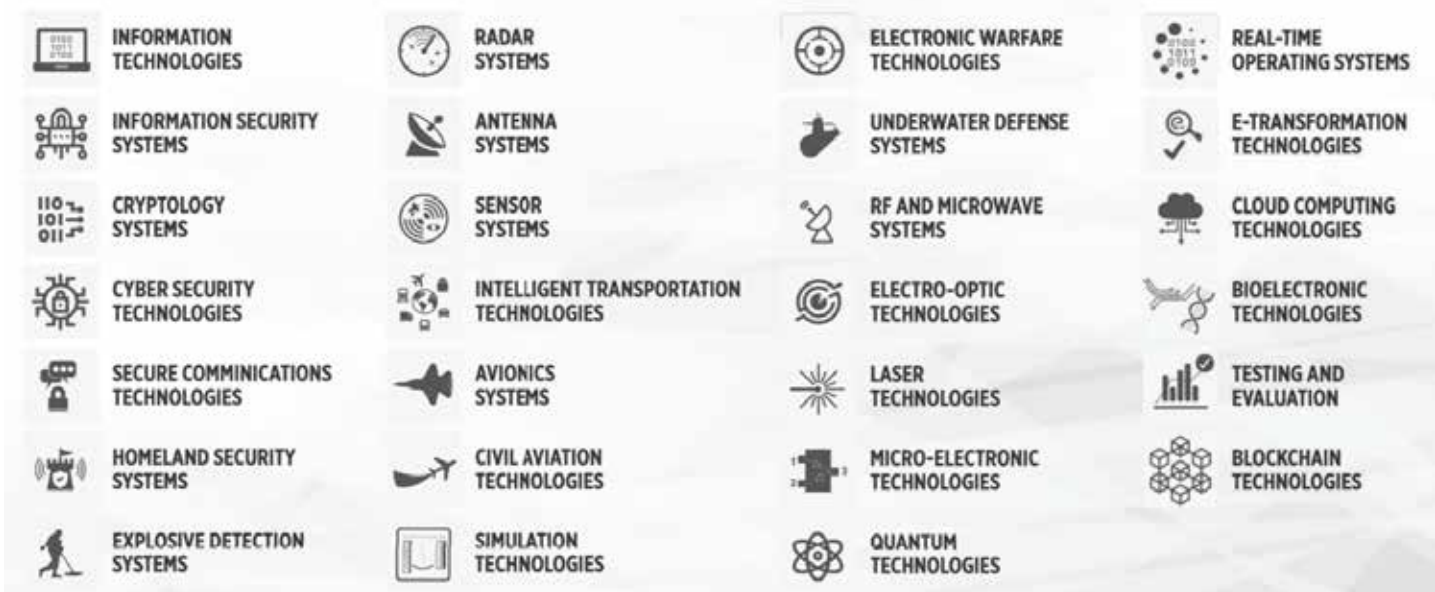


Figure 2. Summary of the Main Research Areas of TÜBİTAK BİLGEM

Meeting of COMSATS Coordinating Council on 25-26 January 2023 online and held in Karachi, Pakistan on behalf of the TÜBİTAK President Prof. Dr. Hasan Mandal.

Other Projects

In 2023, the Vaccine and Drug Development Campus of TÜBİTAK was established at TÜBİTAK MAM, taking the co-creation based collaboration approach of the platform forward.

In animal biotechnology, genomic studies, characterization and animal reproduction studies are conducted.

As part of the INNOFOOD project, new infrastructure was established to improve the regional competitiveness of the food industry and where innovative food improvement studies were initiated.

The Food Innovation Platform of Türkiye (TÜGİP) was established in order to develop the Turkish Food Innovation Ecosystem with about 115 members from different sections of the food ecosystem. The Food Innovation Centre has 9 pilot food processing plants.

Other Collaborations of BİLGEM	
India	A meeting was held with Hexagon [India] on June 2, 2023 to promote BİLGEM and the terrestrial navigation system. Agreement was reached on integrating with GPS systems. A meeting was held with T – HUB [India] on May 30, 2023, to promote BİLGEM and provide information about our cloud technologies. T-HUB currently using Amazon Web Services were found open to using our technologies if it is advantageous.
Malaysia	Meetings at the “XSPEC Technology Anti Corruption Agency” based on voice biometrics technologies resulted in sharing of capabilities/products of the Institutes within TÜBİTAK BİLGEM, such as BTE, SGE, UEKAE, were explained, and a TÜBİTAK BİLGEM İLTAREN capability introduction meeting was held, and evaluation of opportunities with the Institut Penyelidikan Sains & Teknologi Pertahanan Institute.
Turkic Republics	OZAN, ETMTS, Network Security Device, ELÇİ Secure Mobile Communication System were exported to Azerbaijan. Network security devices will be sent to Kyrgyzstan, KUŞRAD to Turkmenistan. Training is also provided in these countries, and cyber security and testing services are also provided. Negotiations for crypto products are ongoing. E-ID, e-driving license and e-passport negotiations are being held with Turkmenistan and TRNC. Countries such as Pakistan, Indonesia and Bangladesh also show interest in BİLGEM products and services
Hungarian Defense Industry	Minister of Industry and Technology, Mehmet Fatih Kacır held an inter-delegation meeting with the country's Minister of Defense Kristóf Szalay-Bobrovniczky in the capital Budapest, as part of his visit to Hungary in November 2023. TÜBİTAK BİLGEM was among 10 defense industry companies from Türkiye in the delegation. The Zalazone Electric Vehicle Development and Verification Test Center was visited and presentations were made, especially on Laser and Mine Detection, EH, LIDAR, etc.



In the South Marmara Hydrogen Shore Platform project, stakeholders from public and private sector are cooperating to produce pure hydrogen from electrolysis for the usage of the private sector NG plants' cooling of turbine generators. In connection with this area of research, a new project aimed at establishing a pilot plant for sodium borohydride has been launched recently.

Informatics and Information Security Research Centre (BİLGEM)

TÜBİTAK BİLGEM research areas are summarised in Figure 2 and examples of important projects in 2023 are given.

MEEP Project

The MEEP Project is financed with 10.3 million Euros and started its activities as of January 1, 2020. TÜBİTAK BİLGEM is working as one of the three main executors in this project. The MEEP Project is planned to host a large-scale Field Programmable Gate Array system created in Barcelona.

Turkish Naval Forces Elements Protected by the DeGauss System

TÜBİTAK BİLGEM, within the scope of its studies on counter-measure systems against magnetic mines, to ensure the security of Turkish Naval Forces ships, designed, installed and conducted

production activities of the DG (DeGauss) system for Offshore Patrol Ships, MİLGEM corvettes, and ships exported to Turkmenistan.

Establishment of Chip Production Facility in Strategic Cooperation

A Strategic Cooperation Agreement was signed in December 2023 by the Minister of Industry and Technology Mehmet Fatih Kacır and the President of the Board of Trustees of the State of Qatar Hamad bin Khalifa University Sheikha Hind bint Hamad Al Thani (HBKU). Within the scope of this agreement, a joint chip production facility will be established at

TÜBİTAK Gebze Campus.

Together with Pavotek Company, KAŞİF (Artificial Intelligence Supported Signal Intelligence Platform) product was introduced to different authorities in Qatar and to the 2nd Chairman of the Qatar Intelligence Authority in 2023.

Development of Mobility and Autonomous Systems and Projects

The 5G-Mobix project, in which cloud-based software that enables autonomous truck driving via 5G was developed, was successfully completed in 2023 and was demonstrated at the İpsala Border





Gate. The project has 59 partners from 10 countries. Test sites are established in six different countries and preliminary demonstrations of the developed technologies are conducted.

The project consortium with the acronym “EcoMobility” (Intelligent, Safe and secure connected Electrical Mobility solutions: Towards European Green Deal and Seamless Mobility) includes a total of 44 organizations, 6 of which are from Türkiye. The original cloud computing infrastructure was developed by the prototype data center and laboratory with a capacity of 300 servers and 20 thousand cores within the Cloud Computing and Big Data. There are 59 organizations in the consortium with the acronym “HICONNECTS” (Heterogeneous Integration for Connectivity and Sustainability). (<https://bilgem.tubitak.gov.tr/en/>)

International Agreements

- In March and July 2023, Saudi Arabia signed a “Memorandum of Understanding (MoU) between TÜBİTAK BİLGEM and INTRA Defense Technologies Co. with INTRA. Ltd.”

- In June 2023, a cooperation agreement on High Power Laser was signed with Pakistan – “Memorandum of Understanding (MoU) between TÜBİTAK BİLGEM and Al Technique Corporation of Pakistan (ATCOP).”
- In July 2023, a “Co-funding Agreement between TÜBİTAK BİLGEM and HAMAD BIN KHALIFA UNIVERSITY” Free Grant Agreement on B3LAB and Safir Zeka was signed with Qatar.
- In July 2023, Memorandum of Understanding (MoU) was signed between The Defense Innovation Accelerator for the North Atlantic (DIANA) and TÜBİTAK BİLGEM with NATO as a test center.

Physical Layer Security for RIS-assisted Wireless Systems

TÜBİTAK BİLGEM researchers prepared and presented on the theme “Measurement-based Characterization of Physical Characterization” during Vehicular Technology Conference (VTC) was held the IEEE VTC2023-Spring Conference held in Florence, Italy on 20-23 June 2023. The study titled “Measurement-Based Characterization of Physical Layer Security for RIS-assisted

Wireless Systems” won of the 'Best Paper' Award.

Space Technologies Research Institute (UZAY)

The GÖKTÜRK-2 satellite, Türkiye's First High-Resolution Satellite designed and built domestically, marked its 11th year in orbit as of 18 December 2023, exceeding its lifespan and providing vital imagery for both military and civilian needs.

Türkiye's first high-resolution satellite continues to deliver critical satellite imagery for national security and progress. (<https://uzay.tubitak.gov.tr/en/haber/gokturk-2-turkeys-eye-sky-soars-11-years-space>)

New Satellite Offers High-Resolution Imagery for National Needs

On 15th April 2023, Türkiye successfully launched its first indigenously developed high-resolution Earth Observation (EO) satellite, IMECE, into space. The 700-kg high-resolution EO satellite was engineered by the TÜBİTAK, Space Technologies Research Institute.

TÜBİTAK UZAY successfully completed

solar panel deployment test of Türkiye's first domestic and national communication satellite TÜRKSAT 6A in November 2023.

TÜBİTAK UZAY leads a consortium of Turkish industry giants, including TUSAŞ, ASELSAN, and CTech, in developing the TÜRKSAT 6A national communication satellite. The project is financed by a collaborative effort: Ministry of Transportation and Infrastructure, TÜRKSAT Inc., and TÜBİTAK. <https://uzay.tubitak.gov.tr/tr/haber/turksat-6anin-gunes-panelleri-acilma-testi-basariyla-gerceklestirildi>

Rail Transport Technologies Institute (RUTE)

Supported/owned by TCDD TÜBİTAK RUTE's Project "Automatic Train Inspection (ATI) system was awarded by European Railway Clusters Initiative Innovation Awards 2023.

In the Hyperloop development infrastructure established by TÜBİTAK RUTE in Gebze/Koaceli Campus, a 208-meter-long tunnel and an infrastructure where pre-tunnel security/motion tests will be carried out were completed in 2022. It was opened to the use of teams consisting of university students with the 'In the Hyperloop Test Infrastructure' development for the competition, the year 2022 and 2023 of the competition had the involvement of 42 and

Patents Registered	12
Trademarks Registered	2
Memoranda of Understanding	43 different countries and organizations
Ongoing cooperation	92 different countries.
Key Comparison Database of the BIPM	643 (involves 100 countries)
BIPM and TÜBİTAK UME 6th Cycle	10 researchers from 10 countries
Project partnerships	13

44 teams from 57 universities.

Defense Industries Research and Development Institute (SAGE)

TÜBİTAK SAGE has successfully developed various critical subsystems and started to export these subsystems through the Business Development of Subsystems. These include Thermal Batteries, Pyrotechnic Devices, Navigation Units, Antennas, Seekers, Connectors, and Fuses.

The Warhead High-Speed Rocket Test Track and Environmental Test Centre was opened to the use of allied countries, now also providing services to support testing and development activities.

In another development, TÜBİTAK SAGE signed memoranda of understanding with Indonesia's PT PINDAD firm, and a

Czech company EXCALIBUR ARMY.

National Metrology Institute (UME)

In 2023, TÜBİTAK UME continued to participate in international R&D projects and to develop solutions for measurement problems in various fields.

TÜBİTAK UME takes active role in regional metrology organizations such as European Association of Metrology Institutes (EURAMET), Gulf Association for Metrology (GULFMET) and Euro-Asian Cooperation of National Metrological Institutions (COOMET). UME is successfully carrying out the Chairmanship of the Metrology Council of the Standards and Metrology Institute for Islamic Countries (SMIIC) since 2013.

The Institute continues its activities in the "European Metrology Program for Innovation and Research" (EMPIR) and "European Partnership in Metrology" (EPM) jointly funded by the European Commission and participating member states. Under the EPM 2023 Call, project applications were submitted in the thematic areas of Fundamental, Industrial, Normative, and Research Potential.

Time and Frequency Laboratory was established in one of the middle Asian countries in a bilateral project. Contract for the implementation for a new project for turnkey establishment of 12 metrology



laboratories in a neighbouring country was signed.

A new facility with a “National Marker” capacity of 30 m³/week has been planned.

Within the scope of the Regional Positioning and Timing System, first national and domestic Rubidium Atomic Clock was produced to be used in positioning satellites.

National Academic Network and Information Center (ULAKBİM)

New Data Centre of our TRUBA Supercomputer and MareNostrum 5 Advances TRUBA include five-fold capacity increase for defence industry, academic research and artificial intelligence studies, and installation of Turkish National Science e-Infrastructure super computer in a new data centre. MareNostrum 5 was declared one of the top 10 infrastructures based on the list that was published in November 2023. (<https://www.tubitak.gov.tr/en/news/new-possibilities-and-opportunities-in-supercomputer-oriented-solutions-marenostrum-5-and-truba>)



- The National High Performance Computing Competence Centre (HPC NCC) of ULAKBİM successfully completed the first year of the EuroCC 2 (National HPC Competence Centre) Project, completing three case-studies completed within the scope of the EuroCC Project and EuroCC 2 Project. Two successes of the project have been “Customizing Scene in Virtual Environments using Neural Networks,” and “Training Large-Scale Models for Speech-to-Text Recognition”.
- Continued management of the

Some Stats from ULAKBİM	
TRUBA	
Researchers benefiting from TRUBA resources	5741
Processor cores	25,000
Graphics processors	216
Data storage systems	14.5 PByte
ULAKNET	
Internet connection capacity	400 Gbps
Services provided to	1198 units belonging to 229 institutions including all public universities in Türkiye
Beneficiary researchers	166 thousand
Beneficiary university students	over 4 million
Internet connections capacity increase in 2023	30%. Ankara: 150Gbps to 250Gbps Istanbul: 100Gbps to 150Gbps
YETKİM Federation	
Institutions registered	178
Countries	73
Identity providers	2,600
Service providers	1,800
Registered institutions	178
ULAKBİM Cloud Infrastructure	
Projects	18
Capacity	732 cores, 12.7 TB RAM, 200 TB Block and 440 TB Object storage capacity
Universities served	Five-200000 students
ULAKBİMversion 5 of TR Index	
Journals access	1,694
Articles access	555.000
Projects supported	21,895
TÜBİTAK National Academic License for Electronic Sources (EKUAL)	
Bibliographic searches performed	More than 26 million
Institutions served	301 (including universities, public research institutions, education and research hospitals)
Academic databases	20
Researchers	3.2 million
Electronic journals	38,500
Electronic books	43,000
Full-text theses	5.5 million
Searches were performed in 2023	26.8 million
Articles were downloaded	36.4 million
Open Course Platform	
Users reached in 2023	785

continue...

Open Access Platform DergiPark (Increase by 40 thousand articles and exceeded 650 thousand in total)	
Visitors hosts	200 million annually
Journals	2,261
Scientific articles	654.378
Registered users	619.725
Turkish Academic Archive Harman	
Searchable records.	more than 4 million

Technical Infrastructure and Platforms Working Group for preparing the Reference Technical Architecture within the scope of the National Artificial Intelligence Strategy.

- Version 23.0 of the National Operating System Distribution Pardus and special version of Pardus for cheap and efficient Raspberry Pi computers based on ARM processors released.

Turkish Industrial Management and Management Institute (TÜSSİDE)

TÜSSİDE's recent work includes:

- National digital transformation maturity assessment model for Türkiye, the “DDX Digital

Transformation Assessment Model” was developed by TÜBİTAK TÜSSİDE to support Türkiye's 2023 Industry and Technology Strategy. The model is applicable to manufacturing industry SMEs and implemented by DDX Consultants on the DDX web portal. Five dimensions are assessed: corporate management, customer management, R&D management, supply chain management and production management processes.

- Project for General Directorate of Information Technologies of the Ministry of Agriculture and Forestry of Türkiye, works on analysis of different approaches for farm registry, crop mapping, yield estimation, monitoring and detection of climate change effects and production/stock management.

- R&D project for Ministry of Agriculture and Forestry, General Directorate of Fisheries and Aquaculture to strengthen the fishing sector.

Research Institute for Fundamental Sciences (TBAE)

TBAE's key activities for the year included:

- As part of the “Quantum - Türkiye Initiative” project, two international schools were held on Quantum Photonics and Quantum Optical Technologies.
- An online course on “Quantum Mechanics: From Fundamentals to High Technologies”.
- International Summer School on Bioinformatics.
- A Summer School on Data Driven Materials Science was held, offering specialized courses in this innovative field.
- “Scientific Türkiye: Public Lecture Series”, six lectures.

TÜBİTAK National Observatory (TUG)

In 2023, 21 articles were published in the international scientific journals from



the observational projects supported by TÜBİTAK TUG Telescopes.

A presentation on “Autonomous Telescope and Scientific Infrastructure Developments at TUG” was made in the workshop titled Autonomous, Robotic Observatories – AstroRob held in Malaga, Spain on 16-20 October 2023. Desktop telescope control and the observatory control software called NightAssistant and astronomy data collection archive and the analysis center called Occultation Portal were introduced.

Bursa Test and Analysis Laboratory (BUTAL)

Between 25 October and 07 November 2023, TÜBİTAK BUTAL organized “International Workshop on Innovative Textiles” in cooperation with UNIDO. Other partnerships were with Ministry of Industry and Technology of the Republic of Türkiye; Turkish Cooperation and Coordination Agency (TIKA). The event had 10 participants from nine different countries: Bangladesh, Cameroon,

Ethiopia, Ghana, Mali, Nigeria, Pakistan, Vietnam, Zimbabwe.

TÜBİTAK BUTAL participated in the IITAS Symposium organized by Ege University Textile Engineering Department, and theoretical and technical studies were carried out with nine Eylül University Textile Engineering Department and the private sector in Izmir and Denizli.

FINANCIAL AFFAIRS

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FINANCIAL AFFAIRS

Major source of financing COMSATS' operations is annual contributions from the Government of Pakistan towards running cost of the organization's Secretariat. Other member states of COMSATS pay voluntary Annual Membership Contribution (AMC) towards COMSATS. The AMC received from member states is kept as 'Trust Money, COMSATS Secretariat instituted creation of an Endowment Fund of US\$ 10.00 million during the 2nd General Meeting of COMSATS, held on 16-17 April 2012 in Islamabad, Pakistan.

Financial Sources of COMSATS Secretariat

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Host Country (Pakistan) Contribution

Being host country of COMSATS, the Government of Pakistan has been meeting the running costs of COMSATS Secretariat under an international agreement since establishment of COMSATS in 1994. The fixed annual grant is revised from time to time as per requirement of the organization. The amount of annual contribution was last revised/fixed to PKR 40.00 million in 2009. Due to increase in expenditure and inflation, the

amount was found insufficient to meet the organization's needs.

Accordingly, COMSATS Secretariat requested the Government of Pakistan for enhancement of the contribution. The Government of Pakistan kindly allocated an amount of Rs. 140 million for the financial year 2023-2024 for running cost of the Secretariat.

Annual Membership Contribution (AMC)

During the reporting period (January to December 2023), COMSATS received Annual Membership Contribution (AMC) from three member countries – China (US\$ 46,237/-), Jamaica (US\$ 19,965) and Pakistan (US\$ 20,000/-).

COMSATS Endowment Fund

In order to strengthen the financial health of COMSATS and to create a regular source of income for technical activities of COMSATS, an endowment fund of US\$ 10.00 million was approved during the 2nd General Meeting of COMSATS held on 16-17 April 2012 in Islamabad, Pakistan. The fund had been proposed by the then Chairperson of COMSATS, Prime Minister of Pakistan, who also pledged a seed money of US\$ 1.00 million as Government of Pakistan's contribution towards the proposed fund.

Representatives of other member states also made pledges to contribute towards COMSATS Endowment Fund. However, so far, only the Government of Pakistan has contributed PKR. 10.00 million towards the Fund. After contribution from COMSATS Secretariat, COMSATS Internet Services, COMSATS University Islamabad, some individuals and profit earned, the total worth of the fund is Rs. 22.200 million as of 31st December 2023.

Accounts and Audit

The accounts of COMSATS Secretariat are managed and maintained as per international practices and in compliance with the International Accounting & Financial Standards. The financial year of COMSATS Secretariat begins from 1st July and ends on 30th June of the succeeding year. Every year, the accounts of COMSATS Secretariat are audited by a reputed chartered accountancy firm. The audited accounts, along with the auditors' report, is approved by the COMSATS' Management Committee/Coordinating Council in the annual meetings.

The accounts of COMSATS Secretariat for the financial year ended on June 30, 2022, have been audited by M/s HLB IJAZ TABUSSUM & Co., Chartered Accountants. The accounts for the financial year ending on 30th June 2023 are ready for audit.

LIST OF FOCAL POINTS IN COMSATS' MEMBER STATES



Hon. Architect Yafesh Osman

Minister
Ministry of Science and Technology
People's Republic of Bangladesh



Hon. Daryl Vaz

Minister
Ministry of Science, Energy and
Technology
Jamaica, West Indies



H.E. Mr. Yin Hejun

Minister
Ministry of Science and Technology
People's Republic of China



Prof. Mashhoor Al-Refai

Secretary General
Higher Council for Science and
Technology (HCST)
Hashemite Kingdom of Jordan



H.E. Dr. Yesenia Olaya Requene

Minister
Ministry of Science, Technology and
Innovation
Republic of Colombia



H.E. Mr. Sayasat Nurbek

Minister
Ministry of Science and Higher Education
Republic of Kazakhstan



Prof. Dr. Gina El-Feky

Acting President
Academy of Scientific Research and
Technology
Arab Republic of Egypt



H.E Mr. Jang Chol

President
State Academy of Sciences
Democratic People's Republic of Korea



H.E. Prof. Pierre Gomez

Minister
Ministry of Higher Education, Research,
Science and Technology
Republic of The Gambia



Hon. Prof. Abdellatif Miraoui

Minister
Ministry of Higher Education, Scientific
Research and Innovation
Kingdom of Morocco



H.E. Dr. Kwaku Afriyie

Minister
Ministry of Environment, Science,
Technology and Innovation
Republic of Ghana



Hon. Chief Uche Godfrey Nnaji

Minister
Federal Ministry of Science, Technology
and Innovation
Federal Republic of Nigeria



H. E. Prof. Mohammad Ali Zolfigol

Minister
Ministry of Science, Research and
Technology
Islamic Republic of Iran



Mr. Ali Tahir

Additional Secretary (Incharge)
Ministry of Science and Technology
Islamic Republic of Pakistan



H.E. Prof. Mahmoud Musa Abu Mowais

Minister
Ministry of Higher Education and
Scientific Research
The State of Palestine



Hon. Dr. Renato U. Solidum, Jr

Secretary
Department of Science and Technology
Republic of the Philippines



Hon. Dr. El Hadji Abdourahmane Diouf

Minister
Ministry of Higher Education, Research
and Innovation
Republic of Senegal



H.E. Farah Sheikh Abdulqadir

Minister
Ministry of Education, Culture and Higher
Education
Federal Republic of Somalia



H.E. Dr. Ramesh Pathirana

Minister
Ministry of Industry
Democratic Socialist Republic of Sri Lanka



H.E. Prof. Mohammed Hassan Dahib

Minister
Ministry of Higher Education and
Scientific Research
Republic of the Sudan



H.E. Prof. Dr. Bassam Bashir Ibrahim

Minister
Ministry of Higher Education and
Scientific Research
Syrian Arab Republic



Hon. Prof. Adolf Mkenda

Minister
Ministry of Education, Science and
Technology
The United Republic of Tanzania



H.E. Prof. Moncef Boukthir

Minister
Ministry of Higher Education and
Scientific Research
Republic of Tunisia



Prof. Dr. Hasan Mandal

President
The Scientific and Technological Research
Council of Türkiye (TÜBİTAK)
Republic of Türkiye



Dr. Martin Ongol

Executive Secretary
Uganda National Council for Science and
Technology (UNCST)
Republic of Uganda



Hon. Prof. Dr. Khalid Ahmed Alwosabi

Minister
Ministry of Higher Education and
Scientific Research
Republic of Yemen



Hon. Prof. Dr. Amon Murwira

Minister
Ministry of Higher and Tertiary Education,
Science and Technology Development
Republic of Zimbabwe

COMSATS' Centres of Excellence



COMSATS SECRETARIAT

Shahrah-e-Jamhuriat, G-5/2, Islamabad, Pakistan

Ph: (+92-51) 9214515-7; Fax: (+92-51) 9216539

URL: www.comsats.org; Email: comsats@comsats.org



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