



ANNUAL REPORT 2022



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

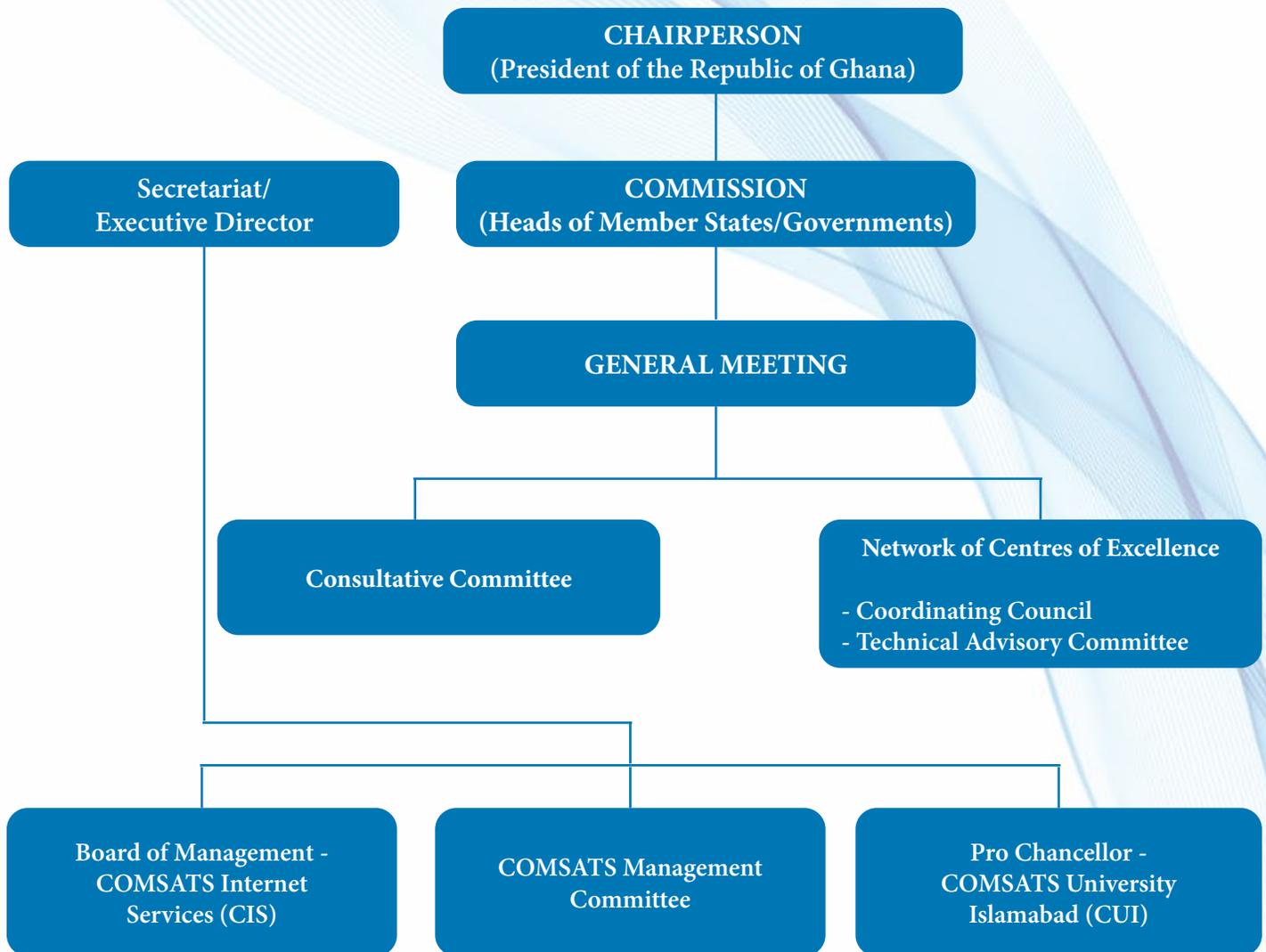
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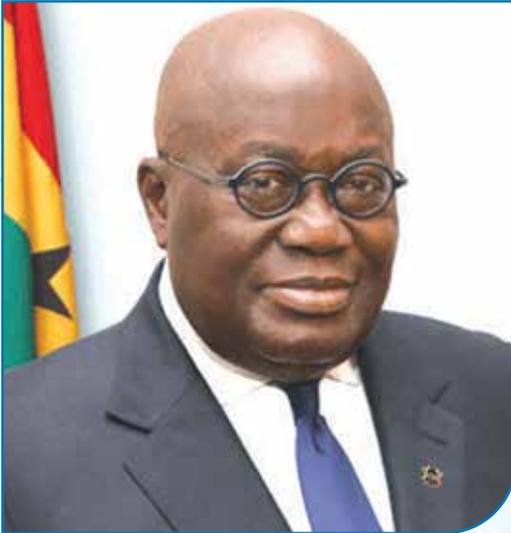
August 2023



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

ORGANIZATIONAL STRUCTURE





Hon. Nana Addo Dankwa Akufo-Addo

President of the Republic of Ghana

Chairperson COMSATS

Hon. Nana Addo Dankwa Akufo-Addo, the Chairperson COMSATS, is the incumbent President of the Republic of Ghana. He 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 holding COMSATS' Chair) initially on 7th January 2017 and later retained the charge upon his re-election as President.

The Chair of COMSATS had been rotated in 2012 from Pakistan to Ghana through consensus among the members of COMSATS' Commission at its 2nd General Meeting held in Islamabad and stayed with Ghana after consensus in 3rd General Meeting.

As a lawyer, Mr. Akufo-Addo worked to champion the cause of human rights, rule of law, justice, freedom, and democracy in Ghana. He is also the Co-chair of the UN Secretary-General's SDG Advocates working with his fellow advocates to promote SDGs as part of an ambitious and transformative global development agenda.



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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 24 reputed R&D and S&T, and higher education institutes in developing countries, predominantly COMSATS Member States.

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 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). A seasoned civil servant of Pakistan, Dr. Zakaria joined the Ministry of Foreign Affairs (MoFA) in 1988. During his illustrious diplomatic career, he 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.

FOREWORD

COMSATS as an inter-governmental organization of 27 member states have immense strengths. The manifestations are 24 Centres of Excellence affiliated to it, an Advisory Council of globally renowned scientists and technologists, a combined population of 2.9 billion people with a reservoir of young and talented people, are such assets that can turn the fate of any country, socio-economically lifts its people and the economy. As an intergovernmental/ international organization, COMSATS is committed to enhancing science and technology capacities in developing countries through South-South cooperation. COMSATS has paved way for supporting the development of its Member States by initiating programs and activities in various areas of science and technology. Despite multifaceted challenges, the organization has been successful in passing on the benefits of S&T cooperation to its Member States and remains committed to its mission of keeping abreast with rapid development in the fields of science and technology.

The organization's work philosophy stems from its shared values of teamwork, inclusiveness, and transparency, fostering its inter-state cooperation in S&T arena. As the Executive Director, I am pleased to acknowledge and appreciate the support and cooperation from COMSATS' fraternity enabling it to keep pace with advancements in S&T. This Report highlights COMSATS' endeavors, activities and accomplishments during the calendar year, 2022.

The year 2022 has been significant for COMSATS in a number of ways. The organization continued its operations in the wake of COVID-19, witnessing and playing its role in digital transformation impacting every sphere of life. It performed its statutory functions, optimized its international linkages and carried out online capacity-building activities with the support of its affiliated Centres of Excellence. Broadly, COMSATS' capacity-building activities pertained to a number of important areas, including water resources/conservation, SDGs, bioenergy, green bio-manufacturing, Sustainable agriculture, biotechnology,

flood relief measures, digital and global Health, mental health advocacy, climate resilience finance, bankable climate change adaptation, and food security. These encouraged meaningful policy debates, knowledge sharing, research collaborations, as well as led to skill development of young researchers and scientists.

Despite setbacks caused by COVID-19 pandemic, COMSATS remained resolute in pursuing its noble goals for the betterment of its Member States. The organization's commitment to innovation and its determination to overcome the odds remained unshaken, drawing strength from even the smallest contributions made by its Member States.

COMSATS continued its focus on clean energy, industrial biotechnology, and tackling climate change. Through its activities, seminar, webinars, and trainings held in various member states, COMSATS worked to promote clean and renewable energy solutions and explored new ways to harnessing green technologies, as reported in this publication. Additionally, the organization contributed towards 4th Industrial revolution in terms of to supporting sustainable practices and resource use. COMSATS emphasized international cooperation and knowledge-sharing among member states to address the global challenge of climate change, generating and sharing essential research to combat its effects. COMSATS also supported initiatives that would help in addressing climate change.

I sincerely hope that readers will find its contents informative and valuable. I want to extend my sincere appreciation to my committed colleagues at COMSATS Secretariat for their contribution and team work. Special thanks are due to all those who have contributed to this Report, including the Chairpersons of the Coordinating Council and Consultative Committee, and specially the Centres of Excellence for their substantive activities, their guidance and support.

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

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. Yanhe Ma
Director General TIB, China



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. Dr. Mochamad Ashari
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. M. Iqbal Choudhary
Director ICCBS, Pakistan



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



Prof. Ahmadou Aly MBAYE
Rector/President UCAD, Senegal



Dr. Radhika Samarasekera
Director General ITI, Sri Lanka



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



Dr. Maher Suleiman
Director HIAST, Syria



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



Prof. Ahmed Ghrabi
Director General CERTE, Tunisia



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



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). Later, the Council approved his life-time membership during its 22nd Meeting. Also, he was made the Chairperson for another term through 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.

FROM THE CHAIRPERSON COMSATS COORDINATING COUNCIL

It is my honour and pleasure to introduce the annual report of COMSATS for 2022. As we are all acquainted, the spread of the coronavirus and its successive mutations over the last years all over the world have led to disturbances in the short-term agendas of most international organisations. Like every other entity that struggled with the COVID-19 pandemic, COMSATS also had to get to grips with virtual meetings and webinars to accomplish their tasks. These activities were enriched by the effective participation of the representatives of the member states and the COMSATS Centres of Excellence. That pandemic has highlighted the necessity of the sincere work from all of us towards the development and implementation of new strategies to survive with the maximum possible achievements of our tasks. After the pandemic, I believe that COMSATS Centres of Excellence soon restored their hand-in-hand, win-to-win cooperative programmes for better productive science and technology in the South. I highly appreciate the great efforts that have been exerted by all COMSATS Centers of Excellence as well as the COMSATS secretariat to adapt to the inconvenient circumstances throughout the past three years and achieve the missions they have to accomplish.

I am looking forward to working together with our respected colleagues from the COMSATS Centres of Excellence as well as Ambassador Mohammad Nafees Zakaria, the COMSATS' Executive Director and his ambitious team, within the frame of the COMSATS Coordinating Council, to exchange ideas, strategies, and plans for the "After Pandemic Era" in the South.





CORE ACTIVITIES OF COMSATS SECRETARIAT

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CORE ACTIVITIES OF COMSATS SECRETARIAT

COMSATS Secretariat provides secretarial assistance to both the Commission and the Network of Centres of Excellence. It is 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 relate 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.



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 24 Centres of Excellence. The Council is an effective platform for South-South and Triangular technical cooperation for realizing the overall objective of achieving sustainable socio-economic development in the South. The Council meets once annually to take decisions on matters relating to the ongoing and future programmes and activities of the organization.

Preparations of 24th Meeting of COMSATS Coordinating Council

Preparations for the 24th Coordinating Council Meeting remained an important undertaking of COMSATS Secretariat during November-December 2022. The meeting was hosted by COMSATS Centre



of Excellence in Pakistan, the International Center for Chemical and Biological Sciences (ICCBS), Karachi, Pakistan, on 25th and 26th January 2023.

To review preparations for the Council Meeting and finalize the organizational matters, Executive Director COMSATS,

Ambassador Dr. Mohammad Nafees Zakaria, visited ICCBS, Karachi, on 26-27 December 2022. Another objective was to strengthen the ongoing collaboration between COMSATS and ICCBS. During discussions with ICCBS' officials, Ambassador Zakaria considered COMSATS Coordinating Council a

forum for S&T collaboration among the developing countries, including tangible R&D projects, long and short-term capacity building activities, exchange of human and technological resources, etc. In this regard, the important agenda items and proposals to be taken up at the Council's forum were also discussed.

Ambassador Zakaria held a detailed meeting with the Director ICCBS, Prof. Dr. M. Iqbal Choudhary, and exchanged views on extending the Centre's research facilities to other Member States of COMSATS, considering it among the best research centres in the country working on chemical and biological sciences. He also discussed means to strengthening South-South and Triangular cooperation in the fields of science and technology in order to help address the socio-economic challenges the developing world is currently facing. Ambassador Zakaria also visited various laboratories and research facilities of the Centre and was pleased to witness the high-standard research activities being carried out by the scientists at the Centre's state-of-the-art laboratories.

Diplomats met during the reporting period were also sensitized about the Council meeting, and those belonging to COMSATS' member states were especially apprised about the Council's undertakings and prospective discussions of the Meeting.

Engagements with Chairperson's Office in Ghana

The Commission, comprising 27 Heads of State/Government of COMSATS' Member States, serves as the highest platform within COMSATS. The first General Meeting of the Commission was held in 1994 that led to the establishment of COMSATS. In April 2012, during the 2nd General Meeting held in Islamabad, Pakistan, the Chairpersonship of the Commission was passed on to the Republic of Ghana through a consensus vote. The President of Ghana currently



holds the position of Chairperson, having been re-elected during the 3rd General Meeting held in Accra, Ghana, in October 2015, and is now serving a second term. Since the transfer of the COMSATS Chair from Pakistan to Ghana, the COMSATS Secretariat has actively collaborated with the Chairperson's Office to ensure effective coordination of the organization's statutory bodies. This includes providing regular updates on Secretariat activities and seeking guidance and support from the incumbent Chairperson, Hon. President Nana Addo Dankwa Akufo-Addo of the Republic of Ghana. During the reported period, communication with the Chairperson's Office was maintained through Dr. Eugene Owusu, appointed by the Chairperson as COMSATS' Focal Person at the Presidency, who also serves as the Advisor to the President on the SDGs.

The COMSATS Center for Climate & Sustainability (CCCS) organized a roundtable meeting on 'Setting the scene in terms of national priorities, opportunities and challenges to boost bankable Climate Change Projects' on 16th November 2022. Held on the sidelines of UNFCCC 27th Conference of Parties (COP27) in Sharam El Sheikh, Egypt, the event was organized in collaboration of ICESCO, RECREE, and Egyptian National Commission for UNESCO & ICESCO. Given Ghana's ministerial-level delegation at COP27 to share their experience in climate pledge implementation, COMSATS requested Ghana to facilitate

its participation to attend the roundtable meeting. Additionally, invitations were extended to participate in other COMSATS activities, such as the webinar on "Building Climate Resilient Health Systems in the Global South" held in April 2022.

Similarly, information regarding the appointment of Ambassador Dr. Mohammad Nafees Zakaria as the new Executive Director of COMSATS, who assumed the position on November 1, 2022, was conveyed. Furthermore, after resuming the role, Ambassador Dr. Mohammad Nafees Zakaria sent a letter to the Honorable President of the Republic of Ghana, Hon. Nana Addo Dankwa Akufo-Addo, in November 2022, informing him about the resumption of duties.

Interactions with Host Country, Pakistan

Briefing to Federal Secretary, Ministry of Science and Technology (MoST), Government of Pakistan

The Federal Secretary, Ministry of Science and Technology (MoST), Government of Pakistan, Mr. Ghulam M. Memon, was given briefing on COMSATS on 23rd June 2022. Apart from being the ex-officio chairperson of COMSATS Ministerial Consultative Committee, Mr. Memon also currently holds the interim charge of Executive Director COMSATS' office.

Held at the Ministry of S&T, the briefing was also attended by senior officials of the Ministry, including Additional Secretary, Mr. Ata ur Rahman; Joint Secretary (Organization), Mr. Miran Mohyuddin; and Joint Scientific Advisor (International Liaison), Mr. Zain ul Abedin. The following senior officials of COMSATS Secretariat gave the briefing: Director (A&E), Mr. M. Bilal Chohan; Director (F&A), Mr. Amanullah Khattak; and Deputy Director (Programmes), Mr. Irfan Hayee.

The briefing session commenced with an introduction given by the Additional Secretary about COMSATS and the organization's flagship higher education project – COMSATS University Islamabad (CUI), and pioneer ISP – COMSATS Internet Services (CIS). After the brief introduction by the Additional Secretary MoST, Mr. Hayee made a multimedia presentation on COMSATS' programmes. He also gave an overview of the historical perspective that led to the establishment of COMSATS in 1994 and highlighted COMSATS' objectives that translate into its programmes and activities. He further elaborated the role and functions of the organization's statutory bodies, including its General Meeting, Consultative Committee, Coordinating Council and the Technical Advisory Committee. He informed Mr. Memon that these bodies are neatly interlinked and constitute a structure that not only affords the organization the highest political leverage, but also provides a sound scientific/technical base for its programmes aimed at national and regional development. Mr. Hayee, highlighted the diversity and commonality of resources and challenges among COMSATS' Member States that provide a useful landscape for South-South and Triangular Cooperation.

The Ministry officials were also briefed about ongoing programmes and activities of COMSATS. The status of the statutory body meetings of COMSATS came under review and it was informed that COMSATS is making preparations to hold meetings of its Coordinating Council and Technical Advisory Committee. These meetings would further enable the organization to take a periodic review of its strategic direction and coordinate international programmes.

Pakistan's Foreign Office Briefed about COMSATS

On 24th June 2022, a meeting was held between COMSATS' officials and senior officials of Ministry of Foreign Affairs (MoFA), Government of Pakistan. The

purpose of the meeting was to brief the MoFA officials about COMSATS and its activities, as well as recent engagements with the office of COMSATS Chairperson, Hon. Nana Addo Dankwa Akufo-Addo, President of Republic of Ghana.

From COMSATS, Mr. Nisar Ahmad, Deputy Director (Coordinator – Chairperson Office) and Mr. Farhan Ansari, Senior Assistant Director (Programmes) held the meeting with Mr. Naeem Ullah Khan, Director General (African Region), and Mr. Arshad Abbassi, Director (African Region), MoFA.

The visiting COMSATS' officials briefed the MoFA officials about COMSATS' structure, member countries, statutory bodies, programmes and activities. Mr. Farhan Ansari gave an overview of COMSATS' flagship projects, i.e., COMSATS University Islamabad (CUI) and COMSATS Internet Services (CIS), as well as various ongoing programmes including capacity building activities. He gave a detailed insight on COMSATS' Network of International S&T Centres of Excellence and its activities. Mr. Nisar Ahmad, being the Coordinator for COMSATS' Chairperson Office, informed the MoFA officials about the recent interactions with the office of Chairperson of COMSATS, especially with reference to preparations for the next General Meeting of COMSATS' Commission in Accra. It was informed that a high-level international conference is planned to be held parallel to the Commission meeting.

Mr. Naeem Ullah Khan informed COMSATS' officials that, as conveyed by the Pakistan High Commission in Accra, the Hon. President of Ghana, has expressed desire to convene an international conference in Accra, being the Chairperson of COMSATS. COMSATS' officials welcomed this development, for which preparatory and coordination work would be expedited at COMSATS Secretariat.

Chairman Federal Public Service Commission (FPSC) of Pakistan Visits COMSATS

On 7th November 2022, Chairman Federal Public Service Commission (FPSC), Capt. (R) Zahid Saeed, paid a visit to Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, and congratulated him on his appointment at this position. During the meeting with Dr. Zakaria, Capt. (R) Saeed extended felicitations and hoped that under Dr. Zakaria's leadership, COMSATS would further thrive and succeed in achieving its mandate of science-led development.



SAPM on Youth Affairs, Government of Pakistan Visits COMSATS

On 14th November 2022, Ms. Shaza Fatima Khawaja (MNA), Special Assistant to the Prime Minister (SAPM) on Youth Affairs, Government of Pakistan, visited COMSATS Secretariat and held a meeting with Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS.

During the meeting, Ms. Shaza was apprised of COMSATS' programmes and undertakings aimed at socio-economic development in the Global South through scientific tools and mechanisms. Thanking Dr. Zakaria for the briefing, Ms. Shaza expressed interest in COMSATS' activities with the aim of building cooperation in areas of mutual interest.



The importance of meaningful engagement of youth in various sectors of economy also came under discussion during the meeting. Dr. Zakaria opined that equipping the youth with necessary skills of modern times and STEM education can aid the progress towards sustainable development. It was also agreed that there is a huge potential in the youth in the global South region.

Others

Ambassador Dr. Mohammad Nafees Zakaria Appointed as Executive Director COMSATS

Ambassador Dr. Mohammad Nafees Zakaria assumed charge as the Executive Director of the Secretariat of COMSATS, on November 1, 2022. He has been appointed by the Head of the Government of Pakistan – the host country of COMSATS Secretariat – as stipulated in the relevant clause of COMSATS’ Statutes. Dr. Zakaria has succeeded Dr. Ghulam Muhammad Memon, the incumbent Federal Secretary of COMSATS’ Focal Ministry in Pakistan, who has had the interim charge of position of Executive Director COMSATS since June 2022.

Executive Director COMSATS Presides Over Session of 18th Convocation of CUI-Islamabad

COMSATS Centre of Excellence in

Islamabad, COMSATS University Islamabad (CUI), held its 18th Convocation on 3rd November 2022. Ambassador Dr. Mohammad Nafees Zakaria, Executive Director of COMSATS, attended the Convocation as the ex-officio Pro Chancellor-II of the University for the first time after assuming charge as Executive Director. He also chaired a session of the ceremony where he addressed an august gathering of University’s Directors, Deans, faculty members and graduating students.

Speaking on the occasion, Dr. Zakaria appreciated the efforts and hard work of graduating students and encouraged them to develop such values that could help them outshine in their professional lives and overcome any challenge that comes their way. Considering the increasing role of technology, he also urged students to keep pace with global advancements in technology. Further, he considered the role of parents and teachers equally significant in the success of the students. He also lauded the phenomenal growth and expansion of the University and considered it a vessel for transmission and generation of new knowledge, and hence adding to the intellectual and economic wealth of Pakistan.

Mentioning Government of Pakistan’s efforts towards developing a knowledge-based economy, Dr. Zakaria stated that the government has made concrete efforts for establishing new universities

Executive Director COMSATS Ambassador Dr. Mohammad Nafees Zakaria



Ambassador Dr. Mohammad Nafees Zakaria assumed charge as the Executive Director COMSATS on 1st 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).

A seasoned civil servant of Pakistan, Dr. Zakaria joined the Ministry of Foreign Affairs (MoFA) in 1988. During his illustrious diplomatic career, he represented Pakistan as High Commissioner to the UK (2019-20), and Malaysia (2017-19). His earlier appointments include Minister (Political)/ Deputy High Commissioner in London (2009-2012) and Consul General for Pakistan in Toronto (2012-2014), as well as various diplomatic assignments in Abu Dhabi (1992-1996), Jakarta (1999-2001), and Bangkok (2001-2006). He was also Pakistan’s Representative to UNESCAP, Bangkok.

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. Most recently after his retirement from the Foreign Services of Pakistan, he was appointed by the President of Islamic Republic of Pakistan as Member Federal Public Service Commission (FPSC) of Pakistan (November 2020 – October 2022).



and strengthening the existing ones. Despite the global economic crisis, it has allocated funds for human resource development with a view to provide highly qualified faculty to the institutions of higher learning in the country, which ensured credible and market-driven degree programmes of higher education. Similarly, many projects have been planned for research and development activities, which are manifested in the form of research grants, high quality laboratories, university – industry linkages, and patent filing, among others.

Executive Director COMSATS Visited COMSATS University Islamabad

Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS visited COMSATS University Islamabad (CUI) on December 19, 2022. It was his first visit since he assumed his responsibility as ED COMSATS. Dr. Zakaria is also Pro-Chancellor II of the CUI.

Rector CUI, Prof. Dr. Muhammad T. Afzal, welcomed the Executive Director and gave him a tour of the campus' different

departments and facilities. The tour was followed by a formal briefing session attended by the Rector, Deans of Faculties and Principal Officers of the University. A detailed presentation about CUI was given by the University Registrar who highlighted its performance with pertinent facts, figures, recent achievements. CUI, in its 7 campuses, has over 2,100 faculty members with over 1,100 faculty members having PhD degrees from advanced countries. More than 33,000 students including 360 international students of 23 nationalities are currently enrolled in different campuses. More than 100 degree programs at Bachelor, Masters and PhD level are being offered by the University that has more than 90,000 alumni – including 714 PhD graduates and 1,700 international students from 40 nationalities who are serving in different sectors in and outside Pakistan. The University, it was learnt, is focusing on research publications and commercialization on development issues crucial to Pakistan. The University has published more than 20,000 impact factor research publications and filed 94 patents. According to Times Higher Education, CUI is ranked number six in Pakistan and one of 601-800 in World Best University Rankings 2023. CUI is offering generous number of scholarships

(100 Scholarships) for the nationals of the COMSATS' member countries.

Dr. Zakaria appreciated CUI's achievements, academic and research performance, and funding higher education for local and foreign students. He highlighted the need to align the University's nine research centers with Pakistan's economic as well as industrial needs. In his opinion, the Centers may advise the Government of Pakistan on different issues as think tank for the relevant policies and initiative. Prospects of aligning CUI's Student Startup Business Center of CUI with National Incubation Center were also explored.

Ambassador Zakaria assured that COMSATS Secretariat will make best efforts towards due utilization of CUI's scholarships by the member countries. Dr. Zakaria assured COMSATS' full support to CUI for promoting University's ambitious development plans over the coming years.

Dr. Zakaria invited Rector CUI to actively participate, as a member, in the meeting of COMSATS Coordinating Council scheduled for the later part of January 2023.



STRENGTHENING SOUTH-SOUTH AND TRIANGULAR COOPERATION

- Meetings with Diplomats and Officials from COMSATS Member States 08
- Meetings with Diplomats of Potential Member States 09

STRENGTHENING SOUTH-SOUTH AND TRIANGULAR COOPERATION

One of the 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 triangular cooperation in a number of fields, including education, training and research, climate change, SDGs and more.



Meetings with Diplomats and Officials from COMSATS Member States

H.E. Mr. Mohamed Karmoune, Ambassador of the Kingdom of Morocco to Pakistan (November 10, 2022)

On 10th November 2022, the Executive Director COMSATS met with H.E. Mr. Mohamed Karmoune, Ambassador of the Kingdom of Morocco. During the

meeting held at his office at the Embassy of Morocco, Ambassador Karmoune felicitated Dr. Zakaria on assuming office at COMSATS Secretariat and assured him that Morocco attaches great importance to COMSATS. Mr. Karmoune thanked Dr. Zakaria for the briefing.

H.E. Mr. Yerzhan Kistafin, Ambassador of Kazakhstan to Pakistan (November 16, 2022)

On 16th November 2022, Ambassador Dr. Mohammad Nafees Zakaria, Executive

Director of COMSATS, paid a courtesy call on the Ambassador of the Republic of Kazakhstan, H.E. Mr. Yerzhan Kistafin, at his office in the Embassy of Kazakhstan in Islamabad. H.E. Mr. Kistafin thanked Dr. Zakaria for the briefing and assured him of Kazakhstan's full support to COMSATS' mandate.

H.E. Mr. Md. Ruhul Alam Siddique, High Commissioner of Bangladesh to Pakistan (November 22, 2022)

On 22nd November 2022, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, paid a courtesy call on the High Commissioner of Bangladesh to Pakistan, H.E. Mr. Md. Ruhul Alam Siddique, at his office in the Embassy. The Honourable Ambassador expressed keen interest in COMSATS' programmes and was especially appreciative of various cooperative activities being run under the umbrella of COMSATS S&T Centres of Excellence.





H.E. Mr. Mohammed Motahar Alashabi, Ambassador of Yemen to Pakistan (November 23, 2022)

On 23rd November 2022, H.E. Mr. Mohammed Motahar Alashabi, Ambassador of the Republic of Yemen to Pakistan, visited COMSATS Secretariat, and held a meeting with Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria.



Welcoming the Honourable Ambassador, Dr. Zakaria appreciated his support towards facilitating Yemen's accession to COMSATS as one of the twenty-seven Member States. H.E. Mr. Alashabi expressed keen interest in building mutually beneficial cooperation in areas of common interest.

H.E. Mr. Mehmet Pacaci, Ambassador of Türkiye to Pakistan (November 25, 2022)

On 25th November 2022, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director of COMSATS, paid a courtesy call on the Ambassador of the Republic of Türkiye, H.E. Mr. Mehmet Pacaci, at



his office in the Embassy of Türkiye in Islamabad. He also appreciated active participation of TÜBİTAK (COMSATS' Centre of Excellence in Türkiye) in COMSATS' programmes and activities. The Honourable Ambassador thanked Dr. Zakaria for the briefing and assured him of Türkiye's full support to COMSATS' mandate.

H.E. Mr. Nong Rong, Ambassador of China to Pakistan (November 28, 2022)

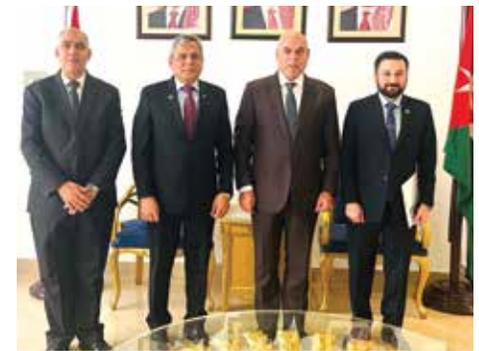
On 28th November 2022, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director of COMSATS, paid a courtesy call on the Ambassador Extraordinary and Plenipotentiary of the People's Republic of China, H.E. Mr. Nong Rong. Mr. Rong appreciated active participation of the Tianjin Institute of Industrial Biotechnology (TIB) and the International Center for Climate and Environment Sciences (ICCES) (COMSATS' Centres of Excellence in China) in COMSATS' programmes and activities. Dr. Zakaria also appreciated the progress made by China in various areas of science and technology and hoped that COMSATS'



Member States would greatly benefit from China. The Honourable Ambassador assured him of China's full support to COMSATS' mandate.

H.E. Mr. Ibrahim Yala Al Madani, Ambassador of Jordan to Pakistan (December 13, 2022)

On 13th December 2022, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director of COMSATS, paid a courtesy call on the Ambassador of the Hashemite Kingdom of Jordan, H.E. Mr. Ibrahim Yala Al Madani. Dr. Zakaria also appreciated active participation of Jordanian S&T Institutions in various programmes of COMSATS. The Honourable Ambassador thanked Dr. Zakaria for the briefing and assured him of Jordan's full support to COMSATS' mandate.

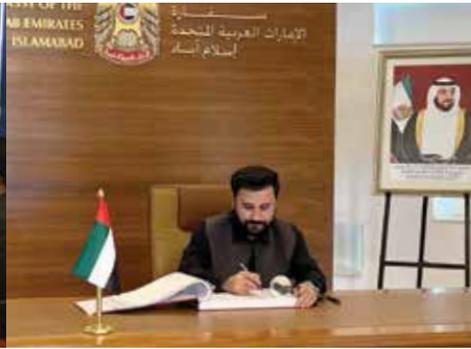


Meetings with Diplomats of Potential Member States

Mr. Tamerlan Khalilov, Deputy Head of Mission of Azerbaijan to Pakistan (April 20, 2022)

On 20th April 2022, Mr. Tamerlan Khalilov, Deputy Head of Mission of Azerbaijan to Pakistan, visited COMSATS Secretariat, along with Mr. Khalid Taimur Akram (Executive Director), and Mr. Faisal Sheikh (Member – Board of Experts) of Center for Global & Strategic Studies (CGSS) – a public policy institution based in Islamabad, Pakistan.

The visiting delegates held a meeting with senior officials of COMSATS. They



received a briefing on COMSATS, its mission, functions and objectives as an intergovernmental organization working for international cooperation in S&T. It was informed that COMSATS is focused at S&T-led sustainable development. The Deputy Head of Mission was also apprised of various scholarship opportunities available at COMSATS' Centres of Excellence, including COMSATS University Islamabad (CUI), Pakistan.

CGSS also extended support for facilitating joint projects to help promote cultural and academic cooperation between the two countries.

COMSATS Condolences Demise of the President of UAE (May 18, 2022)

COMSATS' condolences and expression of solidarity on the sad demise of His Highness Sheikh Khalifa bin Zayed bin Sultan Al Nahyan, the President of the United Arab Emirates (UAE), were communicated to the Embassy of UAE in Islamabad, on 18th May 2022. In this regard, Engr. Qaiser Nawab, Assistant Director (Programmes) at COMSATS Secretariat, called on H.E. Mr. Hamad Obaid Ibrahim Al-Zaabi, Ambassador of UAE to Pakistan. He remarked on the legacy of unprecedented growth, prosperity and development that Late President has left behind for UAE and assured His Excellency of COMSATS' highest consideration of the Government of UAE.

H.E. Mr. Adam M. Tugio, Ambassador of Indonesia to Pakistan (July 27, 2022)

On 27th July 2022, the Ambassador of Indonesia to Pakistan, H.E. Mr. Adam M. Tugio, called on the incumbent Executive Director of COMSATS, Mr. Ghulam Muhammad Memon, to discuss prospects of collaboration between COMSATS and Indonesia, as well as to explore cooperative ties with Pakistani higher education institutions. The meeting was also attended by Mr. Irfan Hayee, Additional Director (Programmes) at COMSATS, and Ms. Hira Khan, Information and Socio-cultural Affairs Officer at the Embassy of Indonesia in Islamabad.

Briefing on COMSATS' work and operations was a part of the meeting during which it was also highlighted that Sepuluh Nopember Institute of Technology (ITS) of Indonesia is one of the twenty-four members of COMSATS Network of International S&T Centres of Excellence. Mr. Tugio appreciated the role



COMSATS is playing towards advocacy of South-South and Triangular cooperation for regional development.

It was learnt during the meeting that students from over fifty countries were granted around three hundred scholarships by Indonesian higher education institutions in 2021, out of which Pakistani students secured the highest number in public sector universities of Indonesia. He was convinced that social and cultural similarities between the two nations provide an opportunity that needs to be explored.

H.E. Mr. Jemal Beker Abdula, Ambassador of Ethiopia to Pakistan (November 10, 2022)

On 10th November 2022, the Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, held a meeting H.E. Mr. Jemal Beker Abdula, Ambassador Extraordinary and Plenipotentiary of Ethiopia.

Thanking the Honorable Ambassador on the occasion, Dr. Zakaria also congratulated him on the opening of Ethiopian Embassy in Islamabad recently. A briefing was also received by the Ambassador on COMSATS' undertakings that are tailored to benefit COMSATS' Member States in various areas of ST&I. H.E. Mr. Abdula expressed keen interest in COMSATS' programmes and considered South-South Cooperation an effective tool in addressing challenges of the South.



COLLABORATIONS WITH NATIONAL AND INTERNATIONAL ORGANIZATIONS

- The Scientific and Technological Research Council of Türkiye (TÜBİTAK), Türkiye 12
- Islamic Organization for Food Security (IOFS), Kazakhstan 13
- Alliance for Affordable Internet (A4AI), USA 14
- South Centre, Switzerland 15
- Climate Resourcing Coordination Center (CRCC), Pakistan 15
- National Flood Response & Coordination Centre (NFRCC), Pakistan 16
- Ministry of Science and Higher Education, Kazakhstan 16
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- United Nations Office for South-South Cooperation (UNOSSC) 17

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.



The Scientific and Technological Research Council of Türkiye (TÜBİTAK), Türkiye

Dr. Orkun Hasekioglu, Advisor to the President of the Scientific and Technological Research Council of Türkiye (TÜBİTAK), Türkiye, visited COMSATS Secretariat on 15th June 2022. Dr. Hasekioglu was visiting Islamabad in connection with his participation in International Workshop on 'Research Commercialization: Challenges and Opportunities' organized by OIC COMSTECH. Dr. Hasekioglu was accompanied by Dr. Mustafa Güzel, Director of Drug Discovery and Development Research Center at Istanbul Medipol University, Türkiye.

The meeting explored COMSATS' relations with Türkiye and TÜBİTAK and aimed at strengthening the cooperation to facilitate science-led development in the global South. It was noted that



TÜBİTAK possesses enormous human and technological resources that can be used to execute programmes for the benefit of COMSATS' Member States and are already contributing to COMSATS' mission through a number of means.

Discussions on planned meetings of COMSATS Coordinating Council,

activities of COMSATS' Network and its thrust areas, scholarships and fellowships, capacity-building activities, and information exchange were also made during the meeting. Prof. Hasekioglu appreciated COMSATS as a potent platform working for socio-economic uplift of the developing countries. He was appreciative of COMSATS Telehealth

Programme, as well as the recent COMSATS' Lecture Series, which featured presentations by distinguished scientists, policy experts, and S&T leaders on various issues linked to sustainable development.

Islamic Organization for Food Security (IOFS), Kazakhstan

On August 16, 2022, COMSATS held a technical meeting with the Islamic Organization for Food Security (IOFS), Kazakhstan, in an effort to establish the first contact between the two parties and explore potential areas of collaboration, including food security, agriculture, and science and technology.

IOFS was represented by Dr. Ismail Abdelhamid, Director of Programmes and Projects Office; Mr. Abdula Manafi Mutualo, Senior Liaison Officer; and Ms. Raushan Kumekbayeva, Manager Coordinator, whereas, COMSATS was represented by Dr. Mehwish Durrani, Additional Director (Programmes); Dr. Huma Balouch, Deputy Director (Programmes); and Mr. Saifullah Khan Dilazak, Programme Officer.

The two parties introduced their organisations and shared information about their primary areas of expertise, ongoing projects, and continuing activities throughout the meeting. It was suggested that combined projects in food security and climate change may be created in order to meet local needs and address global concerns about sustainable and inclusive growth. It was decided that an Action Plan would be created to help achieve shared goals and a Memorandum of Understanding would be signed.

Later on 12th September 2022, a two-member delegation of the Islamic Organization for Food Security (IOFS), Kazakhstan, visited COMSATS Secretariat for a meeting to initiate and discuss prospects of cooperation for climate-resilient agrifood systems transformation in common Member States of COMSATS



and IOFS. The visiting delegation comprised of Dr. Ismail Abdelhamid, Director of Programmes & Projects Office, and Mr. Abdula Manafi Mutualo, Senior Liaison Officer of IOFS.

During the meeting, both sides agreed on creating a cooperative work plan and launch coordinated programmes between CCCS and IOFS with a focus on joint capacity-building in shared Member States, making digitalization for Climate-Smart Agriculture (CSA) a focus area, making joint efforts for mobilising Climate financing, as well as setting up a working group to further explore areas of closer cooperation and bolstering each other's efforts toward combating climate change. Both parties also agreed to sign an Agreement that may draw on enhancing collaboration, coordination, and synergies between both organizations on common thematic areas at the global, regional, and country-level.

On 5th October 2022, COMSATS signed a Memorandum of Understanding with the Islamic Organization for Food Security (IOFS), Kazakhstan, with the aim to contribute towards strengthening capacities of both organizations' Member States in Climate Smart Agriculture to ensure sustainability targets relating 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, H.E. Yerlan Alimzhanuly Baidautlet on behalf of their organizations.

The agreement provides a framework for strengthening cooperation towards the sustainable development of projects on agriculture and food security, with a focus on climate-smart technologies and practices. Specific objectives of the MoU include facilitation for:

- high-level policy debates and technical exchanges towards institutional partnerships and supporting capacity development initiatives to provide expertise and technical know-how to COMSATS and IOFS common member states;
- addressing problems posed by climate change by means, including enhancing productivity, connectivity, and increasing resilience for vulnerable groups in the Global South;
- designing and implementation of innovative initiatives and joint projects under the Green Climate Fund (GCF), Global Environment Facility (GEF) and Adaptation Fund; and
- realization of the Sustainable Development Goal 2 (SDG2) for food security and sustainable agriculture.

Both entities considered the MoU important in terms of developing synergy between IOFS and COMSATS based on their expertise and priority areas and

also for their continuous contribution to promoting South-South and Triangular Cooperation through innovative and comprehensive regional and cross-regional initiatives. Under the MoU, both organisations will jointly pursue training and research activities related to climate change, agriculture and rural development policies, innovation, and social development, such as food security and health, utilizing South-South and triangular cooperation.

Alliance for Affordable Internet (A4AI), USA

A two-member delegation of the Alliance for Affordable Internet (A4AI) visited COMSATS Secretariat and held a meeting with its senior officials on August 19, 2022, to understand mandate, scope and operations of COMSATS and to discuss avenues of cooperation and working modalities.

The A4AI delegates, comprising Regional Head for Asia and Pacific, Ms. Anju Manga and Regional Head for Africa, Ms. Onica Makwakwa, held meeting with COMSATS officials, Additional Director (Programs), Mr. Irfan Hayee, Additional Director (Systems), Mr. Nisar Ahmad, and Assistant Director (Programs), Mr. Qaiser Nawab. They were visiting Islamabad, Pakistan, in connection with a workshop, titled 'Digital Gender Sensitization' jointly organized by the Pakistan Telecom Authority (PTA) and A4AI.

After welcoming A4AI delegates to COMSATS Secretariat, Mr. Hayee acknowledged their interest in collaborating with COMSATS as an intergovernmental organization working for sustainable development of its member states. He took the opportunity to brief A4AI representatives about COMSATS' mission, focus areas, organizational structure, strength in the form of an international Network of S&T Centres of Excellence. He also shared how COMSATS has evolved over the years



and what programs and projects it has been undertaking to benefit the member states, scientific communities, policy makers and other stakeholders. During the briefing, Mr. Hayee also shed light on COMSATS' Flagship Projects and its collaboration with other international partner organizations. It was emphasized that COMSATS is an organization of developing countries that have resolved to adopt South-South and Triangular cooperation as means to development. Mr. Hayee also recounted that currently 27 developing countries are Member States of COMSATS while 24 R&D organizations and academic institutions are members to its robust Network. He highlighted that capacity building has been the main forte of COMSATS. He hoped that COMSATS can benefit from the advocacy activities of A4AI and learn from its programmatic endeavors being made across Asia, Africa, and Latin America.

Ms. Makwakwa thoroughly introduced A4AI as a global coalition working to drive down the cost of Internet access in low and middle-income countries through policy and regulatory reform. Its members are global organizations that operate across multiple countries and actively engage in A4AI's advocacy, research, and in-country engagements to shape a unified voice focused on addressing barriers to affordability and realizing the shared goal of affordable internet access

for all. She noted that the key objective of A4AI operations are not just to provide affordable Internet but to pass on the benefits of cost-effective service for social and economic development that has practical use for masses.

In terms of policy advocacy, it was explained that A4AI promotes good regulatory practices, affordable internet, meaningful connectivity, strengthening rural broadband policy framework, while providing technical assistance where required. Ms. Anju informed that A4AI's has active operations in Bangladesh, Pakistan, Myanmar, Ghana, Mozambique, Nigeria, Gambia, Dominican Republic, as well as Guatemala, where A4AI work in close collaboration with national governments for formalizing partnerships through official Memorandums of Understanding and building national coalitions comprising representatives from the public, private, and civil society sectors to lead local efforts to advance affordable internet access.

Ms. Makwakwa, being Regional Head for Africa, further highlighted Alliance's activities and achievements in African region. She noted that with support from A4AI, Ghanaian multi-stakeholder coalition was formed with an objective to contribute towards the government policy to bring about affordable Internet access to its countrymen. She also boasted that

similar model is being adopted to benefit other African developing countries. She also noted that A4AI contributed towards developing ICT policy of Liberia.

The visiting delegation appreciated COMSATS for its work being done and desired to build synergy in future by formalizing an agreement for this purpose. The meeting concluded on a note of cooperation and maintaining close coordination.

South Centre, Switzerland

A Memorandum of Understanding was signed between COMSATS and South Centre on 25th August 2022 with a view to strengthening existing ties and continuing mutual support for South-South and Triangular Cooperation (SSTrC). Modalities defined in this regard include: innovative and comprehensive regional and cross-regional cooperation initiatives; improving information exchange leading to a greater awareness and wider access to available knowledge and experience; facilitating high-level policy debates and technical exchanges towards strengthening institutional partnerships; as well as engaging in policy development and advocacy, capacity building, and joint training programmes.

On behalf of COMSATS, the Agreement was signed by its interim Executive Director, Dr. Ghulam Muhammad Memon, while Dr. Carlos María Correa signed it for the South Centre as its Executive Director. The signing was done during a meeting between a two-member delegation of the South Centre and the Executive Director COMSATS at the Ministry of Science and Technology (MoST), Islamabad, Pakistan. The South Centre delegation also comprised its Senior Advisor SSTrC and Development Finance, Prof. Yuefen Li, and Lead Programme Officer, Mr. Daniel Uribe. The meeting also had participation of Mr. Irfan Hayee, Additional Director (Programmes) at COMSATS, and two senior officials of MoST.



The South Centre's officials were in Islamabad in connection with an initiative that the Centre is patronizing in collaboration with Islamic Development Bank (IsDB) to institutionalize South-South and Triangular Cooperation (SSTrC) from Pakistan that constituted major part of discussions during the meeting. Prof. Li briefed the participants about national entity envisaged by the South Centre and IsDB to be established in Pakistan to promote SSTrC. As a development finance expert, she shared her assessment on Pakistan's national ecosystem for undertaking such an initiative and explained the proposed functions. Prof. Li also expressed satisfaction on the consultative meeting organized by the Ministry of Foreign Affairs, on 23rd August 2022, where different stakeholders, including COMSATS' representatives, exchanged views and held meaningful discussions on the draft charter of the proposed national entity. Prof. Li explained the scope of this national entity being inter-disciplinary, however science and technology would remain an important area for outward SSTrC. Prof. Li added that this agency will play an important role in facilitating various stakeholders for SSTrC. Acting as a hub and information resource, it would also provide one window operations on relevant cooperation prospects.

Dr. Memon extended support of his

Ministry as well as COMSATS for relevant policy making to facilitate SSTrC. COMSATS and South Centre also agreed to collaborate for observing South-South Cooperation Day 2022.

Climate Resourcing Coordination Center (CRCC), Pakistan

On 26th August 2022, a meeting was held between the representatives of COMSATS Centre for Climate and Sustainability (CCCS) and Climate Resourcing Coordination Center (CRCC) at COMSATS Secretariat. The meeting was attended by Dr. Mehwish Qayyum Durani, Additional Director (Programmes); Dr. Huma Balouch, Deputy Director (Programmes); and Mr. Saifullah Khan Dilazak, Programme Officer. Mr. Sohail Malik, Head of CRCC; and Ms. Kashmala Kakakhel, Advisor at CRCC represented the other side.

The discussion focused on the possibility of CCCS receiving technical support from CRCC for its upcoming training workshop on "Proposal Writing for Bankable Climate Projects" held on the sidelines of United Nations Climate Change Conference (COP 27) in November in Egypt. CRCC assured its support for the said Workshop for which Mr. Malik also contributed as a trainer.

On 30th August, another meeting was held at CRCC office during which the two sides discussed the modalities and content of CCCS' following workshops:

- COMSATS at COP27: Roundtable Meeting on bankable Climate Change Projects, November 16, 2022;
- Training Workshop on Bankable Climate Change Adaptation & Mitigation Projects, November 13-15, 2022;
- Multi-stakeholder and Integrated Approach to Climate Resilience Finance, November 9, 2022

During the afore-mentioned workshops, Dr. Sohail gave thorough talks on current climate change projects and challenges. Dr. Sohail Malik shared insights into the barriers that limit utilisation of development funds compatible with Climate resilience needs to support national adaptation agendas and identified opportunities to overcome related constraints. The importance of the necessary paradigm change and the extent to which the project might catalyse impact beyond a one-time project investment were both emphasised by Dr. Sohail Malik. In particular, he focused on how Identification, Response, Data, methodology, Monitoring & Reporting, when used properly, facilitate the development and approval process of climate change projects. He also highlighted the key components of the Climate Rationale Principles, emphasizing project comprehension.

National Flood Response & Coordination Centre (NFRCC), Pakistan

COMSATS' officials were invited by the National Flood Response & Coordination Centre (NFRCC) at its Centre in-response to a proposal submitted earlier by COMSATS to the Ministry of National Health Services Regulation and Coordination (NHSR&C) of the Government of Pakistan. NFRCC has

recently been instituted as a responsive nerve centre by the Government in the wake of devastating floods in the country that have resulted in a serious humanitarian and climate crisis.

Held on 10th October 2022, objective of the meeting with COMSATS' officials was to assess COMSATS' proposal on "Providing Accessible Primary Healthcare to Flood Affected Communities through a Telehealth System". Drawing upon the experience and expertise of COMSATS Telehealth (CTH), COMSATS' proposed project aims to support flood relief activities in the country in collaboration with government agencies, including NFRCC.

The visiting officials of COMSATS were Dr. Azeema Fareed (Additional Director, Health/ In-charge, Telehealth); Mr. Irfan Hayee (Additional Director/ In-charge, Programmes); and Mr. Nisar Ahmad (Additional Director/ In-charge, Systems) who held a meeting with Brig. Omer Khursheed (Director IT, NFRCC) and Ms. Ayesha Humera (Executive Director, National Information Technology Board – NITB).

During the meeting, officials of NFRCC were briefed about COMSATS and its ongoing projects, especially the Telehealth programme, which is operational from COMSATS Internet Services (CIS). Taking keen interest in the mode of services delivery of CTH, NFRCC's official requested COMSATS for a demo to be presented in the follow-up meeting. COMSATS' team was also encouraged to share the details of the concept note through a multimedia presentation covering project's scope, features and functionalities along with its application in the current disaster management interventions and future roadmap.

The follow-up meeting that took place on 11th October 2022 also had the presence of Dr. Rabail Javed from Ministry of NHSR&C. Dr. Azeema Fareed gave a live demonstration of COMSATS Telehealth

model during which Dr. Nadia Rasheed (Project Manager, Telehealth – CIS) present at Telehealth Resource Centre at CIS connected with four BHU tele-clinics in Balochistan. NFRCC officials observed the tele-consultation process and asked questions about various aspects of the online healthcare system.

Dr. Azeema and Mr. Hayee also discussed the customized aspects of CTH model for current situation and Mr. Ahmed delineated on some related technical aspects. In his feedback, Brig. Khursheed lauded the model for its utility for the remote areas in non-disaster circumstances. He suggested having a "mobile application" compatible with hand-held mobile devices, such as mobile phone or tablet to cater to the primary healthcare needs in disaster hit areas. Furthermore, he advised COMSATS to partner with NGOs working in this domain for implementation of COMSATS' ideas in this emergency situation. The meeting concluded with a pledge to explore further avenues of cooperation in the field of health to help flood affected people of Pakistan. NFRCC's team was also invited to pay a visit to Telehealth Resource Centre.

Ministry of Science and Higher Education, Kazakhstan

On 1st December 2022, a six-member delegation comprising officials of Kazakhstan's Ministry of Science and Higher Education and Kazakhstan's Embassy in Islamabad paid a visit to COMSATS Secretariat. The delegation included Mr. Ahmed-Zaki Darkhan, Chairman of the Committee of Science of the Ministry of Science and Higher Education (COMSATS Focal Ministry in Kazakhstan); and H.E. Mr. Kistafin Yerzhan, Ambassador of Kazakhstan to Pakistan.

During the meeting, Mr. Irfan Hayee, Additional Director (Programmes), made a detailed presentation on the ongoing



programmes and planned activities of the organization. Other senior officials of COMSATS also delineated on specific activities related to COMSATS Network of Centres of Excellence. They highlighted the active role being played by the Kazakh Government in COMSATS' statutory bodies and participation of Al-Farabi Kazakh National University (KazNU) – COMSATS Centre of Excellence in Kazakhstan, in R&D and capacity building programmes.

The delegation expressed interest in strengthening cooperative ties between Kazakh research institutions and COMSATS' Network members, particularly in the areas of IT, Engineering, Biotechnology, Oil & Gas, and Chemicals. The agreed means of cooperation included: networking among experts and young scientists in various fields; collaborative capacity-building events; joint journal publications; sharing of expertise on intellectual property and technology transfer, and joint efforts towards SDGs. It was further agreed that the Kazakh Ministry of Science and Higher Education through COMSATS' platform will consider providing scholarship opportunities to developing countries, as well as grants for commercialization of research projects, and facilitate exchange of students, researchers and experts.

The Ministry also agreed to facilitate MoU signing between CUI and Satpayev University, Almaty. The officials of COMSATS Secretariat and CUI welcomed these proposals and resolved to work closely with Kazakh institutions to facilitate South-South cooperation in science and technology.

Meeting with Honorable Shadow Minister for Women and Equalities, United Kingdom, and Member of the British Parliament

Ms. Yasmin Qureshi, Honorable Shadow Minister for Women and Equalities, United Kingdom, and Member of the British Parliament, visited COMSATS Secretariat, on 22nd November 2022,



and held a meeting with Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS. During the meeting, Ms. Qureshi congratulated Dr. Zakaria on his appointment. She was apprised of COMSATS' programmes and undertakings aimed at socio-economic development in the global South through scientific tools and mechanisms. Thanking Dr. Zakaria for the briefing, Ms. Qureshi expressed interest in COMSATS' activities with the aim of building mutually beneficial North-South cooperative ties.

Dr. Zakaria noted that meaningful cooperation between global South and global North is significant for progress towards sustainable development.

United Nations Office for South-South Cooperation (UNOSSC)

In November 2018, COMSATS joined hands with the United Nations Office for South-South Cooperation (UNOSSC) by signing a Memorandum of Understanding (MoU) for promoting science-led sustainable development in its twenty-seven Member States through South-South and Triangular Cooperation schemes.

Within the framework of cooperation, COMSATS and UNOSSC have been participating in activities related to South-South and Triangular Cooperation in S&T organized by any of two partners. Recognizing the COMSATS' efforts

towards South-South Cooperation, UNOSSC, projected COMSATS as the 'Partner of the Month' for the period July-August 2020, for its South-South Galaxy Platform as part of its initiative to promote organizations on their exceptional South-South and triangular cooperation efforts.

During the reported period, UNOSSC published one of COMSATS' initiatives as best practices for South-South Cooperation in its publication 'Good Practices in South-South and Triangular Cooperation for Sustainable Development Vol. 4', which was launched at the United Nations Day on South-South Cooperation at the occasion of the Global South-South Development (GSSD) Expo 2022, held in Bangkok, from 12th – 14th September 2022.

UNOSSC along with Member States, UN agencies, and other development partners have jointly been developing the "Good Practices in South-South and Triangular Cooperation for Sustainable Development" publication for several years. The publication that features initiatives that contribute to the achievement of Sustainable Development Goals (SDGs), while illustrating the central tenets of effective South-South and triangular cooperation. This publication series has been welcomed by Member States as an exercise that could be used to support developing countries to share knowledge and connect with one another to address similar development challenges.

On invitation of UNOSSC to join this exercise this year, COMSATS submitted,



one of its recent programme activities, i.e. establishment of COMSATS Joint Centre for Industrial Biotechnology (CCIB) for the Good Practices in South-South and Triangular Cooperation for Sustainable Development (Vol. 4) publication. The Centre was established on 14 April 2021, at the Tianjin Institute of Industrial Biotechnology (TIB), CAS, under the framework of the National Center of Technology Innovation for Synthetic Biology (NC SynBio) of China. The centre was established with an objective to promote meaningful cooperation among developing countries, particularly COMSATS' member States, in industrial biotechnology.

COMSATS Telehealth (CTH) and COMSATS Centre for Climate and Sustainability (CCCS) held a webinar on

climate change – health systems nexus in connection with World Health Day with the theme “Our planet, our health”

Observing World Health Day (April 7th), the Telehealth Desk of COMSATS in collaboration with COMSATS Centre for Climate and Sustainability (CCCS) organized a webinar titled 'Building Climate Resilient Health Systems in the Global South' on 6th April 2022. The event was joined by the notable speakers from World Health Organization Regional Office for the Eastern Mediterranean (WHO/EMRO), Egypt; Theodor Bilharz Research Institute (TBRI), Egypt; InterAcademy Partnership (IAP), Italy; St. Luke's Medical Center College of Medicine, Philippines; Somali Greenpeace Association (SOGPA), Somalia; Globesight, UAE; and Indiana University–Purdue University Indianapolis (IUPUI), USA. The UNOSSC also participated, as Ms. Xiaojun Grace Wang, Deputy Director of United Nations Office for South-South Cooperation (UNOSSC), USA, sent her video message in which she highlighted the strong connection between climate and health, and underscored that changing climate is damaging the socio-environmental determinants of health, i.e., food, water and shelter and is becoming a biggest health threat by causing 30 million deaths per year. Ms. Wang also shared some efforts being made by UN agencies for combating climate threats and creating sustainable health systems in different regions of the world.



CAPACITY-BUILDING EVENTS AND INTERNATIONAL OBSERVANCES

• Fourth Term of ANSO-BIDI School (May 04, 2022 to July 13, 2022)	20
• Fifth Term of ANSO-BIDI School (November 09, 2022 to January 2023)	21
• Webinar on Adaptation and Mitigation: Joining Efforts to Activate Climate Action (February 15, 2022)	22
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CAPACITY-BUILDING EVENTS AND INTERNATIONAL OBSERVANCES

Capacity-building constitutes an important aspect of COMSATS' programmes aimed at strengthening 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 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

Fourth Term of ANSO-BIDI School (May 04, 2022 to July 13, 2022)

COMSATS collaborated with the Alliance of International Science Organizations (ANSO), and the Centre for Environmental Economics of the University of Chinese Academy of Sciences (CEE-UCAS), China, to organize the fourth term of ANSO-BIDI School on 'Innovation, Sustainable Development, and Leadership Enhancement' under the Belt and Road International Innovation Development Institute Network (ANSO-BIDI Institute Network). COMSATS has been collaborating with CEE-UCAS to promote capacity-building of developing countries in the fields of science and technology under a Memorandum of Understanding signed in July 2020.



The opening ceremony of the event was held virtually on 4th May 2022. Speaking at the opening, Prof. Dr. Ashraf Shaalan, Chairperson COMSATS Coordinating

Council, stated that the world is currently undergoing massive technological, demographic, environmental, and geopolitical developments that are posing



numerous challenges as well as great opportunities for human development. Prof. Shaalan informed that COMSATS has been playing an important role in facilitating socio-economic growth of the developing countries through a variety of initiatives related to capacity building, collaborative research and development, and the exchange of knowledge, experiences, and best practices. He also pledged COMSATS' continued active role in the ANSO-BIDI Institute Network to achieve collective goals in future.

The online training, which ran from 4th May to 13th July, was divided into nine weekly modules wherein subject experts and academics from renowned universities of Belgium, Canada, China, Switzerland and United States trained over 150 participants from various countries. Course beneficiaries also included 50 trainees from Egypt, Kazakhstan, Nigeria, Pakistan, and Sudan that were nominated by COMSATS Secretariat. A number of topics were covered during the training that included: Sustainability, Technology and Social Science; Accelerating Resilience of Industrial Regions to Pandemic and other Disruptions; Financing Sustainability; Valuing Supply Chain Responsiveness and Resilience: Implications for Sustainable and Ecological Economics; Disruptive Technologies: The Case of Autonomous Vehicles; and the Supply Effects of COVID-19 and Responses to the Pandemic. Active discussions and Q&A sessions during the modules facilitated exchange of ideas and

knowledge-sharing.

This two-and-a-half-month long training concluded in a ceremony that was held virtually on 13th July 2022. On the occasion, Prof. Desheng Wu, Director of the Research Centre for Environmental Economics of UCAS, China, as well as representatives from collaborating/participating organizations shared their views and insights. In his message, read out by Mr. Farhan Ansari, Sr. Assistant Director (Programmes) at COMSATS Secretariat, Prof. Ashraf Shaalan, Chairperson of COMSATS Coordinating Council, acknowledged the concerted efforts of partners towards holding this training course. Underpinning the need of S&T in the sustainable development process, Prof. Shaalan viewed that developing nations need to nurture their indigenous capacities in scientific and technological domains to help improve their socio-economic standing. He also communicated COMSATS' resolve in enhancing collaboration with relevant stakeholders and in making the best use of this platform for mutual gains. The ceremony concluded with the distribution of certificates of honor and distinctions to speakers, participants and outstanding/model trainees, respectively.

Fifth Term of ANSO-BIDI School (November 09, 2022 to January 2023)

Under the Belt & Road International Innovation Development Institute Network (ANSO-BIDI Institute

Network), COMSATS joined hands with the Chinese Alliance of International Science Organizations (ANSO), Centre for Environmental Economics of the University of Chinese Academy of Sciences (UCAS), and other member of ANSO-BIDI Institute Network to organize the fifth term of ANSO-BIDI School (online training) on 'Innovation, Sustainable Development and Leadership Enhancement'.

Starting on 9th November 2022, the event was opened by Prof. Desheng Wu, Dean of the Belt and Road College of UCAS, Director of the Research Centre for Environmental Economics of UCAS, China, and also featured talks by leading officials of participating organizations.

Speaking at the opening, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, opined that socio-economic development of a country largely depends on its scientific and technological prowess. He noted that the countries of the South are at a disadvantage, primarily due to the absence of well-equipped scientific institutions, technical infrastructure, research funding and necessary human capital. He considered it essential for the developing countries to make concerted efforts to develop their S&T capacities in terms of higher education, science, technology, indigenous research and development.

The training benefited over 80 participants, including 47 trainees recommended by

COMSATS belonging to its Member Countries (Iran, Kazakhstan, Nigeria, Pakistan, Palestine and Syria). 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. Each training module was followed by active discussions and Q&A sessions, which facilitated exchange of ideas and knowledge-sharing.

Webinar on Adaptation and Mitigation: Joining Efforts to Activate Climate Action (February 15, 2022)

On 15th February 2022, COMSATS co-organized a webinar 'Adaptation and Mitigation: Joining Efforts to Activate Climate Action' with the Islamic World Educational, Scientific and Cultural Organization (ICESCO), Morocco. The event aimed to deliberate on the outcomes of the United Nations Climate Change Conference (COP26) and related pledges made by the Islamic world and African continent.

The hybrid event was also supported by UNESCO Office for the Maghreb, Morocco; the Climate Change Competence Center (4C Maroc), Morocco; the Regional Center for Renewable Energy and Energy Efficiency (RCREEE), Egypt; and the United Cities and Local Governments of Africa (UCLG), Morocco.

The event was physically hosted at the headquarters of the Hassan II International Environmental Training Center in Rabat. It had a virtual gathering of over 110 from 36 countries, including Algeria, Bangladesh, Burkina Faso, Cameroon, Canada, Chad, Congo, Ethiopia, Egypt, France,



Gabon, Gambia, Greece, Guinea, Japan, Jordan, Kazakhstan, Libya, Madagascar, Mali, Morocco, Niger, Nigeria, Pakistan, Palestine, Rwanda, Senegal, Saudi Arabia, Sri Lanka, Tanzania, Türkiye, Togo, Jamaica, UK, USA, and Yemen.

During his welcome address, Dr. Raheel Qamar, Head of ICESCO's Science and Technology Sector, hoped that the webinar would help increase awareness on the significant change that international partnership and cooperation can bring to climate change mitigation and adaptation.

In his recorded video-message for the occasion, Prof. Dr. Ashraf H. Shaalan, Chairperson COMSATS Coordinating Council, emphasized on the need to incorporate challenges related to climate change as an agenda in policy making at national and global levels.

Speaking on the occasion, Dr. Najat Zarrouk, Director of the African Local Government Academy (ALGA) of UCLG-Africa, shared the role of UCLG in encouraging voluntary actions to mitigate climate change and move toward a more resilient and low-emission society.

In his remarks, Dr. Mohammad Alaoui, Head of the Department of Natural and

Exact Sciences, UNESCO Office for the Maghreb, opined that all countries need to become more resilient in view of the fact that climate change further exacerbates poverty and inequality situations.

Ms. Kenza Khallafi, Partnerships Officer at Mohammed VI Foundation for the Protection of the Environment, opined that development finance institutions have a vital role to play in supporting developing countries transitioning towards climate-smart, resilient, and inclusive economies.

The guest of honour, H.E. Mr. Simon Martin CMG, Ambassador of the UK to the Kingdom of Morocco, urged both the developed and developing countries alike to come together to protect environment and adhere to the Paris Agreement on Climate Change. His Excellency also highlighted the significance of having more effective mobilization of financial resources' from national and international sources to help developing countries in strategizing and developing transformative approaches to climate change adaptation and mitigation.

The webinar featured presentations by Mrs. Rajae Chafil, Director of 4C Maroc; Dr. Jauad El Kharraz, Executive Director

of RCREEE; Dr. Daouda Ben Oumar Ndiaye, Lead Climate Change Expert at Islamic Development Bank (IsDB); Mr. Mazen Malkawi, Regional Advisor for Environmental Health and Climate Change, WHO Representative; Mrs. Nasma Jroni, Expert in Sustainable Development, Mohammed VI Foundation for the Protection of the Environment; Prof. Manal Fawzy Ahmed, Chair, Egyptian National MAB Commission to UNESCO; and Mr. Taffere Tesfachew, Acting Managing Director for The Technology Bank for Least Developed Countries.

These speakers provided comprehensive overview of decisions adopted at COP26, touching upon topics such as low-carbon energy innovation systems; climate change resilient health systems; air climate programme – decarbonisation of the Moroccan economy; climate change adaptation and mitigation: perspective from LDCs, LLDCs and SIDS; and preparations for and objectives of COP27.

Discussions during the panel discussion sessions related to: main cross-cutting factors relating to the climate change; gender and women empowerment as contributors to sustainability; industry 4.0 technologies compatible with climate change mitigation and adaptation; role of intergovernmental and international organizations in integrating mitigation and adaptation strategies in development activities; emerging areas of capacity building to drive the successful implementation of COP26; innovative measures for scaling up and replicating climate finance; how COP26 aims to realize climate action to support post-pandemic inclusive recovery; and the need for Islamic world to contribute to environmental conservation by development and implementation of initiatives and programmes aimed at managing adverse effects of climate change.



15th International Symposium on Natural Product Chemistry (ISNPC-15) (February 21-24, 2022)

Under the framework of COMSATS-UNESCO Technical Cooperation Programme 2020-2021, COMSATS collaborated with the International Centre for Chemical and Biological Sciences (ICCBS), Karachi; Ministerial Standing Committee on Scientific and Technological Cooperation of the Organization of Islamic Cooperation (COMSTECH), and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) to organize 15th International Symposium on Natural Product Chemistry (ISNPC-15) from February 21-24, 2022.

Opening the event, Prof. Dr. M. Iqbal Choudhary, Director ICCBS, considered the Symposium a networking platform to help inspire ideas that may culminate in novel projects and initiatives aimed at advancing the understanding and implementation of natural product chemistry in the region. He acknowledged the support of COMSATS, UNESCO and other partner organizations in making it possible.

In his video message, Prof. Dr. M. Ashraf Shaalan, Chairperson COMSATS Coordinating Council, emphasized that the scientific and technological progress in the area of natural product chemistry and

the prominent role it played in scaling-up bio-industrial technologies strongly led to economic gains and would continue to affect the economic landscape even more deeply in the coming years.



In her video message, Ms. Patricia McPhillips, UNESCO Representative in Pakistan, opined that the progress and development of different nations around the world is inextricably linked to the resources they utilize. She stated that North-South and South-South cooperation is vital for strengthening the technological capacity, capabilities, and sustainability of developing countries.

Prof. Dr. Atta-ur-Rahman delivered the inaugural lecture entitled 'Some Adventures in Natural Product Chemistry and Higher Education'. His lecture highlighted new concepts pertaining to novel possibilities in the field of natural product chemistry, such as synthesis of new therapeutic molecules, development

of new approaches and methodologies for creating and enhancing the structural variation of natural products, and identification of new materials with novel properties.

The technical undertakings of the Symposium were organized under 14 plenary and parallel invited lectures delivered by more than 60 internationally recognized foreign speakers from academia and industry. More than 200 papers on multidisciplinary topics were presented, including oral and poster presentations. The forum combined several modes, including online and offline/physical conferencing and cloud livestreaming to meet the COVID-19 prevention and control requirements.

The event was joined physically and virtually by individuals from 21 countries, including Azerbaijan, Bangladesh, Burkina Faso, Cameroon, Canada, China, Egypt, Germany, Greece, Iran, Iraq, Kazakhstan, Nepal, Nigeria, Pakistan, Sri Lanka, Sudan, Sweden, Turkey, United Kingdom, and USA.

International Seminar on ‘Sustainable Technologies in Modern Energy: A Roadmap Towards Green Economy’ (March 7-8, 2022)

A two-day International Seminar on ‘Sustainable Technologies in Modern



Energy: A Roadmap Towards Green Economy’ was held on 7th and 8th March 2022. The event was aimed to provide interdisciplinary forum to academicians, scientists and early career researchers to deliberate on the importance of energy efficiency, sustainable and renewable energy resources, technologies and applications.

The event was inaugurated by H.E. Mr. Shibli Faraz, Federal Minister for Science and Technology, Government of Pakistan, on 7th March 2022, in a ceremony hosted at the premises of Pakistan Academy of Sciences (PAS), Islamabad.

In his welcome speech, Rector CUI, Prof. Dr. Muhammad T. Afzal, inter alia, highlighted the need for more research and development in grid technology to bring it in line with modern energy needs, which has a huge potential of drawing investors in smart grids.

Speaking on the occasion, Mr. Syed Junaid Akhlaq, Secretary General Pakistan National Commission for UNESCO (PNCU), was of the view that the advancement of sustainable innovative technologies in modern energy would improve energy security, environment, economy, mechanical manufacturing, construction, transportation, and industry, as well as contribute to the creation of new jobs.

During his virtual participation, Prof. Dr. Ashraf Shaalan shared the perspective of COMSATS Coordinating Council comprising of the leadership of COMSATS’ Centres of Excellence. He considered nations’ abilities to keep up with technological progress and innovation, critical for socio-economic growth.

Speaking on the occasion, the Honourable Minister appreciated the role of developing sector and academia in highlighting the issues and initiating key debates on RETs, sustainable development, and green economy. In view of hiking fossil fuel prices, he also emphasized the need for exploiting smart technologies, efficient grids to address issues of the energy demand side in Pakistan. Mr. Faraz further opined that small conservations from energy efficient appliances translate into big savings on large energy projects.



The talks of the event covered a number of issues pertinent to the theme of the event, including: digital engineering; Lithium-ion Batteries as Energy Storage Device; Indigenous development of hydropower; RE-based Distributed Generation; Multifunctional electrode materials for li-ion battery and super capacitors; Sustainable Technologies in Modern Energy; Solar Thermal Air Conditioning Technologies; and Materials for Solar Energy and Hydrogen Production.

The speakers and experts of the two-day event represented major Universities and institutions of Pakistan.

International Conference on 'Industry 4.0 in the Developing World: Challenges, Gaps and Opportunities' March (16-17, 2022)

COMSATS partnered with its Centre of Excellence in Sri Lanka, Industrial Technology Institute (ITI), to organize 'International Conference on 'Industry 4.0 in the Developing World: Challenges, Gaps and Opportunities', on 16th-17th March 2022.

The 25 speakers of the two-day Conference belonged to Industrial Technology Institute (ITI), Sri Lanka; Ministry of Technology and State Ministry of Digital Technology & Enterprise Development, Sri Lanka; Ministry of Youth & Sports, Sri Lanka; Ministry of Development Coordination and Monitoring; Sri Lanka; Pakistan National Commission for UNESCO (PNCU), Pakistan; UNIDO Headquarters, Austria; UNIDO Office, Pakistan; National Research Centre (NRC), Egypt; Presidential Committee on Emerging Technologies, Government of Pakistan; Institute of Policy Studies (IPS), Sri Lanka; Digital Dubai, UAE; Linked Things, Pakistan; Ministry of Information Technology and Telecommunication, Pakistan; COMSATS University Islamabad (CUI), Pakistan; Information and Communication Technology Agency (ICTA), Sri Lanka; Huawei Technologies



Lanka Co (Pvt.) Ltd., Sri Lanka; University of Moratuwa, Sri Lanka; Sri Lanka Electronics Manufacturers and Exporters Association (SLEMEA), Sri Lanka; Entgra Pvt. Ltd., Sri Lanka; Aitken Spence, Sri Lanka; Yazılım Teknolojileri Araştırma Enstitüsü (YTE), TÜBITAK, Türkiye; and COMSATS Secretariat, Pakistan.

The inaugural session of the event was held on 16th March 2022, and was presided over by H.E. Mr. Namal Rajapaksa, Minister of Youth & Sports/Minister of Development Coordination and Monitoring and State Minister of Digital Technology & Enterprise Development of Sri Lanka.

In his welcome address, Chairman of ITI, Sri Lanka, Dr. G.A.S Premakumara, noted that in view of the rapid advancements in emerging technologies, it is vital for policy and decision makers to remain informed of such advancements.

In his opening address, Mr. Jayantha De Silva, Secretary to the Ministry of Technology, Government of Sri Lanka, emphasized that our future course of action should be based on the knowledge of innovations driven by enabling technologies, such as IoT, AI, and robotics. He further stated that countries are already beginning to consider Industry 5.0 and Industry 6.0 as alternatives to Industry 4.0 depending on their existing levels of digital infrastructure, culture, social status, and

economic situation.

Addressing the gathering at the inauguration, Mr. Syed Junaid Akhlaq, Secretary General, PNCU, considered it important for developing countries to make quick learning and duly invest in science, technology, and innovation infrastructure.

In his keynote address, Dr. Bernardo Calzadilla-Sarmiento, Managing Director at Directorate of Digitalization, Technology and Agri-Business, and Director at Department of Digitalization, Technology and Innovation, UNIDO, Austria, noted that advancements under the 4IR provide realistic solutions to our current and future challenges, including global poverty, climate change, and achieving SDGs.

Prof. Dr. Ashraf H. Shaalan, Chairperson COMSATS Coordinating Council opined that the Fourth Industrial Revolution is an excellent opportunity to unite global communities, build sustainable economies, adapt and modernize models, and to commit to value-based leadership of emerging technologies.

The Chief Guest for the occasion, H.E. Mr. Namal Rajapaksa, stated that Sri Lankan government is updating cross-sectoral traditional procedures to keep up with the pace of emerging technologies while ensuring that they encourage all



stakeholders to legislate, regulate, set and implement agenda for critical work.

Dr. Radhika Samarasekera, Director General of Industrial Technology Institute (ITI), and the Conference Chairman, lauded the efforts made by COMSATS and UNESCO for organizing the Conference and also hoped that the event will be a catalyst for driving new approaches and collaborative efforts to benefit from Industry 4.0.

The event's sessions included: Introduction to 4IR – Implications for developing countries; Blockchain & 4IR Technologies; Society 5.0; Innovations and upcoming trends and applications of 4IR; and Smart Cities. The sessions covered the following, respectively:

- resurgence of economy through technology diffusion; digital transformation and 4IR for competitiveness; risks and opportunities in 4IR; and preparing Sri Lanka's labour market for Industry 4.0.
- potential of blockchain for reducing the digital divide; implementing industrial IoT in emerging markets; and learning from blockchain deployment in UAE.
- Society 5.0 vs Industry 4.0 and future of education and culture in the light of AI.
- 4IR technologies for health, agriculture, energy, and disaster risk management.
- impact of digital technology

on international trade; digital transformation of cities; as well as technology enablement for new business models and international trade.

At the end of the technical sessions, a panel discussion was held that was moderated by Mr. Hiranya Samarasekera, Principal Advisor at the Ministry of Technology, Sri Lanka. Discussions during the session covered a number of policy and technical aspects.

Webinar on 'Feasibility Study of Safe Drinking Water through Water Conservation' (March 30, 2022)

COMSATS Centre for Climate and Sustainability (CCCS) in collaboration with the Centre for Climate Research and Development (CCRD) at COMSATS University Islamabad (CUI), Islamabad,

organized a webinar on 'Feasibility Study of Safe Drinking Water through Water Conservation', on 30th March 2022. The webinar was physically and virtually attended by over 70 participants from Pakistan, Bangladesh, China, Egypt, Ghana, Jamaica, and Nigeria.

The webinar aimed to share the outcomes of the ongoing project titled 'Feasibility Study for Provision of Safe Drinking Water through Water Conservation (SDWC)' being run in three D-8 member countries, i.e., Egypt, Nigeria and Pakistan with the financial support of D-8 Secretariat, Türkiye. Within the framework of Sustainable Development Goal 6 (SDG6) – Clean Water and Sanitation – the project was launched with the facilitation of COMSATS Secretariat and the Ministry of Foreign Affairs, Government of Pakistan.

In their remarks at the opening, Ambassadors Shahid Kamal (Founder



of CCCS) and Isiaka Abdulqadir Imam (Secretary General of D-8 Secretariat) welcomed the participants, and commended the project stakeholders and acknowledged the holding of the present webinar. Speaking on the occasion, Dr. Ata ur Rehman, Additional Secretary, Ministry of Science and Technology, Government of Pakistan, highlighted the importance of water conservation.

Dr. Toqeer Ahmed, Principal Investigator of the Project, shared the progress of the study with a brief history of smart water metering, water supply situation in Islamabad, importance of water conservation and different research activities carried out under his projects.

Prof. Dr. Fagr Abdel Gawad from National Research Centre (NRC) of Egypt and Prof. Dr. Kenneth Yongabi from Imo State University of Nigeria shared their views about water conservation activities in their respective countries. GIS based mapping of the study area was explained by Ms. Saima Naz, GIS expert from CCRD.

Dr. Naveed Iqbal, Director Water Management, Pakistan Council of Research in Water Resources (PCRWR), delineated water management practices in Pakistan and discussed different strategies in this connection like roof top harvesting, artificial ground water recharge, water metering and pricing component.

Workshop on 'Crop Microbiome and Sustainable Agriculture' (April 13, 2022)

COMSATS in collaboration with its Centre of Excellence in China – the Tianjin Institute of Industrial Biotechnology (TIB), organized a workshop titled 'Crop Microbiome and Sustainable Agriculture' from the platform of COMSATS Joint Centre for Industrial Biotechnology (CCIB). Held under the umbrella of CCIB's Joint R&D Group on Bio-agriculture on 13th April 2022, the workshop aimed at sharing research progress in the area of



crop microbiome and promoting large-scale application of relevant products and technologies by bringing together researchers from all over the world to address key challenges in sustainable agriculture.

Over 80 scientists/ researchers from Bangladesh, China, Iran, Kazakhstan, Nigeria, Pakistan, and Turkey participated in the workshop both virtually and physically. Welcoming the participants at the opening, Prof. Dr. Jibin Sun, Director of CCIB/Deputy Director-General of TIB, underscored the importance of crop microbiome in improving agricultural production. He opined that crop microbiome has the potential to enhance agricultural productivity; reduce occurrence of plant diseases; diminish the need for chemicals and reduce emissions of greenhouse gases. He also acknowledged the support of COMSATS Secretariat for holding this Workshop.

In his opening remarks, Chairperson COMSATS Coordinating Council, Prof. Dr. Ashraf Shaalan, stated that natural ways to supplement conventional agricultural practices must be sought in order to meet the global demand for food, which is anticipated to climb by 70% by 2050. He viewed microbiome as a potential long-term solution to the challenge of food insecurity that has exacerbated due to continuous land degradation, losses in soil fertility, changing climate, and increasing extreme weather events. He communicated

COMSATS' resolve to contribute to building capacities of scientific community in its Member States in crucial areas of S&T.

The technical proceedings of the workshop featured a keynote address and several presentations delivered by speakers from Bangladesh, China, Iran, and Kazakhstan. In his keynote talk on 'Manufacture of Bio-organic Fertilizers to Manipulate Soil Microbial Communities', Prof. Qirong Shen, Academician of Chinese Academy of Engineering (Professor, Nanjing Agricultural University, China), discussed three types of Rhizospheric Microbiome (RM) employed for the manipulation of soil microbiome, i.e., Detoxification RM, Promotion RM, and Immunity RM. He established the significance of organic based fertilizers (OBF) for preventing water eutrophication and ensuring the health of soil for bumper crops. He further deemed OBF to be of high-quality to help control soil-borne diseases and balance soil nutrient supply. Prof. Shen also discussed the manufacturing of OBF using composting, bacillus biofertilizers, and trichoderma biofertilizers.

Prof. Mohammad Ali Malboobi from the National Institute of Genetic Engineering and Biotechnology of Iran, speaking on the topic of 'Phosphate Bio-fertilizer: A Manifold Solution for Sustainable Agriculture' noted that over the years, sustainable farming methods and agriculture practices have been adopted



that require less land and water resources, are cost-effective, and also ensure environmental safety and food security. Mentioning the importance of phosphate for plant growth, Prof. Malboobi noted that the use of phosphate fertilizer is greater in developing countries than in developed ones. Further during his presentation, Prof. Malboobi discussed integrated nutrient management, monitoring, as well as the advantages of PhosphoBARVAR-2 (phosphate biofertilizer).

Prof. Md. Mozammel Hoq from the Department of Microbiology of the University of Dhaka, Bangladesh, explored the benefits of *Bacillus thuringiensis* (Bt) as a biopesticide and an alternative to chemical pesticides. He informed that production of Bt biopesticides comprises of several crucial steps, including sample collection, characterization, efficiency testing, and bioassay of potential strains before production. Prof. Hoq mentioned that Bt biopesticides produce insecticidal crystal proteins (ICP) / Bt crystals that are both distinctive and environmental-friendly.

In her presentation on 'Biotechnological Potential of Soil Cyanobacteria in Agriculture', Dr. Assemgul Sadvakassova from Al-Farabi Kazakh National University (KazNU) of Kazakhstan,

discussed organic material synthesis, nitrogen fixation, phosphorus absorption, BAS generation, and other biochemical processes related to soil cyanobacteria in agriculture. She also highlighted the productivity of isolated cyanobacterial strains on nitrogen-free medium and discussed genetic identification of isolated strain and construction of phylogenetic tree. Dr. Sadvakassova also informed that research on 'Isolation of Cyanobacteria Axenic Cultures from Rice Fields' is being supported from the platform of CCIB.

Prof. Yang Bai from the Institute of Genetics and Development Biology of Chinese Academy of Sciences (CAS), China, gave presentation on 'Interactions Between Plants and Root Microbiome in Arabidopsis and Rice'. It was informed that root microbiome is vital for health of roots as it protects from diseases and stress, as well as helps in nutrient uptake. Prof. Bai informed that rice is an appropriate model for investigating plant-root microbiota interactions since it grows predominantly in paddy soils and has a unique mechanism with root microorganisms. He mentioned that the two main species of rice – Indica and Japonica – have different root microbiota and exhibit significant genomic and phenotypic variation. Other topics discussed by Prof. Bai included clustered triterpene biosynthetic pathways, triterpene mixture selectivity, protocol for

high-throughput cultivation, identification of bacteria from the plant root microbiota, and function and mechanism of bacterial microbiota associated with *Fusarium graminearum*.

Discussing the significance of microbial fertilizer in his presentation, Prof. Zhiyong Huang, CCIB Coordinator of Joint R&D Group on Bio-agriculture, shared that microbial fertilizers are a viable alternative to chemical fertilizers in terms of reducing environmental pollution. He also highlighted the significance of plant growth promoting microorganisms (PGPM) in stimulating plant growth and promoting plant health mentioning them to be both safe and sustainable. TIB, he informed, had established multi-screening system and obtained over 500 PGPMs. Some other topics discussed by Prof. Huang included: rhizosphere microbiome and its effects, relation of plant and microbe, synthetic microbial community (SMC) and its model, synthetic microbial community FN and NPK, and interaction of microbe-soil-plant, among others.

Workshop on Bioenergy: A Road to Carbon Peaking and Carbon Neutrality (June 14, 2022)

COMSATS Joint Centre for Industrial Biotechnology (CCIB) organized an online workshop on 'Bioenergy: A Road

to Carbon Peaking and Carbon Neutrality' under its Joint R&D Group on Bioenergy. Held on 14th June 2022, the Workshop was aimed at encouraging meaningful dialogue between scientists and exploring potential cooperation for joint R&D to meet industrial needs. Over a 100 scientists and researchers from China, Egypt, Iran, Jordan, Pakistan, Tanzania, Thailand, and Türkiye participated in the Workshop.

The event was inaugurated by Prof. Dr. Jibin Sun, Director of CCIB, and Deputy Director-General of the Tianjin Institute of Industrial Biotechnology (TIB), China. Prof. Sun considered bioenergy an important renewable energy resource having the potential to address challenges of resource scarcity and environmental degradation.

In his opening remarks, Prof. Dr. Ashraf Shaalan, Chairperson of COMSATS Coordinating Council (Former President, National Research Centre of Egypt), noted that the global energy consumption has increased dramatically and over the next two decades the demand is expected to rise to 44%. This situation can be eased with judicious use of RETs. He lauded CCIB's efforts to enhance cooperation among COMSATS Member States in the field of industrial biotechnology.

In his keynote talk on 'Bioengineering beyond Cells to Enable a Fair and Sustainable 21st Bio-century', Prof. Michael C. Jewett, Director of Center for Synthetic Biology at Northwestern University, USA, underscored the significance and applications of Synthetic Biotechnology (SB). Prof. REN Nanqi, Professor at Harbin Institute of Technology, China, delivered the second keynote talk titled 'Perspective of Fermentative H₂ Production Technology from Biomass for Commercialization'. Establishing the significance of green hydrogen as an alternative energy resource, Prof. Nanqi informed that his research team is working on hydrogen production system optimization using comparative genomics, gene expression, and pathway



and network stimulation. The various topics discussed by Prof. Nanqi during his talk included: fermentative H₂ production; Bio-H₂ from biomass; and Bio-H₂ for commercialization.

During his presentation on 'Production of Energy and Climate Friendly Bio-based Products & Ecosystem Restoration of Mountainous Region', Prof. Habib Bokhari, Vice Chancellor of Kohsar University, Pakistan, discussed potential solutions to current global challenges especially in the context of Pakistan. He stated that Pakistan is facing major challenges, inter alia, in the form of untimely floods, heat waves, decreased rainfall, food insecurity, melting glaciers, rising temperatures, forest fires, biodiversity loss, and poor solid waste management. To mitigate such challenges, projects and methods have been introduced, such as genetically modified arsenic-based biosensors for water purification, bio-conversion of waste food, environmentally friendly eco-tourism, and precision and smart agriculture. Prof. Azize Ayol, Professor at Dokuz Eylul University, Türkiye, gave a presentation on 'Syngas Production from Biomass and Microbial C₁ Gas Conversion Technologies', in which she informed about an on-going research project on 'sustainable energy recovery from treatment plant sludge, green wastes, and olive pomace via gasification

process: investigation of beneficial usage alternatives of gasification products' that is being run jointly by TÜBİTAK and Environment, Atmosphere, Earth and Marine Sciences Research Grant Committee (CAYDAG) of Türkiye.

Prof. Mehrdad Azin from the Iranian Research Organization for Science & Technology (IROST), Iran, delivered a presentation on 'Bio-refinery Processes for Production of Biofuels: Steps Paved by Iran', in which he shed light on the bio-refinery processes used for production of biofuels. He also informed the participants about the Qeshm Microalgae Biorefinery (QMAB) which is utilizing advanced technology to provide environment friendly solutions. Mr. Victor Su from Beijing Shougang LanzaTech New Energy Technology Co., Ltd, China, delivered a presentation titled 'Producing Ethanol and Protein from Carbon Containing Industrial offgas through Synthetic Biotechnology'. He informed that his company is one of the leading bio-manufacturing companies in the country, providing production solution to country's 'protein bottleneck' problems.

During the presentation on 'Construction of Fungal CBP Technology for Lignocellulose Biorefinery', delivered by Prof. TIAN Chaoguang, Professor at TIB, the participants learnt about the



traditional cellulosic biomass conversion; consolidated Bio- Processing (CBP); transformation tools for the fungus denovo; genome scale metabolic model; utilization of biomass derived sugars in filamentous fungi; and direct conversion of lignocellulosic biomass.

Briefing the participants about the progress of CCIB's Joint R&D Group on Bioenergy, the Group Coordinator, Prof. LI Demao, informed that two R&D projects are currently being run; one on organic waste and the other one titled 'The Belt and Road Fellowship Initiative of Tianjin Synthetic Biotechnology Innovation Capacity Improvement Project'.

During discussions, Prof. Bokhari proposed initiating pilot-scale studies on biomass and bio-materials to help boost bio-energy resources. Prof. Azin suggested exchange of technologies among the members of the Joint R&D group on Bioenergy.

Webinar on Industry 4.0 driven Climate-Smart Agriculture (August 24, 2022)

COMSATS Centre for Climate and Sustainability (CCCS) organized a webinar titled 'Industry 4.0 Driven Climate-Smart Agriculture: Challenges and Opportunities

for Developing Countries', on 24th August 2022. Speakers from organizations and institutions working in areas related to food security, agriculture and climate research domains in Asia, Africa and Europe participated in the webinar that attracted over 70 participants from 23 countries.

In his welcome remarks, the Executive Director COMSATS, Dr. Ghulam Muhammad Memon, opined that availability of precise information through automated collection, integration, and analysis of data is crucial for informed decision and policy-making in all sectors, including CSA.

In his talk, Dr. Aly Abousabaa, Director General of the International Center for Agricultural Research in the Dry Areas (ICARDA), Lebanon, opined that improving farmers' access to digital

technologies in agricultural value chain is imperative to accelerate transformation of agriculture and food sectors. He also shared ICARDA-led integrated innovations for climate smart agriculture.

Dr. Zitouni Ould-Dada, Deputy Director in Climate and Environment Division at the United Nations Food and Agriculture Organization (FAO), Italy, shared perspectives on linking 4IR and agriculture to climate action to achieve the goals set out in Paris Agreement on Climate Change. He remarked that the implementation of climate smart agriculture plans depends on creating financing mechanisms that strengthen connections between climate finance and agricultural investments from public and private sectors.

Dr. Ismail Abdel Hamid, Director Programmes and Project Officer at the Islamic Organization for Food Security (IOFS), Kazakhstan, remarked that climate smart agriculture is one of key components of IOFS' strategy and action plan for 2022-2023 for ensuring food security also as outlined in OIC's ST&I Agenda 2026.

Dr. Stephen Yeboah, Senior Research Scientist (Agroecology/Agronomy) at the Crops Research Institute, Council for Scientific and Industrial Research





(CSIR), Ghana, apprised that CSIR-Ghana is helping farmers in exchanging their own site-specific knowledge on climate smart practices based on model-driven integrated system contributing to self-generated data on soil, crop management, and production.

Dr. Maram Jameel Abbady, Climate Change Specialist and Drought Monitoring Researcher, National Agricultural Research Council (NARC), Jordan, remarked that climate smart agriculture sustainably increases productivity, improves farmers' capacity to adapt to and deal with the effects of climate change, and supports mitigation efforts. Presenting a case study of climate smart agriculture in Jordan, she demonstrated how this approach/system also encourages further expansion and employment creation.

Following the presentations, a discussion session that addressed a number of topics relating to the theme of the event including: policy interventions and capacity development for adoption of CSA practices and technology; economic feasibility of 4IR technologies for agriculture sector; main barriers for transition towards a CSA approach; and role of IGOs or regional organizations in operationalizing CSA strategies in developing countries.

Closing the event, Dr. Huma Balouch, Deputy Director, (Programmes) COMSATS, stressed that an enabling

environment and institutional partnerships through multi-sectoral and inter-ministerial collaborations are vital for achieving industry driven climate smart agriculture.

Workshop on Green Biomanufacturing of Bio-based Materials (August 31, 2022)

On 31st August 2022, COMSATS Joint Centre for Industrial Biotechnology (CCIB) held an online workshop on 'Green Biomanufacturing of Biobased Materials' under its Joint R&D Group on 'Bio-materials'. During the workshop that had physical and virtual participation of over 50 scientists, researchers and academics, talks/ lectures were delivered by experts from China and Pakistan.

Welcoming the participants at the opening

ceremony, Prof. Dr. Jibin Sun, Director of CCIB/Deputy Director- General of the Tianjin Institute of Industrial Biotechnology (TIB), considered emergence of bio-based materials an important research area that can aide green and low-carbon infrastructural development while remaining sensitive to the global needs and demands for sustainable growth. In his opening remarks, Dr. Ghulam Muhammad Memon, Executive Director COMSATS, highlighted the importance of bio-based materials in different sectors of the economy. He suggested having a coherent strategy for developing a bio-based economy that could effectively respond to pressing global challenges, such as climate change, resource management, global health, and food security.

During the technical proceedings, a keynote talk on 'Halomonas spp. as Super Microbial Cell Factories and Next Generation Industrial Biotechnology' was delivered by Prof. George CHEN Guo-Qiang, Professor at the Center of Synthetic and Systems Biology of Tsinghua University, China. It was followed by following talks and lectures: Living Materials Programmed by Life by Prof. ZHONG Chao, Shenzhen Institute of Advanced Technology (SIAT), Chinese Academy of Sciences (CAS), China; Biosynthesis of Polyhydroxyalkanoates (PHA) and its Applications as Drug Carrier and Food Packaging Material by



Dr. Farha Masood, Associate Professor at the Department of Biosciences, COMSATS University Islamabad (CUI), Pakistan; Monomaterials—Biosynthesis of Succinic Acid by Dr. ZHU Xinna, Associate Professor, TIB, China; and Biosynthesis of Organic Acids and Amines as Monomers for Polymer Materials by Dr. WANG Dan, Associate Professor at the School of Chemistry and Chemical Engineering, Chongqing University, China.

Subsequent to the talks, Prof. BAI Wenjin, Coordinator of CCIB Joint R&D Group on Bio-materials, moderated a panel discussion.

Workshop on Engaging University Faculty for Mental Health Wellbeing of Youth (October 25, 2022)

On 25th October 2022, COMSATS, in collaboration with Faculty Development Academy (FDA) of COMSATS University Islamabad (CUI), Islamabad, organized a Workshop on “Engaging University Faculty for Mental Health Wellbeing of Youth”. Addressing the need to focus more on the achievement of SDG 3 and its targets that include mental health wellbeing, the event was continuation of the initiative undertaken last year to observe World Mental Health Day. Held at CUI, Islamabad, the half day workshop had physical participation of around 50 faculty members belonging to CUI campuses, including Islamabad, Wah, Attock, Abbotabad, as well as other universities including Islamic International University (IIU) and National University of Sciences and Technology (NUST). In his welcome address, Mr. Laeeq Hassan Jaswal, In-charge FDA-CUI, shared concern over growing trends of mental illnesses. He especially mentioned the turmoil caused by the un-controlled use of social-media and digital gadgets in young generation which are causing various behavioral disorders not only in young generation but in overall population. He hoped to address some aspects of the same through the current focused event.



To orient the faculty members on mental health management of their students, Ms. Sidra Akhtar, Chairperson, Foundation Drug Psychological Rehabilitation Centre, Islamabad, was invited as the resource person for the two technical sessions of the workshop.

Ms. Akhtar started the first session with introductions of the faculty members. Defining health and mental health, she highlighted that interdependence of physical and mental health by citing recent researches and some facts on mental health. It was informed that 80 million people in Pakistan are suffering from psychological disorders and the number is expected to increase drastically in the coming years. Ms. Akhtar also talked about social stigmas and lack of empathy that mentally ill patients experience from the society. Ms. Akhtar also highlighted the common disorders in young generation and their possible reasons, and emphasized the need for a watchful

eye identifying abnormal behavior, while keeping them integrated in the society. She added that addiction and suicide are the silent problems of Pakistan’s Education System, and also shared the cases of suicide victims from different educational institutes to highlight the gravity of situation.

The participants took keen interest in the interactive session by asking pertinent questions and sharing concerns as mentors, as well as shared their own views and experiences related to students’ mental health. Ms. Sidra concluded her first session by highlighting the consequences of students’ mental illness on University’s environment and stressing that the administration and policy makers should take due and timely actions in this regard.

The second technical session was based on group activity that aimed at equipping the teachers with ways to keep students comfortable and encourage interaction so as to keep open communication on matters possibly affecting their mental health. The participants took keen interest in the activity and came up with ways to engage with the students other than studies. On conclusion of the activity, Ms. Akhtar summed up the identified reasons and results of the activity. These included: faculty members developing keen observation, increase in healthy interaction thorough useful expressions and discussions to overcome the communication gap with students. In conclusion, she encouraged everyone





to help and to start with themselves to ensure access to positive, safe and healthy environment for all, especially youth.

The event concluded with keynote from Dr. Fareed A. Minhas, the renowned Psychiatrist and Director, the Tree House Psychiatry clinic, who graced the concluding session as Chief Guest. Speaking on the occasion, Dr. Minhas stated that the exponentially increasing psychological issues are the most pressing social and health issue of our society. He not only stressed upon the significance of the need for ensuring mental wellbeing but also shed light on the social stigmas and people's undue opinions and suggestions faced by the patients upon sharing their frustrations and worries. To give a clearer picture, he also shared a case study of a patient who underwent disturbing events throughout her entire life which ultimately led to depression. Focusing on students and teachers, he advised teachers to remain open to talking and building healthy communication with their students. Dr. Minhas also addressed the queries from the audience and appreciated the efforts and initiatives taken by the organizing partners to highlight mental health and well-being which is a rather ignored issue of the society. "Such events are necessary for mental health advocacy, as the awareness in local population related to mental illnesses is next to zero", he said.



Closing the event, Dr. Azeema Fareed, Additional Director – Health, COMSATS Secretariat, recapped the event, and underscored key take-aways. In her vote of thanks, she expressed the organizers' gratitude to the Chief Guest, Dr. Minhas, for his invaluable insights on the theme of the event. She also appreciated Ms. Akhtar's effective conduction of the technical sessions of the event. FDA's collaboration was also lauded. The event concluded with distribution of certificates among the participants and presentation of souvenirs to the speaker and the Chief Guest.

Workshop on Green Biomanufacturing of Bio-based Chemicals (October 28, 2022)

From the platform of the COMSATS Joint Centre for Industrial Biotechnology (CCIB), the Tianjin Institute of Industrial Biotechnology (TIB), China, in collaboration with COMSATS,

organized an online workshop on 'Green Biomanufacturing of Bio-based Chemicals', on 28th October 2022. The workshop was held under CCIB's Joint R&D Group (JRDG) on 'Bio-chemicals' with the aim of promoting dialogue among scientists and enterprises to explore potential cooperation opportunities, particularly joint R&D and industrial collaboration on bio-based chemicals. The workshop featured two key-note speeches by subject-experts from Japan and Germany, and four talks/lectures by experts from China and Thailand, with online participation of over 150 scientists, researchers and academics from around the world.

Prof. Dr. Jibin Sun, Director of CCIB and Deputy Director-General of TIB, opened the event and extended a warm welcome to the subject experts and participants. He thanked COMSATS for its collaboration and support for holding this workshop. Prof. Sun noted that biomanufacturing of bio-based chemicals using renewable resources, is an essential technical approach for addressing the current energy and environmental concerns, and therefore use of one-carbon molecules, marine biomass, and agricultural biomass as substrates for chemical biomanufacturing is receiving a lot of attention. Prof. Sun considered biomanufacturing of chemicals a significant area of scientific research and a new paradigm for environment-friendly and low-carbon industrial development. Prof. Sun expressed pleasure on CCIB's



initiatives to strengthen industrial biotechnology capabilities in COMSATS' Member States and Belt and Road countries.

In his opening remarks, Prof. Dr. Ashraf Shaalan, Chairperson COMSATS Coordinating Council, paid gratitude to TIB for holding this important event from the platform of CCIB. He also welcomed the distinguished experts and participants. Prof. Shaalan stated that chemicals and materials from various biomass sources play important role in reducing our dependence on non-renewable resources. He noted that trees, plants, crops, algae, bacteria and biological waste can be used in different shapes and forms to produce a wide range of bio-based chemicals, fuels, products and intermediates. Prof. Shaalan further noted that biobased chemical industry has become increasingly profitable, and is ready to take over a large share of the market and opined that the continued development of bio-based chemicals will lead to new feedstock demands, new technology development and new economic opportunities.

A keynote speech entitled 'Biodigital Fusion to Establish Biofoundry Technology for Rapid Development of Microbial Cell Factories' was delivered by Prof. Akihiko Kondo, School of Science, Technology and Innovation, Kobe University, Japan. During his presentation, Dr. Kondo noted that the two areas of biotechnology, i.e., engineering biology and bio-foundry, are advancing

towards 'bio-revolution' in terms of DNA sequencing, genome engineering, IT/AI technologies, and laboratory automation. Prof. Kondo discussed the design, construction, and testing procedures for bio-foundry platforms, including the construction of genetic components, genome editing, DNA synthesis, and LC-MS analysis accuracy. It was informed that Kondo University also set up a bio-foundry platform that conducts designing, building, and testing procedures and helps produce nanobodies using pichia yeast. Prof. Kondo also highlighted work of different start-ups affiliated with Kobe University, including Bio-Palette, Synplogen, Bacchus Bio Innovation, and others.

The second keynote speech titled 'Synthetic and Systems Metabolic Engineering of *Corynebacterium Glutamicum* for Bioprocesses: a Focus COMSATS Newsletter, September - October 2022 5 on Nitrogen', was delivered by Prof. Volker F. Wendisch, Chair, Genetics of Prokaryotes, Faculty of Biology, Bielefeld University, Germany. The speech covered various topics, including synthetic biology and its access to nitrogenous products; functionalizing amines including halogenation of amines (7-Cl/Br-indole and 7-Cl/ Br-Truaptamine), N-alkylated amines (reductive alkylation, intercepting methylamine catabolism, and SAMdependent), Hydroxylation of amines, L-carnitine production, L-carnitine biosensor, astxanthin, aquaculture sidestream, etc.

The second keynote was followed by a presentation titled 'Application of Synthetic Microbial Consortia for Biochemicals Production from Renewable Resources', given by Prof. Fengxue Xin Nanjing, Tech University, China. He shed light on the advantage of Microbial Consortia in Bio-refinery, advances for synthetic microbial consortium, consolidated bioprocessing, domestic microbial consortia, design of efficient microbial consortia, improvement of lignocellulose conversion efficiency, identification of core function strains, Butanol production from Corncob, Lactic acid production from Corncob, chemical production from lignocellulose, application of 3D printing of Biocatalytic living materials, etc.

Prof. Verawat Champreda, Director, Biorefinery and Bioproduct Technology Research Group, National Center for Genetic Engineering and Biotechnology (BIOTEC), Thailand, delivered a presentation titled 'Integrated Utilization of Fractionated Sugarcane Waste to Biochemical by Enzymatic and Microbial Conversion'. During his presentation, he explained the Bio- Circular-Green Economy (BCG) and how the sugarcane, cassava, palm oil, petroleum, and plastic industries etc, are transformed into biorefineries. Prof. Shuang Li, School of Biology and Biological Engineering, South China University of Technology, China, delivered a presentation titled 'Efficient Production of Sesquiterpenoid Valencene Using Blue-carbon of Mannitol as

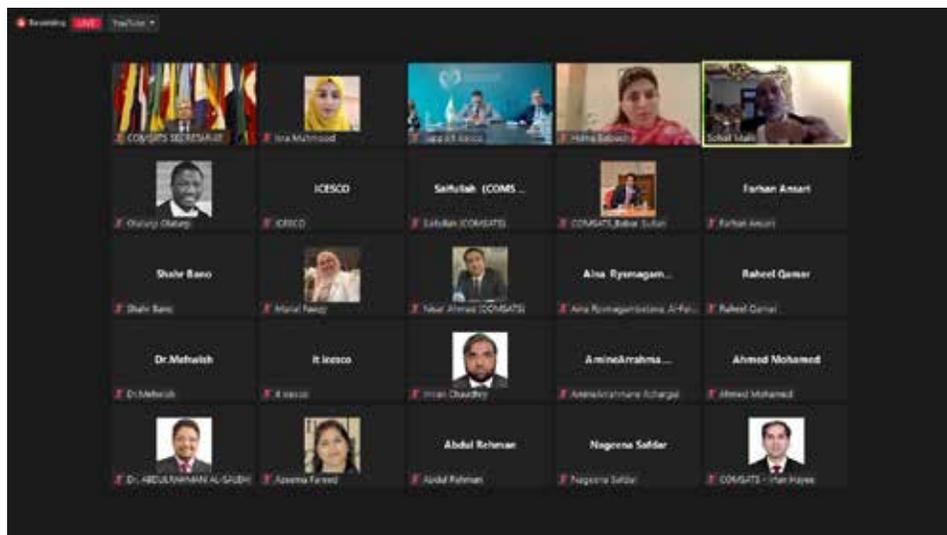
Substrate in *Saccharomyces Cerevisiae*. He shed light on aspects related to dry matter and carbohydrate composition of brown macroalgae, microbial cell factory, crabtree effect, mannitol, valence nootkatone, valence production by *S. cerevisiae*, etc. She also discussed the effective manufacturing of valence nootkatone utilising a *S. cerevisiae* cell factory from mannitol/ brown algae. Prof. Li also explained the two-step adaptive laboratory evaluation, hexanediamine, succinic acid, and aminocaproic acid.

Prof. Yu Wang, TIB, who is also Coordinator of CCIB JRDGroup on 'Biochemicals', delivered a presentation on the 'Development of Genome Editing Technologies for Construction of Microbial Strains for Biochemical Production', during which various topics, including biomanufacturing of chemicals from non-food resources; development of 'CHIP' through biomanufacturing; genome editing; *C. glutamicum*; CRISPR/ Cas-9 based gene editing method; microbial combinatorial inactivation of multiple genes; base editing; genome engineering based strain development, etc., were discussed. Discussing future activities, the Research Group, he emphasized on demand-driven collaborative research from member countries having applications in a number of fields, such as industry, agriculture, environment, health, etc. In this regard, Prof. Wang also informed the participants about the challenges that the biochemical industry is currently experiencing.

The technical session was followed by discussion sessions which include interesting question-and-answer session pertinent to the events' theme.

Interactive Dialogue on Multi-Stakeholders and Integrated Approach to Climate Resilient Finance (November 09, 2022)

On 9th November 2022, COMSATS Centre for Climate and Sustainability



(CCCS) organized an Interactive Dialogue on Multi-Stakeholders and Integrated Approach to Climate Resilient Finance', on the sidelines of UNFCCC 27th Conference of Parties (COP27). The event was held in collaboration of Islamic World Educational, Scientific and Cultural Organization (ICESCO), Regional Center for Renewable Energy and Energy Efficiency (RECREE), and Egyptian National Commission for UNESCO & ICESCO, at the ICESCO's pavilion in Sharam El Sheikh, Egypt.

The event was part of a series of sessions held on the sideline of COP27 at ICESCO's Pavilion. Panelists for the event included from Islamic Development Bank (IsDB), Saudi Arabia; ICESCO, Morocco; Regional Center for Renewable Energy and Energy Efficiency (RCREEE), Egypt; Egyptian National Commission for UNESCO, Egypt; and Climate Resourcing Coordination Center (CRCC), Pakistan. Relevant experts discussed various aspects of the event-theme including climate finance; strategies for drawing investments corporate sector in climate initiatives; identifying gaps, opportunities and challenges in capacity building to mobilize Climate Change financing; transformative climate finance for just transition; and multi-stakeholders common approach for Climate Action.

Prof. Dr. Raheel Qamar Head of Science and Technology Sector, ICESCO gave introductory remarks in which he emphasized the need for an alternate vision for growth and development that can lead to economic growth, and social and environmental well-being of countries through affordable green technologies.

In his opening remarks, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, opined that devastations made by recent climate change events call for making this decade a decisive one in terms of climate response before globally warming becomes an insurmountable challenge.

The technical talks commenced with that of Mr. Yusuf Olatunji, Senior Climate Change Specialist, Islamic Development Bank (IsDB), who noted that Paris Agreement demands for a balance between mitigation and adaptation financing and emphasized the need to take into account the environmental and social benefits that accrue as returns of their investment.

Dr. Manal Al Fawzy Ahmed, Chair, UNESCO Man and Biosphere Project, talked about efficient use of Climate Finance for achieving SDGs 2030 Agenda. Sharing her views, Dr. Fawzy added that preparing strong project bids, comprehensive climate change adaptation



plans, and accreditation with any of the climate funds are generally challenging processes, especially when employing Direct Access modality.

Dr. Foued Alyani, Expert, Science and Technology Sector, ICESCO, informed about ICESCO's contributions towards Climate Action that include active participation in COP27 having more than 50 side events with diverse areas of education, science and culture. He stressed the need for climate funding to be rationalized in favor of underdeveloped countries, especially owing to their lack of technical and human resources.

According to Mr. Ahmed Abdelrasoul, an environment expert from RECREE, there is a significant funding gap between needed and accessible climate finance through National Determined Contributions (NDCs). This finding is based on data from eight climate finance donor organisations, including the Green Climate Fund. He informed that RECREE is making efforts to bring business sector on-board for making climate-friendly investments.

Training Workshop on Mentoring and Coaching for the Identification and Preparation of Bankable Climate Change Adaptation & Mitigation Projects (November 13-15, 2022)

A training workshop on 'Mentoring and Coaching for the Identification and Preparation of Bankable Climate Change Adaptation & Mitigation Projects' was organized by COMSATS, from the platform of 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); Regional Training Centre for Water and Irrigation Studies (RCTWS); and International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) under the auspices of the Egyptian Ministry of Higher Education and Scientific Research. Held from 13th to 15th November 2022, the workshop was hosted by RCTWS in October 6 city of Egypt.

The objective of the workshop was to develop an understanding among the participants about where to look for climate change adaptation funding, the phases of project cycle as well as requirements of banks and donors, and acquire skills for preparing it.

The workshop was inaugurated by Engr. Tarek Elsayed, Head of the Regional Training Centre for Water Resources and Irrigation (RCTWS), on 13th November 2022. During his address, Engr. Elsayed thanked ICESCO, COMSATS, RCREEE and Egyptian National Commission for UNESCO for their collaboration in this regard. Emphasizing the significance of financing for climate resilience, Engr. Elsayed deemed knowledge and skills necessary to convert key climate adaptation and mitigation projects into project designs for obtaining suitable climate financing.

The inaugural session was jointly chaired by Dr. Foued El Ayni, Expert – Science and Technology Sector, ICESCO; Mr. Sayed Elabsy, Assistant Secretary General, Egyptian National Commission for





UNESCO; Dr. Manal Fawzy Ahmed, Chair, UNESCO-MAB (Man and Biosphere) Program & Egyptian National Commission for UNESCO; Dr. Huma Balouch, Deputy Director (Programmes) at COMSATS. The speakers stressed on building the capacity of stakeholders and government representatives to develop bankable climate change adaptation projects and to adapt and build community resilience.

Technical sessions of the three-day workshop were attended by more than 40 participants, including decision makers, planners, environmentalists, researchers and professionals involved in climate change management and risk reduction issues, representing different ministers and governmental departments, universities and research institutions from Egypt, Oman, Libya, Mauritania, Pakistan, Sudan, Brunei, and Morocco.

Dr. Manal Fawzy of Egyptian National Commission for UNESCO, shared on the key concepts and approaches for addressing climate change through mitigation and adaptation, as well as the theoretical framework for planning adaptation actions to climate change. Prof. Ahmed Hegazy from Cairo University highlighted the most important developments from recent climate change conferences as well as the significant problems that would be discussed at the COP27.

Mr. Khurram Lalani, Resource Future

– Pakistan, informed about the Climate Finance Explorer, a searchable database of global public climate financing options that has assembled data on funding sources and assists relevant practitioners and stakeholders in accessing appropriate funding options.

Dr. Sohail Malik from Climate Resourcing Coordination Centre (CRCC) – Pakistan pointed out the key elements of Climate Rationale Principles, emphasizing project comprehension, looking specifically at how identification, response, data, methodology, monitoring & reporting, when used properly, facilitate development and approval process of climate change projects.

Dr. Daniela from CIHEAM provided comprehensive guidance on project cycle management built on using the result-based management principles and the logical framework approach. She also provided information on the Interreg Next Med programme, a significant EU-funded initiative that comprises 15 countries for collaboration in the Mediterranean region. She also briefed the participants about major funding mechanisms and procedures of the new Horizon Europe initiative that supports innovation, research, and science.

Dr. Cosimo Tendi from CIHEAM apprised the participants about the fundamentals related to writing project proposals and emphasized the importance of systemic metrics that reflect the breadth of the

project. He also led an interactive group exercise, during which participants discussed their project concepts, suggested climate solutions, and revised their proposals in accordance with the trainers' guidance.

Mr. Ahmed Abdelrsoul from RCREEE elaborated the current state of energizing investment for energy efficiency in the Arab world, focussing on its objectives, institutional structures, legal frameworks, financing sources, and long-term plans for Arab world.

The recommendations of the event highlighted important aspects related to: multi-stakeholders support for building data driven climate rationale to accelerate climate action for building climate resilience in developing countries; campaigning for mobilizing private sector in climate finance initiatives; capacity-building on bankable climate change projects; developing a comprehensive guide for training on submission of Climate finance proposals; addressing information fragmentation and needs for understanding on evaluation procedures of climate finance institutions.

Expert Group Roundtable Meeting on sideline of COP27 in Sharm El-Sheikh (November 16, 2022)

A roundtable meeting on 'Setting the scene in terms of national priorities, opportunities and challenges to boost bankable Climate Change Projects'



was held on 16th November 2022, in Sharam El Sheikh, Egypt. The event was organized in collaboration of Islamic World Educational, Scientific and Cultural Organization (ICESCO), Regional Center for Renewable Energy and Energy Efficiency (RECREE), and Egyptian National Commission for UNESCO & ICESCO.

The roundtable meeting aimed to develop and understanding of common challenges in scaling up financing for adaptation in line with national priorities of developing countries. The panelists shared insights into the barriers that limit utilisation of development funds compatible with Climate resilience needs to support national adaptation agendas and identified opportunities to overcome related constraints.

The panelists of the meeting included experts from ICESCO, Morocco; Regional Center for Renewable Energy and Energy Efficiency (RCREEE), Egypt; Egyptian National Commission for UNESCO, Egypt; Regional Centre for Training and Water Studies (RCTWS), Egypt; International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), Italy, Resource Future, Pakistan; and Climate Resourcing Coordination Center (CRCC), Pakistan.

Dr. Sohail Malik from CRCC opened

the Roundtable by highlighting the need for strengthened multi-stakeholder cooperation to increase the understanding of the climate context and climate rationale amongst the development planners. Dr. Malik pointed to the challenge of achieving high climate change ambition to integrate climate change and sustainable development at all transaction levels – within the donor priorities, processes and requirements; and government policies.

Prof. Dr. Ahmad Hegazy from Egyptian National Commission for UNESCO stressed that countries have to empower nature-based solutions, particularly the climate-based solutions, by encouraging better negotiations related to trade-offs and benefits between industrial countries and developing countries.

Mr. Khurram Lalani from Resource Future emphasised the significance of developing appropriate adaptation indicators, the log-frame theory of change, and other measures in addition to moving beyond the impact modelling approach.

Dr. Huma Balouch from COMSATS highlighted the potential of South-South financial links and cooperation, which she deemed crucial for investment to support long term development in the developing Countries. She also emphasised the need to increase climate finance for micro, small, and medium-sized businesses (MSMEs)

by giving them access to information and building their capacities to identify and benefit from relevant opportunities.

Dr. Cosimo Tendi from CIHEAM stated that acquiring knowledge and developing skills, and creating an enabling environment are critical for initiating the kinds of climate mitigation and adaptation projects that could draw multi-sector investment from both climate and development financial institutions.

Dr. Manal Al Fawzy Ahmed, Chair UNESCO Man and Biosphere Project, called for having evidence-based strategies to ensure funding for combating climate change. Investment in a variety of assets is necessary to enable shift to a climate-resilient economy in line with Paris Agreement.

Dr. Foued Alyani, Expert, Science and Technology Sector, ICESCO, highlighted that the main challenge faced in gaining effective access to development and climate finance lies in the constraints of human and technical capacity to meet criteria for donor proposals and reporting requirements.

Webinar on Digital Health, the New Normal: Innovation and Acceptance in Africa (December 07, 2022)

COMSATS organized a webinar on

“Digital Health, the New Normal: Innovation & Acceptance in Africa”, on 7th December 2022. The aim of the event was to analyze digital health trends in African countries before, during and after the COVID-19 Pandemic. The event brought together 45 participants from across the African continent.

In her opening remarks, Dr. Azeema Fareed, Additional Director Health/ Incharge CTH, shared event’s objectives, which are in line with the global strategy of WHO aiming to promote knowledge sharing and collaboration in digital health. She stated that COMSATS through its Telehealth Programme is well-placed to fulfilling this objective.

Welcoming the participants, Ambassador Nafees Zakaria, Executive Director COMSATS, remarked that scientific progress and technological innovation was the major contributor towards successful global public health response during COVID-19. He stated that digital health has emerged as an effective solution for making health systems more resilient and sustainable for future crises. Dr. Zakaria also presented COMSATS Telehealth as a success story that got patronage of Government of Pakistan resulting in expansion of this project to remotest areas of Pakistan. He hoped for emulation of such services in COMSATS’ member countries to help less privileged and marginalized communities. He also deemed collaboration among developing countries necessary for joint publications based on indigenous research and success stories; policy and strategy sharing at government and institution levels; and trainings and capacity-building in digital technologies for health.

The technical session of the webinar consisted of 7 talks and was moderated by Mr. Derrick Muneene, Unit Head, Capacity Building & Collaboration Digital Health & Innovation Department, WHO, Geneva. Sharing his views, Mr. Derrick stated that Asian and African region have a lot of commonalities, such as population,



infrastructure and adaptation of digital technologies. He emphasized the growing need for investment in digital health to help build the robustness and resilience of health systems towards future shocks.

First talk was delivered by Professor Lydia Aziato, Vice Chancellor, University of Health and Allied Sciences (UHAS), Ghana. She informed that UHAS is the only university in Ghana providing training in all spheres of health, including telehealth and artificial intelligence. To help post-COVID integration of digital technologies, Dr. Aziato deemed it vital to adopt an inclusive approach bringing together practitioners of traditional medicine as well as uneducated people.

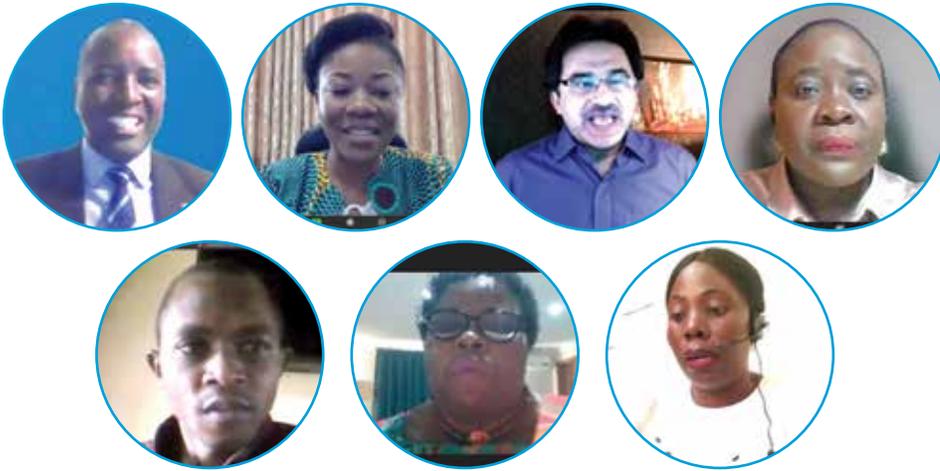
Mr. Adeniyi Daniel Folayan, Research Fellow & Technical Assistant, African Centre for Digital Health & Policy Research (ACDHPR), shared pre and post COVID differences in digital health policy of Africa. Through facts and figures, he established that there has been an increase in the strategy and policy documents in Africa. Around 82 percent of African countries have a strategy, however, less than 36 percent of these have a relevant policy in place leading to the failure of addressing digital health challenges. Furthermore, Mr. Folayan presented the process of policy making and implementation and recommended that digital health policy should be well formulated, properly implemented, as well

as disseminated appropriately to reach all stakeholders.

In her talk, Ms. Oyindamola Sogunro, Chief Program Analyst, E-Government Department, Federal Ministry of Communications & Digital Technology, Nigeria, apprised the participants of the national health ICT strategic framework of Nigeria that was established in 2015 and led to the creation of high-level steering committees and working groups for digital health. She mentioned that subsequent to this framework, a portion for digital health was allocated in the federal budget, and a report and a policy on digital health in Nigeria was developed.

Dr. Joana Eva Dodoo, Registration & Examination Officer, Business Programmes, College of Distance Education, University of Cape Coast, Ghana, shared an overview of digital health in Ghana. She stated that Ghana is going digital under the cognizance that such transformation is essential for economic growth and expansion. She added that from 2009 to 2019, use of digital health technologies in Ghana has increased and in the post-COVID era, it has further expanded to include drones, self-assessment tools, digital tools and applications.

In his talk, Dr. Suhail Chughtai, Director Medical City Online, CTO The Health Bank Global, Orthopedic Surgeon,



explained the difference between clinical telemedicine and video consultations. With the example of the software his company has developed, he explained that clinical telemedicine is based on history, examination and test reports for the virtual management of the disease in addition to video chat between the patient and the doctor. He also outlined a virtual health ecosystem for Africa based on clinical telemedicine system having virtual guidelines and decision support system.

Ms. Joan Stellah Nakimuli, Researcher, African Centre for Digital Health & Policy Research (ACDHPR), talked about various digital health tools in Uganda. These include patient-doctor video consultation systems, patient remote monitoring systems, drone technology, and dashboard for disease tracking. She mentioned that rise in the use of mobile for healthcare, teleconsultation in mental health, and digital tools was observed during COVID-19.

In his talk, Dr. Hammadoun Dia, National Coordinator, SanDi Digital Health Project, Mali, referred to a study conducted in Mali, which showed that teleconsultation costs 6 to 23 percent less than the regular consultation. Dr. Hammadoun also shared the details of his project on solar energy, telehealth and social protection to transform community health in Mali (SanDi). He stated that the project aims to provide renewable energy through solar power to health centres and also

aims to equip the centres with computers, pharmacy and other administrative tools. It will also provide training and capacity-building to health professionals. He stated better patient care, increased revenue, availability of quality data as key benefits of the project.

During the Q&A session, several aspects relating to digital health, SDGs, universal health access, policy implementation and integration of digital tools were discussed. Following views and recommendations were shared by the speakers: country-based need assessment of digital health policies; integration of digital tools in the existing system; stakeholder involvement for successful interventions; building of digital infrastructure; training on the efficient use of digital tools; planning of funding mechanisms and better implementation of digital health policies and strategies.

Closing the webinar, Mr. Derrick emphasized achieving equity in this sphere to enable African countries to fully benefit from information technologies in the field of healthcare.

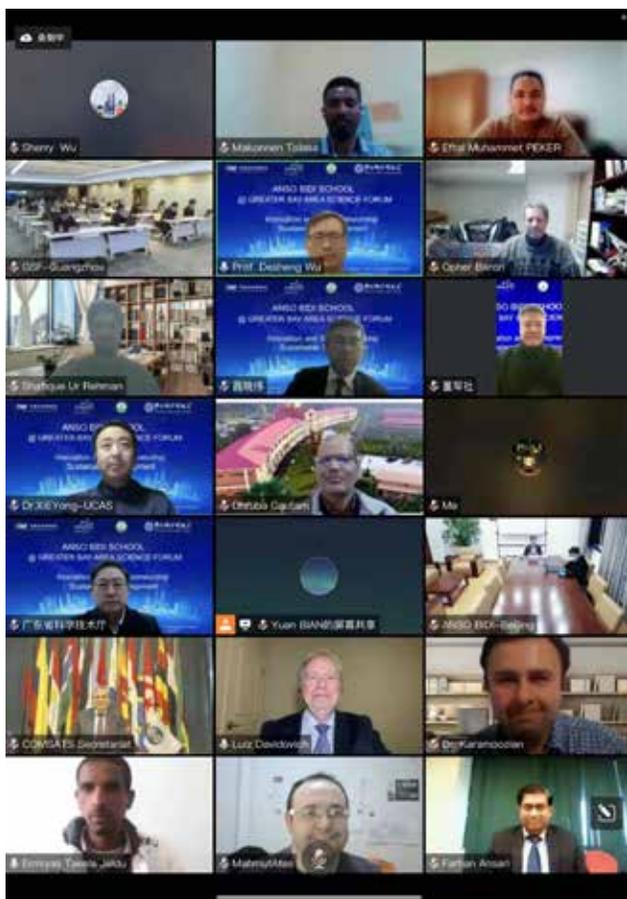
Special Sub-forum on ANSO-BIDI School, theme: Innovation, Entrepreneurship, and Sustainable Development (December 12, 2022)

Under the Belt & Road International Innovation Development Institute

Network (ANSO-BIDI Institute Network) of the Alliance of International Science Organizations (ANSO), the Centre for Environmental Economics of the University of Chinese Academy of Sciences (CEE-UCAS), China, organized a special sub-forum themed 'Innovation and Entrepreneurship, Sustainable Development'. The session was organized on the sidelines of the Greater Bay Area Science Forum 2022 (GSF-2022) on 13th December 2022. The objective was to highlight the role of science, technology and innovation, as well as green entrepreneurial ventures in view of emerging global challenges. The session was opened by Prof. Desheng Wu, Director of the Research Centre for Environmental Economics of UCAS, China. In his speech on the occasion, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, deemed innovation and entrepreneurship crucial in finding sustainable solutions to current global challenges, such as population explosion, climate change, and food insecurity. He also considered collaboration between business and academia important in developing knowledge and skills relevant to industry. Dr. Zakaria also highlighted COMSATS' role in facilitating socio-economic growth of the developing countries through means, such as capacity building, collaborative research and development, and exchange of knowledge, experiences, best practices, and technological resources among member countries.

Third International Training Course on Industrial Synthetic Biotechnology (December 12-23, 2022)

The Third International Training Course on 'Industrial Synthetic Biotechnology' (online training), was jointly organized by the Tianjin Institute of Industrial Biotechnology (TIB), in collaboration with the Alliance of International Science Organizations (ANSO); and the Commission on Science and Technology



for Sustainable Development in the South (COMSATS), from the platform of COMSATS Centre for Industrial Biotechnology (CCIB). The training course aims to enhance the capacity of researchers and scientists belonging to the Belt and Road countries and beyond, especially COMSATS' member countries, in the field of industrial synthetic biotechnology, through theory, practice, and application.

The training was inaugurated on 12th December 2022, in Tianjin, China, and was attended by the large number of scientists and officials, including members of CCIB's Consultative Committee and Technical Advisory Committee, distinguished scientists of TIB, officials of COMSATS Secretariat, senior government officials from Ministry of Science and Technology (MoST), China and the local government of Tianjin. Fifty-two researchers and scientists belonging to developing countries, including

Bangladesh, Burkina Faso, China, Egypt, Indonesia, Nepal, Nigeria, Pakistan, Sri Lanka, Syria, Thailand and Uganda, taking part in the course as trainees, also attended the opening ceremony online.

Deputy Director-General TIB and Director CCIB, Prof. Jubin Sun, gave the inaugural address. He welcomed the distinguished subject experts and participants and highlighted the disruptive impact of Industrial Synthetic Biotechnology for socio-economic sustainable development. He opined that the industrial application of synthetic biology is expected to provide new solutions to the major challenges related to conservation of resources, health and environment being faced by people around the

world. He reiterated TIB's commitment to promoting eco-friendly development in industrial sector through innovation-driven synthetic biology and green biomanufacturing. He thanked COMSATS and ANSO for their collaboration for holding this training.

In his opening speech, Director-General TIB, Prof. Yanhe Ma, extended a warm welcome to all the participants. He thanked and appreciated the support of COMSATS and other partners. He stated that this training will be instrumental for researchers and scientists to thrive in the field of synthetic biotechnology for the prosperity and development of their communities as well as global sustainable development.

In his address, Prof. Jinghua Cao, Executive Director ANSO, stated that ANSO is significantly facilitating scientific

and technological innovation in 'Belt and Road' region through initiating and supporting a number of capacity building activities and programmes. He believed that trainees will broaden their skill sets related to innovation and creativity in the field of biotechnology through various modules being covered by this training, which in-turn will prove to be instrumental in the 'Belt and Road' region's growth.

Speaking on the occasion, Ambassador Dr. Mohammad Nafees Zakaria, Executive Director COMSATS, paid gratitude to TIB and other collaborative organizations join hands with COMSATS to hold this valuable training course benefiting developing countries, particularly the COMSATS' member countries. Dr. Zakaria emphasized the significance of industrial synthetic biotechnology and its application in high tech, energy, medical, agriculture, and food sectors. He particularly stressed upon exploration of natural ways to supplement conventional agricultural practices in order to meet the increasing demand for a steady and healthy food supply. Dr. Zakaria hoped that participants would gain strong theoretical knowledge and practical skills as well as evidence-based knowledge in the field of industrial biotechnology, which would enable them to promote innovations in the field and use them to accomplish shared social and economic objectives.

In her remarks at the occasion, Ms. Xuemei Yang, Division Director, Department of International Cooperation, China's Ministry of Science and Technology, stated that creation of new knowledge in this important field and its widespread application has the potential to significantly enhance local and regional sustainability. She welcomed the initiative of holding the training and believed that events like this may help mentor young scientists who, with their creative ideas, can make remarkable contributions in the field of biotechnology.

Subsequently, Prof. Sun Jibin made



a keynote presentation, in which he provided an overview of industrial applications of synthetic biology and connected it to the solutions to the most critical issues currently faced by the world facing resource conservation, human health, and environmental preservation today. He particularly shed light on various methodologies and enabling technologies, as well as some major achievements in the field of industrial technology. Prof. Sun also covered a virtual excursion to TIB with the view to showcase its state-of-the-art laboratory facilities and diverse array of cutting-edge instruments.

The training program primarily comprised six technical sessions having keynote lectures and talks by subject experts; as well as six experimental sessions, and three sessions of industrial courses.

Some of the main topics covered under six themes were: 1) Frontier Technology on Biomedicine: Biosynthesis of Plant derived natural products, Engineering the Plant Cell Factory for the Production of Plant Natural Products, Biocatalysis Enables Efficient Organic Transformations and Industrial Processes; 2) Frontier Technology on Bio-agriculture: biomass degradation and bio-based chemical production, Microbiome Data Analysis and Synthetic Community Experiment Revealing Causality, Research in

Strigolactone Biosynthesis and Signaling Pathway and its Application in Agriculture; 3) Frontier Technology on Future Food: Cultured Meat in China, Food Fermentation by Cell-free Multi-enzymes, Enzymatic Platform for Biomanufacturing of New Functional Foods; 4) Frontier Technology on Bio-chemicals: Biocatalytic Synthesis of Chiral Molecules and Industrial Applications, Biomanufacturing and Intelligent Control Systems, Synergies Between Synthetic Biology and Metabolic Engineering for Improved; 5) Frontier Technology on Bio-based Materials: Synthetic Biology of Materials, Synthesis of Biodegradable Plastic Polylactic Acid in the era of SynBiotech, Bio-based Production of Material Monomers; 6) Frontier Technology on Bioenergy: Progress of Anaerobic Digestion Technology for Biogas Production, Construction of Bioelectrochemical Systems for Bioelectricity Conversion, Application of Synthetic Microbial Consortia in Bio-refinery System.

During the experimental courses sessions, experiments of enabling technologies demonstrated, including: 1) High-throughput and Automated Genome Engineering; 2) Technology of Systems Biology in Metabolic Engineering; 3) X-ray Protein Crystal Structure Determination; 4) Introduction to DNA Synthesis; 5) Design of Metabolic Pathways Based on

the Genome-Scale Metabolic Network; and 6) Intelligent Fermentation Technology

During the concluding session, Director-General TIB, Prof. Jibin Sun, delivered a brief presentation on COMSATS Joint Centre for Industrial Biotechnology (CCIB), covering its objectives, tasks, areas of joint research, major initiatives, trainings and exchange. He informed that CCIB was established under the framework of the National Center of Technology Innovation for Synthetic Biology (NC SynBio) of China, with a view to promoting meaningful cooperation among the developing countries, particularly COMSATS' Member Countries, in the field of industrial biotechnology. Highlighting the progress and ongoing research activities of the Centre, he informed that so far five high-level joint R&D projects involving research teams from the Member States have been initiated; 14 young visiting scholars were supported; four Science Citation Index (SCI) papers have been published; and two patents applied.

During the discussion session, the trainees reviewed major industrial synthetic biotechnology research initiatives and explored avenues of networking and collaboration prospects in order to create potential partnerships and create novel synergies. The discussion was followed

by a graduation ceremony, during which participants shared the information regarding their different skillsets, vast research experience and diverse academic backgrounds and agreed to collaborate for interdisciplinary research projects of CCIB's R&D Groups on bio-medicine, bio-agriculture, future food, bio-energy, bio-chemical, and bio-based materials.

International Observances

World Health Day (April 6, 2022)

Observing World Health Day (April 7th), the Telehealth Desk of COMSATS in collaboration with COMSATS Centre for Climate and Sustainability (CCCS) organized a webinar titled 'Building Climate Resilient Health Systems in the Global South' on 6th April 2022. The event was joined by the notable speakers from World Health Organization Regional Office for the Eastern Mediterranean (WHO/EMRO), Egypt; Theodor Bilharz Research Institute (TBRI), Egypt; InterAcademy Partnership (IAP), Italy; St. Luke's Medical Center College of Medicine, Philippines; Somali Greenpeace Association (SOGPA), Somalia; Globesight, UAE; and Indiana University-Purdue University Indianapolis (IUPUI), USA. It had a virtual gathering of more than 40 from COMSATS Focal Points and Centres of Excellence, as well as ministries of climate and health, and other relevant stakeholders.

Opening the event, Dr. Azeema Fareed, Principal Medical Officer at COMSATS Telehealth Programme, shed light on the importance of building sustainable health systems that can cushion the negative impacts of climate change related events including those related to health and health systems.

In his introductory remarks, Ambassador (Rtd.) Mr. Shahid Kamal, shared some key statistics relating to health impacts of climate change. He noted that today's world is facing two main challenges: first



is the pandemic, which has revealed the weaknesses of our societies and tested the resilience of our health systems, and the second is the climate change, which is burdening the health systems beyond their capacity. He was of the view that limited interventions are in place against climate crisis particularly against its impact on human health, resulting in delay in progress towards all 17 seventeen goals that are inter-connected nature.

In her video message, Ms. Xiaojun Grace Wang, Deputy Director of United Nations Office for South-South Cooperation (UNOSSC), USA, highlighted the strong connection between climate and health, and underscored that changing climate is damaging the socio-environmental determinants of health, i.e., food, water and shelter and is becoming a biggest health threat by causing 30 million deaths per year. Ms. Wang also shared some efforts being made by UN agencies for combating climate threats and creating sustainable health systems in different regions of the world.

The inaugural was followed by technical session with talks and presentations given by experts on various aspects related to the theme of the event.

In his presentation, Dr. Renzo R. Guinto, Director of Planetary and Global Health Programme, St. Luke's Medical Center

College of Medicine, Philippines/ Co-Founder and Chief Planetary Health Scientist at Sunway Centre for Planetary Health, Malaysia, stated that although climate crisis is contributing to health inequalities, building of responsive health systems should take into account the environmental toll and ensure that such systems are not contributing to climate crisis through carbon emissions. Dr. Guinto also emphasized that planetary and human health requires due and equal consideration as climatic events are damaging both.

Ms. Maha Qasim, Environment and Sustainability Consultant and Country Advisor (Pakistan) at Globesight, stated that climate change is multiplying the already existing threats of inequalities, food security and clean water, particularly for the developing countries like Pakistan. She also shared Government of Pakistan's action plans against climate change related health problems that included Sehat Sahulat Program, Ehsaas Program and Clean Green Pakistan.

Speaking on the occasion, Prof. Gabriel Filippelli, Chancellor's Professor at IUPUI, USA, delineated on the rising trends of atmospheric carbon dioxide and global temperatures. He was of the view that fixing of climatic problems requires concrete action steps rather than mere dialogues and debates. He stated that



numerous resources are required for action plans, however, effective partnerships across sectors and communities could greatly help in mitigating the problem. Prof. Filippelli also shared the programmes of Environmental Resilience Institute of Indiana University to support their local government in dealing with climate change and greenhouse emissions.

Mr. Hassan Mowlid Yasin, Executive Director of SOGPA, Somalia, stated that each century has brought with it different public health challenges, and the challenge of this century is “climate change”. Sharing some key statistics from UN CC:Learn report, Mr. Yasin discussed how climate change affects humans and increases their vulnerability, and elaborated associated health risks.

Discussing fresh water ecosystems, Prof. Dr. Nahed Mohamed Ismail from TBRI, Egypt, highlighted that climate change is also affecting the biodiversity, soil and fresh water reservoirs, and is thus contributing to many waterborne infections and diseases, particularly in African countries. Dr. Ismail opined that challenge of climate change can be better dealt through effective planning and management.

Speaker from IAP, Italy, Mr. Robin Fears, shared the impacts of climate change on agriculture and food security. He deemed science central to climate

change mitigation and adaptation and recommended bridging the knowledge gaps through research, effective health risk communication and countering the spread of misinformation. Also, sharing an overview of IAP’s project on climate change and health, Mr. Fears stated that climate change and the pandemic both had exerted pressures on our stretched health systems.

The Regional Advisor to WHO/EMRO, Engr. Mazen Malkawi, mentioned that 12 out of 22 countries of EMRO region are in emergency in terms of climate crisis. He stated that anthropogenic activities are causing widespread destruction in nature that further adds the burden of environmental diseases to our health systems. He proposed that overcoming widening inequalities is essential and one of the key ways to mitigate climate threats to populations.

During the Q&A session, insightful discussions took place regarding mitigation measures to overcome the health disasters; coordination between climate agencies and health experts for the climate resilient health systems; initiatives taken by UN agencies to cope with climate disasters in health sector; research gaps in the countries of the South; and the challenges of health systems.

Closing the event, the moderator of the webinar, Prof. Dr. Wafaa Kandeel,

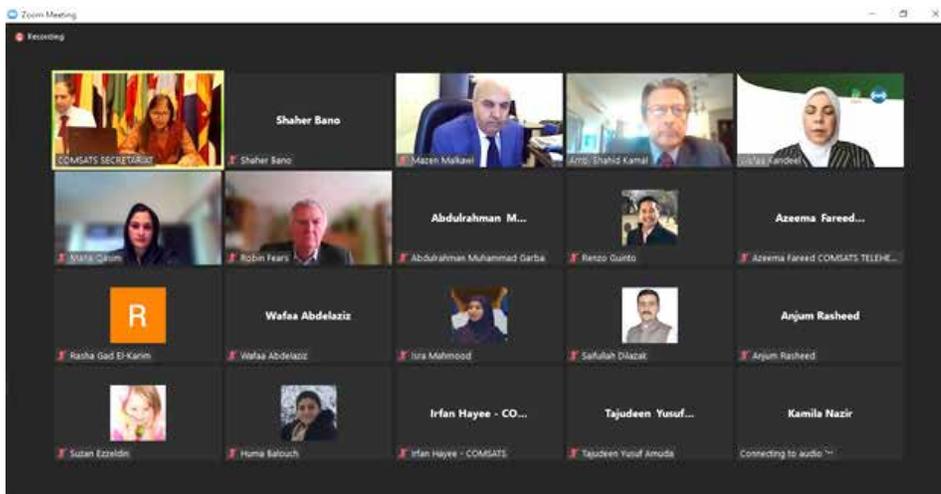
Assistant to the President, National Research Center (NRC), Egypt, expressed gratitude towards speakers for their valued insights and deliberations.

International Day for Biological Diversity (May 24, 2022)

COMSATS event on International Day for Biodiversity-2022 explores challenges towards and solutions for biodiversity conservation with expert inputs from China, Pakistan, Ghana, Jordan and WWF.

On Tuesday, May 24, 2022, COMSATS hosted a webinar to mark United Nations International Day for Biological Diversity 2022 titled “South Views on Post-2020 Global Biodiversity Framework”. The event was organized by COMSATS Centre for Climate and Sustainability (CCCS) in collaboration with the World Wide Fund for Nature (WWF). The theme of the event – “Building a shared future for all” – was chosen in light of the post-2020 Global Biodiversity Framework, which will be established at the UN Convention on Biodiversity’s 15th Conference of Parties (COP15) in June 2022.

More than 50 academics, students, and specialists from China, The Gambia, Ghana, India, Jamaica, Jordan, Kazakhstan, Nigeria, Pakistan, and Turkey participated in the webinar both physically and virtually. The goal of the webinar was to emphasize the importance of biodiversity and conservation, as well



as to develop understanding and raise awareness of biodiversity concerns in developing countries. Experts from China, Ghana, India, Jordan, and Pakistan served as panelists in this webinar, discussing the concerns, sharing their experiences, and suggesting sustainable strategies to conserve biodiversity.

Ambassador Shahid Kamal (Founder of CCCS) welcomed participants, expressed gratitude to the experts for their participation, and discussed the importance of sustainable development and biodiversity in the context of climate change in his opening comments.

Mr. Naeem Ashraf Raja, Director Biodiversity, Ministry of Climate Change, Pakistan, was keynote speaker of the webinar. He delineated on challenges and opportunities with regard to Convention on Biodiversity. He shared the road map for the upcoming COP 15 in China, in which parties will deliberate on ways to achieving targets by 2030.

Prof. Zhiyoun Huang, Coordinator of the COMSATS Joint Center for Industrial Biotechnology (CCIB), in his presentation, emphasized that understanding on response of Earth's biosphere to global climate change will remain profoundly limited unless there is a recognition of importance of microbial diversity. This could jeopardize prospects for building a sustainable future. Prof. Huang discussed the central role of microbial diversity

in rock and soil chemical process to mitigate climate change and also explained how climate change is influencing microbial diversity.

Ms. Hamera Aisha, an official from WWF-Pakistan, discussed the efforts made for conservation of Indus river dolphin and factor affecting the population of the species. She added that construction of dams and barrages significantly threatened the survival of Indus dolphin. Fishing activities in the downstream of river Indus is major life threat to Indus dolphin. Ms. Aisha emphasized the need of devising a framework methodology for modeling threats to biodiversity at different scales, directing future research, resource allocation, and efficient policies, legal frameworks, and regulations.

Dr. Akwasi Duah-Gyamfi, Head of Biodiversity Conservation and Ecosystem Services Division of the Forestry Research Institute of Ghana, shared views about forest ecosystem and role of biodiversity. He highlighted that invasive species, illegal farming, agriculture activities, timber industry and urbanization are major threat to the forest biodiversity. Underpinning the theme of the day 'building a shared future for all', he added that our food, medicine, and survival depends upon natural resources available through biodiversity. Natural resources are a common wealth that should be consumed wisely to ensure that enough is left for

future generations. Dr. Gyamfi suggested that strong policies should be formulated for reversal of biodiversity losses and community engagement approaches could help better achieving the goals of conservation.

Dr. Dipanker Ghose, Director, Species & Habitats, WWF-India, spoke on how environmental degradation and climate change are destroying wildlife and habitat. He considered urbanization and industrialization serious threats of environmental health and integrity. He further informed that during the last half-century, global economic expansion has drastically altered people's lifestyles, at a massive cost to the environment in the form of ecosystem destruction and global warming. Dr. Ghose discussed some common leopard, farmland tigers, waterfowl, and reptile situations. Humans interfere with animals' natural habitats as a result of urban growth, resulting in human-animal conflicts that endanger species.

Dr. Khaled Abulaila, Director of Biodiversity and Plant Genetic Resources, National Agriculture Research Center, Jordan, gave a talk on the topic of Conservation of Plant Biodiversity for Food. He explained that the rich genetic pool of crop species helps against extreme conditions and huge yield. Amid growing concerns regarding climate change and food security, intra and inter crop diversity are important to sustain. He appreciated NARC's commitment to seed conservation in Jordan, as well as herbarium management.

The technical talks of the webinar were followed by panel discussion moderated by Dr. Imran Khalid, Director, Governance and Policy, WWF-Pakistan. In the panel discussion, experts were engaged in the discussion on how the climate and biodiversity crises are intertwined, as well as the critical role that South-South cooperation can play in restoring ecosystems and biodiversity, as well as mitigating and adapting to climate change.



Concluding the event, Mr. Hammad Naqi Khan, Director General, WWF-Pakistan, thanked all attendees, specialists and organizers, and underscored the value of biodiversity. Mr. Naqi also highlighted activities of WWF-Pakistan in the field of biodiversity protection.

United Nations Day for South-South Cooperation (September 12, 2022)

To observe this year's United Nations Day for South-South Cooperation (12 September 2022), COMSATS brought together institutions and individuals from development sector, diplomatic community, inter-governmental organisations, and academic and R&D institutions to foster discussions and encourage debates on issues pertinent to climate change and explore its dimensions related to Climate Diplomacy, including Democracy and South-South Cooperation, fostering climate change advocacy; nexus between climate change, policy and multilateral diplomacy; climate-related security risks; and role of climate finance for effective climate diplomacy.

The webinar entitled "South-South Cooperation and Climate Diplomacy" was organized under the premise of COMSATS Centre for Climate and Sustainability (CCCS) on 21st September 2022. It

resulted in exchange of institutional knowledge, expertise and experiences, as well as best practices in implementing S&T programmes and initiatives for climate action supporting South-South cooperation.

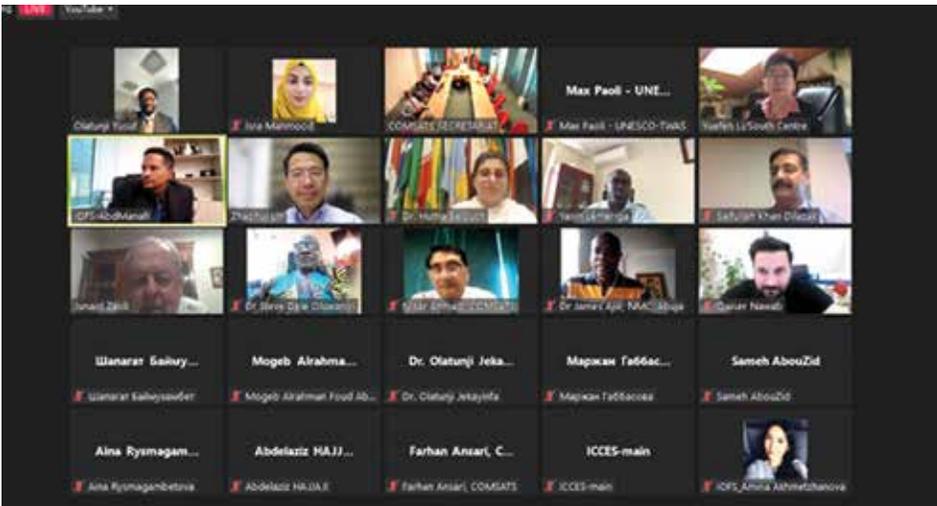
Hosted from COMSATS Secretariat Islamabad, the event brought in perspectives on key topics from African Climate Foundation (ACF), South Africa; Islamabad Centre for Regional Studies (ICRS), Pakistan; South Centre, Switzerland; The World Academy of Sciences (TWAS), Italy; Islamic Organization for Food Security (IOFS), Kazakhstan; International Centre for Climate and Environmental Science (ICCES), China; and Islamic Development Bank (IsDB), KSA.

The Executive Director COMSATS, Dr. Muhammad Ghulam Memon (Federal Secretary, Ministry of Science and Technology, Government of Pakistan), opened the event with a welcome note. In his video recorded message, Dr. Memon considered it high time for governments to address climate security vulnerabilities and focus on strategic climate action, especially those aimed toward and from within developing countries who are most vulnerable in this regard and have fewer coping mechanisms. He urged

for stronger climate diplomacy and international cooperation aimed towards decarbonisation and environment friendly developments during this decade and considered recognition of diverse national situations and capacities important in this regard. He highlighted COMSATS' strong role in raising awareness on key related issues and presented COMSATS Centre for Climate & Sustainability (CCCS) and important initiative for shaping the organization's interventions towards climate action and other related Sustainable Development Goals. Dr. Memon also outlined the key objectives of the webinar that related to: understanding climate change in special context of developing countries; and mutual exchange of knowledge and ideas on possible solutions and mechanisms.

The technical talks commenced with that of Dr. Saliem Fakir, Executive Director ACF, who noted that the fruitful outcomes of the global climate debate would be building the narrative around economic resilience and enhancing global political governance in this regard. He noted that climate-related challenges can further weaken the economic systems already battered by recent crises, including COVID-19 pandemic. According to Dr. Fakir, need for having climate strategy is a by-product of the economy's transition towards services rather than the outcome of "real ambition." Highlighting the impact of extreme weather events on South Africa and Pakistan, he stated that economies depending solely on natural resources are particularly susceptible to the effects of past and present climatic events, making these a bigger threat to the developing countries.

Ambassador (R) Fauzia Nasreen, President ICRS, delineated the multifaceted nature of security issues resulting from the varied effects of changing climate, including human and community health, food and water security, and economic and national security. According to her, the existing socio-economic and environmental challenges posed by climate



change hinder adequate and efficient implementation of developmental policies. Sharing her thoughts on the floods that had unprecedented devastating effect on most of Pakistan, Ambassador Nasreen stated that the quest for climate justice is becoming stronger.

In her talk, Mrs. Yuefen LI, Senior Adviser on South-South Cooperation and Development Finance, South Centre, emphasized the need for a collective response for addressing the global issue of climate change and considered advocacy at the local community level an effective tool in aiding such coordinated response. She highlighted the need for evidence-based advocacy campaigns through success of the campaign for adoption of Heavily Indebted Poor Countries (HIPC) Initiative (1996), where images of starving African babies were used that successfully communicated the message that African countries had no capacity to service the international community's debts.

Dr. Massimo Paoli, Programme Coordinator for Sustainable Development and Capacity Building, TWAS, elaborated on general high levels of ignorance about the causes and consequences of climate change, including facts such as the amount of carbon dioxide in the atmosphere has increased from 280 to 416 P.P.M after the 4th industrial revolution. He stressed that it is crucial to have a clear

understanding of individual responsibility to environmental sustainability that also requires change in habits, research streams and preferences, technologies and innovations, economic decisions, and investments.

Mr. Abdula Manafi Mutualo, Senior Liaison Officer at IFOS, Kazakhstan, provided an overview of the activities carried out by IOFS to address climate change in its member countries. These included: governance enablement, food crisis response, capacity-building, industry development, and resource mobilization. He further informed that IFOS lays strong emphasis on partnerships, collaborations, and exchange of experiences on inter-sectoral policy frameworks and implementation to help develop sustainable food systems in OIC countries.

Prof. Dr. Lin Zhaohui, Director ICCES, shared information on China's plan for climate change mitigation. According to this plan, China is expected to become climate neutral by 2060 and is moving towards clean and low-carbon technologies. He also shed light on how software, supercomputers, and regional climate models play a part in predicting the future of climate based on simulations, hence affording the policy makers, technologists and innovators crucial information for evidence-based decision making.

Mr. Olatunji Yusuf, Senior Climate Change Specialist at IsDB, provided information on the Bank's experience in addressing climate change through initiatives on accelerating rehabilitation, combating poverty, strengthening resilience, and promoting green economic development. In this regard, it was informed that IsDB is focusing on social and urban infrastructure development, climate-smart agriculture, renewable energy technologies, transportation, universal health and education, food security, livelihoods for resilience, climate finance, capacity-building, and youth and women participation for green economic growth. He also highlighted the 'reverse linkage' programme of IsDB, through which member countries assist Muslim populations in non-member states by resource and knowledge sharing, and technology transfer.

Subsequent to the talks, Ambassador (R) Nasreen moderated a discussion session based on several viewpoints that touched upon different aspects of the earlier talks: the role or importance of regional climate adaptation agenda in integrating climate change adaptation into national and regional economic and development policies; incorporation of grassroots and middle level actors in formulation of negotiating strategies; role of G20 in potentially creating a mechanism for South-South climate financing; and segregated, multilayer approach to Climate Diplomacy.

Emphasising the effectiveness of advanced prediction or model system, the panelists pointed out that the climate, weather, food and water system will experience enormous changes in the coming years as a result of both rapid advances in science and technology as well as a rapidly shifting landscape of stakeholders with rapidly changing responsibilities and capabilities. They also emphasised that international donors and IGOs must play a pivotal role in assisting governments of developing countries in their attempts towards integrating climate change resilience-



building in their development agendas and policies.

The event attracted participation from diplomatic community and government institutions, including Jamaican Ministry of Science, Energy and Technology and a number of development sector organizations, higher education institutions and research and development organizations. Islamic World Educational, Scientific and Cultural Organization (ICESCO), Morocco; United Nations Educational, Scientific and Cultural Organization (UNESCO), Paris; Environmental Management Association of Ghana, were among the participating development sector organizations.

Universities from Uganda, Egypt, Spain and Pakistan also participated in the event through virtual platform. These were: Mbarara University of Science and Technology; Heliopolis University for Sustainable Development; Egypt-Japan University of Science and Technology; Universidad de Antioquia; and Quaid-i-Azam University.

Research organizations attending the event included: Uganda National Bureau of Standards, Uganda; National Research Institute of Astronomy and Geophysics (NRIAG), Egypt; and National Agricultural Research Centre (NARC),

Jordan. Moreover, COMSATS' Network through Centres of Excellence in Jordan, Kazakhstan, Nigeria, and Tanzania, and Pakistan: Royal Scientific Society (RSS), Al-Farabi Kazakh National University (KazNU), National Mathematical Centre (NMC), Tanzania Industrial Research and Development Organisation (TIRDO), and COMSATS University of Islamabad also participated in the webinar.

World Science Day for Peace and Development (November 16, 2022)

COMSATS, in collaboration with the United Nations Educational, Scientific and Cultural Organization (UNESCO), Standing Committee for Scientific and Technological Cooperation (COMSTECH), Pakistan Academy of Sciences (PAS), ECO Science Foundation (ECO-SF), and Pakistan Science Foundation (PSF) organized an event to observe World Science Day (WSD) for Peace and Development 2022. Held on 16th November 2022, the event bore the theme "Basic Sciences for Sustainable Development" in connection with the year 2022 being marked as "International Year of Basic Sciences for Sustainable Development". The event had the participation of scientists, students, science managers and general public, and consisted of talks and panel discussion by

renowned scientists and academicians.

The meeting was opened by Prof. Dr. M. Iqbal Choudhary, Coordinator General of COMSTECH, gave a brief talk on the importance of basic science and shared his personal experiences in this respect. Prof. Dr. Shahid Mahmood Baig, Chairman of PSF, Prof. Dr. Tasawar Hayat, Secretary General of PAS, Dr. Seyed Komail Tayebi, President of ECO-SF, Dr. Youssef Filali-Meknassi, Director of UNESCO, including Prof. Dr. Zabta Khan Shinwari, Prof. Dr. M. Aslam Baig, Dr. Nazeer Muhammad, and Prof. Dr. Shahid Mahmood Baig spoke on the occasion highlighting the significance of the day and how S&T could help provide solutions to a number of issue facing the world today , inter alia, pertaining to STEM education, agriculture, water resources, energy, environment, cooperation in S&T, and sustainable development.

In his speech on the occasion, Executive Director COMSATS, Ambassador Dr. Nafees Zakaria, stated that COMSATS as an intergovernmental organization of 27 developing countries has been promoting science and technology through a variety of initiatives related to capacity-building; collaborative research and development; and exchange of knowledge, experiences, good practices and technological resources among its member countries.



PARTICIPATION IN IMPORTANT FORA AND MEETINGS

- 18th Annual Meeting of International Network for Small and Medium Enterprises (INSME) (December 1-2, 2022) 50
- 2nd Innovative Healthcare Technologies Summit (October 26, 2022) 52
- National Meet on SDGs (2022) (July 27-28, 2022) 53

PARTICIPATION IN IMPORTANT FORA AND MEETINGS

Events and organizational meetings of partner and potential partner organizations are utilized as means to 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.



18th Annual Meeting of International Network for Small and Medium Enterprises (INSME) (December 1-2, 2022)

The International Network for Small and Medium Enterprises, held its 18th Annual Meeting on 1-2 December 2022, in Baku, Azerbaijan, in collaboration with KOBIA, Azerbaijan's Department for SMEs. The meeting had the participation of state officials, businessmen, representatives of international organizations, and member institutions of INSME from different parts of the world. COMSATS was invited to participate in the Meeting being one of the member institutions of the Network that is based in Italy.

The two-day event bearing, the theme 'Empowering SMEs: Economic Diversification and Green Growth', comprised of four sessions of panel discussions during the first day, focusing on sustainability and energy challenges for



SMEs; building SMEs readiness to cope with current and future crises; promoting innovation for a green growth; and policy responses.

The Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, was invited to participate as a panelist in one of the sessions of 18th Annual Meeting of INSME, entitled 'Building SMEs readiness to cope with

current and future crisis'. In his panel remarks, Dr. Zakaria suggested that SMEs need to consider adding diversity to their products and services; adapt to the changing dynamics of the business world through use of technologies, go beyond borders to acquire greater share in the regional and global markets and compete with MNCs; and work towards preparedness to survive in the face of challenges.

Remarks by Executive Director COMSATS, Ambassador Dr. Mohammad Nafees Zakaria, as panelist of Session on 'Building SMEs Readiness to Cope with Current and Future Crisis'

SMEs are backbones of any economy. They generate economic activities, employment, and help in socio-economic uplift. In nutshell, SMEs help alleviate poverty and improve living standards. These three aspects are vital for any country and the government. All three reinforce each other and lead to social harmony and creates space for governments to invest in the growth of other sectors of economy and society.

Over time, a number of studies have been carried out by entities like the World Bank, Global Economic bodies, Regional Organizations and individual Analysts, highlighting the importance and significance of SMEs in terms of contribution to the economy, employment generation, and societal prosperity. Studies have also reflected that natural and man-made disasters, economic recessions and pandemics have adversely impacted the SMEs.

Those studies and analyses clearly indicate the high stakes of the respective governments in the sustainability of SMEs. World has experienced the economic devastation caused by the Great Depression of 1930s, a series of financial crises, wars, the ongoing pandemic COVID19 and climate change caused disasters. The analyses assessing the impact of the pandemic and effects of climate change have indicated that yet another recession is in the offing.

In June this year, reportedly global market downturn has wiped out 13 trillion dollars off world stocks, mainly in the developed economies. But the trickle-down effect on smaller economies would be inevitable. Coming years will be more difficult. Therefore, preparedness will be an imperative. The latest developments in the geo-political and geo-strategic context fueling trade war and competition for dominance should be worrisome. Conflicts, irrespective of its type are untenable, particularly, economically. Its time for resolution of disputes, cooperation and reconstruction.

By virtue of its relevance to the interdependent regional and global economic

stability, peace and security, the international community and intergovernmental bodies should feel obliged to duly contribute to the efforts towards SMEs' empowerment and making them resilient. Individual governments, particularly in the developing world, do not have the capacity to provide necessary financial and infrastructural support to establish an enabling environment for SMEs to flourish and survive in the wake of crisis. The governments and intergovernmental bodies should work together in sync and with synergy.

The ability of developing economies to financially support SMEs to take them out from the setbacks or put in place financial protection for the future, is limited. Nevertheless, given the significance of SMEs' contribution to any country's economy or GDP, it is a must for the governments to frame supportive policies, provide financial support and back up to cater for the disruption in the supply chain.

Emerging markets and developing economies with large foreign borrowing and their dependence on external financial support would be in double trouble as global recession looms large over the developed economies that may limit the extent of support they extend. But then there are always opportunities in the challenges. For example, when COVID led to the cancellation of orders of textile products and posed existential threat to the industry, the manufacturers adapted to making protective gears with a range of varieties. Innovations led to the development of UV sanitizers, production of diagnostic kits, preventive vaccines, treatment equipment and protective commodities. Phenomenon of digitization gained momentum due to the COVID19. According to the country studies, 70% SMEs intensified their use of digital technologies. 75% SMEs surveyed in the UK have moved to the remote working while a third have invested in new digital transformation. Likewise, surveys in Brazil and Canada have also seen businesses transforming to eCommerce as the way forward.

However, in developing economies, there is a need to create awareness among policy makers in the governments for framing conducive policies to invest, encourage innovations, support skill development, establish connectivity and coordination among Educational & Vocational Institutes-Business sector and Youth Affairs or Manpower Affairs authorities, offer incentives, provide temporary financial relief in crisis times, including monetary support, tax relief, subsidies, easy access soft loans from SME banks.

International organisations like COMSATS can provide demand-driven services like formulation of policy frameworks for governments, training programs for SMEs pertaining to innovations, adaptation and application of technology, and digitization. Intergovernmental organizations can help 'Actualise' policies framed by the governments for SMEs growth by bridging the resource gaps. Therefore, our preparedness must consider the challenges and implications, and work on converting them into opportunities with the use of technology, innovations, and alternatives. By embracing digital technologies, SMEs can maintain business continuity.

The perils surrounding both the pandemic and climate change phenomena are surfacing in different manifestations. Digitization enables SMEs to minimize associated vulnerabilities.

Innovative and technology-based SMEs can turn their attention to think about expanding outside of domestic borders to enter intra-regional and international markets as well as to compete with multinational companies to capture higher market share in domestic market and to make SMEs technologically competent. There are numerous good practices and success stories across the globe to learn and benefit from. COMSATS is gearing up to help governments using the resources available at its disposal, such as its network of 24 Centres of Excellence nominated by COMSATS' member countries.



On the second day, General Assembly of INSME was held where board members and representatives of the member organizations participated. Speaking on the occasion, Ambassador Zakaria apprised about COMSATS, as well as its ongoing and future activities. Welcoming cooperation between COMSATS and INSME, he shared prospective interventions that could be made jointly by the two organizations. He urged the international community and intergovernmental organizations to play their part in supporting the developing countries to bridge their resource gaps.

Moreover, COMSATS will continue to play its advocacy role by sensitizing the governments of its member countries regarding the measures needed to be taken in order to support the SMEs with assistance for formulation of policy frameworks, remarked Dr. Zakaria.

The meeting concluded on the note of expanding regional and international collaboration to support SMEs and giving voice to their concerns and challenges.

2nd Innovative Healthcare Technologies Summit (October 26, 2022)

Dr. Azeema Fareed, Additional Director (Health) at COMSATS Secretariat and In-charge-COMSATS Telehealth (CTH) participated in “2nd Innovative Healthcare

Technologies Summit” jointly organized by the Federation of Islamic Medical Association (FIMA) and Pakistan Islamic Medical Association (PIMA), on 26th October 2022. The summit was held at the premises of Allama Iqbal Open University (AIOU), Islamabad. It was focused on the theme “Technology as a Cross-cutting Tool” for achieving SDG3 (Good Health and Wellbeing), in particular its sub target on universal health coverage (UHC).

The event had participation of learners and experts belonging to the fields of health, medical research, software and computer engineering, computational biology, and the health-tech companies. The efforts and projects presented by the participants revolved around innovative and tech-driven healthcare solutions through the use of nanotechnology, artificial intelligence (AI), and information and

communication technologies (ICTs) not only to broaden the scope for qualitative healthcare but also for health education and awareness. Besides advocacy for tech-based health solutions, the event also featured discussion on future aspects of medical research supported by Tech-driven solutions.

Dr. Fareed participated the summit as a panelist and also presented COMSATS’ contribution in UHC through its telehealth services over the years. She shared with the participants the background, method, and expertise of their services delivery of CTH since 2001 and also informed them about Telehealth clinics in Balochistan, Pakistan. Further, she also highlighted strengths of CTH in terms of patients’ satisfaction, mode of services delivery, especially in maternal and child healthcare (MNCH), and the referral system.

The participants appreciated the efforts of COMSATS for the quality primary healthcare to the marginalized population of Pakistan. They also lauded the online services being provided by COMSATS in MNCH, which is one of the key problems of the underserved communities of Pakistan.

The event served as an effective forum to learn about latest research and development in Digital Health and Tele-medicine, networking for collaborations aimed at such R&D sector and promotions and marketing of startups and other



initiatives in the field of health. Many technology-driven healthcare smart and affordable solutions/ projects were also showcased as well as presented by the young brains that include the robotic hand, vital signs monitor, AI based pathology cameras and online healthcare systems, which give hope for the future of tech-driven healthcare in Pakistan. Moreover, the challenges and needs related to data-centralization, need for robust interdisciplinary research, and lags in healthcare policies on government level were also the part of discussions during the summit.

National Meet on SDGs (2022) (July 27-28, 2022)

The Parliamentary SDGs Secretariat of the National Assembly of Pakistan in collaboration with Mustehkam Parlimaan – a project of the European Union – organized a two-day Conference titled ‘National Meet on Sustainable Development Goals 2022’, from 27th to 28th July 2022 in Islamabad. Engr. Qaiser Nawab, Assistant Director (Programmes), represented COMSATS during the event.

Sharing his views during the session on “National Dialogue on Climate

Change and the Impact of Heat Wave”, Engr. Nawab stated that there is a need to emphasize on R&D to produce heat resistant seeds that could help improve the agricultural productivity of Pakistan. He also opined that STEM education and ST&I are both vital to address the challenges and crises impeding progress towards SDGs.

In a parallel session on “Re-Defining Corporate Social Responsibility for the achievement of SDGs”, Engr. Nawab gave recommendations with regard to systematizing the use of CSR funds and supporting technology start-ups.





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ACTIVITIES OF COMSATS CENTRES OF EXCELLENCE

A group of twenty-four 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 annual reports received from COMSATS' Centres of Excellence, as well as news of some Centres covered in COMSATS Newsletter over 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.



Capacity-building Activities

ICCES-China Conducts Workshop on Sub-seasonal to seasonal Climate Prediction

The International Center for Climate and Environmental Sciences (ICCES), China, co-hosted an international training workshop on 'Increase Capability on

Gaps and Challenges of Sub-Seasonal to Seasonal Climate Prediction in Thailand' (INCAP2022) with Hydro-Informatics Institute (HII), Ministry of Higher Education, Science, Research, and Innovation (MHESI) of Thailand. Held on 10th and 11th August 2022, the two-day training workshop was physically and virtually attended by 120 participants from Canada, Thailand, Kenya, Tunisia,

Rwanda, Pakistan, Nigeria, Tanzania, Bangladesh, Myanmar, and China.

ICCES-China Holds Conference on Innovations in Agriculture

The International Centre for Climate and Environment Sciences (ICCES), China, co-organized an International Conference on “Innovations in Agriculture to Ensure Food Security in Changing Climate” from 23rd to 25th August 2022. The Conference was held in collaboration with the Islamia University of Bahawalpur (IUB), Bahawalpur – Pakistan, and National Disaster Risk Management Fund (NDRMF), Pakistan and had the patronage of Pakistan Science Foundation (PSF), Islamabad – Pakistan. More than 100 scientists, researchers, students, policy makers and farmers from China, Pakistan, Saudi Arabia, Turkey, Germany, Thailand, South Korea, Peru, Bangladesh and Nigeria participated in the Conference. Experts from China, Pakistan, USA, Thailand, Canada, Brazil, Germany, and Turkey participated as speakers, shared their experiences, and discussed sustainable strategies, innovations, tools and skills for achieving sustainable agriculture in changing climate.

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 its capabilities in innovation and technology-transfer to become a global leader for research and development in industrial biotechnology.



The year 2022 marked the tenth anniversary of TIB. Over the past decade,



targeted at the green, low-carbon and sustainable development demand, taking industrial bio-design as its core, TIB has vigorously constructed the ecological route of industrial economic development, making great progresses in basic research, enabling technologies' development on industrial biology, and key technologies' innovation in the bio-manufacturing industry. TIB has played an important role in supporting the development of bio-manufacturing technology and green bio-economy in China.

On the occasion of the 10th anniversary of TIB, the "top ten scientific and technological progresses" were selected from the aspects of basic research and technological innovation, which include Starch synthesis from carbon dioxide, enzymatic DNA synthesis, new-type base transmutation editor, automated genome editing, construction and industrial application of new strains of bulk amino acids, key technologies and industrial applications of anaerobic fermentation of amino acids, key technologies and industrial applications on bio-manufacturing of important bio-based materials monomers, green biosynthesis of steroid hormone drugs, strain construction and industrial application of vitamin B12 production and bio-manufacturing of healthy sugar.

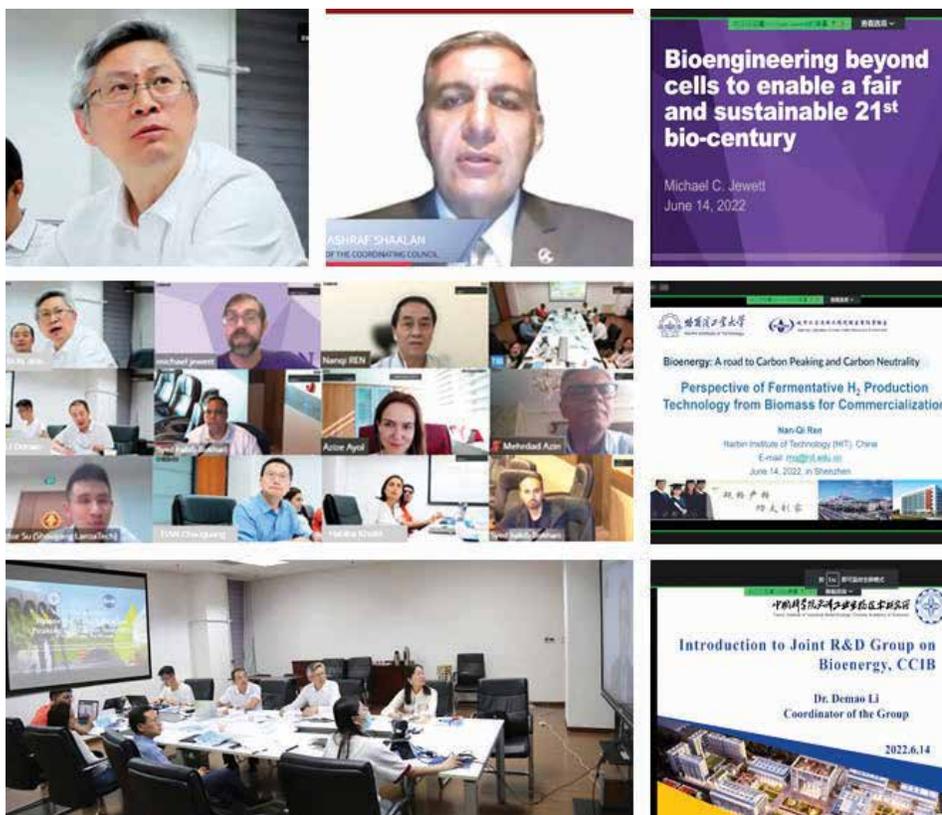
Capacity-building Activities

In 2022, TIB also successfully held the

11th China Summit Forum on Industrial Biotechnology Development and the 6th Bio-industry & Capital Conference. With the theme of "Building Cell Factories and Developing Bio-economy", over 60 leading scholars and experts, founders of the start-ups and well-known investors from China were invited to give lectures and conduct road show. Nearly 4,000 experts and scholars, entrepreneurs and investors in the fields of biotechnology and bio-industry registered the summit. It also opened to the public via live broadcast and got more than 400,000 views. The summit played a positive role in promoting the integration of biotechnology innovation and financial capital, accelerating the high-quality development of the bio-industry.

As the host institute, TIB put great effort to promote the development of the 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 thus to promote the development of biotechnology and bio-industry in COMSATS member states and the "Belt and Road" countries. In the framework of CCIB, a series of activities are organized.

Four workshops entitled "Crop Microbiome and Sustainable Agriculture", "Bioenergy: A Road to Carbon Peaking and Carbon Neutrality", "Green Bio-manufacturing of Bio-based Materials" and "Green Bio-manufacturing of Bio-based



Gambia in March 1999. The University has four well-equipped campuses.

Training on Intellectual Property

In collaboration with the African Regional Intellectual Property Organization (ARIPO) and the Registrar General of The Gambia at the Ministry of Justice, the University of the Gambia (UTG), The Gambia, organized a two-day seminar on intellectual property. The seminar, held under the theme ‘Fostering Creativity and Innovation for Economic Growth and Development in Africa’, was aimed at raising awareness on intellectual property among academic and industrial sector.

Speaking on behalf of the Vice Chancellor, Dr. Muhammed Lamin Sanyang, Director of Research and Consultancy at UTG, stated that in a low-income country like The Gambia, the role of research in an academic institution is significant for its sustainability and development and it is imperative to have knowledge-driven growth to boost country’s economy.

Prof. Pierre Gomez, Gambian Minister of Higher Education Research and Technology (MoHERST), outlined the importance of intellectual property and stated that innovation plays a fundamental role in building solid foundations to promote businesses and industries. In line with this, the Ministry is providing the policy environment that fosters innovation and strengthens research and development capacities of developing countries to build an economy based on human potential to help generate value-added growth.

Establishing Forensic Entomology Lab

Department of Biology, the University of The Gambia (UTG), The Gambia, has been awarded a grant by the American Academy of Forensic Sciences (AAFS) to establish a Forensic Entomology Laboratory at the University. The laboratory would be the first ever initiative towards the practice

Chemicals” were organized to strengthen academic exchanges and promote S&T cooperation, over 600 participated.

Besides, the Third International Training Course on Industrial Synthetic Biotechnology (ITC-ISB) was organized from December 12 to 23, 2022. Among 52 trainees, nearly 47 were from COMSATS’ member states such as Egypt, Pakistan, Nigeria, and Bangladesh. Based on the achievements, CCIB was selected in the “Good Practices in South-South Cooperation & Triangular Cooperation (Volume 4)” released by UNESCO in the United Nations Day on South-South Cooperation.

Fellowship Initiative

In the year 2022, with the support of Belt & Road Fellowship Initiative of Tianjin Synthetic Biotechnology Innovation Capacity Improvement Project, CAS President’s International Fellowship Initiative, etc. 7 young researchers from developing countries such as Pakistan,

Iran, Bangladesh, and Malaysia were funded to carry joint research at TIB.

In 2022, TIB got more than 80 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 120 million yuan. TIB also applied for 189 patents, an increase of 21.9% over last year, and authorized 147 patents, an increase of 24.6% over last year. 270 articles were published, including 250 SCI. TIB has built new partnership with 32 enterprises in 13 provinces and cities with 36 projects with a contract of more than 200 million yuan.

University of The Gambia (UTG), The Gambia

University of The Gambia was established by an Act of the National Assembly of The



of such forensic science in the country. Apart from offering support during investigations, the laboratory would conduct and promote research, as well as provide professional and academic training.

Council of Scientific and Industrial Research (CSIR), Ghana

The Council for Scientific and Industrial Research (CSIR) focuses on accelerating socio-economic development in Ghana through effective utilization of science and technology. The Council was established in 1996 and formulates and implements government policies regarding S&T based development.



R&D Activities

Crops Research Institute (CRI) of CSIR-Ghana is engaging stakeholders in the pepper value chain to enable them for developing varieties that meet local and international demands. Earlier, farmers had never been involved in the selection process and their involvement would help achieve demand-led-breeding. CSIR-CRI is currently doing participatory selection of about 28 different lines of pepper varieties, which were obtained from the World Vegetable Center.

College of Science and Technology (CCST) of CSIR-Ghana has initiated a progressive study to develop smart organic fertilizers for small and medium scale farmers in the country. The objective of the study is to develop fortified compost resources with the required macro and micronutrients for crop production. It will also help enhance nutrient use efficiency and promote the use of compost by farmers while also preventing the excessive use of nitrogen

fertilizer and release of nitrous oxide (a greenhouse gas).

Capacity-building Activities

The Council for Scientific and Industrial Research (CSIR), Ghana, hosted a three-day stakeholder consortium in Accra to discuss ways of improving nutrition under the Healthy Food Africa (HFA) project. HFA is an EU Horizon 2020 collaborative research and development actions project which is intended to strengthen the diversity, sustainability and connectivity of food systems to provide more sustainable ways of producing food and boosting efficiency.

Two institutes of the CSIR, the Water Research Institute and Food Research Institute, are working on the Accra food system laboratory to add to the food value chain. The training was aimed to educate farmers on safety and health concerns in food production and processing.

International Centre for Environmental and Nuclear Sciences (ICENS), Jamaica

Established in 1984 by the Government of Jamaica and the University of the West Indies (UWI), the International Centre for Environmental and Nuclear Sciences (ICENS) is a multi-disciplinary research centre working on the applications of the 'Peaceful Uses of the Atom'. The Centre is affiliated to the Ministry of Science, Technology, Energy and Mining (MSTEM), and the University of the West Indies (Mona).



R&D Activities

Research scientist of International Centre for Environmental and Nuclear Sciences (ICENS), Johann Antoine, is working on ways to help reduce diseases, and improve

the agricultural and medical industry in Jamaica. In his work, gamma irradiation technology — a tool used for sterilisation, radiotherapy, and nuclear energy — will be used to make insects sterile, such as mosquitos, to lower their population. This could be helpful in managing many mosquito borne diseases that are rampant in Africa.

This multi-purpose tool that scientists of ICENS are developing could also be used to sterilise skin grafts for burn victims and crop mutation.

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.

Technologies Developed/ Transferred

RSS developed / transferred following technologies, products, and services during 2022:

- A team of researcher at RSS invented a device to harvest clean, drinkable water from desert air by harvesting water vapour in the form of humidity, the patented device can produce up to 35 litres of water per day, even under the dry, desert conditions of Jordan.
- National Energy Research Centre (NERC) developed different tools such as benchmarking, building energy performance (BEP) calculation, and demonstration project database systems to enable national trainers to use the tools in cooperation with RSS partners through BUILD_ME project activities.



HRH Princess Sumaya bint El Hassan

President

Royal Scientific Society (RSS), Jordan

After such an unprecedented period of crisis and challenge, 2022 offered an opportunity to reflect and to reassess priorities and goals. At the RSS, we were delighted to reaffirm our focus on a mission to apply research to those enduring and increasing challenges that face our people. We are proud of our organisation and of our family of employees who worked through adversity to maintain standards, to increase resilience and to innovate through adversity. As we led the way in supplying support services and advice to the government throughout the pandemic, our team at the Advanced Research Centre developed a unique and patented device, based on novel materials, to draw water from the air in our most arid regions. It was but one of many key deliverables born out of our deep commitment to research for security, quality and life-enhancing innovation.

- Development and Implementation of the Intellectual Property Management System (IPMS) to automate the RSS Intellectual Property Commercialisation Office (IPCO) to add and follow-up IPCO cases.
- Development and Implementation of Tashbeek Platform which is an online platform designed and developed to list a network of Jordanian civil society organisations (CSOs) with the purpose of increasing coordination and cooperation among the different development stakeholders.
- The National Software Quality Assurance Centre (NSQAC) successfully delivered two implementations for a Structural Code Quality gates for important organizations for our customers.
- The National Software Quality Assurance Centre (NSQAC) introduced newly designed service toolkits for Mobile Apps Testing and User Experience (UX) testing.



Major Research Activities/ New Initiatives

Major research activities of RSS during 2022 included:

- Natural Resource Governance in Light of the 2030 Agenda: The case

- of competition over groundwater in Azraq, Jordan.
- Renewable Energy for Refugees (RE4R).
- Understanding the Linkages between Climate, Human Security, and Gender in Lebanon and Jordan.
- Applying a Geopolitical Perspective in Designing Innovation Policies: A Comparative Case Study Between Jordan and Lebanon.
- Labour contractual problems in the construction sector in Jordan: Can innovation provide a practical solution?
- Overview of the challenges facing the realisation of accessibility in Jordan.
- The case for increased collaboration between academia and industry in the food sector in Jordan.
- Overcoming challenges facing youth in the entrepreneurship sector in Jordan.
- Civic technology to enhance citizen's engagement in Jordan's public policy.
- Assessing the Job Creation Potential of the Social Economy in the MENA Region.
- A Decade of Hosting Syrian Refugees in Jordan - Lessons Learnt for Poland.
- Restoring the "sacred" Jordan River.
- Participating in Carbon Markets to Meet Climate Change Mitigation and Adaptation Targets: Jordan.
- Bans, Restrictions, and Missed Opportunities in Jordan: 3D Printing

and Drone Technology.

- Feasibility Study for Solid Waste Recycling in Baqa'a Camp.
- Bat Biodiversity: Local Communities Engagement in Conservation of Ecosystems.
- Production of Ammonium Sulfate Fertilizer from Jordanian Phosphogypsum Waste.
- USA Soft Landing Program for High-Growth Jordanian Start-ups.
- Green Innovation Projects as part of the EU to support Green Economy in Response to the Syrian crisis in Jordan.
- Governance and System Modelling of energy related data in the water sector.
- Accelerating zero emission building sector ambitions and linking renewable energy development and efficient sector coupling in the MENA region – in partnership with Guidehouse Company/Germany.
- Develop a Smart Building Management System (BMS) to control and monitor any electrical device using different devices and systems such as (Machine Learning Algorithms and AI fingerprint devices, databases, ERPs, mobile applications, dashboards and controlling system) in order to reduce electricity consumption, increase electricity devices life span and secure and monitor sensitive locations.
- Developing a Certification Framework for Service Providers (SPs) on Resource Efficient and Cleaner Production (RECP).
- Research Study for Testing Plastics that Degrade in the Environment by a Combination of Oxidation and Biodegradation According to Standard Guide ASTM D 6954.

Capacity-Building Activities

RSS' events during 2021 included:

- Training services aimed at strengthening the skills of the Ministry of Agriculture (MoA) staff on knowledge transfer on the topic of



marketing and post-harvest facilities, pest control, mod agricultural technology, rural development, and entrepreneurial projects, and integrated animal production – funded by FAO, RSS provided the training program through a the MADAD project “Enhancing resilient livelihoods and food security of host communities and Syrian refugees in Jordan and Lebanon through the promotion of sustainable agricultural development”.

- Schools Building Code funded by USAID through Ministry of Education, to strengthen the skills and knowledge of 165 participants from different entities.
- Supporting Jordanian educational institutions in offering labour market oriented vocational training – funded by GIZ. The courses provided 300 Jordanian youth with the required knowledge, skills, and competencies that enable them to meet employer demands in the field of ICT, thus increasing their employability and potential for economic participation and income generation through employment or self-employment in formal or non-formal sectors.
- Implementation of an Entrepreneurship Training and Mentorship in Food Security Innovation, and Channelling Seed Funds to Start-ups.
- Training on Advanced Water Energy Food Nexus, and Access to Finance to

the Greater Ajloun Municipality, and Greater Ma'an Municipality through MINARET II project activities and framework.

- ICT4D team obtained 14 new international professional certificates in the IT service management, I&T institutions' governance, data management and software security and testing.
- The National Software Testing Quality Assurance Centre (NSQAC) in cooperation with RSS Training Centre conducted two consecutive in-house ISTQB Certified Tester-Foundation Level (CTFL) courses in July, 2022 for employees of the Jordan Payments and Clearing Company (JOPACC), where employees of different IT and business backgrounds participated. The course focused on the essential principles of Software Testing, the role of software testing in SDLC, the most famous functional testing techniques, principles in Software test management, and a quick glimpse about software testing tools. The course has established these concepts through practical examples and group practices, which has enhanced the knowledge level of the participants.
- As part of its training plan, NSQAC and in cooperation with RSS Training Centre has delivered over 7 training courses, covering various topics of software testing, and serving trainees of different levels.
- Training and awareness raising of

civil societies on climate change adaptation.

- RSS delivered a training in Beirut to the government of Iraq about preparing the national communications and Biennial Update Report (BUR) about Climate Change.
- Chemical Analysis of Olive Oil

International Collaborations and Agreements

- Agreement with the German Development Cooperation (GIZ) - Sludge Chemical, Physical and Microbiological Laboratory Analysis.
- Agreement with the Food and Agriculture Organization of the United Nations (FAO) - Support community engagement in integrated forest fire management.
- Agreement with CRDF Global - The Mediterranean and Black Sea Flyway: Transboundary Determinants of Avian Zoonotic Diseases - Avian Zoonotic Disease Network (AZDN).
- Agreement with EcoHealth Alliance (EHA) - Understanding the Risk of Bat-Borne Zoonotic Disease Emergence in Western Asia.
- Agreement with OBLON, McCLELLAND, MAIER & NEUSTAND, L.L.P. - Patent Preparation and Prosecution.
- Agreement with Lloyd's Register - Carry out verification of the client's management system to establish compliance with the assessment standard(s) and in accordance with the proposed scope on Provision of Learning Services.
- Agreement with the University Court of the University of Edinburgh - Urban Disaster Risk Hub.
- Agreement with the German Development Cooperation (GIZ) - Green Action in Enterprises (GAIN).
- Agreement with United Nations Environment Programme (UNEP) - Low Carbon Strategy 2050 for the State of Kuwait.
- Agreement with the World Food Programme - The Implementation of



Jordan Country Strategic Plan (2020-2022).

- Agreement with SAID Jordan Water Infrastructure / CDM International Inc. (CDM Smith) - Wastewater sampling plan for task 9.13 - Wadi Zarqa WWTP FS USAID Jordan Water Infrastructure.
- Agreement with the Swiss Agency for Development and Cooperation (SDC) - National Flood Mapping Programme.
- Agreement with the German Development Cooperation (GIZ) - Governance and System Modelling of Energy Related Data in the Water Sector.
- Agreement with Financial Markets International, INC. - Developing Strategic Plan for SME's and Startups.
- Agreement with EXERGIA-S.A - Green Economy Financing Facility (GEFF) Jordan - Verification Consultant.
- Agreement with the United Nations Office for Project Services (UNOPS) - National Determined Contribution (NDC) Action - Facilitating the implementation of climate-resilient and low-carbon development aligned with national and global goals.
- Agreement with Eco Engineering and Energy Solutions (ECOSOL) - Med SE(A)CAP integration through uniform adapted assessment and financing methods, mainly targeting buildings in education and health sectors, for sustainable development goals in a smart society (EACAP 4 SDG).
- Agreement with United Nations

Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) - Solid Waste Management in Baqa'a Refugee Camp.

- Memorandum of Understanding with the Grantham Centre for Sustainable Futures at the University of Sheffield (TUOS).
- Agreement with the American Concrete Institute (ACI).

International Awards and Recognition

Some international awards and recognition received by RSS during 2021 are:

- RSS Jordan received ICT Standard Award from the International Federation of Global Information and Communication Technology (IFGICT), designating it as a 'Green Business'. This certification recognizes the achievements of key organisations in raising their ICT infrastructures to world-leading standards
- A shield of honour in the field of green information technology granted by the federation, was presented by The International Federation of Global Information and Communication Technology (IFGICT) to the ICT for Development Sector at the Royal Scientific Society.
- Dr Almoayyed Assayed, the Director of Water, Environment and Climate Change Centre at RSS, was awarded in January 2022 the UK alumni award in recognition of his contribution to science and sustainability

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.

R&D Activities

A group of researchers from the Faculty of Chemistry and Chemical Technology of Al-Farabi KazNU, Kazakhstan, is conducting research on the development of efficient photocatalysts for converting solar energy into renewable hydrogen. The developed technology of solid-phase mechanochemical synthesis of photocatalysts is economically feasible in contrast to other methods for obtaining photocatalysts. Therefore, the resulting nanocomposites will have a low cost. According to the scientists working on the project, the results will increase the profitability of photocatalytic hydrogen production using solar energy and will become an alternative to oil to help solve the pressing issue of finite natural resources.

International Agreements

- On 6th and 12th April 2022, Al-Farabi KazNU, Kazakhstan, has signed Memoranda of Cooperation with University of Warsaw (UW), Poland, and the National Academy of Sciences (NAS) of Kazakhstan, respectively.
- On November 18, 2022, Associate Dean of the Penn State Law of the University of Pennsylvania (USA) Prof. Stephen Barnes met with the Chairman of the Board – Rector of Al-Farabi Kazakh National University (KazNU) Dr. Prof. Zhanseit Tuimebayev. As a result of the



meeting, a number of cooperation agreements were reached, opening up opportunities for implementation of joint projects in the field of higher education and science.

- On November 25, 2022, a delegation from Turkey headed by the Rector of Ankara University, Dr. Prof. Necdet Unuvar and the Rector of Gazi University, Dr. Prof. Musa Yildiz, visited Al-Farabi KazNU. A decision was reached to carry out joint scientific projects, as KazNU, Ankara and Gazi universities have relevant qualified scientists to form a common base and jointly implement new projects.
- On November 21, 2022 the Chairman of the Board – Rector of KazNU, Dr. Prof. Zhanseit Tuimebayev, met with representatives of the Parliamentary Assembly of Turkic States (TURKPA). The parties discussed the issues of joint implementation of large-scale projects.

International Cooperation

- During the reporting period, various meetings were held by the Rector of Al-Farabi KazNU (Prof. Zhanseit Tuimebayev) with the representatives of universities from Belarus, France, Japan, and Tajikistan, with the aim to explore cooperation avenues in common areas of interest. Agreement

signing was also a part of one of these meetings.

- The meetings were held with Rector of Tajik National University, Prof. Dr. Khushvakhtzoda Qobiljon Khushvakht; and Deputy Chairman of the National Academy of Sciences of Belarus, Mr. Piotr Vityaz. During these meetings, Prof. Tuimebayev expressed readiness to develop partnerships with universities in Tajikistan and research institutes in Belarus to help create greater opportunities for development of new innovative technologies.
- Additionally, on the sidelines of 8th Meeting of the Universities’ Board of Directors held at Université Grenoble Alpes – France, the Rector of KazNU signed Agreements with University of Bordeaux (France), University of Grenoble-Alpes (France) and the University of Tsukuba (Japan).
- Within the framework of the Kazakh-Qatari Investment Forum in Astana, a Memorandum of Understanding was signed between Al-Farabi KazNU-Kazakhstan and Qatar University. The accord was signed by Dr. Prof. Zhanseit Tuimebayev, Rector of Al-Farabi KazNU, and Dr. Hassan Rashid Al-Derham, President of Qatar University. The areas of cooperation include: exchange of experience, information, results of scientific



Professor Promise Mebine

Director/Chief Executive

National Mathematical Centre (NMC), Nigeria

Nigeria is pleased to have being a member-nation of The Commission on Science and Technology for Sustainable Development in the South (COMSATS) since inception in 1994 with the National Mathematical Centre (NMC) Abuja, a Centre of Excellence in Mathematical Sciences and COMSATS' International Thematic Research Group (ITRG) Lead Centre in Mathematical Modelling.

Nigeria has benefitted immensely in the areas of trainings, supports in R & D, Capacity Development activities in Mathematical Sciences and broker of new cooperation and Knowledge-sharing through COMSATS' various publications and flagship project, COMSATS University Islamabad (CUI). We are indeed proud of COMSATS as an enviable Inter-Governmental Organization (IGO).

While promising our continual commitment to the course of COMSATS, it should strive harder in the years to come at uniting nations across boundaries, institutions of varying disciplines and people of different races towards the development of Science and Technology for sustainable developments. Please accept my best wishes.

research, and statistical data; joint publication of materials, research, conferences, meetings and trainings, among others.

- Al-Farabi KazNU-Kazakhstan has signed a Memorandum of Cooperation with the State Islamic University of Sultan Syarif Kasim, Indonesia. The cooperation between the two sides includes: exchange of university staff and teachers; organization of advanced training courses for the teaching staff; development and implementation of joint educational programmes, including double diploma programmes; organization of academic meetings and symposiums; and joint research activities.

Awards and Honors

- Al-Farabi KazNU, Kazakhstan, has moved 25 places up on global Quacquarelli Symonds World University Rankings (QS WUR) 2022 securing 150 position on the list. The ranking gauged 2,462 higher

education institutions out of which 1,422 were selected as the strongest.

- Al-Farabi KazNU, Kazakhstan, was the first Central Asian university to join United Nations Academic Impact Program (UNAI) programme in 2011 and later in 2014, entrusted with the role of acting as UNAI Global Hub for Sustainable Development. This year, KazNU's status to act as UNAI Hub has been renewed.
- On 18th March 2022, the Rector of Al-Farabi KazNU, Kazakhstan, Prof. Dr. Zhanseit Tuimebayev, has been awarded with the II degree "Barys" Order for the following merits: strengthening the statehood and sovereignty of Kazakhstan; ensuring peace, consolidation of society and unity of the people of Kazakhstan; in state, industrial, scientific, socio-cultural and social activities; and strengthening cooperation between peoples, rapprochement and mutual enrichment of national cultures, friendly relations between states.

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.



Major research activities/new initiatives

- Mathematical Modelling and Simulation Research Group is on Research Project on Land and Marine ecosystems.
- Research Project on Wind Energy Potentials in Nigeria is ongoing. This is of the duration of two years.



Capacity-building activities

1. Two week (20 November – 2 December, 2022) Foundation Postgraduate Course in Mathematical Methods for Theoretical Physicists and its Application to Physical Problems. The Participants which included; university lecturers and postgraduate students were taken through; First differential Equations, Second Order differential Equations, Special functions in Mathematical Physics (Special Functions like Legendre, Bessel, Laguerre etc. were handled in details), Hyper geometric Functions, Particle Difference Equation, NU Method, NUFA Method, Application of NU and NUFA methods to physical problems, HEUN Differential Equation and the Extended NU Method. In the end, research directions were proposed and research groups were formed to commence work in the areas that have been identified.
2. International four weeks (7 November – 2 December, 2022) Foundation Postgraduate Course (FPC) and Research-oriented course (ROC) in Fixed Point theory and Applications was held concurrently with a two weeks (7–18 November, 2022) Foundation Postgraduate Course (FPC) in Complex Analysis. Targeted

participants were Researchers/ Scholars and Lecturers in Tertiary institutions that are yet to get their PhD. The workshop was virtual.

3. Two week (28 November – 9 December, 2022) Foundation Postgraduate Course on Reproducible Econometrics Using R was held . Targetted participants included; Graduate assistants, Postgraduates students from universities and other tertiary institutions in Nigeria. Resource Experts in econometrics using R delivered lectures in two thematic areas of the reproducible econometrics which are:

- Linear Time Series Methods
- Modeling Uncertainty

The workshop was held virtually.

International collaborations and agreements

NMC-COMSATS-ANSO Connection

Through this partnership, the Alliance of International Science Organisations (ANSO) is awarding Postgraduate scholarships being administered in the University of Science and Technology of China (USTC) to promising young Nigerians through the NMC. In addition, the B&R International Innovation,

Leadership and Development Institute Network (ANSO-BIDI) School is training Nigerians including a number of staff of the NMC.

International awards and recognition

Three students represented Nigeria in the 29th Edition of the annual Pan African Mathematics Olympiad (PAMO) in Morocco in July, 2022. They competed with students from other African countries. Nigeria got one gold and two bronze medals. The students were earlier identified in the talent hunts and development training series in Mathematical Sciences of the National Mathematical Centre Abuja.

International Day of Mathematics (IDM(Pi-day)) was held on 14th March, 2022. The Day was organised in conjunction with the Nigerian Mathematical Society (NMS), Nigeria Mathematics Association (MAN), Nigerian Association of Mathematical Physics (NAMP), Nigeria Statistical Association (NSA) and Nigeria Computer Society (NCS). The theme for the year was “Mathematics for a better world”. The objectives of this Day were to create awareness on the importance of Mathematics in our day-to-day activities. Mathematics is crucial to technology development which is central to human wellbeing.

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.



Low-Cost Antibacterial Fabric Developed by ICCBS-Pakistan

A team of scientists from Pakistan, including those from the International Centre for Chemical and Biological Sciences (ICCBS), Pakistan, have created an antibacterial fabric that can be used in wound dressing, masks, lab coats, and several types of packaging material. Their research has been published in the journal, Nature. The regular fabric was treated with alkali to create active sites for modification and was then dipped in the chitosan and silver nanoparticles to give it an extra invisible layer. The coating provided protection against microbes but with minimal cytotoxicity. Consequently, the fabric was found to be highly effective in preventing microbial contamination. Compared to normal fabric in laboratory experiments, the antibacterial patch showed 85 % efficacy in killing bacteria and even prevented it from spreading as a colony.

Director of ICCBS-Pakistan Receives ITA Award in Kazakhstan

In recognition of his outstanding



contributions to the development of cooperation in the Turkic world, Prof. Dr. M. Iqbal Choudhary, Director of the International Center for Chemical and Biological Sciences (ICCBS), Pakistan, has been conferred Al-Farabi International Gold Medal by International Turkic Academy (ITA) of Kazakhstan. The Medal, along with a Certificate of Merit, was presented to Prof. Iqbal by President of the Academy, Dr. Darkhan Kydyrali, on the occasion of International 'Al-Farabi – Iqbal' Forum held on 26th and 27th May in Almaty, Kazakhstan.

China Honors Prof. Dr. M. Iqbal Choudhary with China Friendship Award

The Director International Center for Chemical and Biological Sciences (ICCBS), Prof. Dr. M. Iqbal Choudhary, has been honored by the government of China with the Chinese Government's Friendship Award. The award was presented by Ambassador of the People's Republic of China in Pakistan, Mr. Nong Rong in a special ceremony held at the Chinese Embassy.

The Chinese Government's Friendship Award is the People's Republic of China's highest award for "foreign experts who have made outstanding contributions to the country's economic and social progress".

COMSATS University Islamabad (CUI), Pakistan

COMSATS University Islamabad, is a public university established in year 1998. The University has now grown exponentially with seven physical campuses, six faculties and 9 research centers. It has a students' body of over 33,744 students including 500+ International students, teaching faculty of 2,100+ (including 1,120 Ph.D.) and offering more than 100 programmes in 22 academic departments at undergraduate and postgraduate level.



Moreover, in TIMES Higher Education (THE) World Universities Rankings 2023, CUI has been placed among 601-800 world best universities, and ranked 6th in Pakistan in Federally Chartered Universities. Besides, it was also ranked at Engineering & Technology # 301-400, CS # 301-400, BA & Econ # 251-300 and Physical Sciences # 401-500 in subject rankings 2023. CUI is also placed # 201-250 in THE Asian University Rankings 2023. Besides, it was ranked 137th in QS Asian Universities Rankings 2023.

Major Research activities / initiatives

In year 2022, total of 3711 impact factor publications have been recorded in national/international journals by the faculty of CUI. In addition, One Hundred Sixty One (161) research projects, Nineteen (19) Travel Grant applications and Four (04) Seminar Workshops application were submitted to different funding agencies out which Twenty Eight (28) research projects, Three (3) Travel Grants and One (1) seminar workshops have been funded by different funding agencies.

In order to attract young faculty into the research mainstream, a CUI Research

Description	Pakistan	USA	Total
Patents Filed	3	1	4
Patents Granted	2	2	4

Grant Program (CRGP) is in place to award grants up to Rs. 300,000/- for research proposals of 1-2 years duration.

Patents: As we move towards creating knowledge economy, developing an understanding of Intellectual Property Rights is of paramount importance in order to protect inventor's rights and produce research that will fuel innovation and commercialization. CUI has developed in-house capacity to provide IP support to its researchers and file patent applications locally and internationally.

Capacity building Activities

COMSATS University Islamabad firmly believes that sharing of information among students and faculty members and robust interaction with universities and organizations abroad enhances qualitative and improved learning. Based on this philosophy, the Office of Research Innovation and Commercialization (ORIC), has a center for entrepreneurial

training and professional development i.e., ORIC-PD.

In year 2022, ORIC-PD has also conducted 08 training program for Professionals/ researchers and staff. Wherein officials from other organizations have participated and ORIC-PD earned Rs.354,036/-.

The detail of training sessions is as under:

- Data Analysis and Machine Learning (8-10 February 2022)
- Data Analysis for Next Generation Sequencing (NGS) (8-9 March 2022)
- Amazon Bootcamp FBA Wholesale & Virtual Assistance (5 March-17 April 2022)
- Personality Development & Leadership Skills (5 March 2022)
- Five-Day Training/Workshop on Predictive Analytics (3-7 March 2022)
- Applications of Remote Sensing and GIS (15 June 2022)
- Introduction to Three Big Giants for Empirical Analysis: STATA, E-Views, and R (20-22 June 2022)
- Second Batch of Amazon Bootcamp Wholesale and Virtual Assistance (22 July-10 September 2022)

During 2022, seventy (70) renowned researchers, diplomats, delegations,

students and faculty members visited CUI. Similarly, eighteen (18) individuals, delegations and faculty members also proceeded abroad.

Foreign Academic Linkages

CUI, being a flagship project and Center of Excellence of the COMSATS, has been establishing foreign academic and research linkages with different universities, research centers and international organizations across the globe over the years. For this, multiple areas of collaboration were conceived through student and faculty exchange, mobility, international admissions, fellowships, joint research projects, publications, conferences, workshops, trainings and other collaborative activities.

During the reporting period 01 Academic and Scientific Cooperation was signed by CUI. The Government of Pakistan has given approval to sign the instrument with the COMSATS member countries i.e., Federal University of Juiz de Fora, Brazil; Xidian University, China.

Academic Exchanges

CUI has always valued student/staff mobilities and exchanges with foreign





universities in true letter of spirit. Efforts are always made by the International Office to secure fully funded mobilities to enable a wider participation. In this context, CUI availed three Student Exchange opportunities in the year 2022 to Middle East Technical University, Ankara, Turkiye under zero grant program.

As the world started to recover from the pandemic and travel restrictions eased, CUI officials had the privilege to attend two International Staff weeks organized under the framework of the Erasmus+ program of the EU. The first was the 6th International Staff Week (30 May 2022 - 3 June 2022) organized by the Middle East Technical University (METU) in collaboration with China National Academy of Education Administration (NAEA) on the title “Blended Workshop and Training for University International Officers & Administrators”. The second staff week (6-10 June 2022) was organized by Usak University, Turkiye on the theme “Re-connection in New Era”. This event was attended by the Rector and Head International Office.

International students

During the year 2022, a total of 50 international students joined CUI in undergraduate and postgraduate programs from 14 different countries mainly from Afghanistan, Azerbaijan Benin, China, Cameroon, Ethiopia, Sri Lanka, Kenya,

Sierra Leone, Yemen and USA etc. Most of these students are enrolled in Electrical Engineering, Mathematics, Meteorology, Management Sciences, Physics, Pharmacy, Environmental Sciences and Bio-sciences departments.

Further around 80 international students graduated during this period. 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 scholarships 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 scholarships programs which includes 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).

Honors and Awards

Dr. Amir Rashid Chaudhary, Assistant Professor, CUI Lahore Campus won the 10th Federation of Pakistan, Chambers of Commerce and Industry on November 2, 2022 at Governor House, Lahore.

Foreign Faculty at CUI

In an era of global competence, international faculty play a key role to enable HEI’s to increase national and international visibility, strengths through strategic partnerships, enlarge the academic community within which to benchmark their activities, mobilize internal intellectual resources, contemporary learning outcomes to student experience and develop stronger research groups.

Al-Quds University (AQU), Palestine

Founded in 1984, the Al-Quds University (AQU) is serving to provide excellence in academics and research. With its main campus in Abu Dis, AQU is the first Palestinian university to establish a medical school and nanotechnology research center.



Rankings of AQU

Al-Quds University (AQU), Palestine, has been ranked first among the Palestinian universities, according to the SCIMAGO World University Rankings for the first quarter of 2022. Further, it ranked 27th in the Arab world, and at 600 place out of 8000 universities and research institutions worldwide.

According to SCIMAGO ranking, AQU ranked first in the Palestinian territories in the fields of Energy, Medicine, and Pharmacology, and 20th and 21st in the Arab world in Energy and Medicine, respectively. This classification is based on the indicators of research tools, innovation outputs, and social impact.

Moreover, AQU ranked second among Palestinian universities according to the QS World Higher Education Institutions

classification for the year 2022, and was among the best 51-60 Arab universities in citation. According to QS report for the year 2020-2021, the university won first place locally and was 21st regionally in the number of citations for each research paper, and it ranked second Palestinian university in terms of research cooperation worldwide.

Industrial Research and Consultancy Center (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) and is affiliated with the Ministry of Industry, Government of Sudan.



Activities and Events

In the field of developing and modernizing laboratories and workshops, some laboratory complementary equipments were brought, in order to meet the requirements of customers and the scientific accreditation program and high reliability to enhance the role of the IRCC as one of the important partners in providing advisory services, localization and transfer of industrial knowledge and its dissemination.

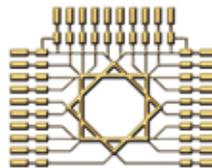
In the field of training, the center organized training courses for workers in the industrial sector, higher education, ministries and civil society organizations to disseminate useful industrial knowledge for industrialization. Some courses were prepared and implemented by the IRCC to support external parties from industrial development partners.

In the field of raising industrial awareness and spreading knowledge, IRCC has organized and participated in many seminars and workshops, a symposium entitled "Impact of science, technology and innovation policies on development" was held on September 15, 2022.

A workshop entitled "Foundry Industry Sector in Sudan: Constrains and Solutions" was held in cooperation with the Federation of Chambers of Small and Craft Industries (Chamber of Foundries) on October 5, 2022.

Higher Institute for Applied Science and Technology (HIAST), Syria

The Higher Institute for Applied Sciences and Technology (HIAST) was established in 1983. The Institute aims to develop the scientific and technological capacity of human resources in various fields of applied science and technology so that it can actively contribute in the scientific and economic progress of Syria.



International Cooperation

HIAST has signed a Protocol of Intent on cooperation with the Polytechnic University (SPbPU), Russia. The protocol was signed during the visit of a delegation



from HIAST to SPbPU.

The document provides for development of partnerships in science and education, including the development of joint graduate and postgraduate programmes, academic mobility of teachers and students, and implementation of joint research in various fields.

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 has implemented Turkey's strategic approach of co-creating and succeeding together, which resulted in advancing output and impact-oriented mobilization of the science, technology and innovation ecosystem.



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.



Prof. Hasan Mandal

President

The Scientific and Technological Research Council of Türkiye (TÜBİTAK), Türkiye

As the Republic of Türkiye enters the centennial anniversary, the Scientific and Technological Research Council of Türkiye (TÜBİTAK) continues to accelerate collaboration with all actors of the research, development (R&D) and innovation ecosystem. In this way, TÜBİTAK innovated, participated and shared new advances for co-creation based collaboration in 2022 to support Türkiye to develop its own technologies, produce technology-based products, and proceed on a path to sustainable development. TÜBİTAK with its activities and support in the fields of science, technology and innovation, which is of critical importance for our future, has stood by academicians, industrialists, researchers, entrepreneurs and students from across the country.

TÜBİTAK has made great contributions to supporting and training scientists of all ages and boosted international collaboration, reaching new opportunities and frontiers. In recent years, the transformative and destructive effects of rapidly developing technologies, global trends, such as the green and digital transitions, socio-economic challenges, such as the pandemic, climate change, energy and food security, and the geopolitical landscape, persists in increasing the need for science, technology and innovation across all countries. However, sustainability, digitization, resilience to multiple risks, social inclusion, competitiveness, and working together have gained even greater importance to open new opportunities for a more sustainable future as a common future.

Our TÜBİTAK research centres and institutes also work together with our ecosystem, increasing the national and international success of the ecosystem in strategic areas. We have worked to launch a new research institute on Clean Energy, Climate Change and Sustainability that will plan and coordinate R&D and innovation projects that serve our green transformation. Moreover, we continue to transfer knowledge and technologies to the industry to multiply the impact of advances. Satellites, defense biotechnology, medicine and vaccines, nanotechnology, rail systems, food, energy, communication systems, Internet of Things, space, polar and climate research represent some of the critical areas of research. We have been completing critical projects that are serving our country's 2023 goals.

With the vision of the National Technology Move and the Green Development Revolution, we will continue to be one of the pioneering institutions that lead and facilitate our country's 2023, 2053 and 2071 targets in terms of R&D and innovation. By adding the power of the stakeholders in the research ecosystem to our strength, we will move forward in close interaction, collaboration and sharing with all stakeholders the strategic approach of "working together, learning together and succeeding together." Many new cooperation agreements are signed with R&D institutions in countries in Asia, the Middle East, Balkans, and Europe – reaching 93 institutions across 65 countries with 28 different bilateral calls opened with 19 countries in 2022. Our cooperation within the international organizations, including D-8, OIC and COMSATS, continued to be strengthened in 2022 by joint calls between the member countries and 227 successful projects were funded by the EU Horizon Europe Program, which shows Türkiye's active participation and contributions in the international R&D and innovation ecosystem. Let me emphasize that as a member in the Network of COMSATS' Centres of Excellence, TÜBİTAK continues to work actively to enhance and deepen our relations with COMSATS and this will continue in an ever increasing manner. We are dedicated to supporting scientific excellence and collaboration. With this Annual Report, we present a summary of our institution's activities within the year 2022. Based on the solid relationship that we have built, I am sure that we will have many opportunities to explore ways for establishing continued, effective scientific and technological cooperation along with mutual exchange of scientific and technical information with COMSATS and network institutions.

R&D Activities

In 2022, TÜBİTAK focused on prioritizing projects directly related to Priority R&D and Innovation Topics, placing special emphasis on these research areas in the TÜBİTAK-1001 programs. Their achievements stem from supporting a qualified human resource across diverse

domains, spanning from basic science to technology, R&D to production. They also supported RDI by collaborating with ministries and public institutions, and providing financing. Additionally, technology transfer offices were closely monitored for their output and impact, effectively accelerating technology transfer to the industry.

TÜBİTAK has been actively leading efforts to achieve Türkiye's 2053 zero emission targets and green development policy. In February 2022, the Science and Technology Commission, under TÜBİTAK, played a key role in establishing RDI solutions for climate change adaptation and mitigation. The creation of the Vice Presidency of Climate



Change and Sustainability at TÜBİTAK Marmara Research Center (MAM) further supports projects aimed at reducing greenhouse gas emissions on a sectoral basis. Additionally, in collaboration with the Ministry of Industry and Technology, TÜBİTAK conducted the "Green Growth Technology Roadmap." As part of the TÜBİTAK Entrepreneurship Support Program (BİGG), the second BİGG Green Growth Call was opened in 2022, providing entrepreneurial project support to 111 green growth-focused entrepreneurs, offering up to 450,000 TL assistance after they initiate their businesses.

TÜBİTAK successfully published 2022-2023 Priority RDI Topics which involved 218 priority R&D and innovation topics in critical technologies, 153 products and 52 sectoral applications, 33 R&D and innovation priorities for climate change and the green transition, and 8 R&D and innovation topics in strategic and need-based areas, including earthquake research. For the first time, within the scope of the support of TÜBİTAK's institution for social and humanities, they have published the Encyclopedia of Social Sciences in 4 volumes, which was created with the contributions of approximately 700 scientists covering 20 subject areas with access to all.

Further, in 2022, TÜBİTAK commenced hosting the GCIP Phase II of the Global Cleantech Innovation Program (GCIP), a collaborative initiative between UNIDO and GEF, set to continue until 2027.

TÜBİTAK launched the Artificial Intelligence Ecosystem Call to facilitate the transformation of AI technologies developed by Türkiye's companies. The program is designed to cater to the needs of companies seeking AI integration in their products or solutions, leveraging expertise from university and public research centers and institutes.

In 2022, TÜBİTAK, in collaboration with TÜBİTAK MAM Polar Research Institute, opened academic calls of ARCTIC 1001 twice and the call of Foreign Base

Participation project support. Moreover, in partnership with UNESCO, they initiated a call in the TÜBİTAK-TWAS Postgraduate and Postdoctoral Fellowship Programs, aimed at attracting international researchers from developing countries to Türkiye and enhancing global cooperation in science and technology.

In the application phase of the High Technology Platforms call for 2022, TÜBİTAK united 34 universities, 3 public R&D centers, 4 research infrastructure, and 28 private sector organizations across 12 High Technology Platforms. Support for four of these platforms commenced in late 2022, and upon completing the contract processes for the remaining eight platforms, they will become operational in early 2023.





International Cooperation

- Prof. Dr. Hasan MANDAL (President TÜBİTAK) has been elected as the president of the World Association of Industrial and Technological Research Organizations (WAITRO).
- TÜBİTAK's BİLGEM and SAGE have been chosen as test centers by NATO's Defense Innovation Accelerator for the North Atlantic (DIANA). Among the 70 centers, BİLGEM and SAGE are among the 47 selected test centers, set to undergo testing for crucial projects in the use and advancement of new technologies.
- Türkiye's TR Index provides comprehensive access to 1,630 national journals, 500,380 articles, and 21,777 TÜBİTAK-supported projects. It plays a vital role in analyzing citations and bibliometrics while examining Clarivate's global research network growth in the "Global Research Report."
- BİLGEM's Fiber Optic Based Acoustic Sensor was exported to Mexico and Czechia, while Cryptography USB Memory was exported to Sweden, Romania, the Netherlands, and Belgium in collaboration with NATO. Additionally, the Foldable Mine Detector was exported to Azerbaijan.
- TÜBİTAK SPACE's The BALİSTİKA system was exported to Saudi Arabia.
- SAGE successfully exported its Thermal Battery to Germany, Brazil,

Spain, Ukraine, Saudi Arabia, and the Global Positioning System KAŞIF to Germany.

- A contract has been signed by TÜBİTAK SPACE and Pakistan Space Agency SUPARCO to develop and export six-meter resolution satellite cameras.

Science and Society Activities

TÜBİTAK's impact was evident in TEKNOFEST 2022 competitions, supporting the development of future technology leaders and pioneering research in Türkiye. The National Sky Observation Festival successfully increased interest in astronomy by engaging science and society through events held in various cities, attracting thousands of participants. A "One Health Virtual Conference" brought together scientists and raised public awareness about the One Health approach. Efforts to establish science centers across the country continued, with 7 centers attracting 6 million visitors and providing training workshops for over 300 children. The Inclusive Science and Social Practices Support Program for Individuals with Special Needs was introduced, and numerous books, including popular science titles, were published, contributing to science literacy with over 1.6 million copies sold.

Awards and Achievements

- TÜBİTAK achieved remarkable

success with its projects, earning 4 grand awards and 3 special awards at the prestigious ISEF, the world's largest science and engineering competition. Over the past 20 years of participation, TÜBİTAK's young talents have proudly secured 20 awards in the last 2 years alone. Additionally, TÜBİTAK excelled in international and regional science Olympics, winning 50 medals (8 gold, 23 silver, 19 bronze) and 5 honorable mentions.

- Success scholarship to 3,770 undergraduate students who studied in 16 different fields in 2022 to promote the development of basic and social sciences.
- In 2022, we increased the number of Frontier R&D Laboratories supported under the 1515- Frontier R&D Laboratory Support Program to six. In this context, we continued to support the development of future technologies in the frontier R&D laboratories established by General Electric, AVL, Ericsson, TUSAŞ, Arçelik and finally Turkcell.
- We have completed our 100 Deneyap Technology Workshop installation goal in 81 provinces as promised.
- TÜBİTAK started Prof. Dr. Aziz Sancar Post-doctoral Research Scholarship Program. We supported 2 female researchers to work in Prof. Dr. Aziz Sancar's laboratory.



SPECIAL ASSIGNMENTS

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- COMSATS Center for Climate and Sustainability (CCCS) 79

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. The administration related to graduate students from Member States studying at CUI is also a special assignment of the Secretariat. Activities of COMSATS Centre for Climate & Sustainability (CCCS) that have grown recently and are included in this Chapter.



COMSATS Telehealth (CTH)

The activities by COMSATS in the Telehealth domain during the COVID and post-COVID period focused on two tracks i.e Telehealth service and SDGs led advocacy and capacity building activities in digital and Global health.

Telehealth Service through Telehealth Resource Centre

Foremost activity is the provision of healthcare through Telehealth clinics in Baluchistan, the remotest province of Pakistan, established before and during this period. Since COVID, there has been mushrooming of Telehealth projects all over the world with more acceptances among the people and health professionals. So happened in COMSATS Telehealth.

CTH is making healthcare accessible to the marginal areas of country since 2001. Until the end of 2022, Telehealth

Functional Clinics

- Duki, Nasirabad
- Shadoband, Gwadar
- Chowki Jamali
- Ashkan Rodini, Mastung
- Washuk, Washuk
- Wahdat Colony, Quetta
- Bakhtiyarabad, Sibi
- Habib Zai, Killa Abdullah
- Lohi, Lasbela

Functional Clinics

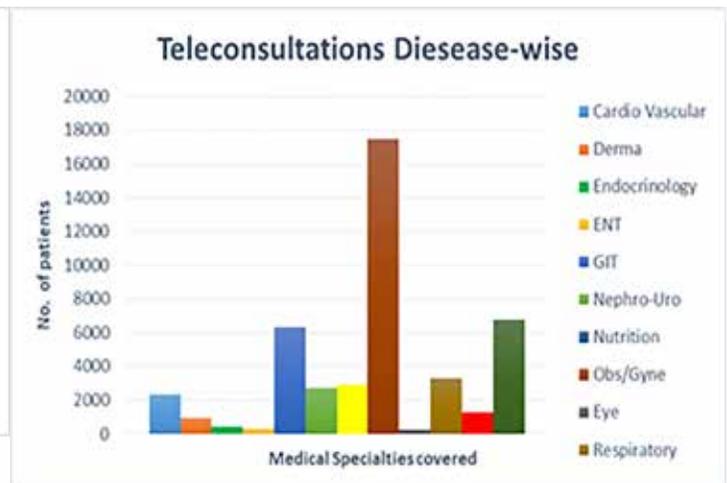
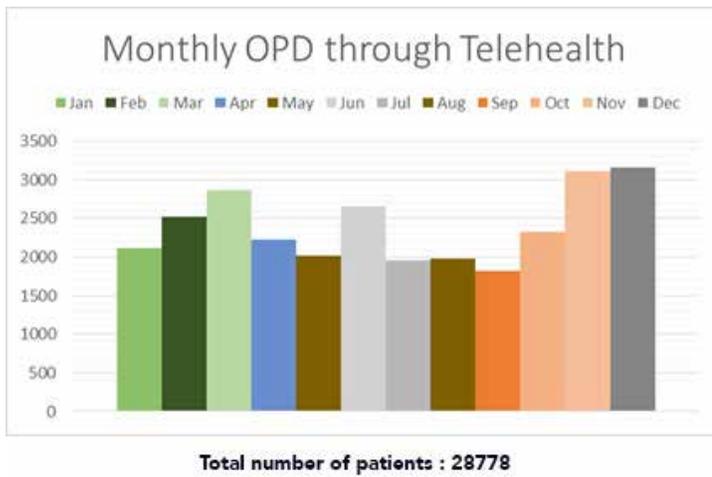
- Kataghari, Punjgour
- Chagai, Chagai
- Musakhail, Musakhail
- MCH Sohrab
- Haji Sher, Kachhi
- Sohbatpur, Sohbatpur
- Mobile Unit Quetta
- Pind Sawika, Jhelum

New Clinics in 2022

- Village Aid, Quetta
- Jungle, Kharan
- Killa Saifullah. Nasai
- Manjshori, Naseerabad
- Noshki, Noshki
- Ghurmi, Nasai
- Dera Bugti (Re operational)

Resource Centre currently based at COMSATS Internet Services (CIS), has provided 150,000 + tele-consultations through more than 39 Telehealth clinics in marginal areas connected with Telehealth

resource center in Islamabad. Irrespective of gender and age group, healthcare was provided via tele-consultations in the fields of: outpatient care, pediatrics, gastroenterology, chronic ailments,



gynecology and dermatology by the health professionals virtually connected with Telehealth clinics. Like the surge of use of digital health all over the world, COMSATS Telehealth has also seen and experienced the acceptance of Telemedicine as a tool to seek healthcare, especially in Baluchistan province. With 17 functional clinics at the start of the reporting period year 2022, six new Teleclinics were established during the year and one Teleclinic was made re-operational in collaboration with Government of Baluchistan & People's Primary Health Initiative (PPHI).

Teleconsultations:

As the number of clinics increased from January to December, the number of total patients benefitting from the increased gradually per month. The Baluchistan province saw the worst floods of decades in year 2022. These floods effected the OPD at Teleclinics due to damaged roads and communications and health infrastructure during the months of August and September.

Maternal and child health cases were the biggest beneficiary of teleconsultations during the reporting year with cases spanning from routine Antenatal care management to the management in emergency situations of pregnancies. The health provision through teleconsultations during the calendar year encompassed

a wide range of illness ranging from the treatment of infertility to the identification of high risk pregnancies; treatment of chronic dermatological conditions like congenital ichthyosis, perioral dermatitis, lichen planus; management of conditions like bronchial asthmas, severe nutritional deficiencies, celiac disease and epilepsy in children and other ailments.

The floods of 2022 in the area resulted in sudden increase in the cases of diarrhea, pneumonia in children. The Teleclinic in Sibbi saw a surge of Malaria cases after the floods that were successfully diagnosed and treated through Telehealth.

Collaborations and Capacity Building of Digital health

Over the past many years, COMSATS Telehealth has not only provided healthcare through its Telehealth service but it has been a consistent platform for the advocacy and capacity building of digital healthcare and its benefits especially for the developing countries. Such activities are the mainstay of the networking and collaborations between COMSATS and other organizations working in the field of digital health. In addition to digital health, these activities explored other dimensions of health including key health issues and current challenges faced across the globe. Few major activities during year 2022 are being mentioned in the following paras:

Joint Event with CUI: To observe World Mental Health Day 2022, COMSATS in collaboration with Faculty Development Academy (FDA) of COMSATS University Islamabad (CUI), Islamabad, organized a Workshop on "Engaging University Faculty for Mental Health Wellbeing of Youth" on October 25, 2022. The event was continuation of the initiative undertaken in the previous year to observe World Mental Health Day. Held at CUI, Islamabad, the workshop had physical participation of around 50 faculty members belonging to different universities in Islamabad, as well as Wah and Attock campuses of CUI. (Details in Chapter 4).

Webinar on Digital Health: COMSATS organized a webinar on "Digital Health, the New Normal: Innovation & Acceptance in Africa" on December 7, 2022. The aim of the event was to analyze digital health trends in African countries before, during and after the COVID-19 Pandemic. Held from the platform of COMSATS Telehealth Programme (CTH), the event had the participation of around 45 participants from various African countries. (Details in Chapter 4)

Participation in 2nd Innovative Healthcare Technologies Summit: Dr. Azeema Fareed, Additional Director (Health) at COMSATS Secretariat and In-charge-COMSATS Telehealth (CTH) participated in "2nd Innovative Healthcare



Technologies Summit” jointly organized by the Federation of Islamic Medical Association (FIMA) and Pakistan Islamic Medical Association (PIMA), on 26th October 2022. (Details in Chapter 6)

Observance of International Health Day/Campaign

World Health Day: To observe World Health Day 2022, the Telehealth Desk of COMSATS in collaboration with COMSATS Centre for Climate and Sustainability (CCCS) organized a webinar titled ‘Building Climate Resilient Health Systems in the Global South’ on 6th April 2022. (Details in Chapter 4)

World Mental Health Day: To observe World Mental Health Day 2022, a workshop for university faculty members for the mental health wellbeing of youth was organized by COMSATS Telehealth. The subject activity aimed to make faculty members aware of the mental health red flags in students. (Details in Chapter 4)

Visits

- On 4th July 2022, H.E. Mr. Agha Hassan Baloch, Federal Minister for Science and Technology, Government of Pakistan, inaugurated three Basic Health Units (BHUs) at Village Aid Quetta, Ashkan Rodani Mastung, and Rokjo Noshki districts. Also present on the occasion was Mr. Nasir Jamal

Khan, Chief Operating Officer at COMSATS Internet Services (CIS). The ceremony was also witnessed by locals, government officials, DSM, DHO, Assistant Commissioner and Deputy Commissioner of the respective districts.

The Federal Minister appreciated the efforts of CIS for setting-up of new telehealth clinics in these remote areas for benefitting less-privileged communities. On the occasion, Mr. Jamal briefed the Minister about COMSATS Telehealth undertakings and informed that over thousands of patients have benefitted from teleconsultations provided by CTH resource Centre in Islamabad through these BHUs.

- On 26th August 2022, Dr. Ghulam Muhammad Memon, Executive Director COMSATS and Federal Secretary at Ministry of Science and Technology Government of Pakistan, visited Telehealth Resource Centre housed at COMSATS Internet Services (CIS) Technology Park. It was the maiden visit of Dr. Memon since his assumption of the office of Executive Director COMSATS on interim basis in June 2022.

Dr. Memon was shown around various facilities of CTH Resource Centre and was briefed about the equipment being used for the teleconsultations. Doctors working to provide teleconsultations to the patients at BHUs in Baluchistan were also introduced by Mr. Nasir Jamal,



Chief Operating Officer of CIS. Dr. Memon took great interest in the operations of the Resource Centre and considered the system a beneficial tool for providing healthcare to people in remote communities of Pakistan.

Dr. Azeema Fareed, Additional Director, Health at COMSATS Secretariat and In-charge COMSATS Telehealth Programme, emphasized the need to replicate this service in other provinces of Pakistan under the patronage of the Federal Ministry of S&T. She also shared the benefits of emulation of such system in other Member States of COMSATS.

Social Media and Networking

Social media proved to be a powerful marketing tool in past years for connectivity, visibility, and spread the word. CTH official Tele-health Twitter and Instagram accounts served as a platform in entire year to spread awareness regarding health and personal care and to showcase its activities.

COMSATS Internet Services (CIS)

COMSATS Internet Services (CIS) is the pioneer Internet Service Provider (ISP) of Pakistan established in 1996 which offers diversified 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.

CIS is currently operating in all major cities of Pakistan and has customers belonging to prominent organizations in public and private sectors, well-known national and international companies and firms, software and business companies, foreign missions, non-governmental organizations, universities, social



development and research organizations.

CIS is a self-sustainable organization, generating its revenues from internet and value added services. For the last 27 years, CIS is recognized as one of the top rated ISPs in Pakistan. We are the pioneer in the establishment of Tele-Health services and have contributed a major share towards social benefit by providing Tele-Health, e-Education especially to the people living in geographically scattered, mountainous and far flung areas of Pakistan.

CIS affairs are managed by a Board of Management (BOM) headed by the Executive Director COMSATS. The board is responsible for the overall decision making for the organization, strategic decision making for CIS' future growth and other organizational matters.

CIS Core and Value-added Services

CIS Core Services

CIS has nine core services known as 'The Colors of CIS'. This includes Tornado® (Wireless broadband), Hawaii™ (Domain, Hosting, and VPS) and COMSpeed™ (Optical Fiber Connectivity). Our value added services include Hurricane™ (On-demand broadband), Prism™ (Website development), Viacon™ (Video conferencing), COM meeting™ (Web Conferencing Service), COMSATS Innovation- IOT and ComClinic™ which is a brand name for Tele-health service

delivered by CIS to the people living in underdeveloped and scattered areas of Pakistan. All processes and procedures conducted by CIS are ISO9001:2008 certified.

Data Centers

COMSATS Internet Services (CIS) has well-equipped data centers in Islamabad, Lahore, Faisalabad & Karachi 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 new potential customers. Salient features of the new data center include:

- Capacity of 1,526 Sq. ft. and approximately 45 racks can be accommodated
- IPV6 enabled and it is 27001:2013 ISO Certified
- Precision cooling system with humidity controller
- Fire suppression along with four stage fire alarm
- N+1 electric system that includes UPS and backup electric generators.
- Power backup facility
- Deployed L-Root Servers
- Fully backed cyber security system



- with round the clock surveillance
- Fully biometric security system
- Protected with advanced Huawei & Juniper firewalls

Software Department

Prism® is a software and web development service that offers website & software development using PHP, ASP, .Net and Java. CIS has developed websites for government organizations and corporate customers including websites for many prominent organizations including Pakistan Army, Pakistan Navy, Nova Technologies and Universal Services Fund.

CIS Tele Health

COMSATS Internet Services (CIS) is pioneer in successfully running of Tele-Health Services in Pakistan. CIS has successfully executed a network of 19 Tele-Health clinics Network project in Pakistan during 2012-2016 where Tele-Health facility was made operational at the rural Basic Health Units (BHUs) located in Islamabad, Rawalpindi, Peshawar, Swabi, Lahore, Multan, Khairpur, Quetta, Musakhail and Gwadar. The facility was extended back in 2017, where 03 additional clinics were made for Tele Consultation in Mardan, Mansehra & Swabi districts. All established centers were fully equipped with the latest digital diagnostic equipment including vital sign monitor, digital stethoscope, examination

camera, ENT & derma scope and ultrasound probe.

For General & Specialist consultations, all the centers are further linked with CIS Tele Health Center Islamabad using the dedicated internet and video conferencing system for live interaction between doctor & patients.

In 2020, COMSATS Internet Services (CIS) signed an agreement with PPHI-B, Government of Balochistan for the establishment of 33 rural Tele Health centers in far flung BHUs in Balochistan. Currently 19 centers are operational under this MOU. These centers are located at Mastung, Qila Abdullah, Washuk, Jaffarabad, Dukki, Sibi, Kachhi, Sohbatpur, Musakhail, Punjgour, Chagai, Dera Bughti, Sohrab, Lasbela, Quetta, Turbat, Kharan, Harnai, Naseerabad & Killa Saifullah districts. One mobile unit has also been established for arranging medical camp on need basis and as per area requirement. 05 clinics are in process and will be operational for OPD by 28th February 2023.

In addition to above, COMSATS Internet Services (CIS) has established 2 new Tele Health clinics one at BHU Village Aid, Quetta and second at BHU Nokjo, Noshki. The both new centers was inaugurated by the honorable Agha Hassan Baloch, Federal Minister for Science & Technology, Government of Pakistan on 4th July 2022.

On the occasion, Mr. Nasir Jamal Khan, Chief Operating Officer CIS briefed the audience and local government officials about the system, methodology and benefits of Tele Health for local community. The local population has deeply appreciated Tele health services because this has enabled them to get medical & specialist health care services at their own door step. They neither have to travel to a city nor pay any fee against the services.

Overall 25 Tele Health clinics are operational in Balochistan. The advanced digital diagnostic health facilities are delivered to the people living in such inaccessible areas online for medical & specialist professionals from Islamabad which was a dream in the past.

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. We have arranged specialized technical training for reputed organizations.

Video Conferencing

Nowadays, many businesses prefer video conferencing for communicating with remote offices and clients, to save travel cost and time. 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 situated in Islamabad while others are located in Lahore, Karachi & Peshawar. During the year 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 8 GBPS in 2021 to more than 10 GBPS in 2022. This progress reflects the growth of CIS as bandwidth is the fuel for an ISP.

COMSATS Center for Climate and Sustainability (CCCS)

COMSATS Centre for Climate and Sustainability (CCCS) was established in 2019 to promote partnerships and collaborations among developing countries for joint action to combat climate change. CCCS recognizes the model of South-South and Triangular Cooperation as an innovative means to jointly addressing shared challenges of climate change.

The premise of CCCS is built on two pillars: 1) Paris Agreement 2015; and 2) UN Sustainable Development Goals Agenda 2030. The primary objective of CCCS is to foster partnerships, collaborations, expertise exchange, and resource and knowledge sharing among the countries of the South.

To utilize well the principle of South-South cooperation and vision of COMSATS,

CCCS connects scientists and experts working on Climate and Environmental Science primarily from COMSATS Member States, as well as other institutions across the globe.

CCCS serves as a platform to foster multi-partnerships, collaborations for science-based joint actions for common challenges of Climate Change. The working mechanism of CCCS is based on four Cs: Connectivity, Communication, Coordination, and Collaboration.

Membership

CCCS brings together scientists, experts, researchers and policy-makers working on climate science and management and its related areas for achieving relevant Sustainable Development Goals.

Primarily, COMSATS Centres of Excellence (CoEs) that work on climate

related areas are members of CCCS and, so far, 25 institutions from 20 COMSATS Member States are members of CCCS network. Currently, CCCS is hosting total 32 members from COMSATS Member States and other states from Asia, Africa, and South America.

Focus SDGs

United Nations 2030 Global Agenda-Sustainable Development Goals (UN SDGs) and Climate Change are interconnected. Of the 17 goals, Climate Action (SDG13) is the most pertinent.

A number of focused research areas of CCCS come under 7 SDGs which are also linked to Climate Action (SDG 13). These are 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

Table 1: SDGs-wise categorization of CCCS webinars

S #	Webinar Name	Relevant Goals
1.	COMSATS-ICESCO Joint Webinar on COP 26's Outcomes and Commitments February 13, 2022	<ul style="list-style-type: none"> SDG-13 – Climate Action
2.	Webinar on “Feasibility Study of Provision of Safe Drinking Water through Water Conservation (SDWC)”, March 30, 2022	<ul style="list-style-type: none"> SDG-6 – Clean Water and Sanitation
3.	Webinar on “South Views on Post-2020 Global Biodiversity Framework” May 24, 2022	<ul style="list-style-type: none"> SDG-15 – Life on Land
4.	Webinar on Industry 4.0 driven Climate-Smart Agriculture: Challenges and Opportunities for Developing Countries, August 24, 2022	<ul style="list-style-type: none"> SDG-2 – Zero Hunger
5.	Webinar on South-South Cooperation and Climate Diplomacy, September 21, 2022	<ul style="list-style-type: none"> SDG 13 – Climate Action SDG 17– Partnerships for the Goals
6.	Interactive Dialogue on: Multi-stakeholder and Integrated Approach to Climate Resilience Finance, November 9, 2022	<ul style="list-style-type: none"> SDG 13 – Climate Action
7.	Training Workshop on ‘Mentoring and Coaching for the Identification and Preparation of Bankable Climate Change Adaptation & Mitigation Projects, November 13-15, 2022	<ul style="list-style-type: none"> SDG 13 – Climate Action



Cities and Communities), SDG-13 (Climate Action), and SDG-15 (Life on Land).

Above mentioned focused SDGs were selected after the consultation with experts of CCCS network and they agreed to work on relevant areas. Subsequent to the consent of experts, CCCS prepared a list of focused research areas under the umbrella of specific SDGs.

SDGs-wise categorization of CCCS' events during 2022 is given in Table 1.

Webinar Series

Due to COVID-19 pandemic, CCCS held most of its activities virtually, which resulted in a number of webinars on different topics related to focus SDGs with researchers, policy makers, students, and academicians across the globe as target audiences, participants and beneficiaries. The speakers of these events belonged to various institutions globally.

During 2022, CCCS hosted six webinars as well as a training workshop on Climate Finance on the following topics, i.e., COMSATS-ICESCO Joint Webinar on COP 26's Outcomes and Commitments, Webinar on "Feasibility Study of Provision of Safe Drinking Water through Water Conservation (SDWC)" co-organized by COMSATS Center for Climate & Sustainability (CCCS), COMSATS

University Islamabad and D-8 Secretariat, Webinar on "South Views on Post-2020 Global Biodiversity Framework" co-organized by COMSATS Center for Climate & Sustainability (CCCS) and Worldwide Fund for Nature (WWF), Industry 4.0 driven Climate-Smart Agriculture: Challenges and Opportunities for Developing Countries, South-South Cooperation and Climate Diplomacy, Interactive Dialogue on: Multi-stakeholder and Integrated Approach to Climate Resilience Finance and Training Workshop on 'Mentoring and Coaching for the Identification and Preparation of Bankable Climate Change Adaptation & Mitigation Projects

In the view of importance of Climate Finance in the era of Climate Change, CCCS in the partnership of ICESCO, RECREE and National Commission of the Egypt for UNESCO and ICESCO organized a Training Workshop on Climate Finance and Bankable Climate Projects

Installation Air Monitor

CCCS facilitated Intent of Cooperation (IoC) between COMSATS University Islamabad (CUI) and Pakistan Air Quality Initiative (PAQI). Consequent to the discussion in the webinar organized by CCCS on 22nd December, 2020 on the topic of Air Quality, both parties showed their interest to have partnership for Air

Quality Monitoring. PAQI is a Karachi based private non-profit entity with an objective of Air Quality Monitoring having air monitoring systems in multiple cities of Pakistan.

Intent of Cooperation between PAQI and CUI was signed and eight AirVisual® monitors were handed-over to Center for Climate Research & Development (CCRD), CUI for the installation in seven campuses of CUI and COMSATS Secretariat. One of the eight monitors was handed over to CCCS on 10th October 2022 and installed at balcony of 2nd floor of COMSATS Secretariat for real time monitoring of air quality. Which includes five parameters i.e. NO_x, SO_x, CO₂, Particulate Matter 10 and Particulate Matter 2.5.

MoU between COMSATS and IOFS

On 5th October 2022, COMSATS signed a Memorandum of Understanding with the Islamic Organization for Food Security (IOFS), Kazakhstan, with the aim to contribute towards strengthening capacities of both organizations' Member States in Climate Smart Agriculture to ensure sustainability targets relating to food security and resilient livelihoods. The MoU was signed by the Executive Director COMSATS, Dr. Ghulam Muhammad Memon, and the Director General of IOFS, H.E. Yerlan Alimzhanuly Baidaulat on behalf of their organizations.



The agreement provides a framework for strengthening cooperation towards the sustainable development of projects on agriculture and food security, with a focus on climate-smart technologies and practices. Specific objectives of the MoU include facilitation for:

- high-level policy debates and technical exchanges towards institutional partnerships and supporting capacity development initiatives to provide expertise and technical know-how to COMSATS and IOFS common member states;
- addressing problems posed by climate change by means, including enhancing productivity, connectivity, and increasing resilience for vulnerable groups in the Global South;
- designing and implementation

of innovative initiatives and joint projects under the Green Climate Fund (GCF), Global Environment Facility (GEF) and Adaptation Fund; and

- realization of the Sustainable Development Goal 2 (SDG2) for food security and sustainable agriculture.

Both entities considered the MoU important in terms of developing synergy between IOFS and COMSATS based on their expertise and priority areas and also for their continuous contribution to promoting South-South and Triangular Cooperation through innovative and comprehensive regional and cross-regional initiatives. Under the MoU, both organisations will jointly pursue training and research activities related to climate change, agriculture and rural

development policies, innovation, and social development, such as food security and health, utilizing South-South and triangular cooperation.

Application for Observer Status of UNFCCC Conference of Parties

CCCS submitted application for observer status, on the approval COMSATS and its member's institution will have access to UNFCCC's COP. This access will provide great platform for development of linkages and finding opportunities in the area of Climate Change and cross cutting SDGs

ANSO proposal Submission: CCCS submitted proposal for training course on subject of Bio-technology and Environmental Monitoring against call for proposals of ANSO with the partnership of Al-Farabi Kazakh National University (KazNU), and National Academy of Sciences of the Republic of Kazakhstan, Karadeniz Technical University, Trabzon, Turkey, and Tianjin Institute of Industrial Biotechnology (TIB)

Capacity Building: Mr. Saifullah Khan, Program Officer attended the 2 days training workshop on 8-9 October 2022 on Climate Extremes and with Emphasis on Health Impacts. Training was organized by Global Change Impact Studies Center and National Institute of Health.



FINANCIAL AFFAIRS

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FINANCIAL AFFAIRS

Major source of financing operations of COMSATS 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' and spent on activities related to the respective contributing country. In order to have a regular source of financing for technical programmes, 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.

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Host Country (Pakistan) Contribution towards running costs of COMSATS Secretariat

The Government of Pakistan, being host country of COMSATS, has been meeting the running costs of COMSATS Secretariat under an international agreement since establishment of COMSATS in 1994. The fixed annual grant (contribution) 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 has very kindly allocated an amount of Rs. 112.200 million for the financial year 2022-2023.

Annual Membership Contribution (AMC)

COMSATS' Member States are paying Annual Membership Contribution (AMC) towards COMSATS on voluntary basis. The AMC received from COMSATS Member States is kept as "Trust Money" and is utilized to support technical activities and programmes of the contributing member state. During the reporting period (January to December 2022), COMSATS received Annual Membership contributions (AMC) from only two member countries – China (US\$ 43,900/-) and Jamaica (US\$ 20,000).

COMSATS Endowment Fund

In order to strengthen the financial health of COMSATS and to have a regular source of income for technical activities of COMSATS, creation of an endowment fund of worth US\$ 10.00 million was approved upon proposal of the then Prime Minister of Islamic Republic of Pakistan, in his capacity as the Chairperson of COMSATS, during the 2nd General Meeting of COMSATS held on 16-17 April

2012 in Islamabad, Pakistan. During this meeting, the Government of Pakistan pledged seed money of US\$ 1.00 million as its contribution towards the proposed fund and 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.

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. The accounts of COMSATS Secretariat are audited by a reputed chartered accountancy firm every year. The audited accounts, along with the auditors' report, are 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 auditors have issued the draft auditors' report and draft audited financial statements for the financial year ended on June 30, 2022.

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. Wang Zhigang
Minister
Ministry of Science and Technology
People's Republic of China



Hon. Dr. Abdullah Al-Mousa
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. Mahmoud M. Sakr
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,
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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. Dr. (Sen.) Adeleke Olurunnimbe Mamora
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. Muhammad Abdullah Khan Sumbal
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. Prof. Adolf Mkenda

Minister
Ministry of Education, Science and
Technology
The United Republic of Tanzania



Hon. Dr. Renato U. Solidum, Jr

Secretary
Department of Science and Technology
Republic of the Philippines



Hon. Prof. Moncef Boukather

Minister
Ministry of Higher Education and
Scientific Research
Republic of Tunisia



Hon. Dr. Cheikh Oumar Anne

Minister
Ministry of Higher Education, Research
and Innovation
Republic of Senegal



Prof. Dr. Hasan Mandal

President
The Scientific and Technological Research
Council of Türkiye (TÜBİTAK)
Republic of Türkiye



H.E. Farah Sheikh Abdulqadir

Minister
Ministry of Education, Culture and Higher
Education
Federal Republic of Somalia



Dr. Martin Ongol

Executive Secretary
Uganda National Council for Science and
Technology (UNCST)
Republic of Uganda



H.E. Dr. Ramesh Pathirana

Minister
Ministry of Industry
Democratic Socialist Republic of Sri Lanka



Hon. Prof. Dr. Khalid Ahmed Alwosabi

Minister
Ministry of Higher Education and
Scientific Research
Republic of Yemen



H.E. Prof. Mohammed Hassan Dahib

Minister
Ministry of Higher Education and
Scientific Research
Republic of the Sudan



Hon. Prof. Dr. Amon Murwira

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



H.E. Prof. Dr. Bassam Bashir Ibrahim

Minister
Ministry of Higher Education and
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COMSATS' Centres of Excellence



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