



COMSATS Newsletter

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

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COMSATS Participates in high-level fora of UN-OHRLLS, UNESCAP and ICGEB

Senior officials represented COMSATS at four important meetings of these international organizations during the reporting period.

(Details on page 6)

Inside this Issue

From the Executive Director's Desk 1

Highlights from COMSATS Secretariat 2

Special Section: COMSATS Participation in Important Fora of Partner Organizations 6

Some Activities of COMSATS' Centres of Excellence 10

Profile: COMSATS' Centre of Excellence, TIB-China 13

S&T News from Member States 14

Science, Technology and Development 15

COMSATS' Brief and Announcements 16

From the Executive Director's Desk

The widening economic and technological disparities between the North and South necessitate increased technical cooperation and sharing of knowledge and expertise to help the South achieve growth. Even the South, provides a gradient view of countries that are at different level of socio-economic development. There are countries for which 'developing countries' can be seen as a euphemism or even an understatement given the dismal growth that has not changed much over decades. China, once a big part of this block, now stands with the economic giants and seems to have graduated from this category. This spectrum of economic conditions in the South is an opportunity for effective collaborations based on similar challenges, needs and experiences.

It, therefore, is important to realize the importance of support to international initiatives such as the Technology Bank established at COMSATS Member State, Turkey, recently (page 8), the

inauguration of which I had the honor to attend. The bank that marks the achieving of SDGs 17.8 is a welcome development in terms of availability of needed technologies by the LDCs. COMSATS' fraternity also comprises nine such countries. We look forward to maximizing the benefits of this initiative for all, while providing due support for other SDGs.

During the reporting period of this newsletter, COMSATS also participated in the UNESCAP's 74th session on 'Inequality in the Era of the 2030 Agenda for Sustainable development'; and Regional Consultation on South-South Cooperation in the Asia and the Pacific: Towards the Buenos Aires Plan of Action 40th Anniversary, as well as the 24th session of ICGEB. Brief accounts of these and other important engagements of COMSATS constitute the highlights of these pages.

Feedback from the readers' is quite welcome.

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HIGHLIGHTS FROM COMSATS SECRETARIAT

Relations Strengthened With Commonwealth Secretariat

On May 22nd 2018, the Executive Director COMSATS, Dr. S.M. Junaid Zaidi, visited Commonwealth Secretariat to hold a meeting with the sixth Commonwealth Secretary General, Rtd. Hon Patricia Scotland QC. The meeting was also attended by the Assistant Secretary General of Commonwealth, Dr. Nabeel Goheer, and other officials.

The agenda of the meeting comprised of discussion of potential opportunities of collaboration between COMSATS and the Commonwealth in areas including Climate Change, Sustainable Development Goals (SDGs), and the Commonwealth Innovation Hub amongst other areas of interest.

Dr. Zaidi endorsed the ideas presented by Ms. Patricia for collaboration in the areas highlighted by the Secretary General, and expressed willingness of COMSATS to take further action for implementation. She also mentioned that such potential collaborations would help develop synergies in areas of interest and enhance the strength and



impact of joint activities.

Meetings with Diplomats from Member States

High Commissioner of Sri Lanka to Pakistan, H. E. Maj. General (R) Jayanath C. P. Lokuketagodage (4th May 2018)

The High Commissioner was accompanied by Mr. Mohamed Anas, Counsellor/Head of Chancery. During the meeting it was recalled that Sri Lanka is one of the founding members of COMSATS, and the Industrial Technology Institute (ITI), Sri Lanka, is affiliated with COMSATS as a Centre of Excellence. The High Commissioner expressed keen interest in the programmes of COMSATS, especially the scholarships being offered by various Centres of Excellence of COMSATS.

Other matters discussed during the meeting included potential collaboration in S&T and institution building in higher education sector, capacity building of scientists and researchers through focused trainings, and exchange of faculty and students, etc.

Ambassador of Kazakhstan, H.E. Barlybay Sadykov (10th May 2018)

The meeting with the Ambassador of Kazakhstan was held in his office in Islamabad. During the meeting, Dr. Kamran Jahangir, Advisor (TAC), COMSATS, recalled that Kazakhstan is founding member of COMSATS, and the Al-Farabi Kazakh National University (KazNU) has been affiliated with COMSATS as a Centre of Excellence since 2016. The Ambassador was also acquainted with the outcomes of the 21st meeting of COMSATS Coordinating Council (3-4 April 2018), hosted by KazNU in Almaty.

On behalf of COMSATS, Dr. Jahangir offered COMSATS' support for jointly establishing a higher education institution in Kazakhstan, exchange of scientists and scholars between Kazakhstan and other member countries, exchange of delegations comprising scientists and academicians, setting-up of Al-Farabi Chair in universities of Pakistan, and collaboration in the field of tele-health.

The honourable Ambassador appreciated the proposals, and pledged to forward the same to Astana for consideration. He also appreciated the programmes and activities of COMSATS



and highlighted the importance of global partnerships in achieving the UN Sustainable Development Goals. He shed light on the recent initiatives of Kazakhstan for promoting green technologies as well as ensuring cyber security.

Pakistan's High Commissioner Designate to Nigeria (and Ghana) H. E. Maj. Gen. (Retd.) Waqar Kingrayi (23rd June 2018)

The key agenda of the meeting with the High Commissioner was to seek support of Pakistani High Commission for reinforcing COMSATS' ties with Nigeria and Ghana. During the meeting, the possibilities of actively engaging Ghana and Nigeria in COMSATS' programmes and activities were discussed including scholarships for their students at COMSATS University Islamabad; efforts for meeting their capacity building needs; and deputing an official from Ghana to work on secondment at COMSATS Secretariat. The matter of upgradation of Council for Scientific and Industrial Research (CSIR), COMSATS' Centre of Excellence in Ghana, was also discussed.

Dr. Zaidi expressed willingness to launch various initiatives for sustainable socio-economic development in COMSATS

Member States belonging to Africa. In this regard, guidance shall be sought from COMSATS' Chairperson (Honourable President of Ghana), who is the Co-Chair of Sustainable Development Goals Advocates. The High Commissioner assured his full support for facilitating the liaison between office of President of Ghana and Executive Director COMSATS.

COMSATS-EU Awareness Seminar on Horizon2020

Breakthroughs in scientific R&D constitute the backbone of innovation-led development, especially for the resource-constrained countries. Low

R&D budgets leave scientists and researchers struggling to meet their study goals and they are not able to play their due role in national development. Funding opportunities from external sources such as the European Union's Horizon 2020 play an important role in filling the research funding gap.

Cognizant of this issue and relevant needs, COMSATS in collaboration with the Service Facility Wing of the European Union organized an awareness seminar on European Union's Horizon 2020, in Islamabad, on 7th May 2018. The purpose of the Seminar was to educate the academia and research





organizations on various aspects of applying for the funding under Horizon 2020, which is one of the biggest EU research and innovation programme. The event was attended by a number of Vice-chancellors and researchers, looking to improving chances of benefitting from good funding opportunities. The event proceedings

were made available through live-streaming to a wider audience, including COMSATS Ministerial focal points, Centres of Excellence, and partner organizations in different continents. Some representatives of foreign missions in Pakistan were also present on the occasion.

A Technology Transfer Consultant, Mr. George Panagopoulos, provided training on three thematic aspects pertaining to H2020. These covered an introduction to the programme and work plan for the last two years; sources of information on the programmes and documentation needs; and ways to prepare and submit proposals best suited to qualify for the funding. Mr. Panagopoulos was representing the PRAXI Network, Greece.

The participants of the event took home great encouragement in the form of success stories from Pakistan. Two Pakistani researchers, Prof. Dr. Syed Habib Bukhari and Dr. Amina Khan shared their experiences that helped them secure funding for their projects under the programme. Dr. Bukhari and Dr. Khan had won funding for their projects on "MeTABLE—Advanced Bioinformatics for Genome and Metagenome and Discovery of Novel Biocatalyst from Extremophiles: Implications for Improving Industrial Processes" and "Tobacco cessation within TB programmes: A 'real world' solution for countries with dual burden of disease", respectively.

Discussion and Q&A sessions of the event further delineated on: national focal points for H2020, available sources of information, capacity-building aspects of the projects, joint venturing between universities, possibilities for social science related projects, important timelines, ICTs in agriculture, inter-disciplinarity of the projects and intellectual property.

Meeting with UNESCAP Delegation

On June 21, 2018, the Senior Coordinator of Asia and Pacific Center for Development of Disaster Information Management (APDIM), UN Economic and Social Commission



for Asia and the Pacific (UNESCAP), Mr. Mostafa Mohaghegh, visited COMSATS Secretariat, Islamabad, and discussed avenues of cooperation between COMSATS and UNESCAP. Mr. Mohaghegh was accompanied by Mr. Aamir Qayum, Project Officer, National Disaster Management Authority (NDMA), Pakistan. Mr. Muhaghegh was on his visit to Islamabad to attend the 6th meeting of regional technical group of Disaster Management Confidence Building Measures (DM-CBM) of Heart of Asia, Istanbul Process.

Mr. Mohaghegh's meeting at COMSATS Secretariat was attended by senior officials of COMSATS, including Advisor (SDGs), Ambassador (R) Fauzia Nasreen; Sr. Assistant Directors, Mr. Farhan Ansari, and Ms. Huma Balouch; and Sr. Program Officer, Ms. Mehwish Durrani. During the meeting, the two sides discussed ways to enhance cooperation between COMSATS and UNESCAP in areas of common interest, particularly in the field of Climate Change.

Mr. Mohagegh informed that APDIM has a governing council comprising of nine members and the Government of Pakistan is very active member of the council. He added that the Center, which is operating from

Tehran, is providing opportunities for collaboration among countries in the Asia and Pacific region. He also invited COMSATS to be a part of this regional information platform.

During the meeting, Ambassador (R) Fauzia Nasreen proposed that COMSATS and UNESCAP should join hands for conducting activities that may have the objective to build capacity in its member countries to deal with climate change. UNESCAP and COMSATS' officials agreed to collaborate for facilitating their common member countries in making best use of available resources and platforms to meet their knowledge and capacity needs; assessed success stories, trends, needs, and gaps in knowledge and capacity for advancing sustainable development.

COMSATS Tele-Health Participates in eHAP Seminar

On June 28, 2018, Pr. Medical Officer/ Telehealth Coordinator at COMSATS Secretariat and Telehealth Manager from COMSATS Internet Services participated in an eHealth Advocacy Seminar on "Scaling eHealth – From Practice to Strategy" organized by the e-Health Association of Pakistan (eHAP)

held in Peshawar, Khyber Pakhtunkhwa (KPK).

COMSATS has been associated with the eHAP since the foundation of the association in 2008 and regularly participates in its events. Support is provided in the form of institutional membership and hosting its board meetings. Dr. Azeema Fareed of COMSATS Telehealth is one of the founding members of the association and has held the positions of Vice president and Joint Secretary in the past.

The objective of the seminar was to improve awareness on eHealth among health and IT related institutions and organizations in Khyber Pakhtunkhwa, to develop understanding about the benefits of eHealth strategy for the success of healthcare programs in the province, and help build synergies between the KP government and other organizations to develop e-health strategy.

The event was attended among others by Director General Health, KPK, Dr. Ayub Roze, Dr. Jamal Nasir, MS Services Hospital Peshawar, eHAP board members, representatives from UNDP and UNICEF and health community in KPK.

During the event, COMSATS' Telehealth project in KPK being undertaken in collaboration with KPK-IT board was appreciated by the local health authorities. The project has economically catered to a large number of patients.

Representing COMSATS on the occasion, Dr. Azeema appreciated the presence of a number of health community representatives and important Government officials during her vote of thanks at the concluding session of the event.

SPECIAL SECTION: COMSATS PARTICIPATION IN IMPORTANT FORA OF PARTNER ORGANIZATIONS

Being the leading intergovernmental organization of the region working for S&T-led sustainable development in the South, COMSATS makes all possible efforts to consolidate its operations to effectively achieve its objectives. An important segment of such activities is networking with and outreach to organizations with similar mandates. This is why the organization not only greatly values its partnerships as a great support system but also works to strengthen its relations and synergies with them. In this connection, COMSATS senior officials participated in high-level statutory meetings of International Centre for Genetic Engineering and Biotechnology (ICGEB), and UNESCAP, as well as attended the inauguration of UN OHRLLS Technology Bank for LDCs. Brief accounts of same are as follows:

24th Session of ICGEB Board of Governors (10th-11th May 2018, Italy)

The Executive Director COMSATS, Dr. S. M. Junaid Zaidi, was invited to participate in the 24th annual session of Board of Governors of International Centre for Genetic Engineering and

Biotechnology (ICGEB), Italy held on 10th and 11th May 2018. He was among over 100 delegates from more than 50 countries that bore witness to this important statutory meeting of ICGEB. The Board drives the Governance of the Centre and determines its direction and activities.

During the session, the Director General ICGEB provided update on cooperation agreements with International and Intergovernmental organizations and working groups within and beyond the UN common system. He explained that over the last four years, the partnerships with multilateral organisations have flourished and listed a number of Organizations already working with ICGEB, which include the European Union, COMSATS, BRICS, IILA, JRC, UNIDO, UNU-BIOLAC, UN-SAB, UNIACB and WHO.

A highlight of the meeting was the signing of a collaboration agreement between ICGEB and Health Consumers and Reference Materials of the Joint Research Centre (JRC) of the European Science Hub, the largest research institute of the European Commission.

74th Session of UNESCAP (10th-16th May 2018, Thailand)

A COMSATS' delegation led by Ambassador Fauzia Nasreen, Advisor (SDGs), visited Bangkok from 10th to 16th May 2018, to attend the 74th Session of United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). COMSATS' participation in the event was a sequel to an MoU signed between the two Commissions during the visit of Dr. Shamshad Akhtar, UN Under Secretary General and Executive Secretary UNESCAP in December 2017.

The theme of the 74th session was "Inequality in the Era of the 2030 Agenda for Sustainable Development". The session was divided into two segments: Senior Officials and the High-Level Ministerial. In the opening session of the events, the Executive Secretary UNESCAP provided a comprehensive picture of the issues confronting the Asia-Pacific Region, initiatives taken to address the challenges and the progress achieved.

At the working sessions, member countries reported in their statements





the status with regard to 2030 agenda for sustainable development. The mega connectivity measures such as Belt and Road initiative and other infrastructure projects as well as ICT connectivity were seen as potential game changers within Asia Pacific.

In the ministerial segment on 14th and 15th May, country statements were delivered by the representatives of member countries and international and nongovernmental organizations enjoying observer status with UNESCAP.

A statement of COMSATS was made by Ambassador Fauzia, who highlighted the vision of COMSATS founders with reference to the three

pillars: science and technology; sustainable development and South-South cooperation. COMSATS aim of providing better life to people at large was presented to be in sync with the objective of reducing inequality and therefore, receives top-most priority in its functioning.

Presence at ESCAP Headquarters was further utilized for holding important meetings. A highlight was the call on the Executive Secretary during which matters related to future prospects of collaboration between COMSATS and ESCAP were discussed. Subjects discussed with other senior officials related to potential areas of joint activities, such as High-Level Political

Forum related to BAPA-40, cooperation of strategic nature involving exposure to small scale technologies with ESCAP member countries, disaster risk reduction and social issues. Overall, the focus remained on the Sustainable Development Goals (SDGs), South-South and Triangular cooperation, which was the main theme of another important event of UNESCAP attended later by the Executive Director COMSATS.

Regional Consultation on South-South Cooperation in Asia and the Pacific (27th-29th June 2018, Thailand)

The Executive Director COMSATS



participated as a Panelist in Regional Consultation on South-South Cooperation in Asia and the Pacific: Towards the Buenos Aires Plan of Action 40th Anniversary, held in Bangkok, Thailand, from 27 to 29 June 2018. The event was organized by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), the United Nations Office for South-South Cooperation (UNOSSC), and the Ministry of Foreign Affairs of the Kingdom of Thailand.

The conference centered on fashioning out concepts, global processes, state of the South-South cooperation in Asia and the Pacific and the way forward. The themes of the conference related to trends and diversity of the South-South cooperation landscape in Asia-Pacific – turning challenges into opportunities; Institutional arrangements and management of South-South and triangular cooperation – experience and good practice; modalities to strengthen regional and sub-regional cooperation through South-South and triangular cooperation for sustainable development; roles of the United Nations Development System and other stakeholders including the civil society organizations and the private

sector; and alternative approaches to sustainable development.

The Panel that comprised Dr. Zaidi among others steered discussion on a session on examples and good practices of transformative South-South and Triangular Cooperation in Asia and the Pacific at the regional and sub-regional levels. Speaking on the occasion, Dr. Zaidi suggested some of the critical areas in which the South has been lagging behind. In this regard, he deemed lack of good human resource of researchers and scientists, absence of a steady supply of financial and ancillary resources, and political will among the crucial ingredients needing reinforcement for development of the South. He also called for more support from the North, as well as the international organizations and funding agencies to help address relevant challenges.

Dr. Zaidi expressed COMSATS' commitment to assist the international community and the governments in the South achieve lasting sustainability for development through science and technology.

On the sidelines of the event, Dr.

Zaidi held meetings with Dr. Vijavat Isarabhakdi, Advisor, Ministry of Foreign Affairs, Thailand; Sikama Sanghirun, Programme Officer, Thailand International Cooperation Agency (TICA); Lorenzo Santucci, United Nations ESCAP; Dr. Subrata Sinha, United Nations Environment Programme; and Srinivas Tata, UNESCAP.

Inauguration of UN-OHRLLS Technology Bank for LDCs

A three-member delegation led by the Executive Director COMSATS, Dr. S.M. Junaid Zaidi, visited Turkey, from the 1st to 6th of June 2018. The visit was undertaken to attend the Inauguration of the UN Technology Bank for Least Developed Countries and to have follow up meetings on possible partnerships/collaborations.

The members attended the inaugural session of the UN Technology Bank hosted by the Government of Turkey on 4th June 2018. The ceremony marked the achievement of the first target of the 2030 Agenda for Sustainable Development, SDG target 17.8. The day-long event comprised of an opening session and a panel session





on Fostering STI in the LDCs: "The contribution of the Technology Bank for LDCs".

On the sidelines of the event, COMSATS' officials had a number of productive meetings with counterparts and experts from various international organizations based in Turkey. Opportunities and possibilities for collaborative research were explored with regard to COMSATS' Centres of Excellence, the International Thematic Groups and the Member States categorized as LDCs. COMSATS has 7 such member states: Bangladesh; The Gambia; Senegal; Somalia; Sudan; Tanzania; and Uganda.

During their stay in Turkey for the Inauguration, COMSATS' delegation also visited the following research and development facilities in Istanbul: TUBITAK's MARMARA Research Centre (COMSATS' Centre of Excellence); Earth and Marine Sciences Institute, MRC; National Metrology Institute; and Informatics and Information Security Research Centre (BILGEM). The members of the delegation were shown the state-of-the-art R&D labs and were given detailed briefing on various facilities available with them. The Executive Director showed great interest in the remarkable progress Turkey had made in some of the very important facets of nation building through S&T. He offered the Turkish

officials facilitation to resources available with COMSATS. Reciprocating his generous offer, the management of these research facilities showed keen interest in working closely with the COMSATS in areas of mutual interest. All participants of the meetings were of the unanimous view that the UN's Technology Bank offers a huge opportunity to the least developed countries and it was in the greater interest of the participating institutions to make the best out of the great initiative.

The Executive Director assured his counterparts of his own and the Commission's resolve to help facilitate the member countries gain self-reliance through science and technology for sustainable development which is the

key to national wellbeing and prosperity. Apart from the befitting recognition as an agent of regional S&T-led development for COMSATS, some outcomes of these interactions include:

1. Strengthened relations with these partner organizations for finding more common grounds for collaborative work through South-South and Triangular cooperation.
2. Stronger support from the North through Networking at these fora of global importance.
3. Interests of common member states highlighted provided intersecting priority points. For example, the common LDCs likely to gain optimum benefit from the Technology Bank, located in COMSATS' Member State, Turkey.



SOME ACTIVITIES OF COMSATS' CENTRES OF EXCELLENCE

KazNU-Kazakhstan in the Top 220 World Universities

On 1st June 2018, Al-Farabi Kazakh National University (KazNU) entered the top 220 among the 800 best universities in the world by moving up another 16 positions in the international QS World University Ranking.

An important factor in KazNU's growth in this ranking was large-scale structural modernization, result-oriented high efficiency management and intensive development of a unique infrastructure that had grown by 40% over the past five years. Following the course of transformation into a world-class research university, KazNU is working to create a medical-biological and innovative IT cluster, and the latest supercomputer that will serve as its nucleus.

RSS-Jordan Wins Al Hussein Fund

The Royal Scientific Society, Jordan won two out of four of Al Hussein Awards for Creativity and Excellence in the Fields of Water, Environment and Energy.

The Water and Environment Center at the Royal Scientific Society (RSS) has received an award for



Best Environmental Project, titled 'Hydroponic on rooftops: A new and innovative way to achieve food security in urban areas'. The project aimed to enhance the water use efficiency in household's agriculture to achieve food security through the hydroponic units.

On the other hand, the National Energy Research Center (NERC) at RSS received an award for Best Energy Project, titled 'Fostering Solar Technology in the Mediterranean area – FOSTEr in MED'. NERC installed, the first of its kind in the region, building-integrated Photovoltaic (BIPV) 17 kWp pilot project. The project was installed on the three skylights of the University of Jordan/Aqaba Campus in order to reduce the university's energy bill and lower its carbon dioxide emissions by 17 tons annually.



R&D at TÜBİTAK MAM-Turkey Aiding National Development

TÜBİTAK MAM developed a technology to detect aflatoxin, which is a toxic and carcinogenic matter in food items. Immunoaffinity columns are used for aflatoxin detection. These columns constitute of antibodies and antibody-based analysis of products, which can be used widely in food control and food analysis laboratories. The diagnostic kits based on the technology will be prepared under the Ministry of Food, Agriculture and Livestock.

The "Passenger Imaging System" developed by the Materials Institute of TÜBİTAK MAM started serving at the Turkish ports of entry. The system, developed by TÜBİTAK MAM as a result of the R&D project in collaboration with the Ministry of Customs and Trade Directorate General of Customs. The system is actively used at the Turkish ports of entry for the detection of smuggling. The Imaging System can detect metal and non-metal dangerous materials like drugs, explosives and guns hidden on passengers or underneath their clothes. One of the most important advantages of the system is its capacity to detect items that cannot be detected by metal detectors, such as meat wrapped around passengers' body, alcoholic beverages, tobacco / tobacco products as well as drugs and explosives.

TÜBİTAK MAM-Turkey Signs IPA-INNOFOOD Protocol

TÜBİTAK Marmara Research Center, Turkey, successfully puts into practice the IPA-INNOFOOD Project on the "Development of Research and Innovation Facilities for Improving Regional Competitiveness of Food Industry". This is the first project approved in the 2nd Term of the Competitive Sectors Program under the financial cooperation between the EU and Turkey.

The protocol signing ceremony was held at the premises of TÜBİTAK MAM. The project aims to improve the product quality and safety of SMEs operating in the food and beverage sector. The aim is to help them develop R&D based product/process technologies and to help them increase their competitive power in the national and international markets.

EMBRAPA Agrobiologia-Brazil Organizes Field Day

About 30 technicians and farmers in the Cunha region of the state of São Paulo participated in a Field Day on 21st June 2018 for recognition of natural enemies of agricultural pests. The

activity was organized by researchers of Embrapa Agrobiologia with the support of the Association of Agroecological Producers of Cunha (APAC), Brazil, and the Association of Culture and Environmental Education (SerrAcima), Brazil.

The field day helped farmers increase



their knowledge about the pests, and how to drop the level of pests without using harmful pesticides.

An InNat guide application that can help in differentiation between the local pests and their enemies was also presented to the farmers for easier recognition.



COMSATS University-Islamabad Wins 2018 Research Excellence Award in Malaysia

COMSATS University, Islamabad (CUI) was awarded the 2018 Global Governance Good (3G Awards) Research Excellence Award for its overall impact in R&D.

The 3G Awards highlight excellence in good governance and commitment to social welfare in three major areas including Government & Politics, Corporate Sector, and Social Sector and Philanthropy. The Awards are adjudicated by Cambridge IFA, a UK-based financial services house that evaluates business data, assess macroeconomic indicators and understands market trends and brand development globally.

IRCC-Sudan Organizes Workshop on Industrial Waste Exchange Project

A training workshop on 'Industrial Waste Exchange Project (IWEX)' was jointly organized by Industrial Research and Consultancy Centre (IRCC), Sudan, and Egypt National Cleaner Production Centre (ENCPCC) from 15th to 20th April 2018. Representatives from different



institutes of IRCC attended the workshop.

The event was aimed at raising awareness and enhancing capacity for waste exchange; data collection from target industries; raising awareness on connecting industrial waste generators with potential users and recyclers; and developing an action plan to establish and implement a modern waste exchange programme in Sudan.

ICCBS-Pakistan Signs an MoU with Basic Medical Science Institute (BMSI)

International Center for Chemical and

Biological Sciences (ICCBS) signed a Memorandum of Understanding with the Basic Medical Sciences Institute (BMSI), Karachi, on 20th June 2018.

According to this memorandum, both the parties will collaborate in areas of basic medical sciences. Joint research projects would be conducted in the areas of mutual interest including physiology, biotechnology, biochemistry, pharmacology, microbiology, biomolecular and biomedical sciences, genetics.

Clinical trials on modern medicine and traditional medicine would also be promoted under the MoU.

NMC-Nigeria Organizes Capacity-Building Activities for Mathematicians

National Mathematics Centre, Abuja, organized a foundation postgraduate course in computational mathematics. The course was aimed at discovering and developing capacities of young mathematicians in Nigeria.

The course provided the participants with a solid foundation for post-graduation. It included a number of activities such as lectures, tutorials and seminars. The emphasis was laid on professional career development for conducting research and delivering seminars and conference papers of the participants.

Another competition for fostering competitive spirits among the students of statistics in tertiary institutions was organized by NMC. The goals of the competition included reshaping the interest of students at tertiary level, and building the ideas among students to consider statistics as career options. The Maiden Edition of the competition was organised by Nigerian Statistical Association (NSA), in collaboration with NMC.



PROFILE OF COMSATS' INTERNATIONAL S&T CENTRE OF EXCELLENCE

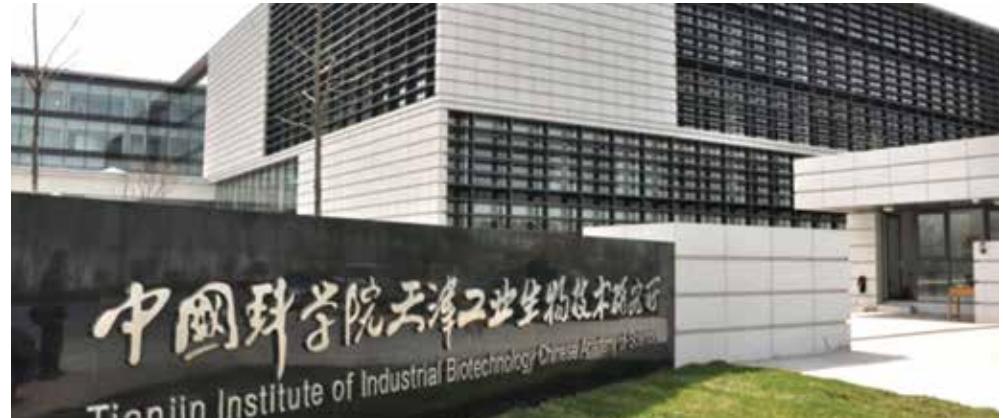
TIANJIN INSTITUTE OF INDUSTRIAL BIOTECHNOLOGY (TIB), CHINESE ACADEMY OF SCIENCES (CAS), CHINA

Tianjin Institute of Industrial Biotechnology (TIB) of Chinese Academy of Sciences (CAS) joined the COMSATS' Network of International S&T Centres of Excellence as its 22nd Member in 2018 during the 21st Meeting of COMSATS Coordinating Council, held at Al-Farabi Kazakh National University (KazNU), Kazakhstan.

The effort to implement a novel strategy for green, low-carbon development was the mandate that precipitated the birth of TIB. TIB works on substituting renewable carbon resources for fossil resources and green bioprocessing for traditional chemical processing, and promoting industrial productivity and efficiency through modern biotechnology, amongst its core missions and long-term strategic goals. Accordingly, TIB's core scientific areas cut across industrial protein science and bio-catalytic engineering, synthetic biology and microbial manufacturing engineering, and biological systems and bioprocess engineering.

TIB's commitment is geared towards linkage of research and industry by tackling the key challenges hampering the commercial application of living organisms in conjunction with major S&T achievements in bio-transformation and bio-manufacturing, the green biosynthesis of chemicals, the microbial production of plant natural products, the green bioprocessing technologies, and having important impacts on social-economic sustainable development.

TIB was jointly founded by CAS and Tianjin Municipal Government and officially designated as one of the CAS research Institutes in November 2012. The institute was primarily approved by the Chinese Commission of Public Sector Reform as a non-profit national research institute in March 2012.



TIB is located in the Tianjin Airport Economic Area. The Institute has a 43,000 m² building located in a four-hectare campus, while the second phase construction of 20,000 m² building located in a three-hectare campus is expected to be completed in 2018.

In the next three years, TIB is expecting to upgrade a National Technology Innovation Centre for Synthetic Biology (NC SynBio) with the support of the Ministry of Science and Technology, CAS, and the local government, which will provide a unique international environment for the research organizations of other countries.

TIB constitutes a three-dimensional scientific management system, which encompasses individual research groups, Strategic and Integrative Research Division, and Core Facilities to help avoid the fragmentation and isolation of activities of research groups, coordinate innovative resource for big target and deliver handy technology package for industry. Furthermore, TIB has established state-of-the-art core facilities covering high-throughput screening, systems biotechnology, fermentation, and genome synthesis alongwith National Engineering Laboratory for Industrial Enzymes, CAS Key Laboratory for Microbial Systems Biotechnology, Tianjin Key Laboratory for Industrial Biosystems and Bioprocess

Engineering, and a Tianjin Engineering Center for Bio-catalytic Technology.

TIB prides itself with over 600 staffs and graduate students, among which 45 are professors. TIB has applied for over 540 patents, among which 136 have been granted and has received 12 awards among which 10 are of national/provincial level.

TIB has been awarded with the title of a National Base for International S&T Cooperation by MoST. In addition, the Industrial Enzyme Technology Innovation Strategic Alliance coordinated by TIB, has been approved by MOST as a member of the National Industrial Technology Innovation Strategic Alliance.

In addition, as a young Institute, TIB has made notable progress in technology transfer. So far, it has established cooperative relationships with over 140 enterprises of the nation with a total contract value of \$120 million. Over 30 technologies have been industrialized in various industries, such as pharmacy, chemical, textile, fermentation, biomaterials and enzyme. It is TIB's mission to continuously strengthen its capabilities in innovation and technology transfer so as to become a global giant to reckon with and lead the industrial biotechnology.

SCIENCE & TECHNOLOGY NEWS FROM MEMBER STATE

China Produces World's Thinnest Float Glass

Scientists from Bengbu Design and Research Institute for Glass Industry in Chinese Anhui province have successfully produced world's thinnest float glass. This glass having higher light transmittance and flexibility is the type used for touch screens of cellphone and similar digital devices (The Telegraph, 21st June 2018).

The new ultra-thin float glass measures 0.12 mm in thickness; slightly thicker than a sheet of printer paper. It can withstand an impact of 55 gram steel ball falling from a height of 1 meter. With the rapidly growing electronics industry and ever increasing demand of ultra-thin glass, this breakthrough technology is likely to drive market growth in Asia-Pacific region.

Cholera Transmission Tracked at the Household Level in Dhaka

A study conducted at Wellcome Sanger Institute, Bangladesh, has found that nearly 80 percent of cholera transmission in Dhaka occurs between people who share households (Nature Genetics, 25th June 2018). In the study, large-scale genomic sequencing was conducted which revealed the similarities and difference in the sequences of cholera strains from each person and those coming from other parts of the globe.

The study results indicate that preventing the chain of transmission within households in high-burden areas could improve cholera management and control strategies thereby reducing the number of cholera cases worldwide.

In another study jointly conducted by International Centre for Diarrheal



Disease Research in Dhaka, Bangladesh; Duke University; and Massachusetts General Hospital, artificial intelligence was used to spot patterns within the gut bacterial communities (Science Daily, 7th May 2018). These patterns could indicate who, among the approximately one billion people around the globe at the risk of cholera infection, will get sick with the diarrheal disease.

Sustainable Farming System for Cocoa Plants in Ghana

In the near future, the production of cocoa (*Theobroma cacao*) – the raw material for chocolate manufacturing – may fall due to inevitable factors such as decreased soil fertility, rapidly ageing plantation, increased pests population, elevated rates of diseases, as well as climate change. Given the fact that the world chocolate consumption is on the rise, there is likelihood that cocoa will become scarce.

Ghana, the chief producer and second largest exporter of cocoa in the world, is attempting to increase cocoa production by switching to sustainable farming techniques such as cultivation of cocoa beneath the canopy of larger trees. This could protect cocoa from intense sunlight along with regulating temperature and humidity. Shaded trees could also maintain soil fertility and absorb carbon out of the

atmosphere (Science Daily, 18th May, 2018). Moreover, the cooling effect on temperature, the number of animal and plant species in the field, and carbon sequestration increases proportionately to the amount of shade.

Vitamin D Supplementation Improves Brain Development in Malnourished Children

A group of scientists from University of Punjab, Pakistan and Queen Mary University of London have found that vitamin D supplementation in malnourished children can improve their weight gain and development of language and motor skills (Science Daily, 1st June 2018). Vitamin D known for its beneficial effects on bones and muscle health has therefore been identified as a potential element favorable for the management of acute malnutrition among children. The study conducted on children aged 6 to 58 months, further predicts the beneficial effects of vitamin D on central nervous system.

In addition to weight improvement, vitamin D supplementation also resulted in substantial reductions in the proportion of children with delayed motor development, delayed language development and delayed global development (reaching certain milestones such as learning to walk or talk). The study was funded by Higher Education Commission of Pakistan.



SCIENCE, TECHNOLOGY AND DEVELOPMENT

Clean Water Access Made Easier

Researchers at Carnegie Mellon University College of Engineering, USA, are working to further refine the process that could soon help provide clean water to many in water scarce regions. The process uses sand and readily available plant materials to create a cheap and effective water filtration medium, termed f-sand (Science Daily, June 20, 2018).

F-sand uses proteins from *Moringa oleifera* plants, a tree that grows well in tropical and sub-tropical climates. F-sand both kills microorganisms and reduces turbidity, adhering to particulate and organic matter. The undesirable contaminants and DOC can then be washed out, leaving the water clean for longer. The f-sand is reusable. This maybe the cheap water purification option for many in the developing world to benefit from.



Research and Development in Medicine

Researchers from Emory Antibiotic Resistance Centre have discovered the first bacterial strain possessing carbapenem resistance. The colistin heteroresistant strain was isolated from a patient in United States (Science Daily, June 09, 2018). The news is particularly alarming because antibiotic resistance in bacterial strains is one of the most

serious issues in medicine.

The research showed that the isolate was heteroresistant to last resort antibiotic that is colistin. This means that a small subpopulation of cells showed resistance. Heteroresistance is more difficult to detect with standard antibiotic susceptibility tests in clinical microbiology labs. Earlier this isolate was classified as susceptible to colistin by standard methods.

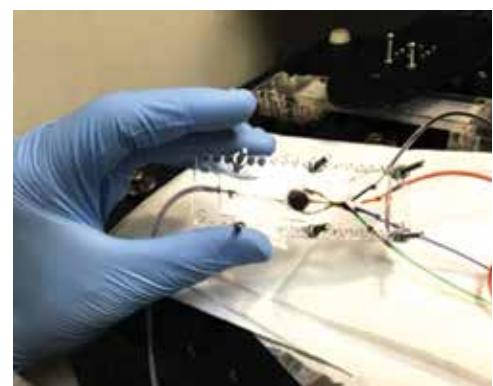
Another group of researchers from UCLA Samueli School of Engineering, US, conducted a research, in which a specially adapted 3D printer has been developed, which can build therapeutic biomaterials from multiple materials (Science Daily, May 21, 2018). The technique uses a light-based process called stereolithography, and it takes advantage of a customized 3D printer that has two key components. The first is a custom-built microfluidic chip -- a small, flat platform similar in size to a computer chip -- with multiple inlets each of which "prints" a different material. The other component is a digital micro-mirror, an array of more than a million tiny mirrors that each moves independently. The printed structures did not show any rejection, when planted into rats.

The research is a step towards on demand 3D printing of complex artificial tissues for use in transplants and other surgeries.

New Dimensions to Energy Research

Researchers from Osaka University, Japan, designed new polymers for organic photovoltaics (solar cells) by using machine learning (The Journal of Physical Chemistry Letters, May 29, 2018). In the future, this could lead to vastly more efficient devices.

The team gathered data on 1,200 OPVs from around 500 studies. Using Random Forest machine learning, they built a model combining the band gap, molecular weight, and chemical structure of these previous OPVs, together with their PCE, to predict the efficiency of potential new devices.



Another team of researchers found new evidences suggesting that batteries based on sodium and potassium hold promise as a potential alternative to lithium-based batteries (Science Daily, June 19, 2018). The team researched on reaction of sodium, potassium and lithium with particles of iron sulfide. The difference between how the different ions reacted was stark visually. When exposed to lithium, iron sulfide particles appeared to almost explode under the electron microscope.

On the other hand, the iron sulfide expanded like a balloon when exposed to the sodium and potassium. As a result, the iron sulfide particle when reacting with sodium and potassium developed a more oval shape with rounded edges. Sodium and potassium batteries at this point do not have more density, but they are based on elements a thousand times more abundant in the earth's crust than lithium. So they could be much cheaper in the future, which is important for large scale energy storage.

Scholarships offered by COMSATS' Centres of Excellence for Member States

Students from COMSATS' Member States are welcome to benefit from the following offers from COMSATS Centres of Excellence:

- Hundred scholarships for students/researchers for postgraduate studies and ten scholarships for post-doctoral fellowships at all campuses of COMSATS Institute of Information Technology (CIIT), Pakistan.
- Seven Ph.D scholarships [4 fully paid and 3 partially paid (50%)] and five-postdoctoral fellowships at the Iranian Research Organization for Science and Technology (IROST), Iran.
- Ten doctoral scholarships/post-doctoral fellowships at the International Center for Chemical and Biological Science (ICCBS), Pakistan.
- Five post-doctoral fellowships at the National Research Centre (NRC), Egypt, and International Centre for Climate and Environment Sciences (ICCES), China, each.
- One post-doctoral fellowship at Bangladesh Council for Scientific and Industrial Research (BCSIR), Bangladesh.

For further details on the scholarships, please visit www.comsats.org or write to tajammul@comsats.org.

Selected Forthcoming Scientific Events in COMSATS' Countries

- 11-14 Sept. 2018 FL2018 -"International Conference on Innovations in Learning for the Future", Istanbul, Turkey (<http://fl.istanbul.edu.tr/en/>)
- 16-17 Sept. 2018 (Nano)-materials for Biomedical Applications, Natal, Brazil (www.sbpmat.org.br)
- 15-17 Sept. 2018 International Conference on Clean and Renewable Energy, Chongqing, China (www.engii.org)
- 26-27 Oct. 2018 ICRST (2018) XIXth Int'l Conference on Researches in Science & Technology, Colombo, Sri Lanka (www.wasrti.org)

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Honourable mentions: Ms. Isra Mahmood, Mr. Kehinde Musodiq Sanni, and Mr. Anya Augustine Igwebuike



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