



COMSATS Newsletter

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

Issue 5, Volume 10

September - October 2018



COMSATS Telehealth organized a knowledge-sharing seminar and a demonstration stall at the International Health Expo, Islamabad, this October.

A number of participants from relevant organizations benefitted from experiences shared by speakers in various eHealth domains: telemedicine, patient information systems, mobile applications and education.

(Details on page 6)

Inside this Issue

- From the Executive Director's Desk 1
- Highlights from COMSATS Secretariat 2
- Some Activities of COMSATS' Centres of Excellence 7
- Science: A Common Heritage of Mankind 12
- Laureates of Nobel Prize 2018 12
- S&T and Development News from Member States 14
- Science, Technology and Development 15
- COMSATS' Brief and Announcements 16

From the Executive Director's Desk

In the term 'Sustainable Development', the word 'sustainable' renders a dimension of humanity to the concept of 'development'. It mandates care and caution towards society, environment and economy, as opposed to the earlier ideas that concerned it with only the last of these pillars. The benevolence of such a definition of development is even more apparent in that there is no hard boundary to the former two pillars in this day and age. The globe has shrunk considerably due to advances in ICTs and transportation, and the atmosphere and natural resources that do not necessarily conform to any bounds and boundaries offer similar opportunities and threats to all.

Realizing this, it seems but natural to have a more genial and inclusive approach towards development that meets the needs of sustainability. A positive externality to such an inclusive approach would be openness to better networking and stronger synergies among institutions and nations. Strong stimuli for the same are being provided by the UN since early 2000s in the form of goals and targets. The superannuation of MDGs in 2015 gave way to a Global Agenda 2030 – the Sustainable Development Goals. The latter connect all nations that adopted the Global Goals owing to their strong element of partnerships, and interdisciplinarity that calls for closer cooperation.

Among themselves, the countries of the South can share resources and expertise based on similarity of challenges. While it may be inevitable to seek expertise from the North, South-South Cooperation would remain necessary for the developing countries to reduce dependence on developed nations. The need for an institutional framework to pursue effective partnerships and reinforce exchange of technical expertise and knowledge among these nations is undeniable. COMSATS provides an effective platform for that as an active agent of both sustainable development and South-South Cooperation.

It is my pleasure to note a few recent events at COMSATS that constitute the content of this newsletter. Our diplomatic outreach during the last two months continued resulting in exchanges with representatives from Jordan, Yemen, Somalia, Austria, Ukraine, Italy, and Norway. An MoU with South Centre, Geneva, would help furthering COMSATS' objectives. Networking and capacity building also continued through meetings at COMSATS' focal point in Turkey, participation in CTWF events in China, and a e-Health Seminar. Meanwhile, the Centres of Excellence continued their excellence according to their national mandates and as part of COMSATS' Network. Some of their undertakings during the reporting period adorn the pages of this issue.

Patron:
Dr. S. M. Junaid Zaidi
Executive Director COMSATS

Editors:
Ms. Farhana Saleem
Ms. Isra Mahmood

Designing & Development:
Mr. Imran Chaudhry

HIGHLIGHTS FROM COMSATS SECRETARIAT

Meetings with Representatives of Foreign Missions in Islamabad

Minister Plenipotentiary/ Charge d’Affaires and Cultural Counsellor, Embassy of Jordan (September 11, 2018)

Dr. Maen Khareasat, Minister Plenipotentiary/Charge d’Affaires and Mr. Mahmoud Oglah Baniata, Cultural Counsellor, Embassy of Hashemite Kingdom of Jordan, held a meeting with the Executive Director COMSATS, Dr. S.M. Junaid Zaidi, and other officials on 11th September 2018.

During the meeting held at COMSATS Secretariat, Dr. Zaidi noted the active role being played by Jordan as an important Member State of COMSATS. He hoped to further strengthen cooperation between COMSATS and Jordan.

Dr. Maen Khareasat valued COMSATS’ pivotal role in facilitating the socio-economic development of its member states, and appreciated its contributions in the fields of science and technology.

Dr. S.M. Junaid Zaidi suggested that Pakistan and Jordan should send their delegations comprising faculty members and students on reciprocal

basis to explore opportunities for faculty exchange, scholarship opportunities, and joint research and development activities. Dr. Maen expressed willingness to support and facilitate such visits.

Ambassador of Yemen to Pakistan (September 18, 2018)

A delegation of COMSATS led by Executive Director COMSATS called upon the Ambassador of Republic of Yemen in Islamabad, His Excellency, Mr. Mohammed Motahar Alshabi.

The Honorable Ambassador informed COMSATS’ officials of the significant progress that had been made with regard to Yemen’s membership to COMSATS. The Ambassador looked forward to availing COMSATS’ platform to enhance the cooperation of Yemen with Pakistan and other Member Countries.

The meeting concluded with a strong resolve to promote cooperation among the developing countries in various fields of S&T in order to address their common challenges.

Ambassador of Somalia to Pakistan (October 04, 2018)

On the invitation from the Executive Director COMSATS, H.E. Ambassador

of Somalia, Mrs. Khadija Mohamed Almahzoumi, visited the COMSATS Secretariat.

During the meeting, possibilities were explored to establish Centre of Excellence on Climate Change and Technology Parks based on the need and priority of the Somali Government. It was noted that collaboration of relevant institutions in China, Turkey and European Union can be sought to establish biotechnology centres, oriented towards the needs of industrial sector, upon Somalia’s request.

COMSATS’ support and cooperation were also extended for Faculty development of Somali higher education institutions. Dr. Zaidi offered COMSATS’ facilitation for securing admissions in further higher studies in Pakistani universities by serving as a conduit between the students and the universities. The Ambassador looked forward to benefitting from various programmes of COMSATS, especially those pertaining to higher education.

Ambassador of Austria to Afghanistan (October 08, 2018)

Upon invitation of Executive Director COMSATS, Dr. S. M. Junaid Zaidi, the Ambassador of Austria to the Islamic Republic of Afghanistan (Resident in Islamabad – Pakistan), Her Excellency Dr. Brigitta Blaha, visited COMSATS Secretariat. The agenda of the meeting was to explore common grounds of cooperation for the benefit of the South, especially Africa.

The Honourable Ambassador was briefed about the programmes, activities and achievements of COMSATS. It was proposed that the two sides can mutually collaborate for joint cooperative projects pertaining to capacity building of scientists and researchers; trainings of academicians; setting-up of Centres of Excellence





in COMSATS Member States; and strengthening linkages with various stakeholders working in climate change and environmental sciences niche.

During the meeting, Her Excellency was also handed a formal letter of invitation to join COMSATS.

Ambassador of Ukraine to Pakistan (October 09, 2018)

The Ambassador of Ukraine to Pakistan, H.E. Mr. Volodymyr Lakomov, visited COMSATS Secretariat upon invitation of Executive Director COMSATS.

The Honourable Ambassador was given

a briefing on COMSATS' programmes, activities and flagship projects by Dr. Zaidi who also expressed desire to collaborate with Ukraine in areas of mutual interest.

H.E. Mr. Volodymyr Lakomov informed that Ukraine stands among the top three countries in the world in the field of IT and has well-developed agriculture sector.

During the meeting, a formal accession letter to Ukraine for joining COMSATS was handed over to H.E. Mr. Volodymyr Lakomov. He assured to take up the proposal with Ukrainian government for final decision.

Ambassador of Italy to Pakistan (October 15, 2018)

The Executive Director COMSATS called upon the Ambassador of Italy in Islamabad, H.E. Stefano Pontecorvo, with senior officials of COMSATS Secretariat and Institute of Peace and Diplomatic Studies (IPD).

During the meeting, Dr. Zaidi briefed the Ambassador about the vision and mission of the Commission and its activities.

The Ambassador informed about the recent connections established between the Italian Ministry of Education, Universities and Research, HEC and different academic institutions of Islamabad and Lahore. It was informed that the Embassy is in process to establish "Italian Cultural Centre" in Lahore similar to Goethe Institute and British Council in 2019.

Dr. Zaidi offered COMSATS' facilitation for providing assistance to the Italian Embassy in developing linkages with higher education institutions in Pakistan. Dr. Zaidi also highlighted the scholarships offered by COMSATS University.

Speaking during the meeting,





Ambassador (R) Fauzia Nasreen emphasized the role of Centres of Excellence (CoE) of COMSATS and explored the possibility of induction of a Centre from Italy to the Network. In response, His Excellency shared a possibility of two Italian institutions' nominations for inclusion in the Network: Consiglio Nazionale delle Ricerche (CNR), and INFN: Istituto Nazionale di Fisica Nucleare (INFN). Further, the Ambassador noted Disaster Management and Maritime Pollution as other areas in which Italy could assist.

Ambassador of Norway to Pakistan (October 22, 2018)

Upon invitation from the Executive Director COMSATS, the Ambassador of Norway to Pakistan, His Excellency Mr. Kjell-Gunnar Eriksen, visited COMSATS Secretariat. The Honourable Ambassador was accompanied by Director (Development Cooperation) of his Embassy.

During the meeting, Dr. Zaidi apprised the Ambassador about COMSATS' programmes and activities. He stated that COMSATS and Norway can cooperate in various domains, such as capacity building and training of scientific workforce, launching projects in contemporary S&T areas, technical institute building as well as other joint ventures tailored for science-led socio-economic development.

The Ambassador was apprised that Norwegian Government is already collaborating with COMSATS University Islamabad (CUI) and has signed a Memorandum of Understanding (MoU) with the University's Abbottabad Campus. Further, the Norwegian Government has pledged to facilitate faculty development in Pakistan and other COMSATS' Member States.

The Ambassador was handed over a formal accession letter to Norway for joining COMSATS, for onward submission to Government of Norway.

COMSATS Strengthens Ties with Focal Point in Turkey

Dr. Kamran Jahangir, Advisor (TAC), COMSATS Secretariat, paid a visit to the Republic of Turkey from September 19th – October 8th, 2018, in order to hold meetings at various R&D Centres of COMSATS' focal point in Turkey – the Scientific and Technological Research Council of Turkey (TÜBİTAK).

During his visit to TÜBİTAK, Dr. Jahangir met with the senior officials of TÜBİTAK, Marmara Research Center (MAM), National Metrology Institute (UME), and Turkish Management Sciences Institute (TUSSIDE).

In the meeting held with the Executive Vice President of TÜBİTAK, Dr. Orkun

Hasekioğlu, it was pledged that TÜBİTAK shall support Government of Pakistan in its initiatives by offering resources and services available with the Council.

TUSSIDE showed keen interest in partnering with COMSATS in areas of common interest.

Further, during the meeting with Dr. Mustafa ÇETİNTAŞ, Director, UME, and Mr. Omar, Head of International Office, TÜBİTAK, it was pledged that consultancy services would be extended for the establishment of facilities akin to UME in COMSATS' Member States. It was also proposed that UN Technology Bank may be approached for launching initiatives in the LDCs that hold COMSATS' membership.

In the meeting with Prof. İBRAHİM KILIÇASLAN, President – MAM, and Dr. Murat MAKARACI, Vice President in Charge of Strategy and Technology Development – MAM, it was ensured that short-term summer trainings shall be offered by TÜBİTAK MAM to scientists/ researchers belonging to COMSATS' Member States.

In a meeting with Prof. Muhammed Hasan Aslan, Rector of Gebze Technical University, Gebze, it was proposed that a Memorandum of Understanding may be signed for the bilateral cooperation under which MS and PhD scholarships



may be offered to students/ researchers of COMSATS' Members States.

During a meeting held at Mardin Artuklu University, Mardin, a possibility of signing an MoU was explored in areas of mutual interest.



SOUTH CENTRE

COMSATS Signs Cooperation Agreement with the South Centre, Geneva

On September 03, 2018, a Memorandum of Understanding was signed between COMSATS and South-Centre. The Executive Directors of the two organizations, Dr. S.M. Junaid Zaidi and Dr. Carlos Correa, signed the agreement, respectively.

Under this agreement, COMSATS and South Centre will collaborate to advance South-South and Triangular Cooperation through various regional and cross-regional cooperation initiatives, as well as exchange information and technical resources among their common member states. Furthermore, through this MoU, both parties have agreed in principle to launch and execute joint cooperative

schemes and programmes in areas such as education and training, STI, policy development, climate change, and sustainable development.

COMSATS' Participates In CAS-TWAS-WMO Forum (CTWF) Events in Beijing, China

A two-day training workshop on, "Land-hydrological processes under changing Climate Observation, Modeling System and Uncertainties" was organized by the International Centre for Climate and Environment Sciences (ICCES) and COMSATS with the support of Bureau of International Collaboration of Ministry of Science and Technology (MoST), China, from 20th – 21st September 2018.

The workshop was held with the



objective to highlight the importance of preserving the hydrological cycle as the existing pressure on water resources is increasing with the population growth and drastically changing climate.

In the inaugural session of the workshop, Prof. Lin Zhaohui, Director ICCES, introduced to the distinguished guests the crucial subject and objective of the workshop. He emphasized the importance of training of young scientists to build their capacity to undertake research studies related to climate change and its impact using the land-hydrological model system.

Representing COMSATS, Maj. Gen (R) Muhammad Tahir, Advisor (China Desk), noted that climate change is becoming one of the greatest threats facing the planet where drought, floods and hurricane in various countries are linked to global warming. He extended his gratitude to Prof Lin for organizing the subject workshop for young scientists from developing countries.

Four internationally renowned scientists (Prof. Yong Luo, Prof. Kun Yang, Prof. Duoying Ji and Dr. Quanxi Shao) gave lectures/ training on the subject and provided details on the model on application, and its statistical treatment and verification.

Sixty young scientists from 20 countries



consultations from the Basic Health Units (BHUs) located in far flung areas and a knowledge sharing seminar.

The Expo was inaugurated on 5th October 2018, by Mr. Aamir Mehmood Kiani, Federal Minister for National Health Services, Regulation and Coordination. Speaking at the inauguration ceremony attended by leading figures of healthcare and IT sector, Dr. S. M. Junaid Zaidi, Executive Director COMSATS, highlighted the need for due incorporation of tele-health in healthcare system. He considered it crucial to promote and encourage research in medicine owing to the fact that new strains of bacteria and viruses are constantly emerging partly due to abrupt climatic changes.

COMSATS Tele-Health knowledge-sharing seminar on e-health helped create awareness among health community about e-health and its importance as well as to share with the participants, experiences in various e-health domains. The seminar attracted around 50 participants including representatives from Human Development Foundation (HDF), PIMS (ORIC), Heartfile Pakistan, COMSATS University Islamabad (CUI), Centre for Information Technology (CIT), GKAZ HealthCare, CYGNET Technologies, Islamabad Diagnostic Centre (IDC), PEITS, Excel Labs, and American

Teleclinic, among others.

At the onset, Dr. Azeema Fareed, Principal Medical Officer at COMSATS Secretariat, presented tele-health as a useful tool to achieve cost effective, time efficient and instant universal health coverage which is in line with the targets of Sustainable Development Goal (SDG3). Further, Dr. Fareed acquainted the participants with COMSATS Tele-Health Project launched in 2001 and providing healthcare services to remote areas of Pakistan through 13 Tele-Health Clinics set-up all across Pakistan from Gilgit/Skardu to Gawadar.

During the seminar, presentations were given by Dr. Shafaat Ahmed Khan (Head of Health Informatics Department, COMSATS University Islamabad – CUI) on health informatics; Ms. Sarah Shafqat (Founder of DreamSofTech Pvt. Ltd. and Director of Membership & Marketing at Cloud Security Alliance, Pakistan) on IoT enabled smart health over cloud; and Mr. Ihtiram-UI-Haque Khattak (Senior Manager at Heartfile Health Financing (HHF) Division, Islamabad) on Heartfile Health Financing Programme.

Mr. Ernest Kaliyev, Director of Centre of Biomedicine, and Healthy Lifestyles at COMSATS' Centre of Excellence in Kazakhstan, Al-Farabi Kazakh National University (KazNU), also participated through video conferencing. He shared the experience of Kazakhstan-Korea in the implementation of digital healthcare in Kazakhstan.

The participants were also given briefing by Dr. Suhail Chughtai on his entrepreneurial tele-health initiative, Medical City Online. Ms. Faiza Batta and Dr. Tayyab Saeed acquainted the audience with the project of American TelePhysicians (ATP) – Shifa4U.

benefitted from this workshop. Countries represented included Egypt, China, Bangladesh, Thailand, Mali, Ghana, Togo, Sri Lanka, Kazakhstan, Tunisia, Malaysia, Pakistan, Sudan, Morocco, Vietnam, Australia, and India.

COMSATS Organizes Knowledge Sharing Seminar on E-Health at International Health Expo

COMSATS Tele-Health participated in the International Health Expo that was organized by Mass Comm Solutions at Pak-China Friendship Centre from 5th – 7th October 2018. The event gathered healthcare stakeholders at one platform with the purpose to provide edutainment, networking, investment, and knowledge sharing opportunities. COMSATS' participation included a tele-consultation desk for live



SOME ACTIVITIES OF COMSATS' CENTRES OF EXCELLENCE

RSS-Jordan Regional Cooperation for Tackling Climate Issues

The Environment and Water Center at the Royal Scientific Society (RSS), Jordan, in cooperation with the United Nations Environment Program (UNEP) and the Iraqi Ministry of Health and Environment, conducted a capacity building training. It was organized for the staff working on the preparation of the second national communication for the UNFCCC on climate change. The three-day training program included lectures on Greenhouse Gases (GHG) inventory estimation and mitigation analysis.

Under another partnership, RSS and the Jordanian Ministry of Environment, in collaboration with Jordan Valley Authority organized the first training of trainers' workshops on adaptation to climate change. The training program included presentations about concepts and causes of climate change as well as identification of best agricultural practices to cope with the negative impacts of climate change on agriculture sector. The training was attended by farmers and agricultural engineers from the north and Center of the Jordan Valley.

These activities are part of a program implemented by the Ministry of



Planning and International Cooperation and funded by the Global Adaptation Fund entitled "Increasing the resilience of poor and vulnerable communities to the impacts of climate change in Jordan through the implementation of innovative projects in water and agriculture in support of adaptation to climate change."

Capacity Building Events at ICCBS-Pakistan

The 3rd International Workshop on X-Ray Crystallography in Structural Biology was held at L.E.J. National Science Information Center, International Center for Chemical and Biological Sciences (ICCBS), Karachi, from 8th – 10th October 2018. The event was jointly organized by Dr. Panjwani Center for Molecular Medicine and Drug Research (PCMD),

ICCBS, and the International Union of Crystallography.

International experts including Prof. Dr. Atta-ur-Rahman, former Chairman Higher Education Commission (HEC); Federal Minister for Science and Technology; Prof. Dr. Samar Hasnain from UK; Prof. Dr. Richard Garratt from Brazil; Director ICCBS, Prof. Dr. M. Iqbal Choudhary; Dr. Sammer Yousuf; and Dr. Saima Rashed spoke on the occasion.

The 47th public awareness seminar on "Environment, Health, and Development" was held at PCMD, ICCBS, on 27th September 2018. The seminar was jointly organized by PCMD and Virtual Education Project Pakistan (VEPP).

ICCBS-Pakistan Collaborates With Provincial Government to Setup Forensic DNA Laboratory

A Memorandum of Understanding (MoU) was signed between the Health Department, Government of Sindh, and the International Center for Chemical and Biological Sciences (ICCBS), Karachi, on October 01, 2018. The Agreement was signed by Additional Chief Secretary, Health Department of Sindh, Dr. Muhammad Usman Chachar and Director ICCBS, Prof. Dr. M. Iqbal



Choudhary, on behalf of their respective organizations. The ceremony was witnessed by the Provincial Minister for Health and Population Welfare of Sindh, Dr. Azra Fazal Pechuho.

Under the MoU, the provincial government will provide Rs.260 million to ICCBS for strengthening forensic DNA and serology facility at Jamil-ur-Rehman Center for Genome Research at Dr. Panjwani Center for Molecular Medicine and Drug Research (PCMD), ICCBS.

According to MoU, the Sindh government will designate ICCBS as focal center for training in forensic serology and DNA analysis, and designate the staff trained from ICCBS as a forensic analyst or expert. All the analysts will take the proficiency test annually as per standards and on successfully passing the test will be allowed to analyze case work.

Some Activities of IRCC-Sudan

Accreditation of Leather Technology Centre Laboratories

The process of accrediting IRCC laboratories was started under the supervision of Sudanese Council for Accreditation (SADC) and Tunisian Accreditation Council (TUNC) and with the patronage of UNIDO. The Leather Technology Center was the first one to be accredited.

Industrial Waste Management Project

The Industrial Waste Management Project was held under the frame work of South-South Cooperation between IRCC, Sudan Cleaner Production Center (SCPC) and Egypt National Cleaner Production Center (ENPCPC). It was an international program financed by the African Development Bank (ADB). It included training courses which



were held in Egypt and Sudan, and an industrial waste survey for a number of factories in Khartoum.

Household Industry Scientific Symposium

In collaboration with Federation of Arab Scientific Research Council (FASRC), IRCC organized the Scientific Symposium on 'Household Industry' in Khartoum from 15th – 16th October 2018. The event was organized with the aim to highlight the role of household industry in supporting development programs in the Arab countries at the national and regional levels.

Al-Farabi KazNU-Kazakhstan Ranked the Best Central Asian University in THE International Ranking

According to Times Higher Education (THE) World University Rankings-2019, Al-Farabi Kazakh National University is the only Central Asian university in the top 801-1000 best universities of the world. A total of 1,250 universities from 86 countries were included in the ranking. Traditionally, THE rankings are headed by Higher Education Institutes from USA and UK. New achievements

of KazNU show high competitiveness of the University and higher education system of Kazakhstan in the global scientific and educational space.

It should be noted that Al-Farabi KazNU ranks 220th in the International QS World University Rankings and it is among the top 50 of the most technologically developed universities of the world according to the international organization Great Value Colleges as well as the top 200 "green" universities of the world in the rankings of the UI Green Metric Ranking of World Universities.

Al-Farabi KazNU Hosts AICT2018

On October 18, 2018, KazNU hosted second day of IEEE 12th International Conference on Application of Information and Communication Technologies (AICT2018), which was held from 17-19 October 2018, in Almaty. AICT2018 was organized in partnership with the Kazakh-British Technical University (KBTU), Almaty; Suleyman Demirel University (SDU), Kaskelen; and ADA University, Azerbaijan, with the support of IEEE Azerbaijan Joint Chapter and technical



sponsorship by Institute of Electrical and Electronics Engineers (IEEE).

AICT2018 is one of the most significant international academic conferences in the field of ICT implementation, which brings together researchers, academics, and practitioners from around the world. The conference focused on technical topics, such as Data Management, Data Mining and Engineering, Computing, Cyber Security, Communication, etc.

Centre for Nuclear Medicine to be established at Al-Farabi KazNU

The President of Asia Oceania Federation of Nuclear Medicine and Biology (AOFNMB) and Chairman of Japanese Society of Nuclear Medicine, Prof. Jun Hatazawa visited Al-Farabi Kazakh National University on September 22, 2018, with the purpose to discuss the possibility of creating a Central Asian Centre for nuclear medicine. According to Prof. Jun, a number of Asian and Arab countries have interest in creating a regional center for nuclear medicine which holds potential for consolidating efforts and potential in the relevant sphere.

At present, there are forty (40) qualified nuclear medicine specialists working in

Kazakhstan.

The University approved all the proposals of the Japanese delegation to establish a Center for Nuclear Medicine which will have faculties and facilities for education and training of relevant specialists.

TÜBİTAK MAM's Test and Analysis Services Reach the Southern Coasts of Europe

TÜBİTAK Marmara Research Center (MAM) has expanded its customer service portfolio to Europe after addressing hydrophone calibration request of a Research Center in Italy and PAH analysis request of an Environmental Laboratory in Monaco. After Italy became the 32nd country served with TÜBİTAK Marmara Research Center's (MAM's) tests and analyses, the Centre provided its services to the Principality of Monaco, which is located in the Mediterranean Coast of Europe. Together, the number of countries served by TÜBİTAK MAM for tests and analyses has reached thirty-three (33) in 4 continents.

TÜBİTAK MAM's Vice President, Assoc. Prof. Murat MAKARACI attributed analysis requests from Europe, Asia, Africa, America and Russia to the good

quality services provided by the Center. TÜBİTAK MAM offers R&D, test and analysis services through its seven (07) institutes specializing in different fields which have been further improved since 2015.

TÜBİTAK MAM Puts Deriner Hydroelectric Power Plant Control System to Service

The power plant control system that was developed by TÜBİTAK Marmara Research Center (MAM) Energy Institute Power Plant Control Technologies Group has been put into service at the first unit of the Deriner HPP operated by the HPPs Department of Electricity Generation Company (EÜAŞ). The project that was initiated in July 2017 covers the development and renewal of units, switchgears, auxiliary systems, spillway control systems, control room and server systems with modern approaches. The new control and command systems to be commissioned at the end of the project are expected to improve the operational efficiency and availability of the plant to ensure secondary frequency control and to achieve system continuity and cyber security. The project is planned to be completed in 2019.

The Deriner HPP consists of 4 units with an installed capacity of 670 MW. It is the 6th largest hydroelectric power plant of Turkey. In 2016, it met 0.7% of Turkey's electricity demand by generating approximately 2 billion kWh of electricity.

Commercialization Activities of TÜBİTAK MAM

TÜBİTAK Marmara Research Center (MAM) and DEMİRPOLAT Ltd. Co. have signed a license protocol on the first 100% national complementary food for infants. The parties will conduct a project on the "Development of Cereal-



Based Complementary Infant Food Formulations”.

Complementary infant foods that have a significant role in the nutrition of infants are not produced in Turkey but imported from foreign countries. Despite the fast growth of its market, Turkey stays far behind the consumption levels of the world, with its 16kg consumption per infant annually; which is 40kg in Poland, 176kg in Spain and 187kg in France. Although the complementary infant food market size grows steadily, there is no production in Turkey. This project will allow the production of hydrolyzed flours made of organic cereals (wheat, oat and rice) which constitute the main raw material of complementary infant foods, and the development of high value added complementary foods for 6 to 36 months old infants with cereal mixtures in accordance with the limits set by the Turkish Food Codex Complementary Infant Food Communiqué.

TÜBİTAK MAM and MAPA Dried Fruit, Food and Construction Industry and Trade Inc. have signed a license agreement for 100% national pectin production. Pectin is a stabilizing and gelling agent used in food processing. Currently, there is no pectin production

in Turkey and the demand for 620 tons of pectin per year is met with imports from foreign countries. The import volume amounted to 8.6 million Turkish Liras in 2017. The project aims to produce pectin from apple pomace and apple peel, and to improve the conditions for apple pectin production.

Laurels for COMSATS University Islamabad (CUI)-Pakistan

COMSATS University Islamabad (CUI), Pakistan, has taken the lead amongst universities, in the latest 2018 Academic Ranking of World Universities (ARWU), released by Shanghai Ranking Consultancy on 28th August 2018. For the first time ever, four Pakistani universities have made it into the coveted ARWU 2018 Rankings, with CUI on top. CUI is placed in the 601-700 band of the ranking, followed by Quaid-e-Azam University Islamabad in the 701-800 band and University of the Punjab, which was placed in the 801-900.

CUI tops the list from Nature Index of high impact factor journal publications from Pakistan. The list was announced on 19th June 2018 and consists of high-quality research outputs ranking table 2018 released by international reputed

scientific publication house, The Nature. CUI had 40 high impact factor publications, including 3 publications by CUI's Rector Prof. Dr. Raheel Qamar, in the recent ranking as compared to about 60 from other Pakistani universities.

R&D Activities in CUI

A study conducted by Dr. Umair Hassan, Assistant Professor, Department of Physics, CUI, has been published in a recent issue of Wiley – Advanced Healthcare Materials. Dr. Hassan is working collaboratively with researchers at the University of Birmingham to develop 'Contact Lenses for Color Blindness.' The researchers in this study have incorporated a rhodamine derivative in contact lenses to filter out the specific wavelength bands (545–575 nm) for application in color vision deficiency management. The biocompatibility of the contact lenses is assessed in human corneal fibroblasts and human corneal epithelial cells showing no toxicity and high cell viability.

Dr. Adnan Ahmed Tahir, Associate Professor, Department of Environmental Sciences, Abbottabad Campus, is working in collaboration with Hunnan

University of Science and Technology, China, and International Centre for Integrated Mountain Development, Nepal, on a research project titled "Glacier Changes and Associated Hydrologic Impact under Warming Climate in Hunza Valley along the Sino-Pakistan Economic Corridor." The project has been approved by the National Science Foundation of China (NSFC) and has won worth 20, 00,000 CNY (~31, 6000 USD) for 3 years.

Collaborations and Networking with Foreign Partners

On 25th September, the Centre for Climate Research and Development (CCRD) successfully completed the "Pakistan Country Environment Profile", "Strategic Environment Assessment" (SEA) and the "Environmental Impact Assessment" (EIA) of the Rural Development Programme in Pakistan for the European Union. On the occasion of project conclusion and dissemination of its outcomes, Prof. Dr. Athar Hussain, Head CCRD, emphasized that the SEA was demonstrative of EU's seriousness towards sustainable development and compliance of the environmental laws in Pakistan. The Chief Guest, Ambassador of the European Union, H.E. Mr. Jean-

François Cautain highly appreciated CCRD for its strategic environmental assessment which helped to improve the environmental performance of EU's rural development programs.

Other collaboration activities of CUI included interactions with invited and visiting delegations from Gansu Natural Energy Research Institute, Lanzhou, China (September 24, 2018); Coventry University, UK, (September 19, 2018); CERN (October 10, 2018); University of Manchester (October 22, 2018); and Ca' Foscari University of Venice, Italy (October 30, 2018). Further networking was done through visits of relevant officials of COMSATS University to Tsinghua University, Beijing, and Tongji University, Shanghai, from 4th to 10th September 2018. The visit allowed a deeper understanding of both institutions and avenues for further collaborations were identified. A joint workshop on Numerical Solutions of Partial Differential Equations was also held with the University of Heidelberg, Germany (1st – 5th October 2018).

Foreign Students at CUI

COMSATS University Islamabad enrolled 110 new international students

CUI Publications (2005-2017)	
Year	Papers Published
2005	31
2006	97
2007	140
2008	183
2009	378
2010	383
2011	707
2012	603
2013	940
2014	907
2015	1263
2016	1560
2017	1904
2018	Expected to cross 2000
Total	9096

from Afghanistan, Ghana, Nigeria, Ivory Coast and Cameroon for Fall Semester 2018. Among these students, nine (09) PhD and two (02) Post-Doctoral scholars joined CUI under CUI-TWAS Fellowship Program. A hundred and ten (110) Afghan students completed their zero semester at Abbottabad Campus and seven (07) International students including two ACU scholars graduated. Besides, five new research papers have been published by the foreign students.



SCIENCE: A COMMON HERITAGE OF MANKIND

by Farhana Saleem

Human beings have over the millennia established themselves as the most intelligent species on the planet that has not only resulted in its survival and development but also is clearly manifested in the pace of its evolution and the intellectual growth. The wonders of S&T that seemed incredible as recently as a century ago now seem quite mundane and unremarkable. With each wonder of science becoming a norm, the frontiers of S&T expand further and further.

The space race of 1960s provided an unprecedented desire for technological supremacy among super power. However, the advances in space technology also broadened the technological horizons for the competing states benefitting the masses in all walks of life. For instance, NASA today is a source of a number of innovations that are benefitting citizens in daily lives.

The potential of S&T to solve socio-economic issues have long been recognized. Humanity is the primary beneficiary of S&T and scientific thought. Be it innovations in existing processes or methods or discovery, operationalization and mainstreaming of diseases eradicating substances, humanity's dependence on S&T is undeniable. Smallpox was eradicated by means of an individual's scientific thinking and experimentation and the concept of vaccination has since formed the backbone of healthcare. Polio vaccine and discovery of penicillin have improved humanity's survival chances exponentially in last century or so. Advances in transportation and telecommunications have reduced distances at a remarkable pace in last few decades.

Such examples, leave very little doubt in the remedial character of science for

individuals and societies. The globe today presents a whole spectrum of level of national and regional development as well as the distribution of important scientific resources. The nations and regions that have built and harnessed their scientific resources and invested in science are reaping due benefits and are better equipped to deal with present and future challenges. Conversely, there are those who seem to be tangled in a vicious cycle of under-development due to their inability to either recognize or adopt S&T as panacea to many of their issues. This is why even at this modern day and age, advocacy of science still remains a major point of concern for those who want to create a world with equitable resource sharing among societies, especially those relating to S&T.

One such entity is the Commission on Science and Technology for Sustainable Development in the South (COMSATS) that has the mission to "help create a world where all nations 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 resources." For over 24 years, COMSATS has remained committed to its cause and has been trying to build in member states the societies that are conscious of the role of science in alleviating poor socio-economic conditions and also to encourage sharing and pooling of resources in this connection. Collaborations, networking and synergies being established in the North and the South aide the organization's efforts towards a better world through S&T.

COMSATS' programs in member states, including Pakistan are testimonials of its due diligence to its cause. Established in 1994, COMSATS now stands 27 member states and twenty-two network

member strong. The organization's programmes have benefitted these resource challenged countries in a number of fields relevant to their national and social needs.

Major source of COMSATS' scientific and technological strength lies in its Network of International S&T Centres of Excellence that contribute in a number of ways in facilitating the organization's efforts for the socio-economic uplift of the member countries. The programmes are formulated respecting social, economic and environmental aspects hence remaining true to the principles of sustainable development. Special attention is given to build indigenous capacity and competence in the emerging sciences and technologies and necessary support is rendered to the technological revolutions in the areas of education, health, and energy.

The thematic areas selected in close consultation with the Member States and Centres of Excellence are: Information and Communication Technologies (ICTs); Internet Security; Natural Products Sciences; Agriculture, Food Security and Biotechnology; Climate Change and Environmental Protection; Nanotechnology; Materials Science; Mathematical Modeling; Construction Materials; Renewable Energies; Science Diplomacy; and S&T Policy and National Innovation Systems.

In Pakistan specifically, COMSATS' three remarkable initiatives have gained recognition for all the right reasons over the years. A major reason was the need based and humanitarian approach driving these initiatives. Realizing that there was no Internet related infrastructure in Pakistan, the organization established COMSATS Internet Services (CIS) in 1996, which is currently providing services to 19 major cities of the country. With regional lead

in ICTs, CIS is offering social service to the country by facilitating COMSATS' Telehealth (CTH) Programme that started in 2001. Subsequently, patients at the tele-health clinics established in Skardu and Zhob were provided specialist medical consultations in Dermatology, General Medicine and Gastroenterology, with the help of audio-visual and peripheral tools. Another project of CTH is currently providing outpatient facilities and capacity-building of health professionals through telehealth clinics located in Mansehra, Sawabi, Mardan, Multan, Quetta and Gawadar. More than 55000 online consultations have been carried out through telehealth system.

In 1998, after due assessment of human resource need in the country from the experience of then nascent CIS, COMSATS University Islamabad (CUI) was established as one of its kind institute, COMSATS Institute of Information Technology (CIIT). With phenomenal growth in a short span of time, the University stands tall as a public sector HEI with 7 campuses in Pakistan. The University offers merit, need-based educational funding as well as accommodates a number of foreign students from COMSATS' member states and other countries on scholarships.

Bilateral and multilateral joint research under COMSATS International Thematic Research Groups (ITRGs) brings together scientists and experts belonging to various developing countries to conduct research in key areas of development with bearing on the well-being of masses. These include: information and communication technologies; agriculture, food security and biotechnology; natural products sciences; renewable energy; mathematical modeling; and climate change and environmental protection. Apart from joint research projects, COMSATS' ITRG programme provides

a platform for expert-exchange and sharing of laboratory resources among the member institutions. Moreover, opportunities of short-term trainings are provided to the group members in order to build their capacity in the target area and enable them to perform their research assignments more effectively.

COMSATS has been actively supporting the capacity building of the developing countries. More than 300 capacity building events have been organized in various member countries in the fields such as agriculture and food security, climate change, cyber security, repair and maintenance of scientific instruments, industrial research, health, ICTs, renewable energy, etc. Various policy dialogues have also been organized by the organization to promote to policy makers S&T as a tool for development, to facilitate of its adoption for benefit of all.

With horizons fast expanding towards North and firmly grounded in its devotion to development of the South, COMSATS sets an excellent example of extending the gains possible from S&T and R&D equitably throughout the globe. As it is rightly said that science is a common heritage of mankind – and so should be its gains.

A significant happening during the reporting period of this newsletter also pertains to achievements that have conferred the greatest benefit to mankind. The Nobel Prize 2018 acknowledged and scientivized 12 able minds this October.

Laureates of Nobel Prize 2018

Physics

The Nobel Prize in Physics 2018 was awarded "for groundbreaking inventions in the field of laser physics" with one half to Arthur Ashkin "for the optical tweezers

and their application to biological systems" and the other half jointly to Gérard Mourou and Donna Strickland "for their method of generating high-intensity, ultra-short optical pulses".

Chemistry

The Nobel Prize in Chemistry 2018 was awarded with one half to Frances H. Arnold "for the directed evolution of enzymes" and the other half jointly to George P. Smith and Sir Gregory P. Winter "for the phage display of peptides and antibodies."

Physiology and Medicine

The Nobel Prize in Physiology or Medicine 2018 was awarded to James P. Allison and Tasuku Honjo "for their discovery of cancer therapy by inhibition of negative immune regulation." The Laureates have shown how different strategies for inhibiting the brakes on the immune system can be used in the treatment of cancer. Their discoveries are a landmark in our fight against cancer.

Peace

Both laureates have made a crucial contribution to focusing attention on, and combating, war crimes. Denis Mukwege is the helper who has devoted his life to defending these victims. Nadia Murad is the witness who tells of the abuses perpetrated against herself and others. Each of them in their own way has helped to give greater visibility to war-time sexual violence, so that the perpetrators can be held accountable for their actions.

Economic Sciences

The Prize in Economic Sciences 2018 has been awarded to William D. Nordhaus "for integrating climate change into long-run macroeconomic analysis" and Paul M. Romer "for integrating technological innovations into long-run macroeconomic analysis." Their findings have significantly broadened the scope of economic analysis by constructing models that explain how the market economy interacts with nature and knowledge.

(Source: <https://www.nobelprize.org/nobel-prizes-2018/>)

S&T AND DEVELOPMENT NEWS FROM MEMBER STATES

Philippines Sets-Up Its First Blockchain R&D Laboratory

The Ateneo de Manila University in Quezon City, Philippines, and a blockchain-powered healthcare startup MediXserve together launched Philippines's first blockchain research laboratory, the AMBERLab (Ateneo-MedixServe Blockchain Education and Research Laboratory) on October 22, 2018 (*Rappler, 22nd October 2018*).

The laboratory located in Ateneo de Manila University's CTC building will serve as a think-tank and advanced research center that will examine blockchain technology for developing countries and initiatives in the private sector.

AMBERLab will design and build prototypes; serve as an incubation center for blockchain-based startups; provide training on blockchain technologies; accept research proposals on the use of blockchain technology; and build a community of academia, private sector, government, and NGOs for sharing knowledge and best practices in technology, health, finance and insurance, government, economics, and social enterprises.

Uganda and UAE to Establish Agriculture Investment Zones

Uganda has signed an agreement with UAE to create free zones on agricultural investments and food security in an attempt to enhance food security in the Emirates (*The National, 29th October 2018*).

Currently, UAE imports 90% the food it consumes and in 2017, imports from Uganda amounted to about US\$ 14 million. Uganda exports fish, milk and other dairy products to the UAE besides gold. This Agreement will promote agribusiness between the two countries and lead to an increase in UAE imports of Ugandan crops and beef. It is also expected that the 2,500-hectare free zone will attract investment from companies in agricultural processing and packaging for export.

Egyptian State Contractor to Build Stiegler's Gorge Dam in Tanzania

An Egyptian state-owned contractor has been chosen to design and build a 2.1GW dam on the Rufiji River in Tanzania (*Global Construction Review, 26th October 2018*). Egyptian President

Abdel-Fattah al-Sisi, who laid the project's foundation stone, expressed hope that the dam will become a model for cooperation between African states and will bring pride to Egypt, Tanzania and Africa.

A report of World Wide Fund for Nature (WWF), released last year, estimated the cost of the dam at US\$ 3.6 billion. In May, Tanzania considered allocating more than US\$ 300 million to the scheme, about 40% of the country's federal budget. At present, around 37 million of Tanzania's 54 million people have no access to mains electricity. If built, the dam would more than double the country's installed generating capacity.

Useful CSR Initiative of Bangladesh Improves Water Quality

The British American Tobacco (BAT) Bangladesh has won the Bangladesh Innovation Award under SDG Inclusion category (*United News of Bangladesh, 31st October 2018*). Bangladesh Brand Forum has initiated Bangladesh Innovation Award to honour best innovative companies of the country. BAT Bangladesh launched 'Probaho' which is a CSR initiative whereby pure drinking water is brought to arsenic-prone areas. The groundwater in many villages of Bangladesh is contaminated with arsenic, sometimes reaching levels as high as 1-2 mg/L whereas, WHO has fixed the acceptable levels of arsenic in water to be 0.01 mg/L. The groundwater is extracted through 73 water filtration plants which run a purification process where arsenic, iron, manganese, phosphates and other impurities are neutralized before the water is distributed to people. The filtration plants are known to purify approximately 350,000 liters of drinking water every day.



AMBERLab Leaders and Partners Show Symbolic Chain at the Launching. Photo Credits: Gelo Gonzales / Rappler.com

SCIENCE, TECHNOLOGY AND DEVELOPMENT

Breakthrough in Treating Paralysis

Targeted neurotechnology restores walking in humans with spinal cord injury (*ScienceDaily, October 31, 2018*). According to the report, patients with chronic paraplegia were able to walk, thanks to precise electrical stimulation of their spinal cords via a wireless implant. Perhaps, the Swiss scientists who introduced this technique showed that, after a few months of training, the patients were able to control previously paralyzed leg muscles even in the absence of electrical stimulation. This recent study, called STIMO (STImulation Movement Overground), has established a new therapeutic framework that could aid recovery process from spinal cord injury. All patients which took part in the study recovered voluntary control of leg muscles which were previously paralyzed for many years. Neurological function was shown to persist beyond training sessions even when the electrical stimulation was turned off. The method involves implants of array of electrodes over the spinal cord which allows targeted individual muscle groups in the legs.

The startup GTX medical, co-founded by Courtine and Bloch, as next line of actions, shall use these outcomes to develop tailored neurotechnology for use in hospitals and clinics.

Simple Stickers for Health Monitoring

A study as advanced by Purdue University researchers has revealed a sticker solution to monitoring health (*www.eurekalert.org, October 16, 2018*). They have made "smart stickers" (both biocompatible and breathable) out of cellulose that can be used to monitor physical activity and alert a wearer about possible health risks in

real time. Health professionals could use the Purdue stickers as implantable sensors to monitor the sleep of patients because they conform to internal organs without causing any adverse reactions. Athletes could also use the technology to monitor their health while exercising and swimming.

The technology is patented through the Purdue Office of Technology Commercialization. The low cost of these wearable devices and their compatibility with large-scale manufacturing techniques will enable the quick adoption of these new fully disposable, wearable sensors.

Smart Solutions for Batteries and Water Purification

One of the challenges in creating smaller and compact devices these days, such as wearables and phones, is that the batteries can take up a lot of room. Also traditionally, 3D-printed lithium-ion batteries used in this kind of printing aren't ionic conductors. A team of researchers led by Christopher Reyes and Benjamin Wiley infused the polylactic acid (PLA) usually used in 3D printing with an electrolyte solution creating custom-sized lithium-ion batteries (*www.engadget.com, October 17, 2018*). The researchers also incorporated graphene and carbon nanotubes into the design of the case to help increase conductivity. After these design modifications, the team was able to 3D print an LED bracelet, complete with a custom-sized lithium-ion battery. Although the research is still in preliminary stage, improvement is ongoing to standardize it.

In a different vein, scientists at the Nanyang Technological University, Singapore (NTU Singapore) led by Assistant Professor Pham Quang Cuong and his team at NTU's Singapore Centre for 3D Printing, developed a

new technology that allows two robots to work simultaneously to 3D-print a concrete structure (*www.techexplorist.com, October 2, 2018*). Also known as swarm printing, the NTU robots 3D-printed, a concrete structure measuring 1.86m x 0.46m x 0.13m in eight minutes. Multi-step process was adopted which begins by having the computer map outline to be printed and assign a specific piece of the printing to a robot.

This technology can be advanced to incorporate other aspect of the industries through combined innovative technologies in robotics, AI, material sciences and green manufacturing techniques.

Ion-Based AI Makes Smart Decisions

Japanese scientists have invented an ionic device that can make decisions based on electrochemical phenomena (changes in ionic or molecular concentrations) (*AsianScientist, October 24, 2018*).

A team of researchers led by Professor Takashi Tsuchiya of the National Institute for Materials Science, Japan, developed an AI system that relies on ions to function. When the device makes a correct decision, the ions move towards the electrode associated with the decision. Repeated correct decisions cause a variation in ionic and molecular concentrations to reinforce the decision.

The research group applied this mechanism to a congested radio communication network and was successful in showcasing that the device can select optimum communication channels. Going forward, the researchers hope to develop this technology into high-performance devices for industrial use.

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 (100) scholarships for students/researchers for postgraduate studies and ten (10) for post-doctoral fellowships at all campuses of COMSATS University Islamabad (CUI), Pakistan.
- Ten (10) doctoral scholarships/post-doctoral fellowships at the International Center for Chemical and Biological Science (ICCBS), Pakistan.
- Five (05) post-doctoral fellowships at the National Research Centre (NRC), Egypt.
- Postgraduate Scholarships and Post-doctoral Fellowships at International Centre for Climate and Environment Sciences (ICCES), China, and PFIIF programme.
- One (01) 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 and farhan@comsats.org.

Selected Forthcoming Scientific Events in COMSATS' Countries

- 18- 20 Dec. 2018 MEPCON — 2018 Twentieth International Middle East Power Systems Conference
Cairo, Egypt
(www.mepcon.org)
- 27-28 Feb. 2019 CARES2019 — Central Asia Renewable Energy Summit 2019, Astana, Kazakhstan
(www.renewableasia.org)
- 26-28 March 2019 IREC'2019 — The 10th Int'l Renewable Energy Congress, Sousse, Tunisia
(www.irec-conference.com)
- 27-28 March 2019 NISS19 — International Conference on Networking, Information Systems & Security
Rabat, Morocco
(www.medi-ast.org)

COMSATS Network of Centres of Excellence



BCSIR-Bangladesh
www.bcsir.gov.bd



Embrapa Agrobiologia-Brazil
embrapa.br/grobiologia



ICCES-China
english.icces.ac.cn



TIB-China
english.tib.cas.cn



CIF-Colombia
www.cif.org.co



NRC-Egypt
www.nrc.sci.eg



CSIR-Ghana
www.csir.org.gh



IROST-Iran
www.irost.org



ICENS-Jamaica
www.icens.org



KazNU-Kazakhstan
www.kaznu.kz/en/



RSS-Jordan
www.rss.jo



ICCBS-Pakistan
www.iccs.edu



NMC-Nigeria
www.nmcabuja.org



CUI-Pakistan
www.comsats.edu.pk



AQU-Palestine
www.alquds.edu/en



UCAD-Senegal
www.ucad.sn



ITI-Sri Lanka
www.iti.lk



IRCC-Sudan
www.ircc.gov.sd



HIAST-Syria
www.hiast.edu.sy



TIRDO-Tanzania
www.tirido.org



CERTe-Tunisia
www.certe.nrnt.tn



TÜBITAK MAM-Turkey
www.mam.gov.tr

Honourable mentions: Mr. Tila Mohammad, Mr. Kehinde Musodiq Sanni, Mr. Anya Augustine Igwebuike and Mr. Anaz Muazu



Contributions from readers are welcome on any matter relevant to the mission of COMSATS, namely the promotion of South-South cooperation in science and technology for sustainable progress of the developing countries. The responsibility for the accuracy of any information rests with the original source. Views expressed in this publication do not necessarily reflect those of its editors, publisher or COMSATS.



COMSATS Secretariat
Shahrah-e-Jamhuriat, G-5/2
Islamabad - Pakistan
Tel: (+92-51) 9214515 to 17
Fax: (+92-51) 9216539
Email: comsats@comsats.org
URL: www.comsats.org