COMSATS Newsletter

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

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COMSATS and the South Centre-Geneva signed an MoU on South-South and Triangular Cooperation; the two sides also discussed matters related to mutual cooperation (page 02).

Inside this Issue

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From the Executive Director's Desk

Development is an idea that has been important for human as a species since its existence on the planet. While the term has a number of epistemic origins and interpretations, in anthropological context 'development' is perhaps best described by its definition from Cambridge Dictionary, according to which development is 'the process of coming into existence or of creating something new or more advanced'.[1)]

Going way beyond the concerns of mere existence over the millennia, the very context of development has evolved over the century, so have the narratives surrounding it. A century earlier, nations picking themselves up from devastating effects of war and surviving recession may have dominated the global narrative of development, the range of associated issues and concerns, however, have expanded and developed greatly since.

Knowledge acquisition and its use for national and group interests were also important for nations a century ago, however its expansion, depth and indispensability has grown more evident and undeniable in recent decades, from foreign policy matters on trade, peace and regional stability to collaborations and cooperation for Big Science for finding answers to elusive mysteries of the cosmos, and addressing through Global Governance common problems that are faced by humanity, such as climate change, food insecurity, water scarcity, etc.

While the dream of effective Global Governance remains largely unrealized, major efforts for and discussions on regional and international cooperation still bear hope for humanity, especially while faced with big calamities such as the one that currently befalls Pakistan and parts of South East Asia in the form of unprecedented floods. Secretary-General UN, António Guterres, has rightly pointed out, "South Asia is one of the world's global climate crisis hotspots. People living in these hotspots are 15 times more likely to die from climate impacts".[2)]

Still on its way to recovery from the setbacks from COVID-19 Pandemic, Pakistan is currently under great duress in terms of lives and crops lost, millions displaced, daunting rescue and rehabilitation challenges that are likely to continue for months to come, and looming threats of arising health issues and scarcity of basic necessities.

[1)] https://dictionary.cambridge.org/dictionary/english/development
[2)] https://www.un.org/sg/en/content/sg/statement/2022-08-30/secretary-generals-video-message-flash-appeal-support-of-pakistan-flood-response-plan-for-pakistan

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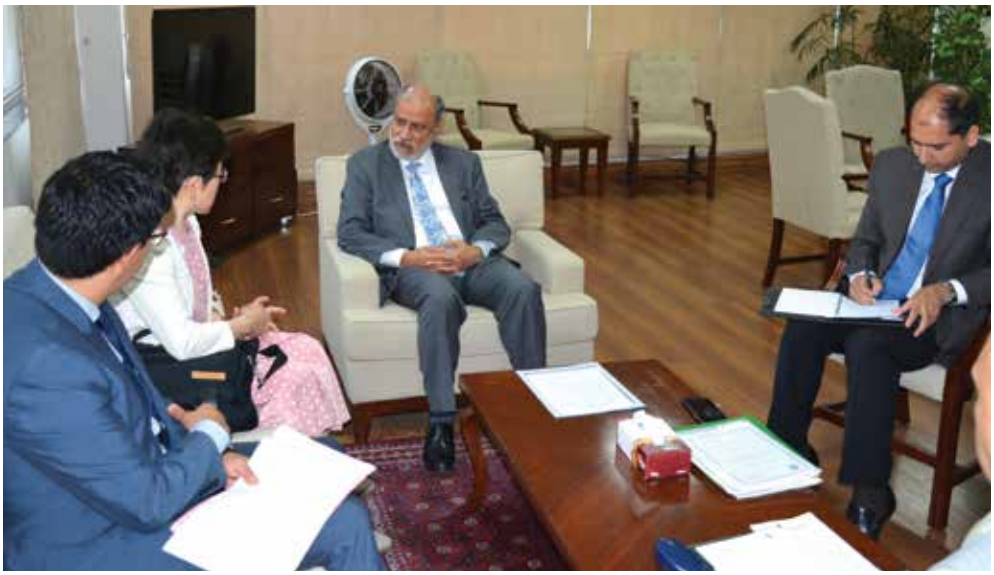
International Cooperation and Outreach

South Centre, Geneva, Switzerland

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

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

The South Centre's officials were in Islamabad in connection with an initiative that the Centre is patronizing in collaboration with Islamic Development Bank (IsDB) to institutionalize South-South and Triangular Cooperation (SSTrC) from Pakistan that constituted major part of discussions during the meeting. Prof. Li briefed the participants about national entity envisaged by the South Centre and IsDB to be established in Pakistan to promote SSTrC. As a development finance expert, she shared her assessment on Pakistan's national ecosystem for undertaking such an initiative and explained the proposed functions.



Prof. Li also expressed satisfaction on the consultative meeting organized by the Ministry of Foreign Affairs, on 23rd August 2022, where different stakeholders, including COMSATS' representatives, exchanged views and held meaningful discussions on the draft charter of the proposed national entity.

Prof. Li explained the scope of this national entity being inter-disciplinary, however science and technology would remain an important area for outward SSTrC. Prof. Li added that this agency will play an important role in facilitating various stakeholders for SSTrC. Acting as a hub and information resource, it would also provide one window operations on relevant cooperation prospects.

Dr. Memon extended support of his Ministry as well as COMSATS for relevant policy making to facilitate SSTrC.

COMSATS and South Centre also agreed to collaborate for observing South-South Cooperation Day 2022.

Islamic Organization for Food Security (IOFS), Kazakhstan

A technical meeting was held with the Islamic Organization for Food Security (IOFS), Kazakhstan, on 16th August 2022, with a view to explore prospects of cooperation in areas of mutual interest and regional and global significance.

Dr. Ismail Abdelhamid, Director of Programmes and Projects Office; Mr. Abdula Manafi Mutualo, Senior Liaison Officer; and Ms. Raushan Kumekbayeva, Manager Coordinator, participated from IOFS' side, whereas, COMSATS was represented by Dr. Mehwish Durrani, Additional Director (Programmes); Dr. Huma Balouch, Deputy Director (Programmes); and Mr. Saifullah Khan Dilazak, Programme Officer.
During the meeting, the two sides introduced their organizations with

respect to core areas of work, and ongoing programmes and activities. In order to meet the national needs and address global concerns relating sustainable and inclusive growth, it was proposed that joint projects in food security and climate change may be launched. For the realization of the same, it was agreed that a Memorandum of Understanding would be inked in the near future and an Action Plan would be formulated to help achieve common objectives.

Alliance for Affordable Internet (A4AI), USA

A two-member delegation of the Alliance for Affordable Internet (A4AI), Washington, comprising Ms. Onica Makwakwa, Regional Head of Africa; and Ms. Anju Manga, Regional Head of Asia and Pacific, visited COMSATS Secretariat, on 19th August 2022. The visiting delegates held a meeting with Mr. Irfan Hayee, Additional Director (Programmes); Mr. Nisar Ahmad, Additional Director (Systems); and Engr. Qaiser Nawab, Assistant Director (Programmes) with a view to explore and break grounds for cooperation in areas of mutual interest.

During the meeting, Mr. Hayee acknowledged A4AI's interest in collaborating with COMSATS and briefed them about COMSATS' mission, core areas of work, as well as organizational framework. Mr. Hayee hoped that COMSATS could benefit from the advocacy activities of A4AI and learn from its programmatic endeavors in Asia, Africa, and Latin America.

Introducing A4AI as a global coalition, Ms. Makwakwa mentioned that it is working to increase Internet affordability and access in low and middle-income countries through policy reforms and regulatory frameworks. Ms. Makwakwa also highlighted Alliance's activities and achievements in the African region.

The visiting delegation appreciated COMSATS' endeavors and expressed willingness to build synergy through formalization of an agreement.

Ambassador of Indonesia to Pakistan

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

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

South and Triangular cooperation for regional development.

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

Capacity-Building Events

Webinar on 'Industry 4.0 driven Climate-Smart Agriculture'

COMSATS Centre for Climate and Sustainability (CCCS) organized a webinar titled 'Industry 4.0 Driven Climate-Smart Agriculture: Challenges and Opportunities for Developing Countries', on 24th August 2022. Speakers from organizations and institutions working in areas related to food security, agriculture and climate research domains in Asia, Africa and Europe participated in the webinar that attracted over 70 participants from 23 countries.

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

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

transformation of agriculture and food sectors. He also shared ICARDA-led integrated innovations for climate smart agriculture.

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

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

Dr. Stephen Yeboah, Senior Research Scientist (Agroecology/Agronomy) at the Crops Research Institute, Council for Scientific and Industrial Research (CSIR), Ghana, apprised that CSIR-Ghana is helping farmers in exchanging their own site-specific knowledge on climate smart practices based on model-driven integrated system contributing to self-generated data on soil, crop management, and production.

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

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

Closing the event, Dr. Huma Balouch, Deputy Director, (Programmes) COMSATS, stressed that an enabling environment and institutional partnerships through multi-sectoral and inter-ministerial collaborations are vital for achieving industry driven climate smart agriculture.

Workshop on 'Green Biomanufacturing of Bio-based Materials'

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

Welcoming the participants at the opening ceremony, Prof. Dr. Jibin Sun, Director of CCIB/Deputy Director-General of the Tianjin Institute of Industrial Biotechnology (TIB), considered emergence of bio-based materials an important research area that can aide green and low-carbon infrastructural development while remaining sensitive to the global needs and demands for sustainable growth. In his opening remarks, Dr. Ghulam Muhammad Memon, Executive Director COMSATS, highlighted the importance

of bio-based materials in different sectors of the economy. He suggested having a coherent strategy for developing a bio-based economy that could effectively respond to pressing global challenges, such as climate change, resource management, global health, and food security.

During the technical proceedings, a keynote talk on 'Halomonas spp. as Super Microbial Cell Factories and Next Generation Industrial Biotechnology' was delivered by Prof. George CHEN Guo-Qiang, Professor at the Center of Synthetic and Systems Biology of Tsinghua University, China. It was followed by following talks and lectures: Living Materials Programmed by Life by Prof. ZHONG Chao, Shenzhen Institute of Advanced Technology (SIAT), Chinese Academy of Sciences (CAS), China; Biosynthesis of Polyhydroxyalkanoates (PHA) and its Applications as Drug Carrier and Food Packaging Material by Dr. Farha Masood, Associate Professor at the Department of Biosciences, COMSATS University Islamabad (CUI), Pakistan; Monomaterials—Biosynthesis of Succinic Acid by Dr. ZHU Xinna, Associate Professor, TIB, China; and Biosynthesis of Organic Acids and Amines as Monomers for Polymer Materials by Dr. WANG Dan, Associate Professor at the School of Chemistry and Chemical Engineering, Chongqing University, China.

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

Fourth Phase of ANSO-BIDI School

Utilizing the platform of ANSO-BIDI Institute Network, the Chinese Alliance of International Science Organizations (ANSO) teamed-up with other members of the Network including COMSATS and the Center for Environmental Economics of the University of Chinese Academy of Sciences (CEE-UCAS) to organize Fourth term of ANSO-BIDI School on 'Innovation, Sustainable Development and Leadership Enhancement'.

The online training, which ran from 4th May to 13th July, was divided into nine (09) weekly modules wherein subject experts and academics from renowned universities of Belgium, Canada, China, Switzerland and United States trained over 150 participants from various countries. Course beneficiaries also included 50 trainees from Egypt, Kazakhstan, Nigeria, Pakistan, and Sudan that were nominated by COMSATS Secretariat.

A number of topics were covered during the training that included: Sustainability, Technology and Social Science; Accelerating Resilience of Industrial Regions to Pandemic and other

Disruptions; Financing Sustainability; Valuing Supply Chain Responsiveness and Resilience: Implications for Sustainable and Ecological Economics; Disruptive Technologies: The Case of Autonomous Vehicles; and the Supply Effects of COVID-19 and Responses to the Pandemic. Active discussions and Q&A sessions during the modules facilitated exchange of ideas and knowledge-sharing.

Participation in Fora

South Centre – IsDB Consultative Meeting at MoFA

A Consultative meeting was hosted by Pakistan's Ministry of Foreign Affairs on 23rd August 2022 that gathered a number of stakeholders for consultation on establishing an entity in Pakistan to institutionalize South-South and Triangular Cooperation (SSTrC). This activity was a part of the study to assess the national ecosystem of Pakistan for South-South and Triangular Cooperation (SSTrC) and also review the proposed charter of the SSTrC entity.

This planned institution is being patronized by the Islamic Development Bank (IsDB) and the South Centre. The Pakistan's Ministry of Foreign Affairs (MoFA), is providing administrative support to the patronizing institutions for engaging with relevant stakeholders in Pakistan. In this respect, as a result of ongoing consultations between IsDB and MoFA, the South Centre was invited to be the main implementing and lead agency for the project.

As a long-established agent and actor of South-South and Triangular cooperation based in Pakistan, COMSATS was made a part of the consultative process. Two Additional Directors (Programme) - Mr. Irfan Hayee and Dr. Mehwish Durani represented COMSATS at the consultative meeting that also had participation of a number of government departments and ministries, in particular Economic Affairs, Finance, Planning and Development, Health, Commerce, Industries and Production, Science and Technology, and Intellectual Property.

During the meeting, Prof. Yuefen Li, Senior Adviser, South-South Cooperation and Development Finance, the South Centre, presented 'Draft Assessment Report of Pakistan's National Ecosystem for South-South and Triangular Cooperation and International Development Cooperation' seeking feedback. The participants discussed the draft assessment report and reviewed its different aspects.

IsDB has made efforts in mapping areas of Pakistan's comparative advantage for creation of the planned institution, which is being considered as a dedicated autonomous entity to provide services for strengthening South-South and triangular cooperation, particularly for outward SSTrC.

During the meeting, Prof. Li also made presentation on 'Consultative Paper on Charter Document on Establishing Pakistan's National Entity for South-South and Triangular Cooperation' with a view to seek consultation and fine tune the Charter thereafter. She explained the various functions of the SSTrC entity which is primarily to act as a central hub for South-South and triangular cooperation in Pakistan.

National Meet on SDGs (2022)

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

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

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

Highlights from COMSATS Telehealth (CTH)

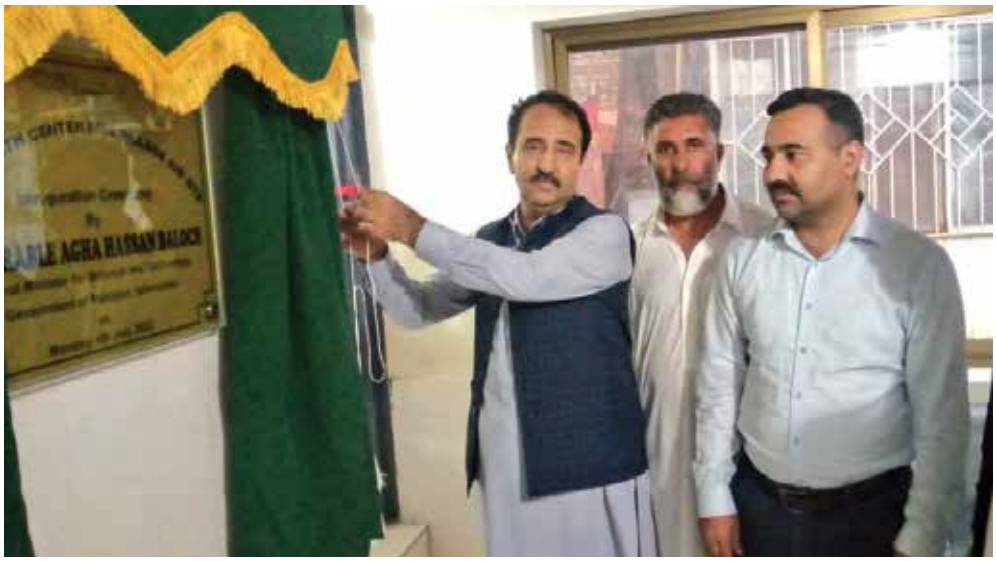
Three Basic Health Units (BHUs) launched by COMSATS Internet Services (CIS) were inaugurated by H.E. Mr. Agha Hassan Baloch, Federal Minister for Science and Technology, Government of Pakistan, on 4th July 2022. These BHUs established at Village Aid Quetta, Ashkan Rodani Mastung, and Rokjo Noshki districts were inaugurated in a ceremony that was attended by CIS representatives including its Chief Operating Officer, Mr. Nasir Jamal Khan. The ceremony was also witnessed by locals, government officials, DSM, DHO, Assistant Commissioner and Deputy Commissioner of the respective districts.

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

On 26th August 2022, Dr. Ghulam Muhammad Memon, Executive Director COMSATS, made a maiden visit to COMSATS Telehealth (CTH) Resource Centre housed at COMSATS Internet Services (CIS) Technology Park.

Reviewing the CTH set-up and facilities, Dr. Memon took great interest in the operations of the Resource Centre and considered the system a beneficial tool for providing healthcare to people in remote communities of Pakistan.

On the occasion, Dr. Azeema Fareed, Additional Director Health at COMSATS Secretariat and In-charge COMSATS Telehealth Programme, emphasized the need to replicate this service in other provinces of Pakistan under the patronage of the Federal Ministry of S&T.



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Pakistan is the eighth most vulnerable nation to the climate crisis, according to the Global Climate Risk Index and the ongoing climate crisis the country is experiencing only further validates the projection. While the World views the catastrophe sympathetically and comes forward to help, it is also time to take a wholesome stock of the situation. Many of the climate vulnerable countries contribute the least to global GHG emissions to which we attribute most climatic calamities under rising global temperatures and Climate Change. Apart from the natural causes expedited by any number of reasons, negligence of the need for anticipation, preparedness, resilience building at policy and governance levels, aided by modern S&T and R&D tools would always result in greater setback. This is evident from developing countries' response to natural disasters and other challenges of global scale, such as COVID-19 Pandemic that took the world by storm, especially in 2019 and 2020.

COMSATS makes efforts to shape its activities around the existing and arising needs of its member states, most of which have many common needs and are most vulnerable to Climate Change. An active agent for cooperation and awareness-raising in the recent years has been COMSATS Centre for Climate Change (CCCS) that has been engaging with key institutions in the South to take necessary debates forward. An efficacious activity on Climate Smart Agriculture held in August by the Centre touched upon some key aspects of sustainable development and Climate Change being the needs of the hour.

Reports on the same and other activities adorn the pages of this issue, including interactions with officials from the South Centre-Geneva, Pakistan's Foreign Office, and the Islamic Organization for Food Security (IOFS) – Kazakhstan. Other important developments at Secretariat's end, including trainings, webinars, visits and meetings, and important developments at scientific and technological fronts from COMSATS Member States and Centres of Excellence, have also been presented in this issue for information of current and prospective partners of COMSATS interested in joining its mission of Science-led Sustainable Development.

As always, feedback on this issue and COMSATS' scope of work is welcome.

SOME ACTIVITIES OF COMSATS' CENTRES OF EXCELLENCE

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

The International Center for Climate and Environmental Sciences (ICCES), China, co-hosted an international training workshop on 'Increase Capability on Gaps and Challenges of Sub-Seasonal to Seasonal Climate Prediction in Thailand' (INCAP2022) with Hydro-Informatics Institute (HII), Ministry of Higher Education, Science, Research, and Innovation (MHESI) of Thailand. Held on 10th and 11th August 2022, the two-day training workshop was physically and virtually attended by 120 participants from Canada, Thailand, Kenya, Tunisia, Rwanda, Pakistan, Nigeria, Tanzania, Bangladesh, Myanmar, and China.

The training workshop provided fundamental information of sub-seasonal to seasonal (S2S) climate prediction, showcased evidence, case studies, tool and approaches that can support decision making, policy and planning for climate and water resource management at S2S time scale. Lecturers from Canada, China and Thailand covered various aspects of the theme and shared local and international experiences on S2S. During the second day of the training, Prof. LIN delivered a lecture on 'CAS-ESM based S2S prediction system and its application for predictability study and real-time prediction' during which he introduced the framework structure of CAS earth system model, as well as the sub-seasonal to seasonal prediction system, which has been widely applied for the prediction of climate disasters in China, Thailand and other developing countries.

Researchers at TIB-China Produce Aqua Feed from Industrial Exhaust Gases

Rapid development of aquaculture requires a rigid increase in feed consumption that heavily depends on wild-captured forage fish, which is unsustainable, costly and less eco-friendly. Finding solutions to these, a team of Chinese researchers from Tianjin Institute of Industrial Biotechnology (TIB) and Institute of Feed Research of the Chinese Academy of Agricultural Sciences have systematically reviewed the application and potential development of industrial exhaust gas in producing aquaculture feed protein.

The potential of one-carbon gas protein (C1GP), a protein that is produced by putting substrates from carbon-related industrial exhaust gases through a bacterial fermentation process, is being explored. C1GP can be made with methane, methanol, carbon monoxide and carbon dioxide substrates. Through this technology, the aquaculture industry will be able to produce protein-rich feed ingredients without overexploiting water and land resources, while reducing GHG emissions and waste production.

UTG-The Gambia Conducts Training on Intellectual Property

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

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

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

economy based on human potential to help generate value-added growth.

R&D in Agriculture at CSIR-Ghana

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

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

Scientists at the Savannah Agricultural Research Institute (SARI) of CSIR-Ghana have submitted an application to the National Biosafety Authority (NBA) for approval to release Ghana's first genetically modified crop, Bt cowpea/ beans having an inherent resistance to pest attacks. Release of the Bt Cowpea will complement government's 'Planting for Food and Jobs' programme and lead to attainment of food security.

RSS Develops Device to Harvest Water from Desert Air

A team of researchers at the Royal Scientific Society (RSS) of Jordan has designed a novel atmospheric water harvesting machine to selectively capture and collect humidity from the surrounding air and condense it into liquid water. The machine has been approved under a "rigorous peer-review process" with the results being published in Nature Communications.

The machine uses porous, molecular sponges that are designed to efficiently and selectively capture, concentrate, and condense water vapor from dry, desert air. Once the molecular sponge is full, water is released by increasing the air's temperature. The released water vapours are then condensed to yield liquid water that are filtered and mineralized for human consumption.

The process can be carried out multiple times a day to deliver a continuous supply of clean drinking water which also meets the national drinking standards of Jordan. RSS has registered a worldwide patent to commercialize the device through a spin-off company called AquaPoro Ventures Ltd.

RSS-Jordan holds Policy Dialogue

Within the framework of MINARET project 'The MENA Region Initiative as A Model of Nexus and Renewable Technologies', RSS organised 'High-Level Policy Dialogue' in Tunisia and Lebanon.

The conferences were aimed to put local governance structures at the driver's seat of integrated and innovative climate action, and highlighted cities as the engines of economies and municipalities as the heart of demand-driven resources management.

Side workshops were also convened by RSS under 'Public-Finance for Municipalities' to equip the governance structures with tool and hands-on techniques to make their cities inclusive, safe, resilient, sustainable and climate-friendly. MINARET is being implemented by RSS with the support of the Internationale Zusammenarbeit (GIZ), targeting municipalities in Jordan, Lebanon and Tunisia.

ISTQB Certified Tester-Foundation Level Courses Conducted by RSS-Jordan

In collaboration with the National Software Testing Quality Assurance Center (NSQAC), RSS' Training Centre held two consecutive ISTQB Certified

Tester-Foundation Level (CTFL) courses for employees of the Jordan Payments and Clearing Company (JOPACC). Participants from IT and business backgrounds learnt the fundamental principles of software testing, the role of software testing in the SDLC, the most well-known functional testing techniques, software test management principles, and a brief overview of software testing tools.

KazNU-Kazakhstan Builds Cooperation with ZTE Corporation

On 17th August 2022, Prof. Dr. Zhanseit Tuimebayev, Rector of Al-Farabi Kazakh National University (KazNU), Kazakhstan, held a meeting with a delegation of ZTE Corporation headed by Mr. Weiwei, General Director for ZTE Business Development in the CIS countries.

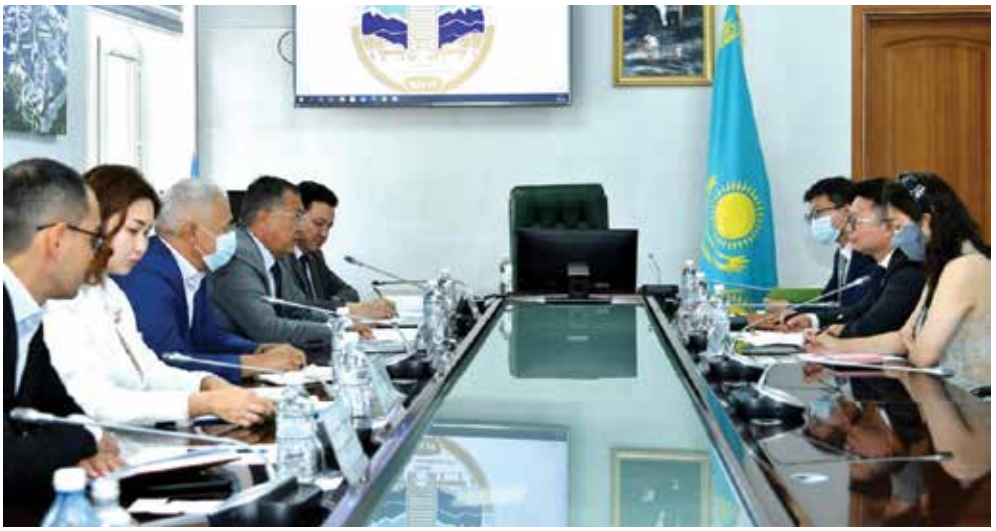
Acquainting the visiting delegates, Prof. Dr. Tuimebayev remarked that KazNU has launched projects on smart technologies, robotics, artificial intelligence and educational laboratory stands and is further interested in implementing various programmes and projects in the field of digital transformation.

While informing about ZTE Corporation, Mr. Weiwei informed that the company provides equipment and services to 140 countries and regions, serving more than 500 telecom operators in the Asia-Pacific region, South Asia, North America, Europe, Latin America, Africa and the CIS.

The two sides expressed willingness to further cooperation in the field of digital transformation.

KazNU-Kazakhstan Awarded Status of Research University

By the decree of the Government



of the Kazakhstan, Al-Farabi KazNU, Kazakhstan, has been awarded the status of a research university in July 2022.

It is the only university in Kazakhstan and Central Asia that has entered top 150 best universities in the world. The main vector of the university's development is its international outreach with more than 500 active international agreements with foreign universities and research centers. Future development plans of KazNU include transformation into a world-class research university as well as promotion into the international educational and scientific space.

Low-Cost Antibacterial Fabric Developed by ICCBS-Pakistan

A team of scientists from Pakistan, including those from the International Centre for Chemical and Biological Sciences (ICCBS), Pakistan, have created an antibacterial fabric that can be used in wound dressing, masks, lab coats, and several types of packaging material. Their research has been published in the journal, *Nature*.

The regular fabric was treated with alkali to create active sites for modification and was then dipped in the chitosan and silver nanoparticles to give it an extra invisible layer. The coating provided protection against microbes but with minimal cytotoxicity. Consequently, the fabric was found to be highly effective in preventing microbial contamination.

Compared to normal fabric in laboratory experiments, the antibacterial patch showed 85 % efficacy in killing bacteria and even prevented it from spreading as a colony.

CUI-Pakistan holds SAC Leadership Dialogue 2022

The International Office of COMSATS University Islamabad (CUI), Pakistan, organized SAC Leadership Dialogue 2022 in collaboration with IEEE Student Society on 27th August 2022. The session helped students enhance their leadership skills; learn about SDGs, entrepreneurship, cooperate and marketing trends; as well as network with professionals.

Collaborations & Partnerships of TÜBİTAK-Türkiye

During the reporting period, different centres and R&D units of the Scientific and Technological Research Council

of Turkey (TÜBİTAK), Türkiye, built and reinforced collaboration in a number of areas. These include:

- A symbolic re-signing ceremony of the Memorandum of Understanding signed between TÜBİTAK and Malaysian Industry-Government Group for High Technology (MIGHT) in 2020 was organized. Prof. Hasan Mandal, President of TÜBİTAK, and Prof. Tan Sri Zakri Abdul Hamid, Co-Chairman of MIGHT (Government Representative) attended the signing ceremony.
- TÜBİTAK ULAKBİM hosted a delegation of the Center for Scientific and Technical Information (CSTI) of Uzbekistan on 4th July 2022. During the meeting, the two sides made presentations subsequent to which an MoU was signed between the two organizations.
- TÜBİTAK UME and the National Metrology Center of Iran – Iranian National Standards Organisation (NMCI-INSO) signed a cooperation agreement on 19th July 2022.
- On 15th August 2022, TÜBİTAK MAM Polar Research Institute (KARE) and the Brazilian Ministry of Science, Technology and Innovation (MCTI) signed an MoU on improving scientific cooperation in Antarctic research.

TÜBİTAK MAM-Türkiye Obtains License for Production of Anti-viral Lozenges

On 4th July 2022, TÜBİTAK Marmara Research Center (MAM), Türkiye, signed an exclusive license agreement with Continental Confectionary Company (CCC) for the "Production of Protective Lozenges/Chewable Tablets Against SARS- CoV-2 Virus".

The intellectual product – Protective Pastille/Chewable Tablet Against SARS-CoV-2 Virus – developed by TÜBİTAK MAM is a food supplement containing various herbal extracts and bee products that prevents viral infection targeting host proteins, strengthens the immune system, is easy to use, has low toxicity, and weakens SARS-CoV-2 virus transmitted through the upper respiratory tract. The product will be produced and sold by CCC against viral infections.

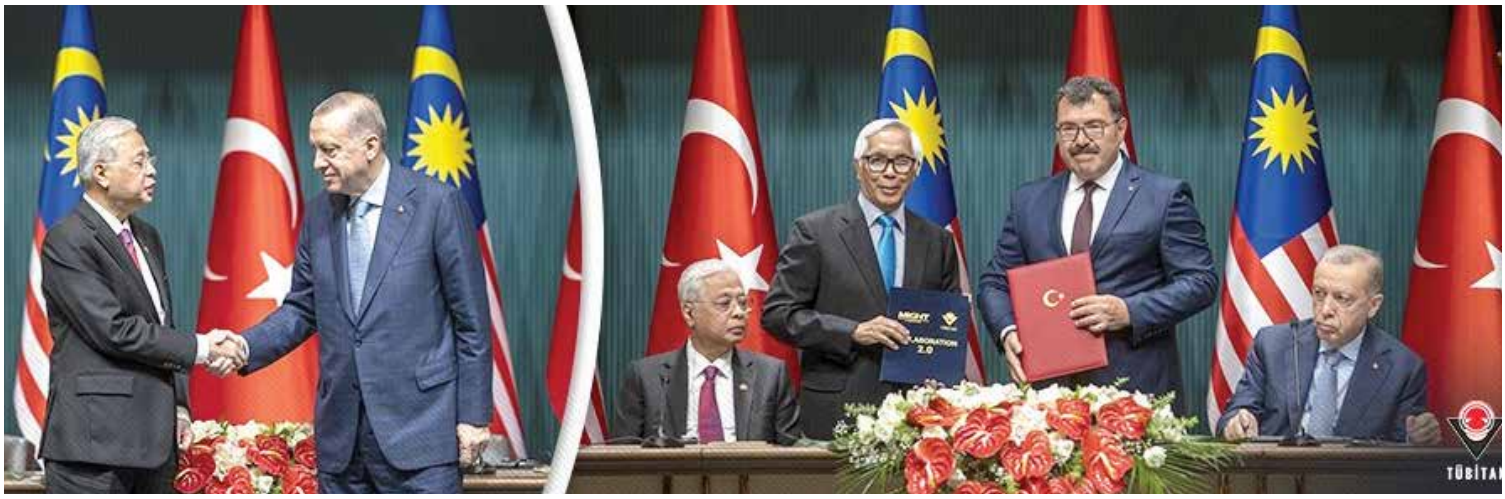
Türkiye's Largest Food Innovation Center Opened by TÜBİTAK MAM

Under Türkiye's Largest Food R&D and Innovation Project, INNOFOOD, a Food Innovation Center and Türkiye Food Innovation Platform (TÜGİP) has been opened at Gebze Campus of TÜBİTAK MAM. The Center will meet the infrastructure needs of the food industry to help carry out result-oriented R&D and innovation studies together. The center provides the most comprehensive R&D studies in Türkiye with its 9 pilot-scale processing lines and research laboratories.

Progress of EuroCC Project of TÜBİTAK ULAKBIM-Türkiye

Within the scope of the EuroCC Project coordinated by TÜBİTAK ULAKBİM, seminars are held to promote the use of High-Performance Computing.
In this context, a two-day EuroCC training event entitled "Artificial Intelligence Applications in Medical Image Understanding", was held jointly by TÜBİTAK ULAKBİM and Sabancı University Center of Excellence in Data Analytics (VERİM) from 6th to 7th August 2022.

The training covered topics on Medical Image on with Deep Learning; Imaging Methods in Radiology; Computational Medical Image Analysis; Automatic Measurement of Proximal Femur Deformities; Data Augmentation in Medical Images with GAN; COVID-19 Detection in CT Images; AI in Medical Imaging; AI in Histopathology.



WOMEN IN SCIENCE

INTERVIEW: PROF. MARIANGELA HUNGRIA, SENIOR RESEARCHER, BRAZILIAN AGRICULTURAL RESEARCH CORPORATION (EMBRAPA), BRAZIL

1. Achieving gender equality for a sustainable future is one of the 17 goals of UN's Global Development Agenda 2030. Seven years into this Agenda, how do you see the progress on global scale and what could be its implications in your view?

It has been 7 years since the launching of UN Global Agenda 2030 and we are still too far from achieving what was planned or what we thought that we could achieve over the years. Indeed, we had some added problems during the Pandemic that made situations go even worse. Even today, in many countries women do not have basic rights. The existing problems related to education and professions got even worse in many countries during the Pandemic. Difficulties arose right from the time when women decided to study and pursue professional careers.

Furthermore, women were the ones to suffer more during the Pandemic in most countries. For instance, more women had to leave their jobs due to added challenges in managing the needs of their children, which includes their day care needs. Therefore, if an employer had to decide between man and a woman for a job, the former got favored because of fewer children related issues the employers associated with them. We are still very far from the equal opportunities culture that we hoped to have at this point in history.

I strongly believe that pursuit of gender parity related goals and targets in UN Global Agenda should be emphasized to help improve the situation.

2. In your opinion, how can a scientific system support women wishing to or pursuing a career in science and what policy interventions does it need to take towards this end?

In my opinion, a major factor in women's career has been the dilemma they face of choosing between being good mothers and being good professionals. Still today, being a mother and a professional, and a scientist all together is very difficult. In many countries, a great number of population is getting old, economically thinking, they need more children and youth to replace the workforce systematically, which should be a strategy for most of the countries. However, not much support is rendered in this direction. So, it is very difficult for mothers that are professionals if they do not have enough childcare facilities.

Considering that women usually have children earlier in their career when they do not earn a lot, they cannot afford too expensive childcare. Governments should give childcare for free so that women have better growth and performance prospects and are able to better contribute to their societies. For instance, in Brazil, if you are a woman and you want to become a scientist or to pursue a master/PhD degree, the fellowship offered is so low that you cannot at all afford to be a mother and to pursue the degree, unless you have support through other means, such as your family to help with that. That is a very strong limitation. Then, of course, we also have other limitations but this (financial) is the major limitation. Another thing is that we need to

address very early on in young girls is their potential to achieve what it takes to be good scientists, good professionals, and how they can tap that potential. In doing so, we encourage them and help build healthy self-esteem so they could do better in pursuit of careers and education in science and technology.

3. Being a woman scientist, did you face any challenges in your research career? If yes, how did you overcome them?

Personally, the biggest challenge I faced in my career was, firstly, self-esteem. That is generally a problem when children are made to doubt their abilities at very young ages. At least, that was the case when I was young. However, I still see this problem in education of women and girls as they

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are always told or made to feel that they are not as capable as men are. If you are a child and people keep telling you such things, you start to believe it. To me, weak self-esteem is a big problem. Personally, I was able to overcome it and grow despite this challenge.
Another problem as a science career woman was trying to be a good professional while also becoming a mother. There has been a lot of prejudice against being a mother in professional environment. I always heard employers saying that mothers have a lot of problems as their children get sick and they have to be taken to the doctor, children's education is also mostly mothers' responsibility. That was an added challenge as a career woman, which came with a number of other challenges as well. A woman's challenges grew manifold if they wanted to pursue a career and motherhood side by side.

4. In your opinion, how can women's involvement in research and development be improved and how would the prospects for women in science change in coming years?

I am a researcher in Brazil in a governmental institution and agriculture microbiologist. I am also a professor at the university. I have completed more than 100 masters and PhD supervisions. With my vast experience and achievements, I can tell that women are much better than men in relation to achieving their goals, managing their time, completing their work. I have had many students who got pregnant during their Master or PhD, yet I never had problems with that as they completed their work most suitably.

As I indicated earlier, self-esteem is an important issue that needs to be addressed in helping women perform well in R&D. Many women that arrived to do masters and PhD with me had this problem. I had to encourage them by assuring them that they could do well and were capable. I do not recall a single female student that arrived feeling empowered. On the other hand, I think that 99% of the male students that I have supervised over the years arrived feeling powerful and self-assured. I am not a psychologist and do not claim to be an expert academician but, in my opinion, the major thing to work on that would make things easier with respect to better inclusion of women and creating equal opportunities is building their self-esteem.

5. You have been associated with EMBRAPA for almost 4 decades. What is your observation on the landscape of gender parity during this timeframe with reference to your organization? Can you indicate some best practices to help guide other scientific organizations?

Yes, I have seen some progress with respect to maternity leaves. Women now have the right to avail six-month leave where they can take care of their children, which is indeed a great achievement. However, I have not observed much progress in other areas by and large in Brazil, and not only in my institution. Although more than 50 percent of the scientists and professors in universities are females, however, not enough steps are being taken to support them in their professional life.

I belong to Brazilian Academy of Sciences where less than 20 percent of the workforce is female, same is the case for Deans of the universities, and in politics, females' percentage is less than 10 percent. The major area where we really need to focus is politics; we really need women in politics because women in decision-making and leadership roles can better formulate laws and programmes to support other women in science and technology. Unfortunately, I have not seen many things change in connection with gender parity neither at my institution nor at the universities.

Even after the Pandemic with everything almost in place, the situation in private sector is not very good where many women are losing their jobs. In the private sector, the organizations claim supporting women during maternity, however, they are fired once they return to their jobs after three months.

6. What can developing countries do to improve women representation and leadership in research sector and what advice would you give to international organizations such as COMSATS in this direction?

Well, as I said earlier, women not having self-esteem is a very serious issue. Even today at 64 years of age, after doing a lot of work and having a lot of achievements, when I receive a prize, I am like, "Wow! Do I deserve that?". I am sure that if a male had been in my place, he would have said: "Wow! It's too late, they should have recognized me before".

Just two months ago, a list of top researchers in terms of publications and citations was released and I was in the first place in the field of agronomy in Brazil. I could not believe that and I checked it many times for I was sure there had been a mistake. So, I thought that it is this problem of self-esteem that women think they are not capable as I was told this many times when I was a child and even today, I have low self-esteem. But I never say such things to my female students; I tell them that they are powerful enough to do anything so that they may feel more empowered than me. So, today with many prizes and first place in agriculture science in Brazil, I still have problem with my self-esteem.

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Egypt's Endeavors for Cooperation on Climate Action Ahead of COP27

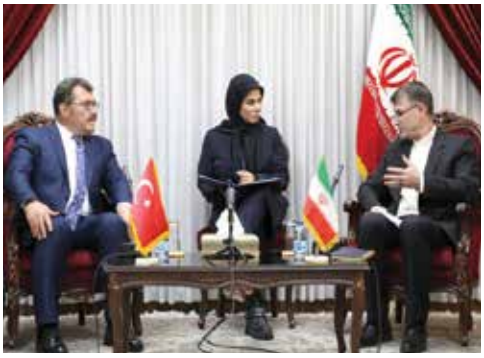
The Government of Egypt, the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF) are aiming to transform Egyptian city – Sharm el-Sheikh – into a sustainable green city as it is planned to host United Nations Climate Change Conference (COP27) In November this year (Zawya; 8th August 2022). In connection with this, a new solar station having a capacity of 280 kilowatts will be installed at Sharm El-Sheikh Museum. Also, many hotels and tourist villages within the city are installing solar panels for climate-friendly transformation of the city before the upcoming climate summit.

Earlier in June 2022, agreement on "Sharm Green City Project" was signed by Egyptian officials which entailed utilizing low-carbon technologies, incorporating proper waste management practices and ensuring environmental protection of the city to make it a sustainable tourist destination.

Egypt also signed a Memorandum of Understanding with Saudi Arabian company Alfanar for a green hydrogen project worth $3.5 billion (Reuters; 29th August 2022). The facility will produce 500,000 tonnes of green ammonia from 100,000 tonnes of green hydrogen per year. Egypt envisions establishing itself as a regional hub for green fuel production ahead of COP27. The country has signed a number of agreements in the past few months, including one for $8 billion green hydrogen factory in the Suez Canal Economic Zone.

Iran and Türkiye Boost Cooperation on Scientific Front

A meeting was held between the



Iranian Deputy Minister of Science in International Affairs, H.E. Mr. Vahid Haddadi-Asl, and President of the Scientific and Technological Research Council of Turkey (TÜBİTAK), Prof. Dr. Hasan Mandal, to discuss scientific cooperation between the two countries (*Mehr News Agency*; 20th July 2022).

On the occasion, the Iranian Deputy Minister mentioned that 47 joint research projects between Iran and Türkiye are underway and hoped to initiate 30 more such projects with a year. His Excellency Haddadi-Asl also suggested initiating cooperation between independent research institutes in Iran and Türkiye to help find solutions to common challenges such as water security. Agreeing to this, Prof. Mandal added that independent research institutions under TÜBİTAK can cooperate with Iran in biotechnology and various industrial sectors.

He also proposed establishing an office of technology transfer between TÜBİTAK and the Ministry of Science, Research and Technology of Iran to help initiate cooperation between S&T parks and knowledge-based companies of the two countries.

Senegal and Egypt Boost Efforts Towards SWM

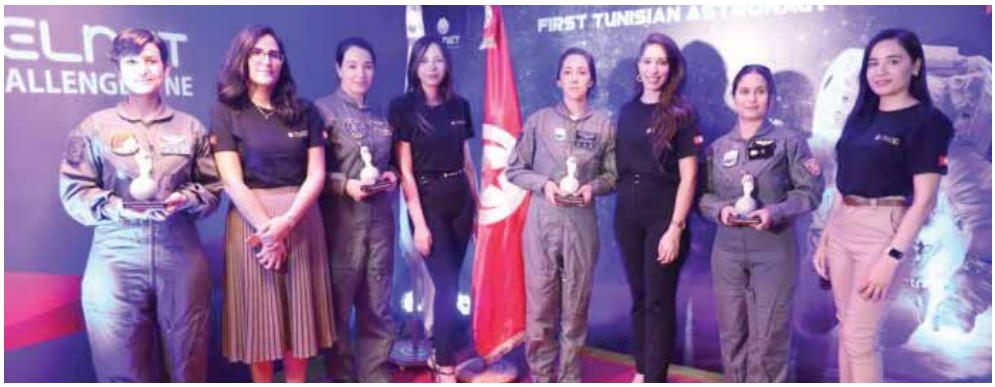
The Promotion of Integrated Management and Solid Waste Economy in Senegal (PROMOGED) is constructing over 500 solid waste recycling units in Senegal in a bid to accelerate recycling of solid waste (Afrik21; 16th August 2022). The initiative was launched by Mr. Ibrahima Diagne, Director General of PROMOGED, in the wake of signing of an agreement between PROMOGED and the National Agency for the Promotion and Employment of Young People (ANPEJ). The aim of the partnership is to boost professional integration through job offers and entrepreneurial opportunities.

Launched in May 2021 by the President of Senegal, H.E. Mr. Macky Sall, PROMOGED is funded by the World Bank, the French Development Agency (AFD), the Spanish Agency for International Development Cooperation (AECID) and the European Investment Bank (EIB).

The Government of Egypt aims to reduce waste pollution to 50% by 2030 through the gradual adoption of the circular economy among others. On 28th August 2022, Egyptian Minister for Environment, Dr. Yasmine Fouad, inaugurated two solid waste transit stations in Al-Gharbiya Governorate (Afrik21; 30th August 2022). The new facilities serve the centres of Zafti and Samannoud. The Zafti station covers an area of 10,660 m^2, with a capacity of 500 tonnes of waste per day. The Samannoud station, built on a 9,660 m^2 site, is capable of receiving 300 tonnes of waste per day.

Tunisian Women to Join African Female Astronaut Project

Eight Tunisian women have been selected as candidates for the first Tunisian and African Female Astronaut Project (Space in Africa; 14th August 2022). It is as a result of a partnership between Tunisia and Roscosmos (Russian State Space Corporation) that aims to launch a Tunisian female citizen



to the International Space Station (ISS) in the foreseeable future. The selection was made at headquarters of Telnet Group in Tunisia on Women's Day.

All the selected women are fighter pilots who graduated from the Borj Al-Amri Aviation School. Furthermore, they are Tunisian Air Force Corps members and have extensive experience in several challenging missions as a result. Two of the eight selected candidates will undergo specific space-related training at one of the Russian Space agency's training centres. This training will last for a year-till the time of the mission to the International Space Station.

The Gambia taking Strides Towards Food Security

The Gambian government has taken steps towards meeting food and nutritional security over the past few years, especially production of grains and supporting agro-commodity value chains. Rice Value Chain Transformation Programme is one such initiative that was started in December 2018 with a total grant financing of US$7 million from the African Development Fund. The project's goal is to improve farm incomes, rural livelihoods, and food and nutrition security in the country. Thus, it targets the production, processing, and marketing of rice as well as reducing imports in the country.

The Board of Directors of the African Development Bank Group has also approved an additional grant of US$3.5 million for the project from the African Development Fund's Transition Support Facility (The Point; 1st August 2022). The additional financing would focus on providing subsidized inputs as well as policy reforms destined to scale up food production. This includes providing climate-resilient inputs at subsidized rates to smallholding farmers and enhancing the existing farmers' registration database.

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Therefore, it is very important that we start telling young girls that they are capable and competent.

7. Gender equity is a cross cutting issue especially in the Global South. What S&T areas do you think are most affected due to non-inclusion of women in developing countries?

Well, we all know that globally in fields like engineering, technology and informatics, we have very low number of women representation and these fields are really very important. I think, it is important that once their talent is recognized, women should be given fellowships early to help them pursue their careers in technology, informatics, etc. If we take mathematics, for example, I have heard in my childhood and even now that "mathematics is not for females" and "they (females) are not good at it (mathematics)"; which is not true. So, we have to start encouraging and supporting females very early if we want to bring a change. It may take 20 years or so, but if we do not start now, we cannot bring any change. Non-governmental organizations can start by taking small steps in this direction.

So, my final message is to start encouraging girls at very young age that they can go far in achieving their dreams and we should support them equally along with boys. Furthermore, it is important to provide childcare and child support to working women so that if they cannot afford a childcare themselves, they do not have to worry about their children. This kind of support is very important since most of the women want to be mothers and the planet also needs new generation. So, the women should be allowed to be excellent scientists, excellent professionals, and excellent mothers as well. But this change needs support from government institutions.

I was surprised to come across poor reports on gender parity from countries in Europe and Canada. These countries are deemed better in such terms than Brazil, but are also way better than many countries in Africa and Asia. Despite this, in European countries, Canada and USA, the support for women is still very low. Although we have this agenda of ODS (Objetivos de Desarrollo Sostenible/Sustainable Development Goals), we are very far from achieving the desired levels of even basic women rights.

Scholarships/Fellowships for Member States by COMSATS' Centres of Excellence

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 at all campuses of COMSATS University Islamabad (CUI), Pakistan.
- Five (05) postdoctoral fellowships at the International Center for Chemical and Biological Science (ICCBS), Pakistan.
- Five (05) short-term postdoctoral fellowships at the National Research Centre (NRC), Egypt.
- Two (02) PhD scholarships at the Al-Farabi Kazakh National University (KazNU), Kazakhstan.
- Postgraduate scholarships and postdoctoral fellowships at International Centre for Climate and Environment Sciences (ICCES) under PIFI Programme.
- Long-term (1-2 years) and short-term (less than 6 months) fellowships for foreign scholars for collaborative research at Tianjin Institute of Industrial Biotechnology (TIB), Chinese Academy of Sciences.

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

TWAS-Sida PhD Scholarship Programme for Climate Research

TWAS-Sida PhD Scholarship Programme for Climate Research invites applications for PhD in an area relevant to the umbrella theme of climate change. The scholarships would be awarded to promising candidates from Least developing countries (LDCs) who have obtained their MSc by December 2022. Aimed at supporting climate action in a world struggling with multiple planetary crises, the Programme is fully funded by the Swedish International Development Cooperation Agency (Sida).

The Programme envisions strengthening endogenous capacity of developing countries in science; reducing the exodus of scientific talents from the South; as well as building and sustaining units of scientific excellence in LDCs.

Application deadline: 5 October 2022 (11:59 Central European Summer Time).

For details, visit: https://twas.org/opportunity/twas-sida-phd-scholarship-programme-climate-research-students-least-developed-countries

For any queries, please contact: climatephd@twas.org.

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