



COMSATS Newsletter

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

May-June 2015

3
2015

Vol.7

www.comsats.org



Members and Participants of the 18th COMSATS Coordinating Council Meeting held in Colombo, Sri Lanka (12 -13 May 2015)

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From the Executive Director's Desk

There are no two opinions about the fundamental role of Science and Technology in achieving the goal of socio-economic development. However, it is pertinent to ask 'whether scientists and technologists have any say in the matters that affect the use of their discoveries and inventions, or do they care about it?', and 'how do they feel when the knowledge they created is used for death and destruction?' These questions have confronted philosophers and scientists at different stages of history. The most notable expression of the resulting dilemma emerged with the advent of nuclear technology. There, we saw a group of scientists actively taking part in a campaign to convince the politicians to develop a 'bomb of apocalyptic destructive power' for the sole purpose of killing human beings indiscriminately, with the rationale that "they" might kill "us" if they were the first to develop such a weapon.

The aftermath of mass destruction in Hiroshima and Nagasaki did arouse revulsion among conscientious scientific circles and, eventually, 'Pugwash movement' took roots. However, the

advocacy for pacifism never succeeded, in the face of huge vested interests generated by collusion between defense and industrial complexes. No wonder, the arms sale of top 100 companies in the world during 2013 was close to US \$400B, according to SIPRI database (www.sipri.org). Peace in the world is obviously not in the interest of these companies.

In the West, the momentum of scientific R&D led by defense industry still has a silver lining of producing technological spin-offs that provide useful technological advancements for civilian use, as well as funding resources for research in the universities. The scientific communities in the South generally do not have such opportunities. Moreover, they don't have sufficient clout to extract financial resources for their research from national development programmes. The funding allocations in national budgets are made by politicians, mostly having no interest in long-term investments that go beyond their expected tenure in power. To be fair, they also have to grapple with

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NEWS/ACTIVITIES/HIGHLIGHTS FROM COMSATS SECRETARIAT

Capacity-Building Events in Sri Lanka and Egypt

COMSATS' capacity-building activities continued during May-June 2015, resulting in co-organization of two international events in Sri Lanka and Egypt. The following summaries provide an overview of these events.

International Symposium on Impacts of Extreme Atmospheric Events, Colombo (14-15 May)

The two-day International Symposium on 'Impacts of Extreme Atmospheric Events on Geo-Surface in a Changing Climate' was held on 14-15 May 2015, in Colombo, Sri Lanka. The event was jointly organized by COMSATS and two of its Centres of Excellence, the Industrial Technology Institute (ITI), Sri Lanka, and the International Center for Climate and Environment Sciences (ICCES), China. The event was attended by about 60 participants and experts from different countries, including Malaysia, Pakistan, Bangladesh, Iran, Thailand, China, and Sri Lanka.

The event provided a forum for exchange of knowledge on natural disasters and mechanisms of extreme atmospheric events; and encouraged synergies among the participating institutions. The Symposium enhanced the participants' capacities to understand, predict and monitor extreme atmospheric events and to work-out necessary measures for their mitigation at national, regional and international levels.

The Secretary, Ministry of Higher Education & Research, Government of Sri Lanka, Mr. P. Ranepura inaugurated the Symposium on 14th May 2015. He considered the Symposium in-line with the current needs and priorities of the countries of the South, in view of the developing countries being hugely affected by the extreme atmospheric events. Earlier, Mr. Niroshana Perera, Chairman ITI, noted that studying the extreme atmospheric events and their impacts on different regions of the world is a collective responsibility, and his country is ready to play an active role in this regard.

Dr. I.E. Qureshi, Executive Director COMSATS, in his address at the occasion, overviewed the legal and political developments at the international level since the global realization of the significance of climate change leading to

United Nations Framework Convention on Climate Change (UNFCCC) in Rio conference of 1992. He informed that COMSATS is dedicated to promote international cooperation among the countries of the South for collectively addressing their common challenges. Prof. Zhaohui Lin, Director ICCES, China, informed that most of the developing countries, including China, are aware of the need to promote research activities and collaborations in this field with a view to understand the mechanisms and impacts of extreme atmospheric events.

A highlight of the inaugural session was a Memorandum of Understanding (MoU) between ITI and ICCES, for the establishment of the Climate Change Research Centre that was signed by Dr. Muditha Liyanagedara, Acting Director General ITI, and Prof. Zhaohui Lin, Director ICCES, China. The signing of MoU was followed by a keynote address by Prof. Ajith de Alwis, Senior Professor, Department of Chemical and Process Engineering, University of Moratuwa, Sri Lanka.

The event featured thirteen invited lectures by the foreign and local resource persons belonging to ICCES, China; Universiti Putra Malaysia, Malaysia; COMSATS Institute of Information Technology (CIIT), Pakistan; Bangladesh University of Engineering and Technology (BUET), Bangladesh; Soil Conservation & Watershed Management Research Institute, Iran; Asian Disaster Preparedness Centre, Thailand; Chinese Academy of Sciences, China; Disaster Management Centre, Sri Lanka; Sichuan Institute of Atomic Energy, China; University of Moratuwa, Sri Lanka; and Department of Meteorology, Sri Lanka. The experts delivered lecture on: observation, measurement and analysis of weather extremes; relevant models and their applications; forecasting and managing weather extremities; environment-friendly practices; and utilization of weather and climate information and technology for food-security.



Participants of the International Symposium (Sri Lanka)

International Conference on Agriculture, Food Security, and Biotechnology, Cairo (8-9 June)

The International Conference on 'Agriculture, Food Security, and Biotechnology' was held in Cairo, Egypt, from 8th - 9th June 2015. COMSATS; Islamic Educational, Scientific and

Cultural Organization (ISESCO); International Union for Conservation of Nature (IUCN); and Centre for Environment and Development for the Arab Region and Europe (CEDARE), collaborated for the organization of this event. Thirty experts from Bangladesh, Pakistan, Senegal, Sudan, Sri Lanka, Nigeria, and Egypt, made presentations during the event, while over 70 participants from various academic and research institutions in Egypt benefitted from the event.

COMSATS' Centre of Excellence in Egypt, the National Research Centre (NRC) hosted the event in Cairo. Other Centres of Excellence of COMSATS represented during the Conference included: Industrial Technology Institute (ITI), Sri Lanka; Industrial Research and Consultancy Centre (IRCC), Sudan; Bangladesh Council for Scientific and Industrial Research (BCSIR), Bangladesh; Université Cheikh Anta Diop (UCAD), Senegal; and COMSATS Institute of Information Technology (CIIT), Pakistan. The local organizations that participated in the meeting were: Cairo University, Agriculture Research Centre, Egypt; International Service for Acquisition of Agri-Biotech Applications (ISAAA), Egypt; and Cotton Research Institute, Egypt.

The objective of the Conference was to build and strengthen linkages among R&D/S&T institutions working in the field of agriculture, biotechnology and food security for effective South-South cooperation; and to foster debate and exchange ideas on how the modern biotechnological techniques can contribute to enhancing sustainable agriculture and food security worldwide.

The event was inaugurated by Dr. Mohamed Hashem, Vice President for Research Affairs & International Relations at

NRC, on June 8, 2015. Opening the Conference, Dr. Hashem considered Biotechnology a key player in addressing the most important challenges facing humanity, which include the most fundamental issues like food security. Speaking on the occasion, Mr. Amr Abdel-Meguid, Regional Program Manager CEDARE, introduced CEDARE as an important actor in meeting global food security and quality challenges through its various initiatives. In his remarks on the occasion, Mr. Salah El Din El Gafrawi, ISESCO



A session of the International Conference on Agriculture, Food Security, and Biotechnology in progress

Representative in Egypt, urged the researchers to take on revolutionary roles to promote advanced agricultural systems in Islamic Countries incorporating modern biotechnology research to ensure food security.

contd. from page 1 ... 'From the Executive Director's Desk'

internationally binding financial obligations and expectations of their constituencies with respect to provision of urgently needed basic amenities. The emergent issues related to natural calamities, internal and external security situations, and the world-trade fluctuations affecting import and export balance-of-payments are indeed factors that are uncontrollable at national level, leading to further constriction of fiscal policy space. Non-availability of sufficient resources for creation and maintenance of research capacity results in low intellectual output leading to further erosion of confidence in R&D institutions. The political and bureaucratic leaders thus tend to pay little heed to the needs of scientific community.

In this backdrop, the COMSATS Coordinating Council's 18th meeting, held in Sri Lanka (page 08) deliberated upon, not only what research COMSATS' Centres of Excellence are doing, but also what impact it has on the lives of general

public. Reports of some astounding breakthroughs achieved by Egypt (in health), Bangladesh (in herbal medicine), and Iran (in renewable energy) were shared by the relevant Council members, creating excitement and optimism among all participants. The Council also candidly deliberated upon the strengths and weaknesses of COMSATS as an international organization. In this regard, the launching of a programme on 'Science Diplomacy' in association with The World Academy of Sciences (TWAS) was highly appreciated in view of its potential to increase scientists' role in matters of public policy and also to enhance COMSATS' visibility as a platform for providing science and society interface. The MoU signed by the Executive Directors of COMSATS and TWAS (page 07) in the area of Science Diplomacy is expected to pave the way for greater cooperation between the two organizations.

As always, it is reiterated that the comments and suggestions from our worthy readers will be highly welcome and given space on the pages of this Newsletter.

Recommendations of the Cairo Conference

The Conference called for:

- Establishment of a scientific network for information exchange between member countries of COMSATS and ISESCO regarding climate change, food production system, automation and precision farming;
- Creation of working groups for mapping the strengths and weaknesses in biotechnology R&D in common member states;
- Integration of relevant institutions concerning agriculture policy, rural development, and research strategy in member countries;
- Establishment of relevant competent committees for necessary decision making on the use of genetically modified products and preservation of biodiversity; and
- Working out joint research proposals for seeking funds with support from COMSATS, ISESCO, IUCN, and CEDARE.

In his message Dr. I. E. Qureshi, Executive Director COMSATS, noted that the developing countries are progressively adopting and adapting to agricultural biotechnology to meet their needs, including those pertaining to food quality, food security, and sustainable agriculture.

The seven technical and parallel sessions of the event covered a number of important topics on the theme of the event: agricultural risk management; sustainable practices for agriculture; tissue culture and plant biotechnology; crop breeding and genetics; crop protection and management; horticulture, floriculture & forestry; and food security and sustainable resource use.

The deliberations of the Conference included identification of various factors resulting in food insecurity in developing countries, and the potential impact and relative importance of using biotechnology to addressing these. The participants highlighted the need to develop consistent policies for agriculture and food security, remaining sensitive to the needs of small-scale farmers and rural communities, as well as called for the active participation of all stakeholders in the relevant policy-formulation process.

Prof. Hosam El-Syed, Conference Coordinator and General Coordinator at NRC, in his vote of thanks at the close of the event appreciated the strenuous efforts of the organizers and partner organizations for making the event successful.

Meetings of COMSATS International Thematic Research Group (ITRG)

During May-June 2015, meetings of COMSATS' two International Thematic Research Groups (ITRG) were held. The meeting of the ITRG on 'Climate Change and



Participants of the Meeting of ITRG on Climate Change

Environmental Protection' was held in Colombo, Sri Lanka, while the ITRG on 'Agriculture, Food Security and Biotechnology' was launched during its Foundation meeting in Cairo, Egypt. With the launching of the latter, the number of active ITRG has now reached five. Brief accounts of these meetings are as follows.

Fourth meeting of the ITRG on 'Climate Change and Environmental Protection', Colombo (16 May)

One of the most active ITRGs, the Group on 'Climate Change and Environmental Protection' held its fourth meeting on May 16, 2015, at Industrial Technology Institute (ITI), Colombo, Sri Lanka. The group is led by Prof. Zhaohui Lin, Director, International Center for Climate and Environment Sciences (ICCES), China. It comprises of scientists and researchers from meteorological departments, scientific and research organizations, and higher education institutions of various developing countries. The meeting was attended by group members belonging to Bangladesh, China, Iran, Malaysia, Pakistan, Sri Lanka and Thailand. The meeting was held on the sidelines of the International Symposium on 'Impacts of Extreme Atmospheric Events on Geo-Surface in a Changing Climate' (Page 02).

The meeting was held to review the progress of the joint research project being undertaken by its members, entitled 'Characteristics and Mechanism of the Extreme Climate Events under the Climate Change Background'.

Mr. Tajammul Hussain, Advisor (Programmes) COMSATS opened the meeting with an overview of the objectives of COMSATS' ITRGs approved during the 13th Coordinating Council Meeting (Italy, 2010). He highlighted the facilitative role being played by COMSATS for the exchange of technical know-how and sharing of necessary laboratory resources among the Group members. In his welcome address, Prof. Lin shed light on the capacity building activities held under the umbrella of the group, including

international workshops, short-term trainings, and post-graduate scholarships, some of which were executed with the support from COMSATS Headquarters. He informed that ICCES-China will continue supporting the capacity building of ITRG members in future as well, and invited them to participate in the upcoming relevant events of ICCES. Dr. J.K.R.R. Samarasekara, Additional Director General (Research & Development), ITI, thanked the foreign participants on behalf of the host institutions and assured of ITI's active participation in the activities of the group.

Outline of the Group's Work-plan for 2015-2016

- Gathering relevant meteorological data of the participating institutions' countries;
- Preliminary analysis of the data;
- Execution of different segments of the joint research project; and
- Publishing joint research papers based on the research results.

The participants of the meeting presented their progress reports and shared their country-specific meteorological data. It was noted that a joint paper, entitled 'Lightning incidents in Mongolia, Geomatics, Natural Hazards and Risk' (March 2015) has been jointly published by two ITRG members, Ms. Doljinsuren Myagmar (Mongolia) and Dr. Chandima Gomes (Malaysia). During the discussions on the joint research project, it was decided that the SAARC Meteorological Research Centre, based in Dhaka, will be requested to nominate its representative for participating in the activities of the group. The ITRG members agreed to prepare specific proposals based on their research expertise and national priorities to be submitted to relevant ministries and funding organizations in their respective countries, with support of COMSATS Headquarters.

The meeting's outcomes included: creation of nine sub-groups, and designation of respective coordinators and members in order to effectively execute different components of the research project; and finalization of a Work Plan and time-line for the activities of these sub-

Subgroups of ITRG on 'Climate Change and Environmental Protection' constituted in its fourth meeting

- Dust Storms
- Floods and Landslides
- Droughts
- Hydrological Extremes
- Thunderstorm and lightning
- Cyclones and Storm surge
- Air, Water and Land Pollution
- Climate Modeling, and
- Risk Management.

groups during 2015-2016. Also, it was decided that the support provided by COMSATS Headquarters will be duly acknowledged in the research publications by the ITRG members.

Foundation Meeting of the ITRG on 'Agriculture, Food Security and Biotechnology'

The Foundation Meeting of the ITRG on 'Agriculture, Food Security, and Biotechnology', was held on 10th June 2015 at Group's Lead Centre, the National Research Centre (NRC), Egypt, in conjunction with the COMSATS-ISESCO-NRC joint International Conference on 'Agriculture, Food Security, and Biotechnology'. The objective of the meeting was to form a group of active research scientists from various institutions of the developing countries that are working in the area of 'Agriculture, Food Security and Biotechnology', and initiate joint research activities under the patronage of COMSATS.

The meeting was attended by five researchers from COMSATS' Centres of Excellence, including Industrial Technology Institute (ITI), Sri Lanka; Bangladesh Council for Scientific and Industrial Research (BCSIR), Bangladesh; Industrial Research and Consultancy Centre (IRCC), Sudan; COMSATS Institute of Information Technology (CIIT), Pakistan; and University of Cheikh Anta Diop (UCAD), Senegal. Moreover, Ms. Huma Balouch, Sr. Assistant Director (Programmes) represented COMSATS Secretariat as programme coordinator.

Chairing the meeting, the Group leader, Prof. Dr. Wafaa Haggag, Head of Agricultural and Biological Division, NRC, Egypt, emphasized that the Group's research would focus on supporting agricultural R&D in different disciplines, especially for enhancing the productivity of wheat lines under stressful conditions using integrated management of resistance, or tolerance lines with formulation of biotechnology products. The outcomes of the meeting



The technical session of the Foundation Meeting of ITRG on Agriculture, Food Security and Biotechnology

included:

- Agreement on the theme and title of the research project: 'Biotechnological Approaches to Improve some Wheat Lines Productivity under Biotic and Abiotic Stresses';
- Decisions on broad parameters of the joint research project; time-line and procedures for executing the project;
- Identification of collaborating institutions/individuals, and distribution of research activities among them;
- Signing of a Memorandum of Understanding, which stipulated cooperation between the Group members.

The group members pledged to take an active part and perform their responsibilities diligently, as well as offered to take significant portions of the research to be conducted in their own labs, such as physical and chemical analyses of wheat lines, growth and yield parameters, formulation of products, detection of plant pathogenic virus and bacteria. The Lead Centre has already been awarded a research grant of US\$ 10,000/- under ISESCO-COMSATS Joint Research Grant Programme, as seed money for the execution of the research project.

Activities under COMSATS' Science Diplomacy Programme

In line with the relevant decision of the 17th Meeting of COMSATS Coordinating Council (May 2014), COMSATS launched its "Science Diplomacy" programme on February 2015, in close consultation with The World Academy of Sciences (TWAS). Recent developments under the programme include: initiation of invited talks by the relevant Science Ambassadors under the 'Science Communication' component of the Programmes; formalization of the cooperation through a Memorandum of Understanding; and a training of COMSATS' official hosted by TWAS. Brief accounts of these are given as follows:

Talk on 'UNFCCC, Kyoto Protocol, and Beyond'

A talk on 'UNFCCC, Kyoto Protocol, and Beyond' under COMSATS' Science Diplomacy programme was organized at Pakistan Academy of Sciences (PAS), Islamabad, on June 16, 2015. The talk was delivered by COMSATS' Science Ambassador on Climate Change, Dr. Athar Hussain, who at present is Professor, Department of Meteorology, COMSATS Institute of Information Technology (CIIT), Islamabad.

Before the talk, Dr. Arshad Saleem Bhatti, Coordinator Science Diplomacy Programme, made a brief introduction of COMSATS' Science Diplomacy Programme. Quoting the examples of Pugwash Conferences on Science and World Affairs, and CERN Laboratories as successful manifestations of Science Diplomacy. He stated that COMSATS has been a practitioner of Science Diplomacy without specifically categorizing it with this diction.

A gathering of 90 participants from government departments, including the Ministry of Science and Technology, Government of Pakistan; Climate change and environment science professionals; academicians, scholars; as well as members of non-government organizations and think-tanks working in Islamabad, attended the talk delivered by Dr. Hussain. He shared data regarding Green House Gas (GHG) emissions and Global Warming (GW); the phenomenon of Hiatus in Global Warming, and requirements of Climate Stabilization. He recalled the measures that the nations listed in the Annex-1 of the Protocol are expected to take in order to cut back on GHG emissions. The carbon dioxide reduction mechanisms stipulated in the Kyoto Protocol and related developmental challenges were also highlighted. He noted that Pakistan accounts for less than 1% of the total global CO₂ emissions volume, which is extremely low. However, in solidarity with the global efforts for addressing the needs of the Climate Change phenomenon, Pakistan should make efforts to get propriety rights for Green technology; establish Green industries; and develop and maintain more comprehensive national GHG inventory. He advocated constant dialogue among various national stakeholders to come up with more comprehensive carbon reduction plans for short to long term.

The talk was followed by an interactive questions and answers session moderated by Dr. Anwar Nasim, President of PAS, during which the interested participants from various



Attendees of the talk on 'UNFCCC, Kyoto Protocol, and Beyond'

institutions made comments and inquiries relevant to the theme of the lecture.

Speaking on the occasion, Dr. Qureshi acknowledged the support of senior officials of PAS, and ECO Science Foundation. Dr. Qureshi asserted the need for more rational and evidence-based decision-making on part of the political leaderships of the developing countries regarding commitments made towards international climate change policies, consortia, and agreements. Dr. Qureshi also informed the audience that COMSATS has started the necessary capacity-building of its designated officials with cooperation from TWAS.

Signing of Memorandum of Understanding with TWAS

A brief signing ceremony was held after the technical session featuring Dr. Athar Hussain's talk, during which a Memorandum of Understanding (MoU) was signed to formalize the cooperation between TWAS and COMSATS in the field of Science Diplomacy.

The Executive Director COMSATS, Dr. I.E. Qureshi, signed the MoU on behalf of COMSATS. Dr. Qureshi noted that the Memorandum could not be signed concurrently by the Executive Directors of both COMSATS and TWAS due to the latter's prior engagements.

The areas of collaboration defined in the MoU include joint organization of lectures, workshops, conferences and seminars in Member States of COMSATS to create awareness about scientific background and solutions of issues affecting public policy and foreign relations. The two organizations would also exchange relevant intellectual resources, information, and data to help serve the purpose of the agreement.

Participation of COMSATS' Official in AAAS-TWAS Summer Course on Science & Diplomacy, Trieste, Italy

From June 7-12, 2015, Mr. Abdul Majid Qureshi, Research Scholar at COMSATS Secretariat, attended the 2015 AAAS-TWAS Summer Course on Science & Diplomacy, held in Trieste, Italy. He was one of the 51 participants and speakers from around the world that had gathered to discuss and exchange ideas relevant to the relatively new and emerging theme of "Science & Diplomacy".

The seven interactive training sessions covered important sub-themes of the concept: Introduction to Science Diplomacy; Trans-boundary Science, National Circumstances and Approaches to Science Diplomacy; Networks and Mechanisms for Science Diplomacy; Science Advice/Communicating Risk to Policy Makers; and Risk



Abdul Majid Qureshi being presented Certificate of Participation by Romain Murenzi, ED TWAS along with V.C. Turekian, Director, AAAS

Communication to the Public. An overview of TWAS' programmes and opportunities relating to science diplomacy was also presented. A highlight of the event was a Lecture by Prof. Sir Peter Gluckman, Chief Science Adviser to the Prime Minister of New Zealand. The training also comprised of group projects supervised by experienced mentors, and were later presented and defended on the last day of the workshop. Mr. Qureshi also represented Pakistan in a group comprising of participants from Bangladesh, Colombia, Korea (DPR), and Ghana. The project presented by Mr. Qureshi on the close of the workshop related to establishment of an inter-regional vaccine research centre.

New Associations and Certification of CIS

During the first half of the year, COMSATS Internet Services (CIS) has been able to strengthen its linkages with two relevant Pakistani institutions. In January 2015, CIS was accepted as a Member of Pakistan Software Houses Association (P@SHA), for period of a year. The membership falls under the category 'Corporate Member' that is open to firms having annual turn-over exceeding Rs. 5 million. Apart from participation in the Association's activities and benefit sharing, the membership offers necessary information sharing available, business protection, and promotion cover in accordance with its Memorandum of Association. In March 2015, CIS got registered with Pakistan Software Export Board (PSEB) of the Ministry of Information Technology, Government of Pakistan, for an 11-month period. The benefits associated with this membership include: tax exemption on exports of IT services; repatriation of profits; and subsidies on participation in national and international events, certifications and trainings.

CIS also acquired ISO 27001:2013 Certification for its Information Security Management System. Valid for three years, the Certificate to this effect was issued to CIS in April this year.

SPECIAL SECTION: 18TH MEETING OF COMSATS COORDINATING COUNCIL (12-13 MAY 2015, COLOMBO, SRI LANKA)

One of COMSATS' statutory bodies, the Coordinating Council fostering South-South cooperation through its annual assembly, met for the 18th time on May 12-13, 2015, in Colombo, Sri Lanka. The meeting was hosted by COMSATS' Centre of Excellence in Sri Lanka, the Industrial Technology Institute (ITI). The meeting had the participation of Council members or their representatives from 13 Centres of Excellence of COMSATS, an honorary lifetime member; and two members of the COMSATS' international Technical Advisory Committee (TAC). A representative of UNESCO also attended the meeting as observer. Moreover, the meeting was attended by the representative of Al-Farabi Kazakh National University (KazNU), Kazakhstan, in connection with the University's request for induction in COMSATS' Network of International S&T Centres of Excellence.

of Pakistan, Nigeria, and Germany in Colombo; as well as universities, R&D institutions, ministries and government departments of the country.

Mr. Niroshana Perera, Chairman ITI, opened the inaugural session with his welcome remarks. He noted that the Government of Sri Lanka is conscious of the fact that advancement in S&T is necessary for achieving socio-economic development. He thanked COMSATS for giving the opportunity to ITI for hosting the important international event in the country.

On the occasion, the Executive Director COMSATS, Dr. I.E. Qureshi; and the Chairman Coordinating Council Prof. Eduardo Posada F., Director Centro Internacional de Física (CIF), Colombia, also addressed the participants of the inaugural ceremony. Both officials were in consonance on the role of S&T and education for development, and the developing countries' need to make concerted efforts to address the ever-increasing gap between the North and the South.



Guests of Honour at the Inaugural Session of the Council Meeting

Inauguration

The meeting was inaugurated on May 12, 2015, in Colombo, by the honourable Minister for Higher Education & Research (MOHER), Government of Sri Lanka, H.E. Dr. Sarath Amunugama. The honourable Deputy Minister MOHER, H.E. Dr. Sudarshani Fernandopulle, and the Secretary MOHER, Mr. P. Ranepura, also graced the occasion with their presence. In addition to the Council members and senior officials of ITI and COMSATS, the ceremony was attended by the representatives of the diplomatic missions

"In spite of well-known statistics showing direct correlation between S&T capacity and economic performance, it continues to be a challenge for most of the developing countries to create credible R&D infrastructures that can lead to developing their industrial competitiveness in world markets....socio-economic development can be realized best through unity and mutual cooperation within the group of countries that are low on the scale of Human Development Index."

Dr. I. E. Qureshi, Executive Director COMSATS

"Thanks to its international composition and the quality of member centres of its Network, COMSATS can play an instrumental role for bringing change in the developing world. We must direct all our efforts to strengthen COMSATS and improving its visibility and influence on the decision makers of the South."

Prof. Eduardo Posada F., Director Centro Internacional de Física (CIF), Colombia, and Chairman Coordinating Council





Technical session of the 18th Coordinating Council Meeting in progress

In his inaugural address, Dr. Amunugama stressed the need for stronger cooperation among developing countries for collectively overcoming challenges to their socio-economic development. The honourable Minister informed that Sri Lanka is one of the seven countries who have achieved most of the goals set out during the 'UN Summit on the Millennium Development Goals' held in New York. Dr. Amunugama urged the governments of the developing countries to identify their respective competitive advantages and make best utilization of the latest advancements in science and technology for increasing their productivity and high-technology exports. He quoted the examples of China, India and Vietnam as one of those developing countries that have been able to enhance Foreign Direct Investment (FDI) by developing a pool of highly educated and skilled manpower.

The Sri Lankan Ministry for Higher Education & Research, attaches great importance to COMSATS as a platform for collaboration in various fields of Science and Technology, and assures of the Government's full support towards the activities of the organization.

H.E. Dr. Sarath Amunugama, Minister for Higher Education & Research (MOHER), Govt of Sri Lanka

Technical Proceedings

During the technical sessions of the two-day event, the meeting deliberated on an 11-point agenda, with an aim to review the progress made over the year and to decide on the future plans and activities of COMSATS. The working sessions were presided over by Prof. Eduardo Posada, while Dr. Imtihan Elahi Qureshi co-chaired the meeting in his capacity as the Secretary to the Council. The standard components of the agenda included: presentation of COMSATS' Annual Activity Report (May 2014 – April 2015) by the Executive Director COMSATS; presentations by the heads/representatives of the Centres of Excellence; and briefing on the administrative and financial matters of COMSATS that was made by the Advisor (Programmes) COMSATS, Mr. Tajammul Hussain.

A highlight of the meeting was the Council's approval of Al-Farabi Kazakh National University (KazNU), Kazakhstan, as the 20th member of COMSATS Network of Centres of Excellence. The Council's approval, in this regard, came in response to: (i) the formal application received from the University; (ii) technical evaluation report of the two members of COMSATS' TAC; as well as (iii) a detailed presentation by the KazNU Vice-Rector for Research and



KazNU in Brief

The Al-Farabi Kazakh National University (KazNU), Kazakhstan, was founded in 1934. The University consists of 14 faculties, 62 sub-faculties, 7 departments, 30 scientific research institutes and centres and a techno park. KazNU offers 81 undergraduate, 84 Masters and 64 Ph.D. programmes. It has more than 2,000 academic staff and student enrolment of over 18,000. KazNU stands at 305th position as per QS World University Rankings (2014); at 14th position as per QS Emerging Europe and Central Asia Rankings (2014); and at 31st position as per Great Value Colleges Rankings (2014).



Innovative Affairs, Prof. Tlekkabul Ramazanov.

The Heads/representatives of COMSATS' Centres of Excellence shared the updates on the scientific activities of their institutions with the view to identifying areas of cooperation. Major deliberations and outcomes of the corresponding sessions are as follows:

- Offers of Scholarships/fellowships were made/ restated by CIIT-Pakistan, ICCES-China, IROST-Iran, and TUBITAK MAM-Turkey.
- Trainings and scientific exchange offers were made by BCSIR-Bangladesh, CIF-Colombia, ITI-Sri Lanka, and TUBITAK MAM-Turkey.
- CIF offered to facilitate collaboration between ICCES-China and the United Nation's International Research Centre on El Niño (CIIFEN), Ecuador, in the areas of mutual interest. Other Centres sought support of fellow Network members in their desired areas of cooperation.
- The Centres of Excellence pledged to take necessary actions to benefit from the COMSATS' Distinguished Professorship Scheme and COMSATS' Panel of Experts on 'Science, Technology and Innovation Policy', as well as to serve as COMSATS' hub in their respective countries and geographical regions to enhance the visibility of COMSATS.



The Chair and Co-chair steering the 18th Council Meeting

- Dr. Yoslan Nur, Programme Specialist of UNESCO, offered UNESCO's support for the commercialization of research results of the Centres of Excellence.

The presentations of Centres of Excellence and scientific consultations amongst COMSATS' Network members touched upon a wide range of scientific domains including:

- Health (infectious diseases; electro-physiology; biological control of mosquito-borne diseases and trace elements in animal/human tissue);
- Agriculture (biotechnology; applications of nanotechnology in agriculture and water resources);
- Applied Biosciences (bioequivalence studies; biomaterials; bio-chemicals; biofuel; bio-physics and bio-refinery);
- Climate and Environmental Sciences (dynamical earth system model; global dust cycle studies; soil analysis; minerals & mineralogy and chemical metrology);
- Energy (renewable energy and green buildings);
- Chemical and Material Sciences (chemical technology; environmental geochemistry; heavy metal pollution; mineral composition of food; bio-geochemical cycles; forensics; proficiency testing; materials and metallurgical science and engineering; Certified Reference Material (CRM) production and Proficiency Testing/Inter-Laboratory Comparison (PT/ILC) development);
- Information Technology (chip designing and 3D-printing); and
- Space Technology.

Deliberating on the succeeding agenda-item, the Coordinating Council approved some necessary revisions and amendments in the Charter of the Network of Centres of Excellence. The Council mandated the Executive Director COMSATS to submit the consolidated Statutes of COMSATS, with the amended Charter of the Network and International Agreement of COMSATS, for the approval of the 3rd Commission Meeting of COMSATS to be held in October 2015 in Ghana.



Participants of the Council Meeting visiting ITI Labs

Participants of the 18th Coordinating Council Meeting

- Dr. Parvin Noor, Director (In Charge) IGCRT, BCSIR, Bangladesh
- Prof. Lin Zhaohui, Director ICCES, China
- Dr. Eduardo Posada F., Director CIF, Colombia
- Prof. Dr. Ashraf Shaalan, President NRC, Egypt
- Prof. Hosam El-Sayed, Assistant Vice President for Research, NRC, Egypt
- Dr. Eugene Atiemo, Director BRRI, Ghana
- Dr. M. Molanejad, Acting President for International Cooperation, IROST, Iran
- Dr. Andrew Gerard Murray Pearson, Head of Department, The University of the West Indies, Jamaica
- Eng. Abeer Arafat, Manager of Communication and External Affairs, RSS, Jordan
- Dr. Haroon Rashid, Pro Rector CIIT, Pakistan
- Dr. Muditha Liyanagedara, Acting Director General ITI, Sri Lanka
- Dr. G. A. S. Premakumara, Research Fellow ITI, Sri Lanka
- Dr. Radhika Samarasekera, Additional Director General (Research & Development), ITI, Sri Lanka
- Dr. Widad H. Abdulhalium, Director General IRCC, Sudan
- Prof. Mkumbukwa Madundo Angelo Mtambo, Director General TIRDO, Tanzania
- Dr. Bahadır Tunaboğlu, President TUBITAK MAM, Turkey
- Prof. Tlekkabul Ramazanov, Vice-Rector for Research and Innovative Affairs, KazNU, Kazakhstan
- Prof. Dr. M. H. A. Hassan, Former Executive Director TWAS, Italy
- Dr. Moustapha Toure, Vice President, Académie Nationale Des Sciences Et Techniques Du Sénégal (ANSTS), Senegal
- Prof. Khatijah Mohamad Yusoff, Dean, Faculty of Biotechnology and Biomolecular Sciences, Universiti Putra Malaysia, Malaysia
- Dr. Yoslan Nur, Programme Specialist, UNESCO, France
- Dr. I.E. Qureshi, Executive Director COMSATS, Pakistan
- Mr. Tajammul Hussain, Advisor (Programmes), COMSATS, Pakistan
- Mr. Farhan Ansari, Sr. Assistant Director (Programmes), COMSATS Pakistan

Under the discussion held on the new initiatives of COMSATS, the Executive Director COMSATS was authorized to sign an MoU between TWAS and COMSATS for collaboration in the field of Science Diplomacy, which was later signed during an event held in Islamabad.

Based on the deliberations of the meeting, a Communiqué, encompassing clauses relevant to the ongoing programmes and future aspirations of the Network, was adopted by the Council. The Council that had earlier showed satisfaction over the administrative and financial matters of COMSATS, appreciated the financial and in-kind contributions by some Member Countries towards COMSATS' activities, and encouraged all others to provide financial support to the organization for achieving the objectives of South-South cooperation. The Council appreciated the efforts of COMSATS Secretariat in fulfilling the objectives of the organization, including the steps taken for extending COMSATS' membership to other developing countries, and expressed pleasure on learning about the initial consent of the Government of Morocco to join COMSATS as a Member State.

Excerpts from a Letter of Appreciation from Rector KazNU, Kazakhstan, Prof. Galimkair Mutanov, to the Executive Director COMSATS

We are pleased to learn that Al-Farabi Kazkh National University has been accepted to COMSATS Network of Centres of Excellence... We realize the importance of mission entrusted to us and the responsibility of its fulfillment.... I would like to thank you for warm welcome and hospitality rendered to Prof. Tlekkabul Ramazanov at the 18th meeting of COMSATS Coordinating Council. (The) good impressions and positive reviews show respect and goodwill to our country.

Under another agenda-item, progress reports of the two International Thematic Research Groups (ITRGs) on 'Climate Change and Environmental Protection' and 'Information and Communication Technologies' (ICTs) were presented to the Council by the representatives of their Lead Centres. While reporting the progress made by ITRG on ICTs, Dr. Haroon Rashid (CIIT) informed that the project component related to 3D Graphical Imagery Therapy for Healing Brain Tumors in Children (3DGIT), funded by the National ICT R&D Fund of Pakistan, has been successfully completed. Prof. Lin Zhaohui (ICCES-China), presenting the activities of ITRG on Climate Change informed that the member institutions have analyzed the extreme weather and climate events in their respective countries, based on the observed meteorological datasets. The Council was informed that two more ITRGs on 'Agriculture, Food Security and Biotechnology' (led by NRC-Egypt) and 'Renewable Energy' (led by IROST-Iran) are scheduled to hold their foundation meetings during June and September 2015, respectively.

Conclusion

During the concluding ceremony of the Council meeting, votes of thanks were given by the Chair and the Co-Chair of the meeting, acknowledging the support of ITI and COMSATS Secretariat for organizing the meeting in Colombo, and appreciating the active participation of Council members enabling the Council to meet its objectives. On behalf of the local Organizing Committee, Dr. J.K.R.R. Samarasekera, Additional Director General (Research & Development), ITI, thanked the foreign delegates for traveling long distances in order to participate in the meeting. She acknowledged the support and guidance of the senior officials of the Ministry of Higher Education & Research, Government of Sri Lanka.

The next (19th) meeting of the Coordinating Council will be hosted by COMSATS Institute of Information Technology (CIIT), in Islamabad, Pakistan.

Communiqué of the 18th Coordinating Council Meeting of COMSATS (12 – 13 May 2015, Colombo, Sri Lanka)

The participants of the 18th meeting of COMSATS Coordinating Council, comprising of thirteen Council Members or their representatives after having deliberated upon the eleven-point agenda of the meeting on 12-13 May 2015, are pleased to make the following joint statement:

1. The Members of COMSATS Coordinating Council highly appreciate the excellent arrangements made by the Industrial Technology Institute (ITI) for holding the 18th Council meeting and for providing generous hospitality to its participants.
2. The preparation of necessary documentation by COMSATS Secretariat and the administrative support provided to ITI for the successful organization of the meeting is noted with satisfaction.
3. The Council Members are pleased to learn about the high quality of multi-disciplinary research work being undertaken by ITI, and encourage the Institute to seek research partners in COMSATS' Member States.
4. The Council welcomes the induction of the Al-Farabi Kazakh National University (KazNU), Kazakhstan, as a new Member of the Network of Centres of Excellence and hopes that the University will actively participate in the programmes and activities of COMSATS.
5. The efforts being made by COMSATS Secretariat for extending COMSATS' membership to other developing countries is noted with satisfaction. The Council is pleased to learn about the initial consent of the Government of Morocco to join COMSATS as a Member State.
6. The signing of a Memorandum of Understanding (MoU) between COMSATS and UNESCO for cooperative programmes in different fields of science and technology has been noted with pleasure. COMSATS Secretariat is encouraged to continue its collaboration with international organizations having similar mandates, including UNESCO, TWAS and ISESCO, for the socio-economic uplift of the countries of the South.
7. The Council recognizes the importance of the Charter of the Network of Centres of Excellence and considers the amendments approved in the present meeting an important step towards unified statutes of the organization.
8. The Council appreciates the dedicated efforts of COMSATS Secretariat to fulfil the objectives of the organization, and takes note of the following additional achievements:
 - i) Launching of the fourth International Thematic Research Group (ITRG) and continuation of the activities of three already operational ITRGs;
 - ii) Preparations for launching of two more ITRGs during 2015;
 - iii) Steady stream of capacity-building events, organized in collaboration with other international organizations, with the participation of scientists, engineers and technicians belonging to Centres of Excellence and Member States;
 - iv) Preparations for holding the 3rd Commission Meeting of COMSATS during October 2015;
 - v) Launching of COMSATS Distinguished Professorship Scheme;
 - vi) Launching of COMSATS' Science Diplomacy Programme;
 - vii) Increasing the utilization of postgraduate scholarships at the COMSATS Institute of Information Technology (CIIT), Pakistan, by Member Countries; and
 - viii) Concerted efforts for the regular publication of COMSATS' Newsletter, journal 'Science Vision' and other information material about the organization.
9. The visits of Executive Director to the international organizations and Centres of Excellence and interactions with the members of diplomatic and scientific communities of Member States are highly beneficial in promoting COMSATS' mission of South-South cooperation in science and technology. He is advised to continue his efforts towards the implementation of COMSATS' five-year strategy.
10. The Council records with gratitude the financial and in-kind contributions by some Member Countries towards COMSATS' activities and encourages all others to provide financial support to the organization for achieving the objectives of South-South cooperation.
11. The Council encourages the Network members to make serious efforts for the following:
 - i) Increasing the number of collaborative research and development projects with other Centres of Excellence;
 - ii) Redouble efforts to commercialize the products developed in their respective Centres of Excellence
 - iii) Launching of the remaining four ITRGs;
 - iv) Maximum utilization of the scholarships offered by Centres of Excellence in China, Pakistan and Iran;
 - v) Keeping COMSATS Headquarters aware of new developments and major achievements of their organizations;
 - vi) Contributing scholarly scientific articles for publication in COMSATS' bi-annual journal, the 'Science Vision'; and
 - vii) Placement of their officers at COMSATS Headquarters on secondment.
12. COMSATS Coordinating Council reiterates its recommendation for the Member States to increase their level of GERD component to a level of 2% of GDP and enhance financial support for international bodies that provide S&T capacity-building opportunities.

S&T INDICATORS OF MEMBER STATE

In Spectrum: Republic of Colombia



The Republic of Colombia is located in the North West of Latin America, sharing its borders in the North West with Panama; to the East with Venezuela and Brazil; and to the South with Ecuador and Peru. The country shares maritime limits with Costa Rica, Nicaragua, Honduras, Jamaica, Dominican Republic and Haiti.

The territory of what is now Colombia was originally inhabited by indigenous peoples, including the Muisca, Quimbaya, and Tairona. In 1499, the Spanish arrived and initiated a period of conquest and colonization, ultimately creating the Viceroyalty of New Granada, with its capital in Bogotá. Independence from Spain was won in 1819, but by 1830 "Gran Colombia" collapsed with the secession of Venezuela and Ecuador. What are now Colombia and Panama emerged as the Republic of New Granada. The new nation experimented with federalism as the Granadine Confederation (1858), and then the United States of Colombia (1863), before the Republic of Colombia was finally declared in 1886.

Historically an agrarian economy, Colombia urbanized rapidly in the 20th century. Today, 17% of the workforce is employed in agriculture, generating about 6.1% of GDP; 21% of the workforce is employed in industry and 62% in services sector, responsible for 37.3% and 56.6% of GDP, respectively (*CIA World Factbook*). Tourism in Colombia is an important industry.

Colombia is the second most biodiverse country in the world, after Brazil, which is approximately 7 times bigger in area. Colombia has top ranking for its diversity in bird species. The country has the highest number of species by unit area worldwide and it has the largest number of endemism (ecological state of a species being unique to a defined geographic location). These facts make knowledge of conservation science and biodiversity an important consideration in the overall S&T strategy of the country.

According to the Fundación ProAves (a non-profit organization working on bird ecology in Colombia), about 10% of the known species of the world live in Colombia, including over 1,900 species of birds, more than in Europe and North America combined. Colombia has 10% of the world's mammals species, 14% of the



amphibian species and 18% of the bird species of the world. On a measure of the number of species "confirmed" with photograph and specimen records, Colombia scores 1,850 bird species (exceeding Peru's total of 1,762 and Brazil's of 1,771).

The country has between 40,000 and 45,000 plant species, equivalent to 10 or 20% of total global species, this is even more remarkable given the fact that Colombia is considered a country of intermediate size as per the National Parks of Colombia, an autonomous department of the Ministry of Environment, Housing and Territorial Development, Government of Colombia.

Colombia is rich in natural resources, and its main exports include petroleum, coal, emeralds, coffee, nickel, cut

Socio-economic and S&T Indicators of Colombia

Indicator	1995	2000	2005	2010	2013
Total Population (Millions)	36.57	39.90	43.18	46.44	48.32
GDP per capita (current US\$)	2,529	2,504	3,394	6,180	7,865
Exports of goods and services (% of GDP)	15	16	17	16	18
High-tech exports (% of manufactured exports)	7	8	5	5	7
Internet users (per 100 people)	0	2	11	37	52
Mobile cellular subscriptions (per 100 people)	1	6	51	96	104
School enrollment, primary (% gross)	112	119	120	115	-
School enrollment, secondary (% gross)	63	72	82	96	93
Researchers in R&D (per million people)	-	101	166	154	-
Patent applications (Residents)	141	75	99	133	251
Total Trademark applications	13,054	16,610	19,937	25,990	26,314
Immunization, measles (% of children, ages 12-23 months)	95	88	96	88	92

Source: World Bank Indicators (Retrieved: June 2015)

flowers, bananas, and apparel. USA is its leading export partner (accounting for Colombia's 31.8% of total exports), with China, Panama and India following the list. Colombia's key imports include industrial and transportation equipment, consumer goods, chemicals, paper products, fuels, and electricity with USA, China, Mexico, and Brazil being chief import partners (*CIA World Factbook*).

The electricity production in Colombia comes mainly from renewable energy sources, 67.8% of it is obtained from hydroelectric generation. Colombia's commitment to renewable energy was recognized in the 2014 Global Green Economy Index (GGEI), ranking the country fourth among the top 10 nations in the world in terms of greening efficiency sectors. The report states, "Colombia's high performance is driven by a strong result on the Efficiency Sectors dimension due to its utilization of renewable energy and commitment to advancing sustainable tourism" (*GGEI Report, 2014*). The country is ideally poised to harness benefits of clean energy coming from a binding international agreement to cut GHG emissions later this year and must continue to invest in order to expand renewable energy option in its energy-mix.

According to Colciencias, the Colombian Administrative Department of Science, Technology and Innovation, the country has more than 3,970 research groups registered in science and technology in 2014, the number has considerably decreased over the last 4 years from its peak value in 2011 recorded at 5,554. The department also reports a decrease of 7.76% of the research groups that meet its set standard definition, as compared to 2013. The Colombian government has set up iNNpulsa, a body that promotes entrepreneurship and innovation in the country by providing grants to start-ups.

The Colombian economy has steadily grown in the last 20 years with a fair rise in goods and services, of which a consistent share has been of high technology exports. Primary and Secondary school enrollment also have seen a remarkable consistency and an upward trend as GDP per capita has risen from US\$ 2529 in 1995, to US\$ 7865 in 2013. Life expectancy at birth in 2000 was 71 years; the life expectancy increased to 74 years by 2013 (*World Bank Development Indicators, June 2015*).

According to a popular website MyMEDHoliday the general Health standards in Colombia have improved owing to massive healthcare reforms leading to better healthcare systems in the country since the 1980s. Colombia is projected as one of the main destinations in terms of health tourism in Latin America due to the

quality of its healthcare professionals, a good number of institutions devoted to health, and an immense inventory of natural and architectural sites. Cities such as Bogotá, Cali and Medellín are the most visited for cardiology procedures, neurology, dental treatments, stem cell therapy, ENT, ophthalmology, and joint replacements among others for the medical services of high quality.

Public spending on education as a proportion of GDP in 2013 was 4.9%, which puts Colombia in the 95th place. The expected and mean years of schooling stood at 13.2 and 7.1 years, respectively. A total of 94.7% of the population aged 15 and older were recorded as literate, including a slightly higher number for females (*UNDP Human Development Report, 2014*). Colombia's HDI value for 2013 is 0.711, which is in the high human development category, placing the country at 98 out of 187 countries and territories. Between 1980 and 2013, Colombia's HDI value increased from 0.557 to 0.711, an increase of 27.6 percent or an average annual increase of about 0.74 percent.

Despite the fact that most indicators on the World Bank's Knowledge Index (KI) and Knowledge Economy Index (KEI) for Colombia have seen an upward trend in recent years starting from the early 2000s, there has been noteworthy progress in the Education Index. However, the progress on the economic incentive regime index does not seem as encouraging. The Innovation Index shows a flat rise on a comparison with the KEI, ICT and KI indices. This calls for more focus on higher education with particular relevance to promoting innovation and entrepreneurship.

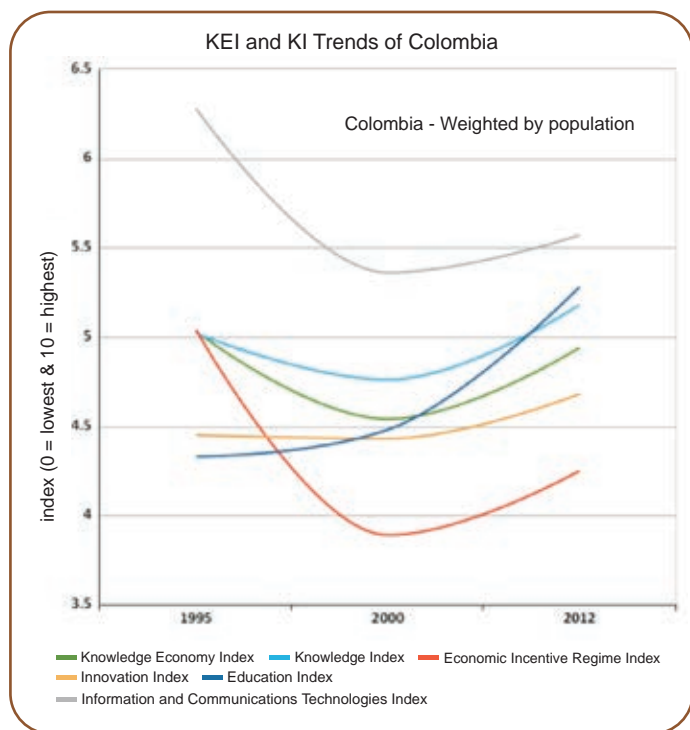
Colombia has very low R&D intensity, with Gross domestic expenditure on R&D (GERD) at around 0.16% of GDP for the last five years to 2011. In 2009, the private sector funded 19% of GERD and the public sector 77%, while 4% was financed from abroad (*OECD Science, Technology and Industry Outlook 2012*).

In 2014, Colombia's GDP had grown faster than any other country in Latin America and was dubbed as the fourth fastest growing in the world. Although the same year

Colombia's HDI Trends

Years	Life expectancy at birth (Years)	Expected years of schooling (Years)	Mean years of schooling (Years)	GNI per capita (2011 PPP\$)	HDI Value
1980	65.5	8.8	4.3	6,851	0.557
1990	68.3	9.3	5.5	7,391	0.596
2000	71	11.5	6.5	8,275	0.655
2010	73.4	13.5	7.1	10,368	0.706
2013	74	13.2	7.1	11,527	0.711

Source: *UNDP Human Development Report (Accessed on 28 June 2015)*



Colombia struggled to keep inflation lower than it was in 2013, but it performed better in dealing with poverty, extreme poverty and unemployment all thanks to technology-based programmes designed to address inequality.

To develop emerging technologies, the 2009 national STI policy of Colombia proposed developing strategic sectors to produce high-value goods and services with high scientific and technological content. These sectors include energy and natural resources, biotechnology, materials and electronics, ICT, logistics and design (*OECD Science, Technology and Industry Outlook 2012*).

On a continent where Brazil, Chile and Argentina are home to distinguished research institutes and robust science budgets, Colombia is taking the cue to invest more in scientific research. According to an article written by Aleszu Bajak on the Future of Science in Colombia, Colciencias, the Colombian government's science, technology and innovation department, is petitioning for larger budgets. The department had planned a two-pronged approach: train more scientists and invest in high-calibre research institutions to keep those researchers in country. Colciencias has designed a strategy to support STI skills from early childhood to doctoral studies. Government initiatives include: increasing the number of highly qualified human resources in priority areas; achieving a higher percentage of full-time teachers in universities; and strengthening regional scientific and technological capabilities.

The focus of the Centro Internacional de Física (CIF),

Colombia, which is COMSATS' International S&T Centre of Excellence in Colombia, ranges from astrophysics and optics to biotechnology and materials science. Since its founding in 1985, the Centre has not only advanced basic scientific understanding, but also has produced important applications to support industry and improve the lives of the people.

Some noteworthy achievements of CIF during the past 30 years or so include: 80 technological products obtained through contracts with industry; three spin-offs (and two others in process); 220 international and national publications; 110 articles in proceedings; seven books; five patents; over 80 finished projects; 36 completed R&D projects; 40 national cooperation agreements; 30 international cooperation agreements; and 140 trained scientists, including 30 Ph.Ds. (*Excellence in Science: CIF, Bogota, Colombia, 2013*).

Colombia stands to increase its exports to the U.S. by 40%, which could translate into more than US\$1 billion in annual revenue. But without industrial and innovation policies put in place, Colombia's science and technology sector could fall prey to the asymmetries resulting from a free trade agreement with a stronger economy (*OECD Science, Technology and Industry Outlook 2012*).

The HDI ranking of the country and its recent performance on the HDI since 2010 is promising, however there is a need to fortify this spur with sustained funding and measures to utilize the S&T resources of the country to address key areas of development.

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ACTIVITIES/NEWS OF COMSATS' CENTRES OF EXCELLENCE

Farewell Given to Nigerian Students Graduating from CIIT-Pakistan

On June 30, 2015, the Executive Director COMSATS, Dr. I.E. Qureshi, held a farewell meeting with Nigerian students that graduated from COMSATS Institute of Information Technology (CIIT). These students, (Fall-2013 scholarship) availed the scholarships offer to students from COMSATS Member States. The six graduating Nigerian students attended the farewell meeting that was held at Islamabad campus of the Institute. The meeting also had the participation of Mr. Tajammul Hussain, Advisor (Programmes) COMSATS; Dr. Arshad S. Malik, Head of CIIT International Office; as well as Mr. Aminu Abdulkadir, Minister/Head of Chancery of Nigerian High Commission in Islamabad.

During the meeting, Dr. Qureshi noted that the world communities are gradually shifting towards becoming knowledge societies, which has led the developed countries to investing in brain gain, in addition to their earlier focus on production. He emphasized that using the right knowledge and skill set coupled with ambition and drive, the young generation can bring change in the socio-economic conditions of their countries. Dr. Qureshi congratulated the students on completion of their degree requirements, and hoped that they would be able to better contribute to their country's development. He encouraged the students to promote COMSATS as an effective driver of socio-economic change in the developing countries.

The Nigerian students, who had been enrolled in graduate programmes in Mathematics and Biosciences, shared their academic experiences at the Institute, and the topics of their theses. The research undertaken by these students pertained to: fluid mechanics applications in healthcare, apparatus in Hilbert space, eradication of diseases, chromatographic processes in industry, and cyber-security.

Speaking on the occasion, Mr. Abdulkadir appreciated the academic performance of the Nigerian students and advised them to consider themselves as the representatives of CIIT in Nigeria. In his remarks, Dr. Malik also considered the foreign students an asset for CIIT, as they contribute towards creating a unique multi-cultural environment that helps broaden the experiences and learning of other students. He informed that, currently, there are 120 international students enrolled in CIIT under various programmes, and 50 more applications are under consideration for admissions in Fall-2015 session. He informed that the facilities being offered to foreign students at CIIT are being further improved to make their experience more productive and comfortable. Dr. Qureshi appreciated these efforts and advised that CIIT should focus on COMSATS' Member Countries while taking in international students, which was one of the purposes behind the establishment of the Institute in 1998.

At the close of the meeting, the Nigerian students were presented souvenirs by Dr. Qureshi.

Feedback from a Nigerian Graduating Student

"Living in Pakistan and studying in CIIT Islamabad has been a worthwhile experience for me. I was really satisfied with the faculty members with regards to their personal relationships with the students. They have always been available to address academic issues of the students. That really made the process of learning easy..."



David Ugochukwu Uche
MS (Mathematics), CIIT, Islamabad

CIIT-Pakistan Professor wins the Horizon2020 Research Grant

Dr. Habib Bukhari, Associate Head, Department of Biosciences, CIIT Islamabad campus, won a prestigious grant for his research proposal under Horizon 2020 – the biggest EU Research and Innovation programme. The title of his project is "MetaBLE, Advanced bioinformatics for genome and metagenome analyses with discovery of novel biocatalysts from extremophiles: implications for improving industrial bioprocesses". The aim of the proposal is to acquire new insights about the mechanisms of environmental adaptation, particularly for cold-adapted organisms, and to discover novel metabolic pathways and enzymes with potential industrial value. The goal will be accomplished by establishing collaboration and a knowledge-exchange network with industrial and academic partners.

This research activity is expected to significantly contribute



Dr. I.E. Qureshi holding a meeting with the Graduating Nigerian Students

towards pushing all the involved laboratories to the top level in the field of production of active biomolecules and in the discovery of mechanisms of molecular adaptation under extreme environmental conditions. These discoveries may help the manufacturing of a new generation of products, such as cleaning agents, biofuels, replacing chemicals in industry as a green technology application.

CIIT-Pakistan Hosts EMMA-3 Meeting

CIIT hosted the final meeting of the Erasmus Mundus Mobility with Asia (EMMA) Consortium of European and Asian universities from 12-14 May 2015, at its Islamabad campus.

The 3-day meeting, jointly organized by CIIT and University of Nice (France), was attended by two European partners – University of Evora (Portugal) and University of Nice (France) – and six Asian partner universities, namely University of Philippines (Philippines); Ateneo de Manila University (Philippines); Jadvapur University (India); NED University of Engineering and Technology (Pakistan); Fatima Jinnah Women University (Pakistan); and CIIT (Pakistan). In addition, two universities from Afghanistan, the University of Herat and Shaikh Zayed University, as well as Hajvery University (Pakistan) were invited to attend the meeting as prospective partners for the future programmes.

The meeting bearing the theme “Towards Erasmus+”, focused on reviewing the EMMA-3 Programme, which is drawing to a close. The participants discussed various possibilities of cooperation under the Erasmus+ Programme (2014-2020) of the European Union. Besides assessing the impact of the EMMA-3 programme, the meeting also selected seven mobilities for the “EMMA Mobility Award 2015” based on the overall academic and extracurricular performance of the beneficiaries.

RSS-Jordan Holds Workshop on Environment-friendly Technology in Food Industries

On June 8, 2015, the Royal Scientific Society (RSS) of Jordan held an introductory workshop at the Amman Chamber of Industry designed to highlight a project focused on transfer of environment-friendly technology to members of food industry in all parts of the Kingdom. This project has the support of United Nations Industrial Development Organization (UNIDO) and is financed by the European Union.

The project is designed to reduce energy consumption of food industry members in the country in order to improve the environmental management system (ISO-14001), and to publicize the green financing programme. The project will



Technical Session of the Introductory Workshop on Environment-Friendly Technology in Food Industries, Amman

support twelve factories with an aim to reducing their consumption of raw materials and water, as well as discharge organic materials in wastewater.

Moreover, the project will follow an integrated approach in implementation, as it seeks to improve: efficiency of resources and cleaner production, the environmental management system, and the calculation of materials costs in order to achieve sustainable production.

This workshop will be followed by a series of similar workshops in Zarqa and Marka (North East of Amman) to seek the participation and involvement of stakeholders in the project. It is worth mentioning that the project was successfully implemented during 2009-2011 in Egypt, Tunisia and Morocco, which resulted in reducing the consumption of resources, energy and costs of production.

New Developments at BCSIR-Bangladesh

Hon. Md. Nazrul Islam took charge of Bangladesh Council of Scientific and Industrial Research (BCSIR) as its new Chairman, on 14 June 2015. Mr. Islam also holds a portfolio of Additional Secretary, Ministry of Science and Technology, Government of People's Republic of Bangladesh.



In another development, BCSIR and the China National Pulp and Paper Research Institute (CNPPRI), Beijing, China, have reached an agreement for cooperation in the field of science and technology, which was formalized through signing of an MoU.

Activities at IRCC-Sudan

During the reporting period, three training activities for industrial enterprises were co-organized by the Industrial

Research and Consultancy Centre (IRCC), Sudan, as per its mandate. These trainings held in Khartoum included: 'Training on Management Technology' in collaboration with Giad Company (3-10 May), and 'Training on Environmental Impact Assessment' in collaboration with Central Laboratory for Technical Service and Calibration (17-21 May 2015). Another training activity was held in partnership with the Ocean Center of Technology, Khartoum, Sudan (4 May - 3 Jun 2015).

The Centre also participated in various events and meetings, including:

- 7th Arab International Conference on Information Technology, Rabat, Morocco (19-21 May);
- Forum of Measurement and Calibration, organized by Nano Centre for Measurement and Calibration, Khartoum (25 May); and
- 5th 'Made in Sudan' Exhibition (14-28 June).

Soybean Research-related Capacity-Building at IRCC-Sudan

As part of the 'National Project of Utilization of Soybean Cultivated in Sudan', a workshop on 'Soybean Value Chain: Comprehensive Marketing Systems Approach to Link Producers to Market and Credit', was held at IRCC, Sudan, on 11-13 May 2015. The event was jointly organized by the United Nations Industrial Development Organization (UNIDO) and the Sudanese Ministry of Industry (MoI) with the funding support from the Government of Japan. The objectives of the meeting were to: assist the Government of Sudan to strengthen soybean value addition to support job and wealth creation in rural farming areas; create relevant awareness; and explore ways to increase efficiencies along the entire soybean value chains.

On 28 May 2015, IRCC participated in the final steering Committee meeting to evaluate the status of the project and to discuss funding opportunities for the next phase of the project. The meeting was attended by senior officials of MOI, UNIDO, IRCC, and the Embassy of Japan in Sudan.

Later, on 23-27 May 2015, the soybean equipment procured from Japan was installed by three Japanese experts. The four main components were a roaster, a crusher/miller, a dough mixer and an oven. The tape-cutting ceremony to commission the installation of soybean processing equipment to IRCC was jointly performed by H.E. Mr. Mohamed Ahmed Ajaballa, State Minister, Ministry of Industry, and H.E. Mr. Hideki Ito, Ambassador of Japan. On the occasion the UNIDO Representative in Sudan, the Federal Undersecretary, Ministry of Industry and the Industrial Development Officer, UNIDO, Vienna, were also present to witness the ceremony.

New species named after a researcher at Embrapa Agrobiologia, Brazil

A new species of legumes has been identified in the Botanical Garden of Rio de Janeiro and named *Fariana Hymenaea*, after the researcher Sergio Faria Miana, from Embrapa Agrobiologia. The researchers at the Rio de Janeiro Botanical Garden, Robson Ribeiro Daumas, Benicio Domingos Oliveira Silva Cardoso, and Haroldo Cavalcante de Lima, who identified the new species, published their discovery in an article in February 2015. The new species is found in the state of Espírito Santo, in the Southeast of Brazil, and grows in tree scrub or sandbank. It is scattered along the Atlantic coast. The naming of the new plant species after the scientist was a tribute to him as recognition of his more than 30 years of research in partnership with the Botanical Garden.

IROST- Iran and the University of Sistan and Baluchestan (Iran) signed Cooperation Agreement

On June 22, 2015, Iranian Research Organization for Science and Technology (IROST), Iran, and the University of Sistan and Baluchestan (Zahedan, Iran) signed a Memorandum of Understanding (MoU) for cooperation in different fields of science and technology, including renewable energy and technology, agriculture, chemical technology and advanced materials, biotechnology, and information technology.

The MoU was signed by H.E. Prof. Akbari, Vice Minister and President of IROST, and Dr. Alireza Bandani, the President University of Sistan and Baluchestan, with the aim of: encouraging cooperation in scientific and research activities particularly at postgraduate level; implementing joint research projects of mutual interest at regional and national level with an emphasis on research potential of Sistan Balouchestan province for renewable energy (solar, wind



Officials of IROST and University of Sistan and Baluchestan Signing the MoU

and sea waves), biotechnology, agriculture, medicinal plants, chemical and marine technology; as well as cooperating in patent registration, organizing joint symposia, academic meetings and training workshops at national and international level in Tehran and Zahedan. Further, both sides agreed to share their laboratory equipment and library resources. The University of Sistan and Baluchestan will support IROST for establishment and development of centres for entrepreneurship at different universities in the country.

TUBITAK MAM, Turkey, holds Research and Support Awards

To encourage best practices in R&D at TUBITAK Marmara Research Center (MAM), Turkey, the annual 'Research and Support Awards' were held at the Center on June 16, 2015. The President and Vice-Presidents of MAM, Deputy Director TÜSSİDE, MAM Institute and Unit Managers and MAM employees participated in the event.

Eligible employees were presented awards and certificates in various categories, including "Research Support", 'Technology Development', 'Innovation', 'Most Successful Research Team' and 'The Most Successful Researcher Award'.

ICCBS-Pakistan to be designated as the UNESCO Category-2 Institute

Dr. Ahmed Fahmi, UNESCO Programme Specialist in S&T for South Asia, called on the Patron-in-Chief International Center for Chemical and Biological Sciences (ICCBS), Prof. Dr. Atta-ur Rahman, and Director ICCBS, Prof. Dr. Muhammad Iqbal Choudhary, to finalize the procedures for designating the status to ICCBS as 'UNESCO Center for Excellence Category-2 Institute'. Dr. Fahmi's visit to the Center is one of the final steps to the declaration, as ICCBS had already been under observation for the last many years for the said status by UNESCO.

Researchers of ICCES-China predict the El Niño conditions to continue in 2015

Climate researchers, Fei Zheng and Jiang Zhu of International Center for Climate and Environment Science (ICCES), Institute of Atmospheric Physics (IAP), Chinese Academy of Sciences (CAS), China, predict that El Niño conditions will continue in 2015

El Niño–Southern Oscillation (ENSO), a periodic warming and cooling of the surface waters over the Central and Eastern equatorial Pacific Ocean, has a significant influence on global weather/climate, ocean conditions, and marine fisheries. In ICCES/IAP, a new large size (i.e., 100 members) ensemble prediction system (EPS) has been developed recently to make ensemble ENSO forecast routinely in real time. This year, the ICCES/IAP ENSO EPS predicted that the El Niño conditions which occurred in 2014 would continue through the Northern Hemisphere during summer 2015 with an approximately 60-70% chance, and with a probability of more than 60% that it will last through autumn and winter. At the same time, the amplitude of this El Niño event will be around 1°C, indicating a weak-medium warm event (Figure-1). Based on this ENSO forecast result, the extreme rainfall in China is predicted to be centralized over the Mid-lower reaches of the Yangtze River in boreal summer 2015.

The developed ICCES/IAP ENSO EPS has three main components. The basic model is an air-sea coupled ENSO model. An air-sea coupled-model data assimilation system is used to decrease the error in both the initial atmospheric and oceanic conditions for the model, by assimilating a series of atmosphere and ocean observations simultaneously. A linear first-order Markov stochastic model is embedded within the coupled model to effectively simulate the time evolutions of the model uncertainties of forecasted sea surface temperature (SST) and prolong the period of ENSO prediction. A 20-year retrospective forecast comparison demonstrates that good forecast skill of the EPS with a prediction lead time of up to two years was possible.

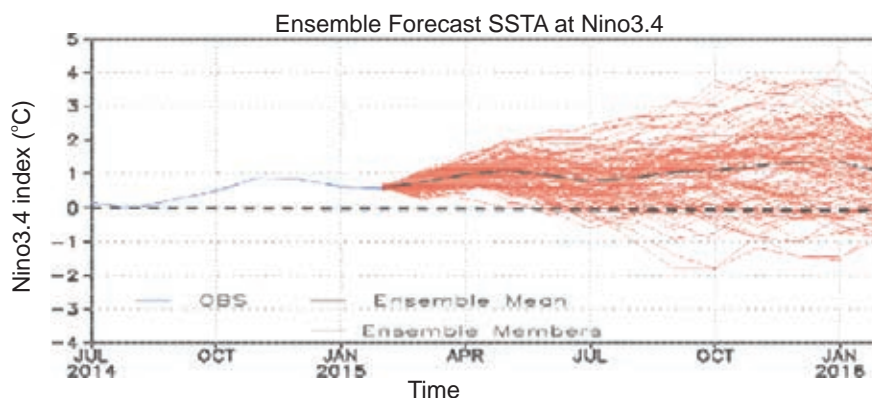


Figure-1: Ensemble forecasted Nino 3.4 indices with 100 ensemble members (red line), starting at March 2015. The black line is the ensemble-mean forecast.

OPINION: NON-GOVERNMENT INDIVIDUALS (NGIs) - ROLE OF INDIVIDUALS IN MAKING PAKISTAN SCIENCE CONSCIOUS

Anwar Nasim*

The slogan "Making Pakistan Science Conscious" first appeared as headline of a news item published in the newspaper "Dawn" on March 9, 1984, based on my interview when I was working with National Research Council of Canada in Ottawa. For the last three decades this has been a deep-rooted passion very dear to my heart. More recently, Pakistan Academy of Sciences has started a very active monthly programme to motivate young university students to discuss strategies for making Pakistan Science Conscious.

Economic prosperity and overall well-being of any nation are complex end-points determined by a large number of inter-related factors. One of the aspects that has been given less attention is the role of committed individuals, working in private capacity without organizational umbrella. Such individuals in any society are the biggest segment of the population engaged in social welfare, socio-political reforms or knowledge dissemination. In Pakistan with a population of nearly two hundred million, a simple analysis will show that those involved in Government and Non-government Organizations (NGOs) will be less than one or two percent. Therefore, a big question is, 'what is the role and contribution of the concerned citizens among remaining 98 percent individuals who constitute a big majority in this triangle?' Another feature worth pointing out is that even the success of NGOs and governments is also largely determined by individuals. In politics, the human history is full of examples where individuals changed the course of history and destiny of nations.

In a developing country like Pakistan, things move in a totally different manner. The pattern of development in such countries has a different dimension because of a number of reasons but mainly because the failure of most basic systems. In such situations, individuals play a key role in changing the status of that very nation from a 'developing' to a 'developed' one. Individuals' role cannot be underestimated in the overall progress of the society.

Pakistan's history is replete with examples of selfless sons of the soil who made great contributions in their fields; take for example Abdul Sattar Edhi, Hakeem Muhammad Saeed, Akhtar Hameed Khan and many others.

The Concept of Non-government Individuals (NGIs)

Depending on government for providing everything is an unrealistic approach towards problem solving. It is imperative that we make communities self-reliant. The concept of Non- Government Individuals (NGIs) is another dimension of what we call "self-made" professionals or entrepreneurs. This concept corresponds to the idea of promoting gifted individuals in all fields of life. The main objective of this concept is to encourage and develop individual's capacity in order to support socio-economic growth in the country. Here I am tempted to quote a Japanese Professor named Kihara, who during a seminar in 1968 was questioned "What would you do if you see that productivity of your country is less than your real potential as a nation?" and he answered, "You see, we are forty million adults and if each person cuts his/her sleep by one hour we gain forty million hours. I leave it to you to imagine what can be achieved in forty million extra hours every day".

There are many examples of NGIs, who made enormous impact on society. One such individual is Abdul Sattar Edhi. He began to work as a street hawker selling pencils and matchboxes, and is now well-known philanthropist. He runs the Edhi Foundation that owns the world's largest ambulance service, and operates free nursing homes, orphanages, clinics, women's shelters, and rehabilitation centres all across the country. His example inspires every human soul. Just a few simple quotations from him will illustrate the point.

"Things are done by doing them not by talking about them."; "I hated failure and knew that success was synonymous with effort, by which rule I believe I could win."; "The strength of words lies in implementation, otherwise they are meaningless."

One can find similar examples from many other walks of life. In case of Science and Technology, the first name that comes to my mind is Dr. Norman Borlaug, known as 'father of Green Revolution'. He is often credited with saving over a billion people from starvation as he developed semi-dwarf, high-yield, disease-resistant wheat varieties and combined these with modern agricultural production techniques to

*** About the Author:** Dr. Anwar Nasim is a Pakistani molecular biologist and geneticist, who is currently holding the position of President of Pakistan Academy of Sciences since January 2015. He holds a Ph.D in Biochemical Genetics from University of Edinburgh (1966) and has served many academic institutions and S&T organizations. Dr. Nasim is also Fellow of The World Academy of Sciences (TWAS), and Islamic World Academy of Sciences (IAS). Email: dranwarnasim@gmail.com



revolutionize wheat yield in Mexico, Pakistan, and India.

Another great name is that of Prof. Dr. M. S. Swaminathan from India. His revolutionary contributions are in the fields of agricultural renaissance, sustainable rural development through ICT, and technological empowerment of women in agriculture, through knowledge & skills.

History has clearly documented the role that individuals have played in paving the ways that human societies have followed over the centuries. In the book '100 Greatest Men', the author collected accounts of one hundred individuals and their endeavors that brought a significant change to the current world. The number of persons and their fields of endeavor are enlisted below:

Field	No. of Persons
Scientists & Inventors	36
Political & Military Leaders	31
Secular Philosophers	14
Religious Leaders	11
Artistic & Literary Figures	5
Explorers	2
Industrialists	1
Total	100

Non-government Individuals (NGIs): The Way Forward

What is better than one? Two, of course. This simple question defines the next phase of NGI concept and that is setting up of a national NGIs network. The main objective of NGIs network will be to bring like-minded committed professionals together for sharing the best practices, learning the lessons from each other and modifying existing strategies in areas where mistakes were committed.

In the light of existing infrastructures that govern the running of any society, one can critically examine how one can approach the problems of achieving sustainable economic development. In an ideal situation, there is a need for constructive interactions between the three key players, i.e. Government, NGOs and NGIs; for this to happen NGIs need to have proper platform in the form of a network.

NGIs and Promotion of Science and Technology

It is evident that NGIs exist in all fields of life; for Science and Technology we need to have a network of scientists, engineers and other professionals to promote science in the country. Promotion of science is a complex process that involves several different aspects, e.g. entrepreneurship,

technology parks, popularization and communication of science, science diplomacy, capacity building, training in research, international collaboration, seminars/conferences, writing monographs and books, knowledge-based economy, etc. Hence there is a need for a large number of dedicated individuals. This group of NGIs will need to explore several new approaches to reach the average person with the aim of promoting science and technology. The role of media, both print and electronic, needs to play a crucial role for such a network of NGIs. In this regard, Pakistan Academy of Sciences (PAS) has already taken steps to work closely with Pakistan Science Foundation (PSF), and Pakistan Council for Science and Technology (PCST) to develop closer working relationship with print and electronic media. To achieve this objective, Pakistan Academy of Sciences (PAS) in collaboration with Higher Education Commission (HEC) of Pakistan has started a programme of monthly meetings with young university students. In this campaign, it is absolutely essential to involve the younger generation. Without youth no mission can move forward.

Recommendations

This write up focuses entirely on the role of individuals in promotion of Science and efforts to make Pakistan Science Conscious. The scope however for such efforts is much broader and applies to all segments of society. In our desire to make a society "Happy, Healthy and Balanced", the real challenge is for social scientists to analyze the role that individuals can play in the triangle of Government, NGOs and NGIs. A very large number of individuals (majority of the population) have the potential that remains essentially underutilized due to non-conducive environment. Once such favorable condition is obtained in Pakistan, several worthwhile national goals can be achieved.

Organizations like COMSATS and Pakistan Academy of Sciences should have a network of scientists who could work together as NGIs. Such an approach can then be extended to other groups like Medical Doctors, Engineers and Social Scientists.

This process will involve firstly identifying NGIs who can start interacting and, if possible, meet once a year. It is expected that such groups will lead to an enhanced impact resulting from synergy.

The group can start by critically reviewing the history of Science and Technology in Pakistan, identify the causes of both success and failure through SWOT Analysis. In the light of this in-depth analysis and by using the internationally known "Foresight approach", future plan of action may be developed. Such a road map also needs to be closely linked to "Vision 2025" – a development programme of the Planning Commission of Pakistan.

SCIENCE, TECHNOLOGY AND DEVELOPMENT

Aspirin Precursor Helps Conserve Plant Water

In a recent desert trial, *acacia* plants treated with the plant hormone salicylic acid, a precursor of the drug Aspirin, had a higher survival rate in arid conditions than conventional plants as reported by *SciDev.Net* in its 5th May edition.

The trial data shows that survival on less than a litre of water a month of seedlings treated with the hormone was at least 13 times higher as compared to untreated plants. The trial took place in the arid Thumama Nature Park near Riyadh, Saudi Arabia. The trial is part of a wider project that aims to address environmental degradation caused by overgrazing, while also exploring methods of growing plants in arid environments to reverse desertification. To treat the plants, salicylic acid was coated on the seeds or sprayed onto the leaves of grown plants. The acid helps suppress a reactive form of oxygen molecules produced by plants not getting enough water, which damage cells and ultimately kills them. In addition, the chemical helps to shrink the stomata conserving the water content in the plant making it drought resistant.

New Antennas Improve Wireless Internet Access

Researchers at Universiti Teknologi MARA (UiTM) in Malaysia have successfully used ionized gas in a common fluorescent light tube as an antenna for a Wi-Fi Internet router (*Science Daily*, May 29, 2015). Wi-Fi routers are essentially two-way radios that connect digital devices to the Internet. However, in buildings and across solid structures, some 'dead spots' for communication may arise, whereby Wi-Fi signals are either partially or completely blocked, such that a reliable connectivity is not possible. Similarly, electricity can form ionized gas or plasma, having comparable conducting properties to a common radio antenna when it flows through the argon-mercury vapour in a fluorescent tube. This allows an attached router to send and receive radio signals through the light tube on the standard 2.4-gigahertz Wi-Fi frequency in exactly the same way it does through a regular antenna. The router's radio waves can ionize the gas in the tube enabling it to act as an antenna whether the light is switched on or off.

Using this technology, multiple antennas could be connected to a single router through the building's electrical wiring. This would create a separate antenna in every room where there is a dedicated fluorescent light fixture, providing low cost building-wide wireless Internet coverage.

Long-Lived Novel Anti-malarial Compound Discovered

According to World Health Organization, Malaria kills over half a million people around the world, mostly children under

the age of five. Due to the emergence of drug-resistant parasites, there is a constant need to develop novel treatments for this parasitic disease. As per the report published in *SciDev.Net* by Emese Balog on 18th June 2015, a new anti-malarial compound may be able to both treat current infections and protect against future ones.

According to researchers, only a single dose of the new compound would increase immunity of patients and could help fight the malarial parasite by simultaneously interacting with several stages of the Malarial parasite's life-cycle. The compound, currently named DDD107498, was originally discovered in 2010. Since then, it has undergone testing along with dozens of other potential anti-malarial compounds as part of the 'Medicines for Malaria Venture', a public-private partnership that includes the University of Dundee, Scotland. The ability of the compound to remain in the body for relatively long time enables it to acts as a preventive agent for patients even after discontinuation of the medicine. According to the researchers, the compound would be used with an existing anti-malarial drug to counter the parasite's resistance.

Microbial Factories Fight Drug Resistance

Researchers can engineer micro-organisms to produce complex proteins much like a dairy farmer milking cows. With drug resistance on the rise, antibiotics like erythromycin, which is used to treat diseases like pneumonia, whooping cough and urinary tract infections, need to be upgraded to new analogs in order to remain effective. According to a research published in the Journal '*Science Advances*' (May 29, 2015), *E. coli* (micro-organism notorious for rapid multiplication) has been successfully harnessed to synthesize dozens of new forms of the drug. These have slightly different structures from the existing versions, some of which are effective against bacteria that have become resistant to the original form of erythromycin commonly used clinically. The research was led by Blaine A. Pfeifer, an Associate Professor of Chemical and Biological Engineering at Buffalo School of Engineering and Applied Sciences, USA. Getting *E. coli* to produce new antibiotics has been something of a holy grail for researchers in the field. This is because *E. coli*, a harmless organism, multiplies rapidly, speeding up experimental steps and aids efforts to scale-up production of drugs. The species also accepts new genes relatively easily, making it a prime candidate for genetic engineering.

In the new study, Pfeifer's team focused on one of the final steps in the anabolic process of erythromycin that had previously received little attention from researchers. Researchers focused on using enzymes to attach 16 different shapes of sugar molecules to a molecule called 6-deoxyerythronolide B. Every one of these sugar molecules was successfully adhered, leading to more than 40 new analogs of erythromycin.

PROFILE OF HEAD OF COMSATS' S&T CENTRE OF EXCELLENCE

DR. VICTOR KWAME AGYEMAN, DIRECTOR GENERAL – CSIR, GHANA

Dr. Victor Kwame Agyeman is the current Director-General and a Chief Research Scientist of the Council for Scientific and Industrial Research (CSIR), since January 2015. He is regarded as one of the leading authorities on Tropical Forest Ecology in Africa.



Dr. Agyeman holds a B.Sc (Hons) in Natural Resources Management in 1985 from Kwame Nkrumah University of Science and Technology (KNUST), Ghana. Subsequently, he undertook his M.Phil research work at KNUST under a 'Sigma (ø) Research Grant for Young Scientists'. In 1990, he did his Ph.D from the University of Aberdeen, Scotland, U.K. He continued pursuing higher education obtaining his LLB (Law degree) from KNUST, and a Qualifying Certificate/Barrister-at-Law (QC/BL) from the Ghana School of Law in 2012.

In 1985, Dr. Agyeman joined CSIR's Forestry Research Institute of Ghana (CSIR-FORIG), and in 1990 he was promoted to Senior Research Scientist at the Institute. He was appointed the Head of the Natural Forest Management Division (NFMD) in 1996. Between 2000 and 2001, Dr. Agyeman served as Management Consultant on a World Bank supported sector wide Natural Resources Management Programme (NRMP), which was executed by the then Ministry of Lands, Forestry and Mines (MLFM). Upon his return to CSIR-FORIG in January 2004, he was promoted to the rank of Principal Research Scientist (PRS). In 2007, he was appointed the Director of CSIR-FORIG. Having relevant qualification and expertise, Dr. Agyeman has also rendered his services as a Solicitor and Barrister of the Supreme Court of Ghana.

Dr. Agyeman also served as the Project Management Consultant to the African Development Bank (AfDB)-funded Community Forestry Management Project (CFMP) worth US\$10 million, for two years (between 2002 and 2004). From 2010 to 2012, he was also part of a three (3) member Ghanaian expert team appointed by Ministry of Lands and Natural Resources (MNLR-Ghana) to develop a US\$86 million Forest Investment Project (FIP).

Dr. Agyeman was the lead consultant for a Sector Strategic Analysis of the Forestry Sector of Liberia in 2010. He was also a Member of a Panel of Experts contracted by the International Tropical Timber Organization (ITTO) to develop 'Criteria and Indicators (C&I) for Sustainable Forest Management'. In addition, Dr. Agyeman has served as a member of six different 'Panels of Experts' under the auspices of the United Nations Forum on Forests (UNFF), New York, in 2006, and the ITTO in 1996, 2000, 2003, 2005, and 2010. He supported Food and Agriculture Organisation

(FAO) in 2004 to develop an African Position Paper, which was presented by Ministers of State for Forestry and Heads of Forestry Organisations in Africa at the 17th session of the Committee on Forestry (COFO) at FAO, Rome, in March 2005. The output of the consultancy also served as a working document for the African Position during negotiations at the Fifth United Nations Forum on Forests, in New York in 2005.

Dr. Agyeman has represented Ghana at several high-level international meetings. He was a member of a team of experts that represented Ghana at the United Nations (UN) for the negotiations for an International Arrangement on Forests (IAF) in 2007. Dr. Agyeman has also been the recipient of a Rockefeller Foundation Fellowship/Grant to give two lectures at Tufts University in Boston, USA, on "Sustainable Forest Management in Ghana". Between 1994 and 2013, Dr. Agyeman participated in over 70 international conferences and undertook study visits to 30 different countries, in Africa, Asia, Europe, Latin America, USA and Australia.

Dr. Agyeman has been the chairperson of the Forestry Research Network of Sub-Saharan Africa (FORNESSA) from 2009 to date. He was also a Founding Member of the Ghana Institute of Foresters (GIF). He is also currently a Member of the Ghana Bar Association (GBA). Dr. Agyeman is a Board Member or Member of the Board of Trustees of a number of international organizations and fora, including:

- Member, Technical Panel on Forest Quarantine (TPFQ) of the International Plant Protection Convention (IPPC), Rome, Italy;
- Member, Board of Trustees, Lake Victoria Research Initiative (VicRes), Kampala, Uganda;
- Member, Governing Council of the African Forest Forum (AFF), Nairobi, Kenya;
- Member, Board of Trustees of the Plant Resources of Tropical Africa (PROTA), Wageningen, Netherlands;
- Member, National Biodiversity Committee (NBC), under the Ministry of Environment, Science, Technology and Innovation (MESTI), Ghana.

He has authored one hundred and twenty-eight (128) edited Journal publications, books, monographs and research reports.

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COMSATS' BRIEF AND ANNOUNCEMENTS

Selected Forthcoming Scientific Events in COMSATS' Countries

27-29 August 2015	ARCA 2015 – 4 th Applied Research Conference in Africa, Ibadan, Nigeria (http://www.arcaconference.org/)
10-13 September 2015	OSSCOM 2015 – International Conference on Open Source Software Computing, Amman, Jordan (http://osscom2015.osscom.org/)
30 Sept.-2 Oct. 2015	Innovation Africa 2015: Developing Skills for 21 st Century Africa, Lake Victoria, Uganda (http://innovation-africa.com/2015/)

International Symposium on 'Light & Life' 14th – 16th October 2015, Islamabad, Pakistan

COMSATS in collaboration with COMSATS Institute of Information Technology, and Abdus Salam International Centre for Theoretical Physics (ICTP), is organizing the International Symposium on Light & Life from 14th to 16th October, 2015, to celebrate the International Year of Light and Light-based Technologies - 2015 (IYL 2015).

This Symposium is intended to provide a platform for discussing advancements in light, its sources, properties and interactions, and its role in sustaining and enhancing the quality of life on this planet. Leading experts and practitioners from universities and R&D organizations of COMSATS' Member States, USA, Europe, and South Asia will deliver expert talks at the event. Researchers, Faculty Members, Engineers, Graduate and Senior Undergraduate Students are encouraged to register for the event. For more information, please email at lightandlife2015@comsats.edu.pk, or visit the event website: <http://ww2.comsats.edu.pk/lightandlife2015/>.

TWAS Fellowships 2015 (www.twas.org) Call for Applications

TWAS Fellowships Programme with over 460 Ph.D. and over 150 postdoctoral fellowships available annually in 10 developing countries is the largest programme of its kind worldwide.

The 2015 TWAS Fellowships call for applications is now open for majority of the programmes. These fellowships include, TWAS-CIIT Postgraduate and Postdoctoral Research Fellowships in natural or social sciences, at the seven campuses of COMSATS Institute of Information Technology in Pakistan. For more information on programmes, eligibility criteria and contact details, visit the website: <http://twas.org/opportunities/fellowships>

Science Vision - Call for Papers

COMSATS invites scholarly contribution for Volume 21(1) of its bi-annual journal Science Vision, which aims at highlighting the important scientific and technological developments that have a bearing on socio-economic conditions of the people.

For more information, visit the journal's website: www.sciencevision.org.pk.



A BRIEF ON COMSATS

The Commission on Science and Technology for Sustainable Development in the South (COMSATS) is an intergovernmental organization, with its Secretariat located in Islamabad, Pakistan.

COMSATS, currently, has 21 developing countries as its members, spread across three continents, i.e., Latin America, Africa and Asia. A network, of 20 International S&T Centres of Excellence, is also affiliated with COMSATS to contribute to scientific development of its Member States. The mission of COMSATS is to help create a world where all nations are at peace with one another and capable of providing good quality of life to their populations in a sustainable way using modern S&T resources. For detailed information, please visit COMSATS' website: www.comsats.org.

COMSATS NETWORK

 BCSIR-Bangladesh www.bcsir.gov.bd	 ICENS-Jamaica www.icens.org	 UCAD-Senegal www.ucad.sn
 Embrapa Agrobiologia-Brazil cpab.embrapa.br	 RSS-Jordan www.rss.jo	 ITI-Sri Lanka www.iti.lk
 ICCES-China english.icces.ac.cn	 KazNU-Kazakhstan www.kaznu.kz/en/	 IRCC-Sudan www.ircc.gov.sd
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