

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

ANNUAL REPORT 2016



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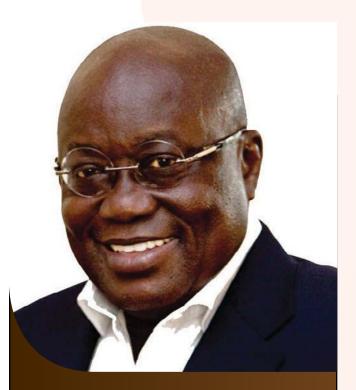


ANNUAL REPORT 2016



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

Editors Ms. Farhana Saleem Ms. Sameen Ruqia Imadi Designing & Development Mr. Imran Chaudhry Special Acknowledgement Mr. Tilha Mohammad



Hon. Nana Addo Dankwa Akufo-Addo President of Ghana Chairperson COMSATS

Hon. Nana Addo Dankwa Akufo-Addo became the 13th President of the Republic of Ghana after winning the country's Presidential Election 2016. On 7th January 2017, he took charge as the President of Ghana, by virtue of which he is an exofficio Chairperson of COMSATS. The Chair of COMSATS was rotated in 2012 from Pakistan to Ghana through consensus among the members of COMSATS' Commission at its 2nd General Meeting held in Islamabad. The Chair was later passed on to Mr. Akufo-Addo by his predecessor, Mr. John Dramani Mahama. As a lawyer, Mr. Akufo-Addo worked to champion the cause of human rights, rule of law, justice, freedom, and democracy in Ghana.



H.E. Mr. M. Nawaz Sharif Prime Minister of Pakistan Head of the Host Country, Pakistan

Mr. Muhammad Nawaz Sharif is the 20th Prime Minister of Pakistan, since June 2013. He has previously served as the Prime Minister twice, from 1990 to 1993 and from 1997 to 1999. His Excellency's third term is credited to be one of social centrism. He aspires to make Pakistan "educated, progressive, forward looking and an enterprising nation".



COMSATS' PROFILE

The Commission on Science and Technology for Sustainable Development in the South (COMSATS) was created in October 1994 as an international/intergovernmental organization to act as a global forum of developing countries for their sustainable socio-economic uplift through the applications of science and technology. COMSATS' current membership includes 24 countries located in the continents of Africa, Asia and Latin America, representing a population of over one-third of the world's total.

These countries have diverse social, cultural, economic, political, educational and religious backgrounds, and also differ greatly in their scientific and technological potentials. Their common aspirations for development through cooperation in S&T capacity-building is the raison d'être of their membership of COMSATS.

The Secretariat of COMSATS is permanently located in Islamabad, Pakistan, which is supported by the generous grants from the Government of Pakistan. The membership of COMSATS is open to all developing countries.

MISSION

The mission of COMSATS is to 'help create a world where all nations/states are at peace with one another and capable of providing a good quality of life to their populations in a sustainable way, using modern scientific and technological means'.



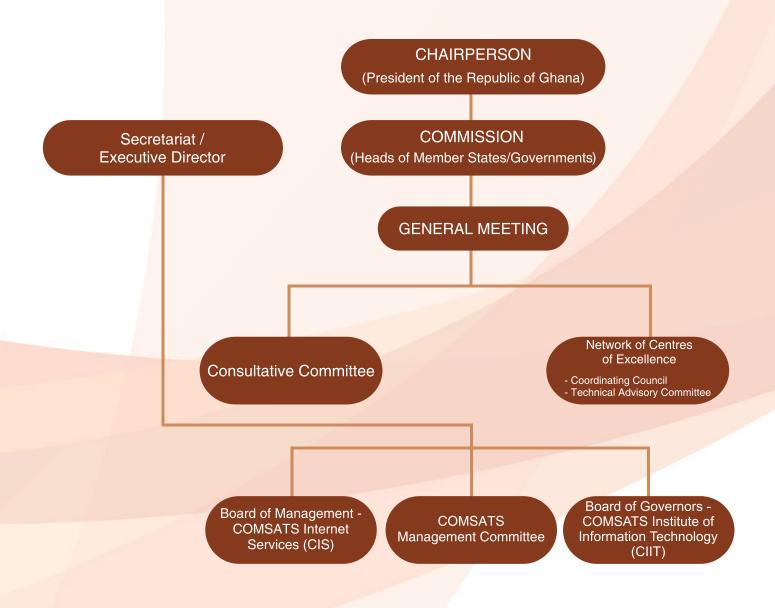
OBJECTIVES

The major objectives and functions of COMSATS as given in its Statutes are:

- To sensitize the countries in the South to the centrality of science and technology in the development process, to the adequate resource allocation for research and development, and to the integration of science and technology in the national and regional development plans;
- To support the functioning and activities of the Network of International Science and Technology Centres for Sustainable Development in the South, established at the foundation meeting of the Commission;
- To support other major initiatives designed to promote indigenous

- capacity in science and technology for science-led sustainable development, and to help mobilise long-term financial support from international donor agencies and from Government/Institutions in the North and the South to supplement the financing of international scientific projects in the South;
- To provide leadership and support for North-South and South-South cooperative schemes in education, training and research, such as the proposal to set up programmes of scholarships for research at centres of excellence in the South; and
- To support the relevant programmes and initiatives of major scientific organisations working for the development and promotion of science and technology in the South.

ORGANOGRAM



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FOREWORD

Dr. S.M. Junaid Zaidi Executive Director COMSATS

Dr. S. M. Junaid Zaidi assumed the charge of Executive Director in February 2017, by virtue of which he is also the ex-officio Secretary to the Commission, Coordinating Council and the Consultative Committee. He has rich and diverse experience spanning over forty years, ranging from his work for international and national organizations, educational-institution building, and research and teaching to foreign collaborative ventures. He has been the founding Rector of a Centre of Excellence of COMSATS, the COMSATS Institute of Information Technology (CIIT), which has phenomenally grown in operations and reputation both nationally and internationally. He is a recipient of two prestigious national awards of Pakistan, Sitara-i-Imtiaz and Hilal-i-Imtiaz.



As an intergovernmental/international organization, COMSATS has a clear and well defined vision guiding its principles and helping to steer its operations. COMSATS is a non-profit organization of the developing world for building science and technology capacities through South-South cooperation.

While the organization takes due pride in its operations of over 22 years, the path has not been all smooth. Although the challenges have been numerous and diverse, the Organization remained steadfast. One such challenge originates from the very socio-economic standing of the member states, as having developing countries as members was associated with financial constraints. However, with its altruistic goals, monetary setbacks owing to the weak economic conditions of developing countries never discouraged COMSATS from continuing working for the betterment of its Member States. The organization was rather motivated

to innovate and improvise through the issues of financial nature, and every little contribution coming from Member States gave its foundations added strength.

COMSATS' resolve and devotion to its mission is therefore the driving force that helps it rise above various challenges. Nevertheless, however determined COMSATS may be, it will always need the support of its stakeholders, especially the governments of Member countries, Centres of Excellence and partner organizations. The model of the organization is based on synergies, inclusiveness and transparency, and it has always remained open and welcomed opportunities of cooperation facilitating the achievement of its goals. I thank all individuals and entities who have supported COMSATS through its towards success.

This Report gives a comprehensive overview of the activities and engagements

of COMSATS during 2016. It is, however, worth mentioning that much of the credit for the successful accomplishment of the activities goes to the former Executive Director, Dr. I. E. Qureshi, whose term came to an end in September 2016 and Mr. Fazal Abbas Maken, Federal Secretary, Ministry of Science and Technology, who served as acting Executive Director for three months thereafter. My own contribution has been rather modest.

With the hope that the readers will find the contents of this report informative and useful, I register appreciation for my colleagues at COMSATS Secretariat for their diligence and commitment. I am especially indebted to all those who have contributed to this Report, including the Chairpersons of the Coordinating Council and Consultative Committee, the Centres of Excellence and the editorial team.



MESSAGE

H.E. Rana Tanveer Hussain Federal Minister for Science and Technology, Pakistan Head of COMSATS' Focal Ministry in the Host Country

H.E. Mr. Rana Tanveer Hussain is the current Minister for Defence Production and the Minister for Science and Technology, Government of Pakistan. Mr. Hussain has been an elected member of the National Assembly of Pakistan since 1985. In addition to briefly holding the cabinet portfolio of Minister for Defence Production in 2008, he has previously served as Parliamentary Secretary to Ministry of Finance, Special Assistant to the Prime Minister on Finance, as well as Parliamentary Secretary to the Prime Minister.



Development has been continuing since the civilization of humanity. With growing sophistication in lifestyles, and processes utilized for sustenance, enterprising humans have been on a constant journey of self-betterment. Since after the inception of the idea of nation-states, development concerns at the level of individuals and groups have evolved into regional and international considerations. With each passing year, the need for forming collaborations and synergies becomes more and more relevant and pressing. Even the most developed nations cannot deny their importance, especially in view of growing globalization.

Nations have been reaping the benefits of working together for long now. Such cooperation has helped end wars, maintained peace and aided the under resourced in succeeding in scientific endeavours. Thus, importance of the organizations and consortia facilitating such synergies is undeniable, and the Government of Pakistan is cognizant and appreciative of the same. As the host country of COMSATS since its inception, Pakistan has made evident its stance and resolve to facilitate highest level of interactions among countries with common goals. Bringing together 24 developing countries under a common agenda of S&T-led development is a laudable pursuit, which Pakistan has been supporting since the organization's beginning.

Through this message, I extend the Organization my best wishes for future, and assurances of my Ministry's support to its endeavours.



FROM THE CHAIRPERSON CONSULTATIVE COMMITTEE

Mr. Fazal Abbas Maken Federal Secretary, Ministry of Science and Technology, Government of Pakistan

Mr. Fazal Abbas Maken, Federal Secretary, Ministry of Science & Technology (MoST), Government of Pakistan, has been the exofficio Chairperson of COMSATS Consultative Committee since 9th July 2015. Mr. Maken is using his diverse expertise, inter alia, in policy making and trade promotion, to create linkages amongst R&D institutions, academia and the industry of Pakistan. He is endeavouring to re-orient the existing R&D paradigm in the country towards industry-focused and need-based research, with a view to contributing towards technological advancement of the industrial sector.



The debate on developmental gaps between the North and the South has been an important component of deliberations on world issues held at various multilateral fora. However, despite significant rise in incomes, in both the developed as well as developing countries during the past few decades, economic disparities - both international and intra-national - have become even more conspicuous. Besides other multiple factors, an important factor behind these disparities is the significant variance in access to technology between the developed and developing world. In this backdrop, the role of platforms like COMSATS, created with the vision to address these technological gaps through South - South cooperation, becomes quite pronounced.

COMSATS has been devoted to the cause of S&T-led sustainable development since

the end of the last millennium, and has broken new grounds for co-operation amongst the developing countries in the field of ICTs, education and health. The Government of Pakistan has been extending administrative and financial support to all the endeavors of this Organization, based in Islamabad, and will continue to do so to help reach its full potential.

During the calendar year 2016, the Organization continued to strive in pursuit of its mission. I also had a closer involvement with the Organization, holding additional charge of the Executive Director for three months during the latter part of the year. In my multiple capacities as Head of the Organization, Chairperson Consultative Committee and the focal point on behalf of the Government of Pakistan, I have tried to remain responsive

to the Organization's needs and to facilitate its operations as much as possible. As this Annual Report comes out, Dr. S.M. Junaid Zaidi has taken charge of COMSATS as the Executive Director. He has been associated with the Organization in his capacity as Rector, COMSATS Institute of Information Technology and as such brings a rich experience to his present assignment. I wish him great success in fulfilling his responsibilities. I also appreciate the services of the former Executive Director, Dr. Imtinan Elahi Qureshi, who looked after the affairs of COMSATS for the last eight years.

This Annual Report would give the readers a glimpse of what the organization has achieved or aspired for during the previous year through its capacity-building programmes and international cooperation. I wish COMSATS another successful year.



FROM THE CHAIRPERSON COORDINATING COUNCIL

Prof. Ashraf Shaalan President of the National Research Centre (NRC), Egypt

Prof. Ashraf H. Shaalan is the President of Egypt's prestigious research institution, the National Research Centre. He was elected as the Chairperson of COMSATS Coordinating Council, during its 19th Meeting held in Islamabad, Pakistan, in May 2016. As an academic, Prof. Shaalan has published his work mostly focused on child growth and development, child nutrition and assessment of nutritional status. He is also the Editor of the Egyptian Medical Journal of NRC (MJNRC) and member of scientific board of many other scientific journals.



On behalf of the COMSATS Coordinating Council, it is my honour and pleasure to congratulate and welcome Prof. S. M. Junaid Zaidi as the new Executive Director COMSATS. We believe that Prof. Zaidi will enhance the role of COMSATS in strengthening collaboration in science and technology among COMSATS' Member States.

This Annual Report, among other things, summarizes the main activities of the COMSATS Centres of Excellence since the last meeting of the Coordinating Council held in Islamabad last year. I had the privilege of not only attending the said meeting representing my organization the National Research Centre (NRC) of Egypt, but also was honored to be elected the Chairperson of the Council for three years. The report of the said meeting is also duly covered in the first section.

Throughout the last annum, an extremely significant set of events were jointly organized on some carefully selected topics in both basic and applied multidisciplinary fields of prime importance to the COMSATS Centres of Excellence. These

events comprised conferences, workshops, training sessions, and symposia on subjects of great relevance to developing countries, like application of Frontier Sciences in almost all fields, such as internet security, agriculture, climate change, South-South cooperation, and food security. Many of these topics also relate to the activities of COMSATS International Thematic Research Groups (ITRGs). The report appropriately covers these activities.

Great focus of COMSATS remained towards fostering collaboration with relevant scientific organizations, viz. UNESCO, TWAS, and ISESCO, reflecting the organization's commitment towards South-South cooperation among institutions in the southern hemisphere.

The achievements of the members of the Network of Centres of Excellence have also been reported to highlight the outstanding variety in their activities and their great potential to promote international cooperation and scientific and technological development in the third world. Being part of the globe that faces many dilemmas, including political, social, economic, and environmental, the Coordinating Council of COMSATS emphasizes that science and technology provide hopes for solving most of our problems. I believe that the objective of a long-term growth for developing countries can be easily achieved by fortifying the role of education, and science and technology in our societies.

On hosting the 20th Meeting of the Coordinating Council in Cairo, I would like to welcome all delegates from COMSATS Centres of Excellence to the National Research Centre (NRC) premises. Great thanks and appreciation are due to the organizing committee of the 20th Meeting of the Council, from both the COMSATS Headquarters in Pakistan and the NRC in Egypt. I believe that both the institutions have made a sincere effort for making possible the fruitful collaborations during the upcoming Council Meeting.





Activities of COMSATS' Statutory Bodies

The 19th Meeting of COMSATS Coordinating Council 02

39th & 40th Meetings of COMSATS Management 11
Committee



The 19th Meeting of COMSATS Coordinating Council

The Coordinating Council of COMSATS comprises the Heads of its 20 International S&T Centres of Excellence. The Council meets once annually to decide on matters relating to the membership of the Network, in consultation with the Consultative Committee. The Council also approves the programmes and budget of the COMSATS' Network, as well as makes rules for governing its own procedures.



Following its tradition of regular annual meetings, COMSATS Coordinating Council held its 19th meeting on May 17-18, 2016 in Islamabad, Pakistan, which was hosted by COMSATS Institute of Information Technology (CIIT).

The two-day meeting comprised of three technical sessions, in addition to inaugural and closing sessions, and had participation from 14 Centres, officials from COMSATS Secretariat and officials of partner international organizations, UNESCO, ECO Science Foundation and SESRIC.

Inauguration

The inaugural session that took place on May 17, 2016, was presided over by Mr. Fazal Abbas Maken, Federal Secretary, Ministry of Science and Technology, Government of Pakistan, which is the Focal Ministry of COMSATS in the host country of its Secretariat. Mr. Maken is also the ex-officio Chairperson of COMSATS Consultative Committee. Over 150 participants attended the inaugural ceremony, including the Council members, representatives from

government ministries and departments, S&T organizations, R&D institutions, and diplomatic missions of COMSATS' Member States in Islamabad.

During his inaugural address, Mr. Maken opined that the vast majority of

"....the Government of Pakistan considers it an obligation to fellow developing countries to support COMSATS and will continue to bear the lion's share of its expenditures. It is a very useful platform, rendering its services most efficiently with minimum possible costs, resulting in tangible benefits to Member Countries. I appreciate the fact that the team at COMSATS Secretariat is small but efficient, sticking to their tasks with dedication and upholding high standards in all their activities. I am sure the COMSATS' community all over the world recognizes the worth of this unique organization and would use its various platforms for facilitating South-South Cooperation in the best interest of all Member States."

Mr. Fazal Abbas Maken, Federal Secretary, Ministry of Science and Technology, Government of Pakistan









population in developing countries has very modest expectations, for instance, food, water, health, education etc. The scientists and every resourceful member of the society needs to help achieve equitable distribution of resources for all. He considered the role of organizations, like COMSATS, important in this regard. He expressed confidence in the international operations of COMSATS and lauded its services in the domain of science and technology being rendered to Pakistan and other Member States. He hoped that this international platform would effectively be used for finding scientific solutions to the problems of developing countries to lead them to economic prosperity.

Speaking at the occasion, Dr. I. E.

Qureshi, Executive Director COMSATS, stated that the activities of COMSATS are built around its core mission of providing assistance for socio-economic development in the countries of the global South. Dr. Qureshi expressed faith in the scientific leaders of Member States attending the Council meeting for coming up with an effective agenda to energize their respective governments for improving standards of their R&D institutes and facilitating South-South Cooperation.

In his message, Dr. Eduardo Posada, Chairperson Coordinating Council, said that dependence on developed countries for aid and intellectual support helps but is not sustainable and comes at the cost of national integrity and security. He "There are over 15,000 working scientists in COMSATS' Network.
This is a big pool of human resource that is available to COMSATS for its international activities, which are geared towards two objectives: firstly, to enhance the research capacity of individual scientists; and second, to provide them opportunities of cooperation with other R&D organizations in developing countries. These activities are built around COMSATS' core mission of providing assistance for socio-economic development to the countries of the global South."

Dr. I. E. Qureshi, Executive Director COMSATS

"Thanks to its [COMSATS'] international composition and to the quality of member centres, COMSATS can be a great instrument for bringing change in the developing world. We must direct all our efforts to strengthen this institution and improve its visibility and influence the decision-makers in our countries."

Dr. Eduardo Posada, Chairperson Coordinating Council

emphasized the need for making efforts to strengthen COMSATS and to improve its visibility and influence on the decisionmakers for promotion of S&T for socioeconomic development of the South. As the host of the Council Meeting, Dr. S.M. Junaid Zaidi, Rector CIIT, welcomed the Council members and hoped that the meeting would serve as a catalyst for strengthening the South-South cooperation on knowledge exchange and creation of new knowledge. He noted with pleasure that his Institute, carrying the acronym and values of 'COMSATS', has realized fast-paced growth since its establishment in 1998 and vows to break into a new era of growth and success with a promise to be among the best seats of higher education, within the COMSATS Network in particular and the world in general.

A major highlight of the inauguration was the signing ceremony of COMSATS' accession agreement by H.E. Prof. Dr. Aboubacar Senghore, Minister for Higher Education, Research, Science and Technology, Islamic Republic of the Gambia, and the Executive Director COMSATS. By virtue of this agreement, Gambia became the 24th Member State of COMSATS. While addressing the gathering, the honourable Minister said that the Government of the Republic of the Gambia was making all out efforts to build relevant infrastructure in the country for the promotion of science and

technology. He informed the audience that his government had taken several initiatives for national S&T policy and established a polytechnic institution. He sought COMSATS' support in the area of higher education, in response to which the Rector CIIT pledged his institution's

COMSATS Institute has now firmly reached the threshold of breaking into a new era of growth and success with a vision to be among the best seats of higher learning within the COMSATS Network in particular and the world in general.

Dr. S. M. Junaid Zaidi, Rector COMSATS Institute of Information Technology (CIIT)

support by means of scholarships to the Gambian students, as well as expertise for developing Gambian human resources and academic institutions.

Technical Proceedings

The meeting deliberated upon an 11-point agenda, mainly focused on COMSATS' international engagements, activities

of COMSATS' Centres of Excellence, existing programmes and new initiatives, as well as financial and administrative matters of the organization. Dr. G. A. S. Premakumara, Director General ITI, Sri Lanka, moderated the first three agendaitems of the meeting, in place of Prof. Eduardo Posada F., who could not attend the meeting. The remaining agenda-items of the two-day event were presided over by Prof. Dr. Ashraf Shaalan, the newly elected Chairperson of the Council, President of National Research Centre (NRC), Egypt.

As a regular feature of the Council meetings, the Executive Director COMSATS presented the organization's annual activity report for the period from May 2015 to April 2016. The Council admired the consistent efforts being made by COMSATS Secretariat for extending COMSATS' membership to other developing countries, and welcomed the accession of the Kingdom of Morocco, the State of Palestine, and the Republic of the Gambia as COMSATS' Member States. The Council expressed satisfaction over the following achievements of COMSATS during the reporting period:

 Approval of the COMSATS Statutes by the Commission during its third General Meeting;



Participants of the 19th Coordinating Council Meeting

- Mr. Zhang Haihua, First Secretary, S&T Section, Chinese Embassy in Islam abad, Pakistan
- Prof. Dr. Ashraf Shaalan, President NRC, Egypt
- Prof. Hosam El-Sayed, Assistant Vice President for Research, Head of Proteinic and Man-Made Fibres Department, NRC, Egypt
- Prof. Dr. Victor Agyeman, Director-General CSIR, Ghana
- Engr. Abeer Arafat, Manager, Communication and External Affairs, RSS, Jordan
- Prof. Tlekkabul Ramazanov, Vice-Rector for Research and Innovative Affairs, KazNU, Kazakhstan
- Prof. Benjamin O. Oyelami, Professor NMC, Nigeria
- Dr. Farzana Shaheen, Professor ICCBS, Pakistan
- Dr. G.A.S. Premakumara, Director-General ITI, Sri Lanka.
- Dr. W. H. A. Halim Hassan, Director-General IRCC, Sudan
- Prof. Tahir Diop, Head, Laboratory of Fungal Biotechnologies,
 Department of Plant Biology, Faculty of Sciences and Technology,
 UCAD, Senegal
- Dr. Maher Suleiman, Director HIAST, Syria
- Dr. Lugano Wilson Mwansule, Director of Engineering Development, TIRDO, Tanzania
- Prof. Ahmed Ghrabi, Director-General, CERTE, Tunisia
- Ms. Vibeke Jensen, Director UNESCO Office, Pakistan
- Mr. O. Caglar, Technical Cooperation Specialist, Training and Technical Cooperation Department, SESRIC, Turkey
- Prof. Dr. Manzoor H. Soomro, President ECOSF, Pakistan
- Dr. S. M. Junaid Zaidi, Rector CIIT, Pakistan
- Dr. Haroon Rashid, Pro Rector, CIIT, Pakistan
- Dr. I.E. Qureshi, Executive Director COMSATS Pakistan
- Mr. Tajammul Hussain, Advisor (Programmes), COMSATS, Pakistan
- Mr. Farhan Ansari, Sr. Assistant Director (Programmes), COMSATS, Pakistan

- Approval of the Rules and Regulations of COMSATS Endowment Fund by the 3rd General Meeting of COMSATS;
- Continuation of the current 5-year strategy of COMSATS for the next five years (2016-2020), as advised by the 3rd General Meeting of COMSATS;
- Launching of the International Thematic Research Group (ITRG) on Agriculture, Food Security and Biotechnology;
- Successful holding of 14 capacitybuilding events organized in collaboration with other international organizations, with the participation of scientists, engineers and technicians belonging to Centres of Excellence and Member States;
- Continuation of COMSATS'
 Distinguished Professorship Scheme,
 COMSATS' Science, Technology and
 Innovation Policy Panel, and COMSATS'
 Science Diplomacy Programme;
- Increasing the utilization of postgraduate scholarships at the COMSATS Institute of Information Technology (CIIT), Pakistan, by Member States; and
- Regular publication of COMSATS
 Newsletter, journal 'Science Vision' and other publications including information material about the organization.

As an integral part of the Agenda, the Heads/representatives of COMSATS' Centres of Excellence shared the updates on the scientific activities of their institutions with a view to identifying























common areas for bilateral and multilateral cooperation. Based on the diversity of strengths of the Network, offers of collaborations were exchanged in the following fields:

- cancer treatment, nanotechnology, genetic engineering and biotechnology, disease genomics, and natural and medicinal products;
- climate change, energy technologies, environmental technologies, pollution prevention and control, and environment and clean production;
- · energy, renewable energy, gas and

petrochemical technologies, coal technologies, chemical technology, and earth and marine sciences;

- agriculture, biotechnologies, agro processing, herbal, food technology and food microbiology;
- iron and steel technologies, textile and leather technologies, material based technologies;
- mathematical modeling, and mathematical finance, and ICTs.

Moreover, the following specific offers were also made during the course of the deliberations on the Agenda:

- holding of joint events in repair and maintenance of laboratory instruments, in related field of RETs, by UCAD-Senegal and IROST-Iran, respectively;
- facilities and services by IRCC-Sudan, and NRC-Egypt;
- training and visits by CERTE-Tunisia, ITI-Sri Lanka, ICCBS-Pakistan, ICCES-China;
- scholarships at MAM-Turkey, and CIIT-Pakistan;
- students and faculty exchange by HIAST-Syria.















The representatives of UNESCO, SESRIC and ECOSF made statements as Observer organizations, sharing their vision, operations and programmes. Under the relevant agenda-item, the representatives of the Lead Centres of COMSATS' ITRGs on 'Climate Change and Environmental Protection', 'Information and Communication Technologies' and 'Mathematical Modeling' presented the progress made by their respective groups for the period from May 2015 to April 2016. The Council considered the ITRG programme a major component of COMSATS' future programmes and activities.

The discussion on new initiatives resulted in a strong commitment to expand and enhance the scope of Science Diplomacy Programme, Panel on ST&I Policy, and

Distinguished Professorship Scheme. The Centres of Excellence agreed to inform COMSATS Secretariat regarding the ST&I policies and priorities of their respective countries, in order to ensure that the programmes and activities of COMSATS are in line with the development needs of Member States.

The Coordinating Council showed satisfaction on the administrative and financial affairs of COMSATS, and accorded approval of the actions taken and recommendations made by Management Committee of COMSATS. The Council unanimously approved the constitution of Board of Management of COMSATS' Endowment Fund, and selected/approved members of the Board in the following five categories: (i) Representative of the Coordinating

Council; (ii) Eminent Scientist of Pakistan; (iii) Philanthropist; (iv) Representative of MoST, Pakistan; and (v) Representative of CIIT, Pakistan. The Council issued a meeting Communiqué and a Resolution.

Closing Ceremony

In his remarks at the concluding ceremony, Rector CIIT, Dr. S. M. Junaid Zaidi, appreciated the Executive Director COMSATS and his team for excellent secretarial work at the organization and its programmes over the years. He hoped that the meeting arrangements made by his Institute were up to all the delegates' satisfaction.

Speaking at the conclusion, Executive Director COMSATS thanked CIIT for suitably organizing the meeting and the





newly elected Chairperson for befittingly steering its deliberations. He lauded CIIT and expressed pride over such an outstanding Centre of Excellence of COMSATS.

In his closing remarks, Prof. Shaalan appreciated the efforts of COMSATS Secretariat in consistently pursuing the COMSATS' mission over the years and especially commended Dr. Qureshi for his able leadership during his two tenures as the Executive Director. It was decided that the next (20th) meeting of the Coordinating Council will be hosted by NRC-Egypt in 2017.

Major Outcomes of the Council Meeting Among the major outcomes of the meeting were:

- Selection of a new Chairperson;
- Signing of Accession agreement by The

Gambia;

- Approval of Board of Management of COMSATS' Endowment Fund;
- Offers of technical cooperation and scholarships among
- · Network members in a number of fields;
- Renewed commitment of the Council Members towards COMSATS' programmes and assurance of enhanced participation;
- Approval of financial matters and administrative actions.

Technical Visits

On 19th May 2016, CIIT, the host institution of the Council Meeting, arranged for the participants of the meeting visits to its various departments and laboratories, i.e., Physics laboratory, Nanotechnology laboratory, Centre for Advanced Studies in Telecommunication, as well as Department of Student

Affairs and Day Care Center. The visits were conducted by senior officials of these departments/laboratories, which facilitated the exchange of knowledge and information needed for enhanced scientific cooperation between CIIT and other Network members.

Later, the Council members were shown the new building of COMSATS Internet Services (CIS), where they visited different sections of CIS and were briefed about its technical facilities. Mr. Muhammad Amir Malik, Chief Executive Officer, CIS, made a detailed presentation on the current operations and services offered by CIS in various cities of Pakistan. He also shed light on the social services of CIS, including the establishment of Telehealth Centres in different parts of the country.

Communiqué of the 19th Meeting of COMSATS Coordinating Council (17 – 18 May 2016, Islamabad, Pakistan)

The participants of the 19th meeting of COMSATS Coordinating Council, comprising of fourteen Council Members or their representatives, after having deliberated upon the twelve-point agenda of the meeting on 17-18 May 2016, are pleased to adopt the following statement unanimously:

- The Members of COMSATS Coordinating Council appreciate the excellent arrangements made by the COMSATS
 Institute of Information Technology (CIIT) for holding the 19th Council meeting and for providing generous hospitality to its participants. The preparation of necessary documentation by COMSATS Secretariat and the administrative support provided to CIIT for the successful organization of the meeting is highly praiseworthy.
- 2. The Council Members are pleased to learn about the high quality educational programmes and research work being undertaken by CIIT faculty, and encourage the Institute to increase its enrolment of students from COMSATS Member Countries as well as enhance research collaboration with other Network Members.
- 3. The Council is pleased to learn about the successful organization of the 3rd General Meeting of COMSATS (27-28 October 2015) and the 3rd Meeting of COMSATS Consultative Committee (26th October 2015) in Accra, Ghana. The re-election of H.E. Dr. John Dramani Mahama, President of Ghana, as the Chairperson of COMSATS for the next three years' term (2015 2018) is highly welcome.
- 4. The outstanding leadership provided by Professor Dr. Eduardo Posada F., as the Chairperson of the Council during the period (2010 2016) and his services for the cause of COMSATS are duly acknowledged and highly applauded.
- 5. The Coordinating Council warmly welcomes the election of Prof. Dr. Ashraf Shaalan, President, National Research Centre (NRC), Egypt, as its new Chairperson for the term of three years (2016 2019), and hopes that he will be able to provide a new thrust to the COMSATS' Network with regard to achieving its objectives.
- 6. The consistent efforts being made by COMSATS Secretariat for extending COMSATS' membership to other developing countries is noted with admiration. The Council welcomes the accession of the Kingdom of Morocco, the State of Palestine, and the Islamic Republic of The Gambia to COMSATS as Member States, and hopes that these new member countries will actively participate in the programmes and activities of the organization. In this regard, the Council requests the Governments of Palestine and The Gambia to nominate one of their renowned R&D organizations, each, for induction in COMSATS' Network of Centres of Excellence.
- 7. The Council is pleased to learn about the nomination of the Mohamed V University, by the Government of Morocco, for induction in COMSATS' Network of Centres of Excellence. It is desirable that the necessary formalities for induction of the Mohamed V University in COMSATS' Network are completed before the next Council meeting. COMSATS Secretariat is encouraged to continue its efforts to extend the membership of COMSATS' Network to all Member States.
- 8. The Council is pleased to note the approval of the COMSATS Statutes by the Commission during its third General Meeting. The efforts made by the Amendment Committee, constituted by the Coordinating Council, as well as COMSATS Secretariat with regard to the formulation of COMSATS Statutes, are highly appreciated.
- 9. The Council is pleased to note that the Rules and Regulations of COMSATS Endowment Fund, prepared by COMSATS Secretariat, have been approved by the 3rd General Meeting of COMSATS. The Member States are strongly urged to mobilize funds for the COMSATS Endowment Fund. In this regard, the release of US\$ 0.1 Million, by the Government of Pakistan, as the first installment of its total commitment of US\$ 1 million towards the COMSATS Endowment Fund, is gratefully acknowledged.
- 10. The Council records with gratitude the financial and in-kind contributions by some Member Countries towards COMSATS' activities. The continuation of payment of Annual Membership Contribution (AMC) by Pakistan and China, and commencement by Kazakhstan is laudable. The Council encourages all other Network members to sensitize their respective governments regarding the benefits of regularly making AMC for the financial sustainability of COMSATS.



- 11. The Coordinating Council will be pleased to continue the current strategy of COMSATS during the next five years (2016-2020), as advised by the Commission, with emphasis on technical cooperation projects employing, inter alia, the concept of International Thematic Research Groups in order to provide maximum socio-economic benefits to the member countries;
- 12. 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 fifth International Thematic Research Group (ITRG) and continuation of the activities of four already operational ITRGs;
- (ii) Preparations for launching one more ITRG during 2016;
- (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) Continuation of COMSATS' Distinguished Professorship Scheme, COMSATS' Science, Technology and Innovation Policy Panel, and COMSATS' Science Diplomacy Programme;
- (v) Increasing the utilization of postgraduate scholarships at the COMSATS Institute of Information Technology (CIIT), Pakistan, by Member Countries; and
- (vi) Concerted efforts for the regular publication of COMSATS' Newsletter, journal 'Science Vision' and other information material about the organization.
- 13. The Council encourages the Network members to make concerted efforts for the following:
- (i) Providing greater opportunities of graduate scholarships, doctoral fellowships, and short-term trainings to Member States.
- (ii) Increasing interaction and cooperation with other members of the Network, including expert exchange, technology transfer, joint research projects, etc.
- (iii) Launching of the remaining three ITRGs;
- (iv) Keeping COMSATS Headquarters aware of new developments and major achievements of their organizations;
- (v) Contributing scholarly scientific articles for publication in COMSATS' bi-annual journal, the 'Science Vision';
- (vi) Placement of their officers at COMSATS Headquarters on secondment.
- 14. The Council is pleased to learn regarding the establishment of 64 new laboratories by NRC-Egypt. The generous offer of NRC-Egypt for sharing its equipment and laboratory facilities with other Centres of Excellence is highly appreciated. Also, the offer of graduate scholarships for The Gambia offered by CIIT is noted with high appreciation.
- 15. The Council encourages all the Network members to support the scientific community of Syria during its current
- 16. The Council members believe that the expansion of the scope of International Thematic Research Groups is desirable for the future success of the programme.
- 17. 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.

39TH & 40TH MEETINGS OF COMSATS MANAGEMENT COMMITTEE

The COMSATS Management Committee assists the Executive Director's Secretariat in the implementation of policy decisions taken by the Coordinating Council and other organs of COMSATS; recommends programmes and budget of COMSATS; monitors financial activities of COMSATS; evaluates rules and regulations of COMSATS Secretariat; and deliberates upon other administrative issues.

COMSATS Management Committee held two meetings under the Chairmanship of Executive Director COMSATS, Dr. Imtinan Elahi Qureshi. The 39th meeting was held on 12th April 2016 and the 40th on 23rd August 2016. Both the meetings were attended by Mr. Muhammad Amir Malik, the Chief Executive Officer, COMSATS Internet Services; Dr. Tariq-ur-Rahman, former Chairman, Pakistan Council for Science and Technology (PCST); Mr. Tajammul Hussain, Advisor (Programmes), COMSATS Secretariat; Mr. Sabih ur Rahman, Advisor (Host Country Affairs); Mr. M. Bilal Chouhan, Deputy Director (A&E); and Mr. Amanullah Khattak, Deputy Director (F&A), COMSATS Secretariat. Dr. Haroon Rashid, Pro-Rector CIIT attended the 39th Meeting only. Mr. Zhang Haihua, the first Secretary (Science and Technology) of the Chinese Embassy

in Pakistan did not attend the 39th meeting. However, he participated in the 40th meeting.

39th Meeting of COMSATS **Management Committee** (12th April 2016)

The 39th Management Committee Meeting was held on 12th April 2016 and, inter alia, reviewed important activities of COMSATS Secretariat carried out since the Committee's last meeting. The two major agenda-items deliberated on by the participants were: Preparations for the 19th Coordinating Council meeting, and the Budget of COMSATS for the year 2016-17. Mr. Tajammul Hussain, Advisor (Programmes), briefed the Committee about the preparation for the then upcoming 19th meeting of COMSATS

Coordinating Council and presented COMSATS' Annual Activity Report, which forms an important annexure of the Council Meeting Working Paper.

Mr. Chouhan presented administrative matters, while Mr. Amanullah presented the budget for the year 2016-17 and audit report for the year 2014-2015 to the Committee for approval. The Committee expressed satisfaction over the administrative and financial affairs of COMSATS Secretariat.

40th Meeting of COMSATS **Management Committee** (23rd August 2016)

Meeting subsequent to the 19th Coordinating Council meeting, the Committee in its 40th Meeting briefly



reviewed some key deliberations of the Council Meeting. This was the last meeting held under the Chairpersonship of the outgoing Executive Director.

The main points of the Council meeting deliberated upon in the meeting for necessary follow-up included election of a new Chairperson of the Coordinating Council for a period of three years;

endorsement of the rules of COMSATS Endowment Fund; and approval of the Management Board for the Endowment Fund.





Activities of COMSATS Secretariat

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ACTIVITIES OF COMSATS SECRETARIAT

COMSATS Secretariat performs the dual role of being the Secretariat of the Commission and the Headquarters of Network of Centres of Excellence. It is responsible for regularly holding statutory body meetings as well as following up their deliberations and decisions. The Secretariat also executes COMSATS' programmes and activities in partnership with other inter-governmental agencies, national SexT institutions, RexD organizations, members of academia and scientific community across the world. Other core activities of the Secretariat relate to: pooling and management of financial resources; enhancing the membership of COMSATS and its Network; and dissemination of information to the stakeholders.

Administrative Functions

Cognizant of the importance of the tasks entrusted to COMSATS, the workforce at its Secretariat exercises due diligence in its operations. Good planning precedes execution of the Organization's programmes and activities according to international standards while optimizing the use of resources. An important tool for achieving the desired results is the Secretariat's working relations with relevant organizations with similar mandate, which the Secretariat is regularly trying to strengthen. The Secretariat works in close coordination with and due involvement of its governing bodies represented by Member States and Network Members, in keeping with the objective of sensitizing the stakeholders.

In the year 2016, COMSATS Secretariat performed a number of activities and accomplished various tasks, which are duly highlighted in different sections of this Report.

These include:

- Organization of 19th meeting of COMSATS Coordinating Council in Islamabad, Pakistan and 39th and 40th Meetings of COMSATS Management Committee (Section 1);
- Offers of COMSATS' Membership made to Brazil and Mexico in meetings with high level government officials of respective countries (Section 2);
- Republic of the Gambia joined COMSATS as 24th Member State (Section 1);
- · Links were made for the strengthening

- of Membership of COMSATS Network of International Science and Technology Centres of Excellence with Morocco, Gambia, Palestine, Uganda, and Zimbabwe (Section 2);
- Meetings with important officials from Gambia, Nigeria, and Sudan for future cooperation and development of Science and Technology (Section 2 & 6);
- Co-organization of 11 science and technology events in Morocco, Malaysia, Pakistan, Iran, Sudan, China, Jordan, and Nigeria (Section 3);
- Facilitation for three meetings of International Thematic Research Groups, which includes launching of a new ITRG on Renewable Energy (Section 4);
- Organization/sponsorship of 7 capacitybuilding activities with ISESCO (Section 3);



- Signing of Memorandum of Understanding with National Center of Physics, Pakistan (Section 5);
- Fruitful international visits of Secretariat officials to Morocco, Malaysia, Iran, Sudan, China, Nigeria, and Jordan in order to attend capacity building events and enhance cooperation through meetings with high officials (Section 6);
- Publication of 6 issues of COMSATS Newsletters; a collaborative publication with TWAS; Urdu version of One Hundred Reasons to be a Scientist, among others (Section 9);
- Annual Membership Contributions received from six Member States, Pakistan, China, Jordan, Kazakhstan, Nigeria, and Sri Lanka (Section 10).

Enhancement of Membership of COMSATS' Commission

Expansion of COMSATS' Membership is an ongoing process since its establishment and has been a top priority in COMSATS' strategic plan. During 2016, linkages were established and strengthened with potential member countries and vigorous efforts were made to approach their governments with offers of COMSATS' Membership. These included Gambia, Brazil, and Mexico.

Gambia's State Membership to COMSATS

As a result of COMSATS Secretariat's active pursuit of the matter of Gambia's accession to COMSATS with the Government of Gambia, H.E. Prof. Dr. Aboubacar Senghore, the Minister for Higher Education, Research, Science and Technology (MHERST), and the Executive Director COMSATS signed the COMSATS' Accession Agreement on 17th May 2016, in Islamabad, Pakistan. By virtue of its membership, Gambia will be represented at the Heads-of-State level Commission and the Ministerial-level Consultative Committee of COMSATS. The Ministry of Higher Education, Research, Science and Technology, will act



as COMSATS' focal point in Gambia. Mr. Mucktarr M. Y. Darboe, Director Directorate of Science, Technology and Innovation (DST&I), Ministry of Higher Education, Research, Science and Technology, played an important role in realizing Gambia's membership. Mr. Darboe witnessed the signing ceremony of the accession agreement in Islamabad, and will also serve as Gambia's liaison officer for COMSATS and its international programmes.

During the signing ceremony, the Executive Director COMSATS said that Gambia's membership will greatly benefit the programmes and activities of COMSATS and set an encouraging example for more countries to join the Organization. Considering it a privilege to sign the accession agreement, the Gambian Minister expressed Gambia's willingness to contribute to South-South cooperation in S&T through the platform of COMSATS and expected mutually beneficial outcomes for both Gambia and COMSATS.

Other Efforts to Expand State Membership

Brazil

In January 2016, the Executive Director COMSATS corresponded with H.E. Mr. Celso Pansera, Minister of Science, Technology, and Innovation, Government of Brazil, through the Ministry of Foreign Affairs, Government of Pakistan, referring to his earlier interactions in this regard.

The matter was later followed up on 27th April 2016, during a meeting between the Executive Director and H.E. Mr. Claudio Raja Gabaglia, Ambassador of Brazil to Pakistan, held in Islamabad, wherein the Ambassador assured to forward the documents to the relevant Ministry of Brazil and follow up the case of Brazil's membership to COMSATS.

Mexico

A maiden effort with regard to the expansion of COMSATS' membership made during 2016 pertained to Mexico. A formal letter of invitation for the Government of Mexico to join COMSATS as a Member State, along with COMSATS' draft Accession Agreement and other relevant documents, was sent to Mr. Aurelio Nuño Mayer, Secretary, Secretariat of Public Education, Mexico. The matter was also pursued with H.E. Mr. Aitzaz Ahmed, Ambassador of Pakistan to Mexico, seeking his assistance in ascertaining Mexico's position with respect to its membership to COMSATS.

Enhancement of Membership of COMSATS Network of International S&T Centres of Excellence

COMSATS' Network of International S&T Centres of Excellence for South constitutes a major instrument for the organization's efforts to supporting and facilitating technical collaboration among its Member States in a number of scientific disciplines. Expansion of this network is a constant pursuit to strengthen both the number and the thrust areas of the Network in line with the aspirations of the major statutory bodies of the Organization.

During 2016, efforts were continued by COMSATS Secretariat to strengthen the Network especially from COMSATS' Member States having no representation in the Network and as such in the Coordinating Council. These countries include Morocco, Gambia, Palestine, Uganda, and Zimbabwe.

As a result of COMSATS' active follow-up through correspondence and interactions with Focal Points in these countries, Makerere University from Uganda, and Al-Quds University from Palestine expressed their willingness to join COMSATS' Network of Centres of Excellence. COMSATS has approached its Focal points in these countries, Uganda National Council for Science and Technology, and the Palestinian Ministry of Education and Higher Education, for seeking formal nominations of these institutions.

A visit of COMSATS' delegation to Morocco, on 20th December 2016, resulted in further strengthening the case of Mohamed V University, Rabat, Morocco. The COMSATS' officials briefed the University officials about due process for induction as a Centre of Excellence. The duly filled-in prescribed application form seeking background information on facilities, pilot projects and technical strengths and the areas needing assistance was handed over to COMSATS' officials to formally initiate the induction process. The technical evaluation of the university would be done by at least two members of COMSATS Technical Advisory Committee (TAC). The decision for formal membership of the University will be taken by the Council at its 20th Meeting in Cairo.



Prof. Dr. Ashraf Shaalan

Follow-up of the Decisions of the 19th Coordinating Council Meeting of COMSATS

A major component of the activities of COMSATS Secretariat is following up the decisions of its statutory bodies. The 19th meeting of COMSATS Coordinating Council was held on May 17-18, 2016, in Islamabad, Pakistan and hosted by COMSATS' Centre of Excellence in Pakistan, COMSATS Institute of Information Technology (CIIT).

The draft minutes of the meeting were prepared by COMSATS Secretariat and circulated among all Council members as well as other participants for their feedback on 24 June 2016. The finalized minutes were later circulated to the Network Members on 12th July 2016.

The 19th Coordinating Council meeting took a number of decisions regarding the expansion of COMSATS' membership, and effective implementation of COMSATS' programmes and activities in COMSATS' Member States. The decisions were actively taken up for follow up by COMSATS Secretariat and their implementation status is described in various sections of this report.

A major decision of the Council was



Dr. Eduardo Posada F.

election of the new Chairperson. The Council had elected Prof. Dr. Ashraf Shalaan, President, National Research Centre (NRC), Egypt, as the new Chairperson for a three-year term (2016-19). An appreciation letter signed by the incumbent Chairperson Coordinating Council was sent to Prof. Dr. Eduardo Posada F., for his outstanding leadership of the Council during his two terms spanning six years (2010-16).

With a view to further strengthening COMSATS and expanding its scientific and technical activities in the countries of the South, contacts were established and consolidated with potential member countries and vigorous efforts were made to approach their governments in this regard. As a result of active interactions and consultations by the Executive Director COMSATS with the Governments of potential member countries, Gambia joined the Commission as the 24th Member State.

As per the Council's resolution, COMSATS Secretariat continued its efforts for enhancing the membership of its Network of International S&T Centres of Excellence. As an outcome of these efforts, Makerere University from Uganda, and Al-Quds University from Palestine and Mohamed V University, Morocco, were engaged.

The Coordinating Council in its 19th meeting unanimously approved constitution of the Board of Management of COMSATS' Endowment Fund and delegated its powers and functions to the Board of Management for operation of the Fund pertaining to investment; spending and usage, and operation of the bank accounts, accounting record and audit. The first meeting of the Board of Management was held on 19th May 2016, in Islamabad, Pakistan, to discuss the Board's terms of reference and functional responsibilities. The minutes of the meeting were circulated to the participants on 1st June 2016.

The Council had advised the Lead Centres of the inactive ITRGs to make efforts to formally launch their respective Groups with the support of COMSATS Secretariat. In the light of this decision, and as per the commitment of the Iranian Research Organization for Science and Technology (IROST), the foundation meeting of the ITRG on 'Renewable Energy' was successfully held on 2nd November 2016, in Zahedan, Iran. The joint research project selected for execution by the Group relates to development of Silicon crystalline solar cells as well as microbial fuel cells for bioelectric generation as waste water treatment.

The Council also encouraged the Lead Centre of ITRG on 'Natural Products Sciences' and 'Agriculture, Food Security, and Biotechnology' to overcome the challenges faced by them and resume their research activities. The 2nd meeting of ITRG on 'Agriculture, Food Security, and Biotechnology' was held on 19 October 2016 at Industrial Research and Consultancy Centre (IRCC), Sudan. During the meeting, IRCC presented a joint research proposal entitled 'Improvement of Wheat Quality and Productivity using both Traditional and Modern Techniques' to the members of the ITRG for collaboration.

COMSATS Secretariat invited the Member Countries and Centres of Excellence to benefit from the standing offer of CIIT's 100 post-graduate and 5 post-doctoral scholarships for study at its various campuses. In response, a total of 71 nominations were received and processed for MS and Doctoral studies at CIIT. In this regard, 12 students were accepted by CIIT, belonging to Nigeria (7), Bangladesh (1), China (1), Palestine (1), and Ghana (2).

Other offers of collaboration made by the Centres of Excellence during the 19th Coordinating Council meeting were also followed up.

Disbursement of Annual **Membership Contribution** (AMC)

The Annual Membership Contribution is a voluntary funding mechanism for COMSATS Member States constituted to support COMSATS' technical activities and programmes in the contributing countries. The AMC enables COMSATS to facilitate the exchange of scientific and technical expertise and information, provide financial support for organizing conferences, workshops and seminars on special topics relevant to the need of contributing States.

During the calendar year 2016, COMSATS Secretariat followed up with the Focal Points in Member States, including Bangladesh, China, Colombia, Egypt, Ghana, Jamaica, Jordan, Kazakhstan, Pakistan, Sri Lanka, Tanzania, Uganda, and Zimbabwe, matters relating payment of AMC as per their commitments made during meetings of COMSATS statutory bodies in recent years.

Moreover, during the visits of COMSATS' officials to Iran, Morocco, Sudan, and Nigeria, COMSATS' Focal Points in these countries were urged to make



regular annual membership contribution to facilitate COMSATS' pursuit of its mission of energizing S&T sectors in the member countries. Consequently, COMSATS received grants from six Member States while Focal Points of some Member States informed that their AMC was in the process of approval from their governments. A brief account of the AMC received during the reporting period is given in Section 10 of this report.

Important Meetings

Meeting with Gambian Minister for Higher Education, Research, Science and Technology

H.E. Prof. Dr. Aboubacar Senghore, the Minister for Higher Education, Research, Science and Technology, Islamic Republic of the Gambia, visited COMSATS Secretariat, on 19th May 2016 to hold consultations with the Executive Director, Dr. I.E. Qureshi, on Gambia's recent accession to COMSATS as 24th Member State. The Minister was accompanied by Mr. Mucktarr M. Y. Darboe, the Ministry's Director, Directorate of Science, Technology and Innovation (DST&I). Mr. Tajammul Hussain, Advisor (Programmes), COMSATS, and two other senior officials of COMSATS also attended the meeting.

After a briefing on COMSATS and its programmes by Dr. Qureshi, the Minister expressed satisfaction on Gambia joining COMSATS, which he considered an important platform offering avenues for South-South S&T cooperation. Explaining as to how Gambia can benefit from COMSATS' membership, Dr. Qureshi elucidated on the composition, roles and functions of various statutory bodies of the Organization. He informed that a relevant government department/ministry with S&T portfolio serves as COMSATS' focal point in the member country. The functional heads of the focal points are members of COMSATS Consultative Committee, which secures the interests of these countries in COMSATS' operations.



Referring to his useful discussion with the Chairman Higher Education Commission (HEC) of Pakistan earlier, the Minister expressed interest in availing the scholarship offers from COMSATS' platform, particularly the postgraduate scholarships offered by COMSATS Institute of Information Technology (CIIT).

Prof. Senghore sought COMSATS' support in developing strong international ties with other Member States and partner organizations, like ISESCO and OIC, and in identifying resources and opportunities for cooperation in various fields of S&T. Dr. Qureshi assured the Minister of COMSATS' full support to the Gambia as a Member State. Some areas mentioned in this regard were consultancy for its science, technology and innovation policy by COMSATS Panel of Experts on ST&I Policies.

The Minister was informed that Member States were obliged to make voluntary contributions towards COMSATS. These contributions constitute a trust fund. which is utilized for the benefit of the contributing countries. He was informed that COMSATS employs innovative approaches to optimally benefit its Member States despite financial limitations. One such measure is resource-sharing with organizations with similar programmes/ mandates, like UNESCO, and ISESCO.

Keeping in view Gambia's need to develop scientific infrastructure and facilities with the support of relevant institutions, the Pakistan Council of Scientific and Industrial Research (PCSIR), an institution of the Government of Pakistan was introduced to the Minister, which can facilitate the Gambia with regard to scientific instrumentation. Dr. Qureshi offered COMSATS to act as an intermediary between PCSIR and the Government of the Gambia.

The meeting concluded on a note for increased cooperation and support for the Gambia. A major outcome of the meeting was the nomination of Ministry of Higher Education, Research, Science and Technology as COMSATS' focal point in the Gambia and Director DST&I as the liaison officer for all the affairs related to COMSATS. The nomination of relevant Gambian institution to join COMSATS Network of International S&T Centres of Excellence was sought by Dr. Qureshi in order for the Gambia to benefit from scientific interactivity taking place annually through COMSATS Coordinating Council.

Meeting with Nigerian Minister for Science and Technology

The Honourable Minister for Science and Technology, Government of Nigeria, H.E. Dr. Ogbonnaya Onu, paid a visit



to COMSATS Secretariat, Islamabad, on 2nd June 2016. He was accompanied by five Nigerian officials. Dr. Dan Azumi M. Ibrahim, Director General, National Office for Technology Acquisition and Promotion (NOTAP) was also a member of the Nigerian delegation.

The Nigerian delegation was briefed on COMSATS by Dr. Qureshi with special reference to Nigeria. Dr. Qureshi expressed satisfaction over Nigeria's active participation in COMSATS' programmes. The Minister expressed satisfaction about Nigeria's engagement with COMSATS and showed keen interest in expanding cooperation with COMSATS.

Elucidating the execution of some of COMSATS' projects and programmes, Dr. Qureshi grouped them into major categories like S&T Capacity-Building; South-South Cooperation; Postgraduate Scholarships; Consultancy on S&T Policy; Science Diplomacy; Scientific Publications; International Thematic Research Groups (ITRGs); and sponsorship of scientific activities.

Dr. Qureshi informed the Minister that one of the ITRGs (Mathematical Modeling) was being led by COMSATS' Centre of Excellence in Nigeria, the National Mathematical Centre (NMC), Abuja. The group's joint research project, entitled

'Mathematical Modeling and Simulation of Air and Water Pollution: Effects and Remedies' also enjoys the patronage of ISESCO. He stated that COMSATS' capacity-building programme greatly impact the development of its Member States in terms of practical usefulness. In this regard, he gave the example of the workshop on 'Repair and Maintenance of Scientific Equipment', held on 23-27 May 2016, in Enugu, Nigeria. Dr. Qureshi presented the Minister a dossier on COMSATS' activities and engagements with Nigeria, as well as a list of equipment repaired in the Enugu workshop.

The Minister was pleased to learn about COMSATS' contribution in the scientific capacity-building of Nigerian scientists and institutions. He appreciated the working relations between COMSATS and NMC and hoped for further strengthening relations with COMSATS. Sharing his willingness to expand scientific cooperation with other countries and institutions, the Minister referred to his discussions with Pakistani counterpart during his visit to Islamabad.

The Executive Director informed that since Pakistan's Ministry of Science and Technology (MoST) is COMSATS' focal point in the host country of its Secretariat, COMSATS maintains close working relations with the MoST, which has 17

scientific institutions under its umbrella. He noted that the expertise in these institutions can be availed by COMSATS' Member States. He further said that for the series of workshops on Repair and Maintenance of Scientific Equipment, experts are mobilized from the Pakistan Council of Scientific and Industrial Research (PCSIR), which is an attached organization of MoST.

It was noted that under COMSATS Scholarship Programme, 18 Nigerian students graduated from COMSATS Institute of Information Technology (CIIT), which is a public-sector university as an attached institution of MoST.

The meeting concluded with assurances of increased cooperation for future activities, and presentation of COMSATS' publications to the Minister, who reciprocated the gesture with donating his book entitled, "From Opposition to Governing Party: Nigeria's APC Merger Story", for COMSATS' Library.

Visit by the Sudanese Undersecretary, Ministry of Higher Education and Scientific Research

Prof. Azhari Omer Abdelbagi, Undersecretary, Ministry of Higher Education and Scientific Research (MoHESR), Government of Sudan, visited



COMSATS Secretariat on June 2, 2016, to meet COMSATS' officials. Prof. Abdelbagi was accompanied by Prof. Ahmed Hassan Fahal, Director of Scientific Research, MOHESR; and Dr. Rashid A. Saeed, Associate Professor, Sudan University of Science and Technology.

The meeting was also attended by representatives of the Sudan Embassy in Islamabad, namely Mr. Ahmed Abdel Rehman Muhammad, Charge d' Affaires and Ms. Ebtihal Mohamed, First Secretary. Also present on the occasion were senior COMSATS' officials, Mr. Tajammul Hussain, Advisor (Programmes); Mr. Sabih ur Rahman, Advisor (HCA); Mr. Irfan Hayee, Deputy Director (Programmes); and Mr. Nisar Ahmad, Deputy Director (Systems).

Dr. Qureshi stated that COMSATS highly values its close ties with Sudan, which joined COMSATS in 1999 and actively participated in the programmes and activities of the Organization. Dr. Qureshi elaborated the role of COMSATS as an Organization working for the betterment of developing countries. He recalled his visit to Sudan in 2012 and holding meetings with the high officials of the Ministry of Science and Communication to strengthen S&T cooperation between COMSATS' Centre of Excellence in Sudan

and other Centres in its Network.

Prof. Azhari informed that the portfolio of science and technology has been assigned to his Ministry due to recent changes in the Government. He further explained the existing hierarchy and government structure for managing S&T in the country. It was agreed that necessary steps would be taken to designate MoHESR as COMSATS' focal ministry in Sudan.

Through a presentation on COMSATS and its programmes, the visiting delegation was apprised on the organization's engagements with Sudan. Dr. Qureshi mentioned that the Industrial Research and Consultancy Centre (IRCC), Khartoum, as a member of COMSATS' Network had been benefiting from the scientific programmes of COMSATS. It was also noted that IRCC is a member of three active ITRGs conducting research in the areas of ICTs, natural products sciences, and agriculture, food security and biotechnology. He also referred to the active participation of IRCC's Director General, Dr. Widad Hassan, in the last Council meeting held in May 2016, in Islamabad. Mr. Hussain added that the Director General IRCC during her visit to Islamabad had met with the Chairman of the Pakistan Council of Industrial and Scientific Research (PCSIR). With COMSATS' facilitation, the two

organizations inked an agreement in the area of industrial development.

Mr. Hussain informed the delegates that two Sudanese students graduated from COMSATS Institute of Information Technology (CIIT) under its Postgraduate Scholarship Programme, while one was pursuing his studies. Dr. Qureshi encouraged MoHESR to consider nominating more students from Sudan to avail scholarships offered through COMSATS' platform. He presented the Undersecretary with a set of COMSATS' publications and a copy of the prospectus of CIIT.

Dr. Qureshi stated that a number of capacity-building events were organized in Sudan in the recent years, especially two events on the theme of repair and maintenance of scientific equipment. He also informed the delegates about the planned international conference in Khartoum in October 2016 with cooperation of ISESCO, on the theme of Agriculture, Food Security and Biotechnology. Dr. Qureshi sought nomination of a relevant institution to host the event in Sudan.

In this regard, the Undersecretary affirmed that his Ministry would take up the matter of supporting the upcoming conference in



Sudan as well as nomination of a suitable Centre affiliated with his Ministry to join COMSATS' Network. Mr. Tajammul Hussain and Prof. Ahmad H. Fahal were appointed liaison officers of COMSATS and MoHESR, respectively, to coordinate organizational matters of the conference.

Meeting with Nigerian Students Availing Scholarships from COMSATS Institute for Information Technology

On June 20, 2016, a group of four Nigerian students called on the Executive Director, Dr. Imtinan Elahi Qureshi, at the

COMSATS Secretariat in Islamabad. These students were beneficiaries of COMSATS' Scholarship Programme who completed their postgraduate degrees in Mathematics and Information Security from COMSATS Institute of Information Technology (CIIT). The students wanted to visit the Secretariat before returning to their home country in order to express their appreciation and gratitude to COMSATS and its leadership, especially Dr. Qureshi for his personal attention and care.

The students thanked COMSATS for providing them the opportunity to earn Masters' degrees in very important fields of studies related to Nigeria's development. Earlier, the selection and placement process of the students was facilitated by Nigeria's National Mathematical Centre (NMC), which is one of COMSATS' Centres of Excellence.

Congratulating the students on successful completion of their academic programmes, Dr. Qureshi hoped they would be able to make valuable contributions towards the development of Nigeria. He expressed gratitude to the Director/Chief Executive Officer NMC, Prof A. R. T. Solarin, for





his remarkable contributions towards COMSATS' programmes and for facilitating the selection of the students for COMSATS' Scholarship.

Participation in a Seminar on National Security

Dr. I.E. Qureshi, Executive Director COMSATS, delivered a keynote address on July 28, 2016, in the Seminar on "Role of Education, Science and Technology in National Security", which was organized in Islamabad, Pakistan, by the Institute of Strategic Studies Islamabad (ISSI) in collaboration with the University of Management and Technology (UMT), Lahore.

The seminar was overwhelmingly attended by representatives from different thinktanks, science and technology institutions, universities, government departments and inter-governmental agencies. Mr. Rana Tanveer Hussain, Minister for Science & Technology and Defense Production, Government of Pakistan, graced the occasion as the Chief Guest.

Considering the broad scope of the seminar, Dr. Qureshi emphasized that science and technology activities are effective means to project 'soft power' of a country having a strong bearing on its international credibility leading to tangible security benefits. He deemed it important that scientists and engineers of Pakistan are supported and encouraged to undertake scientific research through international collaboration.

Dr. Qureshi informed as to how COMSATS was contributing towards the development of the countries of the South and how Pakistan, as host country, was benefiting from COMSATS' international programmes and activities. He, particularly, mentioned COMSATS Network of Centers of Excellence, International Thematic Research Groups and its Science Diplomacy Programme.

He said that COMSATS having emerged from Dr. Salam's vision was working

outside the UN structure with no regional and political affiliation.

He believed that COMSATS, with its S&T-led scientific activities in developing countries, was a source of good will for Pakistan at the international arena. Earlier, the seminar started with welcome remarks by Director General of ISSI, Ambassador Masood Khan and introductory remarks by Hasan Sohaib Murad, the Rector UMT. About 18 speakers delivered talks on how science and technology-based approaches could be employed to achieve national security. Other speakers at the inaugural session included: Dr. Muhammad Latif, Adviser Research and Development, Higher Education Commission; Dr. Mujahid Kamran, Vice Chancellor, Punjab University, Lahore; Mr. Pervez Butt, former Chairman, Pakistan Atomic Energy Commission and Engr. Muhammad Asghar, Rector, National University of Science and Technology, Islamabad.



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SCIENCE AND TECHNOLOGY EVENTS ORGANIZED WITH COMSATS' SUPPORT

Capacity-building activities make a prominent part of COMSATS' programmes aimed at South-South Cooperation. The organization has been persistently organizing scientific events in areas of crucial importance to strengthen scientific linkages; build indigenous capacities; and promote S&T as a tool for development. Since its establishment, COMSATS has organized and sponsored numerousnational and international events on various subjects. These events provide a useful platform to the members of the scientific community, development experts, donor and development agencies, and the decision-makers in particular from Member States, to share their views and experiences on contemporary issues of importance for S&T-led socio-economic development.



6th International Workshop on Internet Security: Enhancing Information Exchange Safeguards (19-23 December 2016, Rabat, Morocco)

The 6th International Workshop on 'Internet Security: Enhancing Information Exchange Safeguards' was jointly arranged on 19th to 23rd December 2016, in Rabat, Morocco by COMSATS; the Islamic Educational, Scientific and Cultural Organization (ISESCO); and the Inter Islamic Network on Information Technology (INIT). It was inaugurated by

Dr. Tariq Mahmood, Director (Science and Technology), ISESCO, at ISESCO Headquarters in Rabat. The inaugural ceremony was attended by a large number of IT professionals, researchers and students, belonging to universities, R&D organizations and government departments of Morocco.

Dr. Tariq Mahmood informed that ISESCO was striving to create a critical mass of IT experts in the Islamic countries in order to protect online information.

Earlier, Mr. Fazal Abbas Maken, Executive Director COMSATS, in his message read out by Mr. Tajammul Hussain, Advisor (Programmes) COMSATS, expressed gratitude to ISESCO and INIT for joining hands with COMSATS in organizing the workshop. He stressed the need for capacity-building of cyber security professionals and IT experts in order to ensure security of the identities, documents and passwords of individuals, organizations and businesses.

Mr. Tahir Naeem, Executive Director INIT, called for greater efforts and collaboration to safeguard the online environment. He also shared the mission and ongoing activities of his organization



in the field of Information Technology. The event provided a forum to the participating researchers and professionals to learn about the latest advancements in the field of Internet security; use of stateof-the-art technologies for protection of network and network accessible resources from different types of software attacks; and working out effective Internet/ information security solutions for general public, governmental organizations and commercial enterprises. The technical sessions of the five-day workshop were attended by 40 young researchers, academicians, system administrators and cyber security professionals, belonging to Palestine, Uzbekistan, Iran, Sudan, The Gambia, Ivory Coast, and Morocco.

During the first technical session, Dr. Haider Abbas, Research Fellow/ Assistant Professor, Center of Excellence in Information Assurance, King Saud University, Saudi Arabia, imparted training on 'Organizational Security'. He covered the following topics: Certification of Organizations; Practical Approaches to Organizational Information Security Management; ISO 27001: Information Security Management System; Risk Assessment; Risk Calculation Methods and Treatment Strategies; Gap Analysis; Information Security Policy/Procedures Writing; and Information Assets Identifications & Valuation. He also conducted practical exercises on: Gap Analysis; Risk Assessment & Treatment;

Statement of Applicability; Internal/ External Auditing; and Organization's Certification Process.

The second technical session was conducted by Mr. Zafar Iqbal Mir, Deputy Head, Information Security Risk, MENA – HSBC, UAE. He covered topics related to dissecting a cyber-attack, including Reconnaissance (Recon), Scanning, Gaining Access, Maintaining Access, and Covering and Hiding Tracks. He also touched upon topics related to various types of attacks, including Anatomy of a Sample Distributed DoS (DDoS) Attacks, Evolution of Botnet Configurations and DDoS Attacks, the concept of Kill Chain, Mitigation Techniques and Layered Security Approach.

The third session was conducted by Mr. Syed Mustafa Raza, Director - Solutions & Consulting (Info Sec), IXTEL Dubai, and Consultant (Pre-sales Solutions), Gulf Bridge International, Qatar Foundation Group, UAE. He imparted training on the such aspects of cyber security as Defining Vulnerability, Exploit, Threat and Risk; Creating a Vulnerability Report; Conducting an Initial Scan; Common Vulnerabilities and Exposure (CVE) List; Vulnerability Detection Methods; Types of Scanners; Port Scanning and OS Fingerprinting; Enumerating Targets to Test Information Leakage; Types of Exploits: Worm, Spyware, Backdoor, Rootkits, and Denial of Service (DoS);

Deploying Exploit Frameworks; Implementing Scanner Operations and Configuration; Choosing Credentials, Ports and Dangerous Tests; Creating Custom Vulnerability Tests; Customizing Nessus Scans; Filtering and Customizing Reports; Interpreting Complex Reports; and Contrasting the Results of different scanners.

During the fourth session, Mr. Asad Raza, Professional Technical Faculty Member, Information Security Engineering Department, Institute of Applied Technology, UAE, imparted training on: Steps in Incident Handling; Information Gathering and Reconnaissance; Vulnerabilities in Microsoft Windows; Metasploit Framework; Exploits and Payloads; Auxiliary Modules; Security Issues in Wireless Networks; Social Engineering Toolkit and Prevention Methods.

The final session of the workshop was conducted by Mr. Muhammad Faheem Qureshi, Lecturer, Abu Dhabi Polytechnic, Institute of Applied Technology, UAE, during which he covered the following aspects of Digital Forensics: Evidence Handling; Roles and Responsibilities; Phases of a Digital Forensic Process; Memory Forensics; Storage Forensics; and Microsoft Windows Forensics. All the technical sessions were highly interactive.



Towards the end, the certificates were distributed by the representatives of ISESCO, COMSATS and INIT among the resource persons, local and foreign participants, and Organizing Committee members.

The event successfully ended on 23rd December 2016. Dr. Tariq Mahmood, thanked the Organizing Committee members from ISESCO, INIT and COMSATS for working hard to make this event a success. He hoped that the working relations made during the workshop will be maintained for future collaboration and learning.

International Workshop on Nanotechnology for Young Scientists (IWYS-2016) (28 -30 November 2016, Selangor, Malaysia)

The International Workshop on 'Nanotechnology for Young Scientists' (IWYS-2016) was organized by COMSATS in collaboration with the Islamic Educational, Scientific and Cultural Organization (ISESCO), from 28th to 30th November 2016, in Selangor, Malaysia and hosted by the Universiti Kebangsaan Malaysia (UKM), Malaysia.

The event aimed at responding to the needs of young scientists in developing countries; promote indigenous capacity-building in science and technology for science-led sustainable development; and encourage scientific research and sharing of experiences, especially in the field of nanotechnology. A diverse group of scientists with a wide range of expertise attended the event and discussed important issues, challenges, and the vital science needed for better understanding Nanotechnology from a broader perspective.

The workshop was inaugurated by Ybhg. Prof. Dato' Dr. Imran Ho Abdullah, Deputy Vice Chancellor, Universiti Kebangsaan Malaysia (UKM), on November 28, 2016. Around 150 subject specialists, researchers and students from 12 countries, including Bangladesh, Brunei, China, Egypt, Kazakhstan, Jordan, Korea, Indonesia, Iran, Malaysia, Pakistan, and Turkey participated in the inaugural function.

The inaugural session began with a welcome address by the Chairman of Workshop Central Committee, Prof. Dr. Mohammad Hafizuddin Hj Jumali (UKM), who highlighted the huge potential and possibilities related to nanotechnology. He lauded COMSATS and ISESCO for their support in organizing the Workshop and highlighted the importance and objectives of the event.





Mr. Fazal Abbas Maken, Executive Director COMSATS, in his message read out by Ms. Huma Balouch, Sr. Assistant Director (Programmes) COMSATS, said that instituting an effective process for identifying and understanding the broad implications of nano-technology for society could help policy-makers duly integrate it in development strategies. He also acknowledged the continuous support of ISESCO towards COMSATS' international programmes and activities.

In his Inaugural address, Prof. Dato' Dr. Abdullah stated that Nanotechnology is a multidisciplinary area which involves a number of fields, such as applied physics, material sciences, supramolecular chemistry, mechanical engineering, mechatronics, chemical engineering, and bioengineering. He felt that the technologies being developed by Malaysian scientists and research activities in the area of nanotechnology needed to be commercialized to serve as an effective engine of economic growth for the country.

The workshop focused on developing understanding on nanoscale physics, chemistry, engineering, and biology, and facilitating knowledge-sharing among scientists in these fields.

There were two keynote talks, two invited plenary lectures, six workshop sessions, 20 selected oral contributions, and 50 poster presentations. There was also an exhibition of latest products, services, technologies and industry innovations by the commercial partners, including Bruker AXS, RGS Corporation Sdn. Bhd, Gaia





Science, Vistec Technology Services, Alpha Instruments Supplies & Services Sdn Bhd, and ITS Interscience Sdn Bhd. The knowledge shared under these components of the event demonstrated the practical importance of nanotechnology.

The highlights of the Workshop included the keynote address by the world-renowned physicist, Prof. Dr. Qikun-Xue of Tsinghua University, China, who is the first winner of 'China's Nobel' prize for his pioneering contribution in the Quantum Anomalous Hall (QAH) effect. In his talk, Dr. Xue gave an introduction of three techniques: molecular beam epitaxy (MBE), scanning tunneling microscopy (STM), and angle resolved photoemission spectroscopy (ARPES), and presented MBE-STM-ARPES study of topological insulators and iron-based superconductors.

The other keynote talk was delivered by Prof. Ahmet, Oral from Middle East Technical University, Turkey, in which he gave an overview of the state of the art Scanning Probe Microscopes (SPM) for magnetic imaging in the 20mK to 300K temperature range. He talked about mK-Scanning Probe Microscopes (mK-SPM) operating in Scanning Tunnelling Microscope (STM), Scanning Hall Probe Microscope (SHPM) and Atomic/Magnetic Force Microscope (AFM/MFM) mode in

a wide temperature range of 20mK-300K. SHPM images of magnetic materials at 20mK were also presented by Prof. Oral. The Workshop sessions covered a number of important topics, such as fundamental description of metallic nano-particles; flexible organic optoelectronic devices using printing process; low dimensional inorganic optoelectronic nano-materials; defects in wide band gap semiconductors for potential use in light sources; acylated chitosan stealth liposomes, and one dimensional electronic oxides nanomaterials. The technical proceedings of the event broadly centered around the relevant materials and interface parameters that play a key role in functionality of nanodevices, as well as the overall device design.

The event also featured country status reports by foreign participants from Bangladesh, Brunei, Egypt, Indonesia, Jordan, Kazakhstan, and Malaysia. These, inter alia, covered: applications and benefits of nanotechnology, societal issues and innovation and commercialization processes. On the last day, a scientific writing workshop was also conducted to help young researchers and students refine their scientific writing and critical reading skills.

The 50 posters covering various aspects and latest developments related to

processing, modelling and manufacturing technologies of nano-structured materials, were displayed throughout the event around the perimeter of the exhibition area. Relevant Universities, R&D institutions and industries participated in the poster contest.

During the concluding session, Prof. Jumali (UKM), in his capacity as IWYS Chairperson, expressed his gratitude to all participants, particularly session moderators, panelists and presenters. He thanked to the local organizing committee, ISESCO and COMSATS for their efforts, expressed satisfaction on the interactive nature of the Workshop and congratulated the participants on the extensive networking that had taken place.

The conference ended with the distribution of certificates to the participants that was followed by a video-montage of highlights from the Workshop.

Seminar on Celebrating Science Centres and Science Museums (17 November 2016, Islamabad, Pakistan)

To commemorate the World Science Day for Peace and Development (WSDPD) 2016, COMSATS in collaboration with



the Office of Research, Innovation and Commercialization (Professional Development Department) of COMSATS Institute of Information Technology (CIIT), Pakistan, held a National Seminar on 'Science Centres and Science Museums' in Islamabad, on November 17, 2016.

Dr. Ishfaq Ahmad, a veteran scientist and former Special Advisor to the Prime Minister of Pakistan on Strategic Programmes, presided over the inaugural session. Dr. Ahmad noted with pleasure, Pakistan's role in institutionalizing UNESCO's World Science Day for Peace and Development, for which he had personally played an important role in the late nineties.

Earlier, in his welcome address, Dr. Raheel Qamar, Dean, Research, Innovation and Commercialization, CIIT, stated that science centres help nurture scientific ideas and thoughts and build understanding between public and scientific community.

Mr. Fazal Abbas Maken, Executive Director COMSATS, in his message postulated that science centres and museums extend and enrich conceptual understanding of the physical laws of nature, and develop skills of exploration and observation, directly related to scientific thinking.

A message by Director General UNESCO, Dr. Irina Bokova, was read out by Mr. Raza Shah, National Professional Officer, Natural Sciences, UNESCO Country Office, Islamabad, in which she considered Science Centres and Museums vitally important for sustaining and reinforcing existing values and knowledge.

More than 65 participants, including, diplomats, academicians, scientists, principal museum managers and curators, CIIT faculty members and students, as well as representatives of media and civil society attended the seminar. The inauguration was followed by a technical session comprising of highly informative talks by four eminent speakers: Dr. Zain-ul-Abedin, Advisor, Department of Architecture, CIIT Islamabad Campus; Mr. Mian Attique Ahmad, Secretary General, Museums Association of Pakistan (MAP); Ms. Fatima Sami, Graphic Exhibit Designer, National Museum of Science and Technology (NMST), Lahore, Pakistan; and Dr. Tariq Bin Tahir, former Director General, Pakistan Atomic Energy Commission (PAEC).

In his presentation, entitled 'Science in Service of Museums and Heritage: the Role of CIIT', Dr. Abedin said that Museum is a platform of education where teachers teach less, yet students learn more. He advocated the need for integrating





museums in teaching methods as a high impact, and experience-based knowledge interface.

Mr. Ahmad's talk was entitled "Role of Science Centers and Science Museums as Educational Institutions at Regional Level". He shared his experience of working at district-level for establishment of museums, besides the aspirations of MAP for undertaking innovative measures in collaboration with CIIT in this regard.

Ms. Sami introduced NMST as a nonprofit organization working for improving S&T literacy in society. She informed that Museum acquires, conserves, and exhibits the tangible and intangible heritage of humanity and its environment for science education, study and entertainment. She mentioned that NMST is a prime showcase in Pakistan for the amazing technological advances made by Muslim scholars.

Dr. Tariq presented a proposal on establishing 'Children Science Discovery Centre' in the country, benchmarking renowned museums from around the world. He noted the changing paradigm in science museums that now encourage more interactivity apart from exhibiting ideas, artifacts and technologies.

Regional Expert Meeting on Renewable Related Energy Focusing on Microalgae Technology Using Ocean Resources Including Solar and Fuel Cell (31 October - 1 November 2016, Zahedan, Iran)

The Regional Expert Meeting on Renewable Related Energy Focusing on Microalgae Technology Using Ocean Resources Including Solar and Fuel Cell' was held from 31st October to 1st November 2016, in Zahedan, Iran. It was









organized by COMSATS in collaboration with its Centre of Excellence in Iran, the Iranian Research Organization for Science & Technology (IROST), as well as the University of Sistan and Baluchestan, Iran. The latter was also the host of the event, which was attended by over 50 participants belonging to Iran, Bangladesh, Kazakhstan, Syria and Spain.

The event was inaugurated on 31st October 2016, at the auditorium of the University of Sistan and Baluchestan, by H.E. Mr. Ayatollah Solimani, Representative of the Supreme Leader of Iran in Sistan and Baluchestan. Mr. Solimani extended warm welcome to the foreign and local subject experts participating in the event. He, inter alia, called for greater cooperation among the developing countries for making the

best use of the renewable energy resources available to them.

Earlier, Prof. Bandani, President of University of Sistan and Baluchestan, Iran, expressed pleasure on hosting the event and welcomed the local and foreign speakers and participants. He presented the status of renewable energy technologies in the province of Sistan and Baluchestan of Iran and informed that the provincial government was making huge investments for optimum utilization of the renewable energy resources available in the province. Highlighting the need for enhanced capacity-building in the field of renewable energy, Prof. Bandani welcomed the technical collaboration of the participating institutions with his university. Dr. M. Molanejad, Acting President

for International Cooperation, IROST, informed that increased greenhouse gas emissions have affected the availability of drinking water in Iran, and called for increased collaboration in the field of renewable energy with a view to finding better substitutes for fossil fuels.

Prof. Nasrin Moazami, IROST, Iran, shed light on global trends in renewable energy investments during the recent years. She apprised the audience on the ongoing research activities in Iran in the field of renewable energy, particularly energy generation from microalgae. Speaking on the occasion, Mr. Farhan Ansari, Sr. Assistant Director (Programmes), COMSATS, stressed the need for enhanced collaboration among the developing countries, in general, and COMSATS'



Member States, in particular, in the field of renewable energy.

The two-day event included six technical sessions that featured 21 technical presentations and invited lectures on different topics related to the theme of the event. The presentations made during the event, inter alia, related to: assessment and market development of wind energy resources in Iran; market of renewable energy in Spain; research on semiconductor optoelectronics and nanophotonics in Kazakhstan; genomic cosmetics and microalgae; bio-fuel production from high energy crops adapted to hot and dry climate; research on photovoltaic systems in Syria; research on solar thermal energy in Iran; study on wave energy resources in Iran; emerging solar energy technologies in Bangladesh; microalgae bio-refinery established in Iran; recent advances in proton-exchange membrane fuel cells in Iran; developments of microbial fuel cells for energy generation and wastewater treatment; research on sold oxide fuel cells in Iran; potential of production of second generation bioethanol in Iran; technoeconomic development of solar thermal concentrating power plant; challenges with heating and ventilation systems in the residential near zero energy buildings; and successful experiences of solar energy in the world.

The recommendations of the meeting, inter alia, related to:

- making best use of the abundant renewable energy resources available in the developing countries;
- ensuring adequate, reliable, affordable, equitable and sustainable supply of renewable energy to various sectors of the economy for national development;
- accelerating the process of acquisition and diffusion of technology, managerial expertise and private-sector participation in the renewable energy sector;
- promoting investments and technology development in the sector;
- fostering international cooperation and trade in the sector; and
- strengthening the training institutes for renewable energy.

International Conference and Exhibition on Renewable Energy Technologies (18-20 October 2016, Islamabad, Pakistan)

The International Conference and Exhibition on Renewable Energy Technologies, ICERET-2016 was held in Islamabad, Pakistan, from 18th to 20th October 2016. The event was organized by COMSATS in collaboration with the Islamic Educational, Scientific and Cultural Organization (ISESCO) and Pakistan Council of Renewable Energy

Technologies (PCRET), in Islamabad, Pakistan. An exhibition was also arranged in conjunction with the event, which took place from 19th to 21st October 2016 at the premises of PCRET.

The conference was inaugurated on 18th October 2016, by H.E. Rana Tanveer Hussain, Federal Minister for Science and Technology, Government of Pakistan. The inaugural ceremony was attended by over 120 participants from academia, industry, R&D organizations and diplomatic community in Islamabad.

The Federal Minister considered it important to fully exploit RETs for successful implementation of the Government's energy policies, in view of the grave concerns about energy scarcity. The Federal Secretary, Ministry of Science and Technology (MoST), Mr. Fazal Abbas Maken, highlighted the importance of advancements in RETs, especially the rising environmental concerns in due to rapid climate change. Director General PCRET, Dr. Basharat Mahmood, stated that PCRET was making all-out efforts to strengthen this area in Pakistan. He hoped that the deliberations of the event would strengthen the Council's efforts with new knowledge and best practices in the field. Speaking on behalf of COMSATS, Mr. Irfan Hayee, Deputy Director (Programmes), considered the theme of the event important, especially





with regard to sustainable development Goal-7, 'Affordable and Clean Energy'. Mr. M. Yaqoob, Assistant Secretary-General Pakistan National Commission for UNESCO (PNCU), represented ISESCO on the occasion.

A highlight of the inauguration was the presentation of a shield to Dr. Ishfaq Ahmad, an eminent Pakistani scientist and former special Advisor to the Prime Minister of Pakistan on Strategic Programmes, for his outstanding contributions to science and technology.

The conference had eight technical sessions spread over three days, during which 30 invited and contributed talks were delivered by 29 speakers. Ten international speakers participated in the conference, five of whom represented COMSATS' S&T Centres of Excellence in Egypt, Iran, Jordan, Kazakhstan and Sudan; four represented private-sector enterprises from

China, Germany, USA and Taiwan; while one international speaker represented a leading university of USA. The speakers from China and Taiwan made virtual participation. Moreover, five posters were presented by various groups of students on the sidelines. Over 110 registrations were made for the conference from around 60 different organizations from across the country – academic institutions (57%), R&D organizations (24%) and industry and SMEs (19%).

During the conference, 10 talks were given on the theme of solar/photovoltaic technologies, five on biomass and biodiesel, four on fuel cells, two on wind energy, while the rest touched upon different aspects of RETs, including its importance in national energy-mix, integration in energy system, deployment, financing and economic value assessment, as well as case study on exploiting RETs in telecom sector. The first talk of the conference

was given by Prof. Dr. M. A. Lodhi from Texas University, USA, who spoke on concentrated, integrated and cascaded solar power generation system.

Dr. Iqbal Chaudhry of Qorvo Inc, USA, highlighted R&D efforts aimed at reducing the levelized cost of electricity (LCOE) in concentrated photovoltaic (CPV) technology. Dr. Gholamreza Farahani of the Iranian Research Organization for Science and Technology (IROST), Iran; shared research on maximum power point tracking in solar energy systems while Mr. Kairolla S. Sekerbayev of Al-Farabi Kazakh National University (KazNU), Kazakhstan, elucidated on research being made at his institution focusing on optical absorption properties of organometal perovskites with different iodine and bromine content for photovoltaic technologies.

Two case-studies presented under the theme were: Implementation of 100 KW hybrid solar system at CIIT Islamabad; and performance of solar photovoltaic pump coupled with high efficiency irrigation systems. Other topics covered under 'solar/PV technologies' included: PV modules performance improvement through extended surfaces under climate of Pakistan; High Concentration Photovoltaics (HCPV); and PV Test Solution & Quality Assurance.

Under the theme 'biomass/biofuel', Dr. Abdulrahim Saad, Industrial Research & Consultancy Centre (IRCC), Sudan took



stock of recent advances on biomass pyrolysis; while Prof. Dr. Gamila H. A. Ahmed of Water Pollution Research Department, National Research Centre (NRC), Egypt, deliberated on sustainable cultivation of microalgal biomass and wastewater treatment for biofuel production. Mr. Azim Khan Niazi of Nagaro GmbH, Germany, discusses the use of smart biogas plants as a sustainable decentralized solution for urban and rural organic waste management in developing countries.

Under the theme of 'fuel cell', an overview of Polymer Electrolyte Membrane Fuel Cell Energy Systems for Sustainable Development was presented. Speakers also touched upon Anisotropic Anion Exchange Membranes for Solid Alkaline Fuel Cells (SAFCs); development of a prototype for the generation of hydrogen from organic wastes in high yield; as well as fabrication of photocatalytically efficient ZnO/CuO hetero-junction photoanode for photo-electrochemical hydrogen production.

Engr. Muhieddin Tawalbeh, representing Royal Scientific Society (RSS), Jordan, presented country case-study with special reference to capacity building in Wind Energy and Concentrating Solar Power (CSP) project (WECSP) in Jordan. The event concluded on the third day with a panel discussion session that was chaired by Dr. Iqbal Chaudhry of Qorvo, Inc., USA, and Co-chaired by Mr. Nadeem Zakir, Head of Photovoltaic Division, PCRET.

The concluding ceremony of the Conference was presided over by the Federal Secretary MoST, who appreciated the intellectual content presented during the Conference on important topics related to RETs, and lauded COMSATS, ISESCO and PCRET for successfully this important conference.

The event recommendations emphasized that the governments of developing



countries should play a strong role in supporting use of RETs through formulating relevant policies and strategies, enhancing research funding as well as introducing incentives such as 'tax credit' for consumers. The relevant steps taken by the Government of Pakistan, such as 'net metering' and duty-free import of solar panels, and other renewable energy products were noted and appreciated. The Conference further recommended that the private sector should advise governments for promoting RETs, and training opportunities in the related fields.

The Exhibition on RETs was inaugurated at PCRET by Prof. Dr. Gamila H. A. Ahmed on October 19, 2016. A total of 15 stalls exhibiting different RET products were showcased, which included windmill, solar panels and PV Balance-of-System (BOS), such as solar charge controllers, batteries, inverters, net metering systems; AC & DC solar water pumping systems; wind, solar and weather data acquisition systems; solar passive building insulation products; different types of solar cookers, water heaters, vegetable/ fruits dehydration plants, water desalination/purification plants; rawal plugs & anchors for solar modules roof installations; special cables; LED lights; demo biogas plant and indigenously manufactured solar powered car and a bus having solar powered computer lab.

2nd International Conference on Agriculture, Food Security, and Biotechnology (17-18 October, 2016, Khartoum, Sudan)

The 2nd International Conference on Agriculture, Food Security, and Biotechnology was held on 17th and 18th October 2016, in Khartoum, Sudan. The Conference was organized by COMSATS in collaboration with Islamic Educational, Scientific, and Cultural Organization (ISESCO), University of Khartoum, the Industrial Research and Consultancy Centre (IRCC), Sudan, under the patronage of the Ministry of Higher Education and Scientific Research (MoHESR), Government of Sudan. Researchers and subject experts from Egypt, Iran, Oman, Pakistan, Senegal, and Sudan contributed to the two-day conference as speakers, which was attended by a large number of local participants and organizations.

The objective of the conference was to provide a forum to scientists, researchers, technologists and faculty members of higher education institutions to share their experiences and recent developments in the field of agriculture and biotechnology; and examine from a scientific point of view the need for increasing the global availability of and access to food in a sustainable manner. With 32 speakers representing national governments, international organizations, industry, NGOs, universities and research



institutes, the Conference focused on key issues relating to food security and how biotechnology could contribute to ensuring food for all. The conference was attended by over 300 participants.

The inaugural ceremony of the Conference was held at the Grand Hall of Ministry of Higher Education and Scientific Research (MoHESR), Government of Sudan. The Honourable Minister for Higher Education and Scientific Research, H.E. Prof. Somaia Abukashawa, inaugurated the Conference. Other distinguished guests at the ceremony included Sudanese government officials: H.E. Mr. Yagoub Mohamed Altaib, State Minister at the Ministry of Agriculture & Forestry; H.E. Mr. BaharIdris Abu Garda, Federal Minister of Health; and Prof. Azhari Omer Abdelbagi, Undersecretary MoHESR. Prof. Ahmed Hassan Fahal, University of Khartoum, Dr. Widad H. AbdelHalim, Director General IRCC, Sudan, Dr. Ismail Abdel-Hamid, Expert, Science Directorate, ISESCO, and Ms. Huma Balouch, Sr. Assistant Director COMSATS.

Opening the conference, Prof. Fahal categorized food security as one of the most important challenges faced by the humanity, which involved much more than agriculture, and had a significant bearing on other important Millennium Development Goals (MDGs). H.E. Prof. Somaia urged the participating researchers to take on revolutionary steps to promote modern

agricultural systems in Sudan. She stressed the importance of increasing production through research in biotechnology to ensure food security in the country.

Focusing on the role of science and technology, H.E. Dr. Abdallah said that science and technology had greatly contributed to addressing the agricultural needs of growing populations in Asia and Latin America, but did not benefit Africa. Dr. Widad H. AbelHalim said that the world population could comfortably sustain by recognizing the intimate relationship between food, water, energy and climate change. Prof. Azhari deliberated on the scope of possibilities and opportunities in agricultural biotechnology in developing countries.

He termed biotechnology as the key technology of the 21st century. Dr. Ismail Abdel-Hamid, Expert Science, ISESCO, said that the conference would serve as a small step on a long journey towards ensuring food for all. Ms. Huma Balouch stated that this Conference would enhance the capabilities of participating scientists in assessing the emerging sustainable agriculture and food security challenges, particularly in South, and the modern biotechnology related approaches to meet these challenges, at national, regional and international levels.

The proceedings consisted of five technical and one keynote sessions. Two keynote presentations were made by Prof. Dr. Abd Allah Ahmed Abd Allah, currently affiliated with the University of Khartoum and former Minister of Agriculture, Food and Natural Resources, and Mr. Wagdy Merghani, Chief Executive Officer, Mahgoub Group, Sudan. The topics covered during this session were an overview of Agricultural Sustainable Development, and assessing Sudan's export diversification potential in agricultural products.

The intellectual contributions covered a wide range of topics, in which major emphasis was laid on understanding and assessing the relevance of biotechnology across a range of life sciences with regard to agricultural productivity improvement.



A number of speakers emphasized the importance of meeting the information needs of farmers to address major scientific and related socio-cultural issues. The sessions included active discussions that encouraged information and idea sharing and future cooperation among the participants and their institutions.

The Conference focused on the following themes: food production and food security; pest and disease control using biotechnological approaches; improving agricultural productivity through enhanced resource use efficiency (Genetically Modified Crops); climate-change impacts, adaptation, vulnerability for crops and post-harvest components of food systems; metrics for measuring food security across local and regional contexts; reducing post-harvest losses and contaminations and food loss and waste management.

15th CTWF International Symposium on Atmospheric Aerosol and the International Lecture Courses on Atmospheric Aerosols (19-27 September 2016, Beijing, China)

The 15th CTWF International Symposium on Atmospheric Aerosol (19-24 September 2016) and the International Lecture Courses on Atmospheric Aerosols (25-27 September 2016) were held in Beijing, China. The events were hosted by COMSATS' Centre of Excellence in China, the International Center for Climate and Environment Sciences (ICCES), and co-organized by COMSATS, CAS-TWAS-WMO Forum (CTWF), the Aerosol Comparisons between Observations and Models (AeroCom), and the International Satellite Aerosol Science Network (AeroSAT). The events were attended by over 150 participants belonging to Iran, Pakistan, Norway, China, USA, Sweden, Finland, Japan, Netherlands, France, Nigeria, Brazil, Germany, United Kingdom, Spain, Ghana, Thailand, India, Sri Lanka, Egypt, Belgium, and Switzerland.



Both the events facilitated exchange of knowledge, expertise and skills among the participants belonging to research organizations from various developing and developed countries for assessing the impacts of atmospheric aerosol on environment over different regions of the world to facilitate highly informed mitigation measures at national and regional levels.

The 15th CTWF International Symposium on 'Atmospheric Aerosol' was inaugurated on 19th September 2016, in Beijing. The opening ceremony of the event included the addresses by Dr. Kai Feng (Chinese Academy of Sciences, China), Dr. Yifen

Pu (Chinese Academy of Sciences, China), Dr. Xiaohong Liu (University of Wyoming, USA), Dr. Mian Chin (NASA Goddard Space Flight Center, USA), Dr. Thomas Popp (Deutsches Zentrum fur Luft-und Raumfahrt (DLR), Germany), and Dr. Ralph Kahn (NASA Goddard Space Flight Center, USA).

The six-day event was divided into 15 technical sessions, which featured 50 technical presentations and invited lectures on different areas related to atmospheric aerosol, as well as several discussion sessions. The topics covered during the symposium, inter alia, included: air pollution-climate change relationship;





aerosols-cloud interactions; dust storms; effects of aerosol on air quality and surface radiation trends; using satellite datasets for studying aerosol; indirect effects of aerosol; effects of aerosols on the poles; employing different climatic models to assess the impacts of atmospheric aerosol; uncertainties in the satellite datasets related to atmospheric aerosols. Moreover, three poster presentation sessions were arranged to depict the participants' research efforts and results related to the theme of the event.

The symposium was followed by the three-day International Lecture Courses on 'Atmospheric Aerosol', which commenced on 25th September 2016. During the opening ceremony, Prof. Lin Zhaohui, Director ICCES, China, said that atmospheric aerosol posed serious threat to all regions of the world, especially the East Asian countries; and stressed the need for studying and creating such models as to mitigate its effects.

Prof. Brian Toon (University of Colorado, USA), a subject-expert, highlighted the need for sensitizing the political leaders of the world on the significance and impacts of air pollution. Mr. Farhan Ansari, Sr. Assistant Director Programmes, COMSATS, stressed the need for further investigating the atmospheric aerosol on the basis of long-term datasets at local and regional levels for adopting effective mitigation measures.

The event featured 13 invited lectures delivered by five subject experts belonging to USA and China. Prof. Brian Toon gave lectures on topics, including relationship of aerosol with Asian monsoon, effects of volcanic eruptions on climate change, clouds-aerosol relationship on earth and mars, etc. Prof. Margaret Tolbert (University of Colorado, USA) gave lectures on particulate water in atmospheric aerosol, and cirrus cloud formation in the upper troposphere. Dr. Mian Chin (National Aeronautics and Space Administration, USA) discusses the models used to study atmospheric aerosol. Prof. Hong Liao (Nanjing University of Information Science and Technology, China) traced historical changes and climatic effects of aerosols in China, while Prof. Xiaohong Liu (University of Wyoming, USA) gave an overview of aerosol-cloud-climate interactions. The events concluded with distribution of certificates among the local and foreign participants.

Seminar on Framework of Sustainable Development Goals (SDGs) (22 September 2016, Islamabad, Pakistan)

COMSATS in collaboration with the Pakistan Academy of Sciences held a National Seminar on 'South-South Cooperation in the Framework of Sustainable Development Goals (SDGs), in Islamabad, on 22nd September 2016,





to commemorate the UN Day for South-South cooperation (September 12, 2016). Mr. Neil Buhne, Director UN Resident Coordinator and UNDP Resident Representative in Pakistan, was the Chief guest at the opening ceremony. Dr. Anwar Nasim, President of PAS, and Mr. Irfan Hayee, Deputy Director (Programmes) COMSATS, gave their opening remarks in the inaugural session. The Seminar was attended by more than 90 participants, including diplomats, academicians, scientists, economists, students, as well as representatives of media and civil society.

The technical session of the seminar comprised of two keynote addresses; two presentations on different aspects of South-South cooperation; and a panel discussion. The subjects covered were: From MDGs To SDGs & South-South

Cooperation Needed for its Success' by Prof. Dr. Zabta K. Shinwari, Secretary General, Pakistan Academy of Sciences (PAS), Islamabad; 'Contribution of STI to the Three Dimensions of Sustainable Development' by Prof. Dr. Anwarul-Hassan Gilani, Chairman, Pakistan Council for Science and Technology (PCST), Islamabad; 'South-South Cooperation from MDGs to SDGs' by Dr. Abid Qaiyum Suleri, Executive Director SDPI, Islamabad; and 'China: Exporting Sustainable Development' by Mr. Syed Tanvir Abbas Jafri, Incharge China Study Centre, COMSATS Institute of Information Technology (CIIT), Islamabad.

Mr. Buhne remarked that although dynamics of the world and cooperation patterns over the years were changing

very fast, South-South Cooperation was still relevant. He said that development paradoxes in Pakistan were not much different from those in the developed countries. Mr. Buhne was optimistic that despite a number of shortcomings, Pakistan was among the earliest adopters of the SDGs. The UN Resident Coordinator also emphasized on the importance of development indicators for assessing the progress.

Dr. Nasim stated that implementing the SDGs requires active government leadership and a broad coalition of actors to make it possible. He strongly advocated the role of science academies in promoting S&T to achieve sustainable development goals. He hoped that the science complexes created for promotion of S&T would live up to their mandate and potential.





Mr. Hayee noted that COMSATS' programmes were consistent with the concepts of South-South cooperation and Sustainable Development Goals. He stated that COMSATS held this event to be a part of the worldwide observance of UN World Days, and hoped that it would help promote best practices for South-South cooperation.

In his keynote address, Prof. Dr. Zabta K. Shinwari, Secretary General of PAS, highlighted the crucial importance of South-South Cooperation for implementing the SDGs. He believed that South-South cooperation was an expanding and dynamic modality and a vital component to confronting the development challenges faced by developing countries.

Prof. Dr. Gilani, Chairman, Pakistan

Council for Science and Technology (PCST), pointed out the interdependence of various SDGs. He said that SDGs should not be treated in isolation from each other as many areas and targets overlapped. He said that there was an over emphasis on one of the pillars of Sustainable Development, i.e., the Economy, without giving due consideration to the other two, i.e., society and environment.

Referring to people's skepticism about the achievement of the Goals, Dr. Suleri stressed that the government should give maximum publicity to the SDGs for increasing public awareness. He particularly emphasized on the SDG 16, 'Peace, Justice and Strong Institutions' as the most important factor for overall socioeconomic development. He called for rationalizing expectations from the SDGs

and modifying the approaches for their achievement in the light of the world's experience with the MDGs.

Mr. Jafri's talk related to the 'One Belt One Road (OBOR)' initiative of China as a case study of South-South Cooperation. He informed that with a major focus on trade, China's OBOR involves cooperation agreements with 65 countries in four major areas of interest, i.e., policy coordination, infrastructure construction, financial integration and people-to-people contact.

The event concluded with an interactive panel discussion session by the following panelists: Dr. Suleri; Dr. Nasim; Prof. Dr. N.M. Butt, Chairman PINSAT; Dr. Qasim Jan, Advisor COMSTECH; and Mr. Wasim Hashmi Syed, Advisor (HRD), who represented Dr. Mukhtar Ahmad, Chairman HEC, Pakistan. The panelists addressed questions and concerns raised by the audience related to the theme of the event.

3rd International Workshop on Applications of ICTs in Education, Healthcare and Agriculture (31 May - 1 June 2016, Amman, Jordan)

The 3rd International Workshop on 'Applications of ICTs in Education, Healthcare and Agriculture' was held in Amman, Jordan, from 31st May to 1st June 2016 at the Royal Scientific Society (RSS),





Amman, which is the largest applied research institution of the country and COMSATS' Centre of Excellence in Jordan. The third of its kind, the workshop was jointly organized by COMSATS; Islamic Educational, Scientific and Cultural Organization (ISESCO); the InterIslamic Network on Information Technology (INIT); and the United Nations Economic and Social Commission for Western Asia (UNESCWA).

The workshop aimed at strengthening the capacity of software and application developers, researchers and students involved in designing practical applications addressing development problems in the areas of education, health and agriculture in the common Member States of the partner organizations. The objective was to understand and possibly help develop ICT applications and policies conducive for improving governance structures in thematic areas of the workshop.

Mr. Daher Thabet, Director ICTs, RSS, presided over the inaugural session of the event held on May 31, 2016. Other distinguished participants of the session included Dr. Bilal Zaka, Director, CIIT-

Virtual Campus and Representative INIT; Mr. Abdul Majid Qureshi, Research Scholar, COMSATS Secretariat; Dr. Ismail AbdelHamid, Programme Specialist, ISESCO; and Engr. Nael Elmulki, Jordan National Officer, UNESCWA. Around 60 subject specialists and experts from Morocco, Pakistan, Tanzania, Egypt, Jordan and Palestine also participated in the inaugural function.

The technical proceedings of the workshop spread over six sessions comprising of 22 talks, case studies, and keynote lectures. These covered innovative applications







being developed by students, researchers and government institutions for addressing governance related problems in the areas of Health, Education and Agriculture. The first two sessions focused on the theme of ICT applications in Education, and the third session focused on ICT applications in Agriculture. The next three more sessions covered talks under the theme of ICT applications in Healthcare. Several case studies of software developed and deployed in educational institutions and healthcare fields were shared, while some speakers presented profitable applications with social models of marketing.

The discussions held during the event called for a favorable regulatory environment and patronage of public institutions for adoption of the many existing applications and their regular improvement. The need was stressed for greater awareness on the merits of certain ICT applications, particularly in the healthcare sector, as well as for addressing intellectual property (IP) issues among software developers.

Mr. Thabet also presided over the closing ceremony of the workshop on June 1, 2016. He remarked that the developing countries needed to strengthen their capacities to develop indigenous software

applications for addressing local problems. Dr. Ismail AbdelHamid, in his vote of thanks, appreciated the strenuous efforts of the partner organizations for making the event successful and lauded the hospitality of the host institution. Certificates were also awarded to the participants at the closing ceremony. The participants expressed gratitude towards COMSATS, ISESCO and INIT for providing the researchers with a platform to present their work.

9th National Workshop on Repair and Maintenance of Scientific, **Engineering Equipment** in Universities, Research Institutions and Small Scale Industries (23-27 May 2016, Enugu, Nigeria)

Under the COMSATS-ISESCO Biennial Cooperation Programme 2016-17, the 9th national workshop on 'Repair and Maintenance of Scientific Engineering Equipments in Universities, Research Institutions and Small Scale Industries' was jointly organized by COMSATS; the Islamic Educational, Scientific and Cultural Organization (ISESCO); and Federal Ministry of Science and Technology (FMST), Nigeria from 23rd

to 27th May 2016. The workshop was hosted by the Projects Development Institute (PRODA), Enugu, Nigeria. This series of events was started in 2004 due to realization of the importance of the role of scientific equipment in R&D activities by COMSATS and ISESCO. The series aims to arrange hands-on training workshops on repair and maintenance of scientific instruments in the R&D institutes, universities, hospitals and small-scale industries. So far, more than 350 technicians, researchers, engineers and scientists have received hands-on training on various scientific instruments; thus helping them in the upkeep and maintenance of instruments and reducing their dependence on foreign experts. The Workshop was inaugurated by Dr. Habiba Lawal, Permanent Secretary, Federal Ministry of Science and Technology (FMST), Nigeria on May 23, 2016 at Enugu, Nigeria.

The inaugural ceremony was also attended by Eng. Dr. Charles N. Auglanna, Director General/CEO PRODA, FMST; Mr. Abayomi Oguntunde, Director, FMST; Eng. Prof. S. N. Ndubuisi, Managing Director, Scientific Equipment Development Institute; Prof. I. M. Bugaje, Director General/ CEO, National Research Institute for

Chemical Technology (NARICT); Prof. T. U. Onuegdu, Representative of Vice Chancellor, UNIZIK University; Dr. (Mrs.) N. A. Onyekwelu, Zonal Director, National Institute of Trypanosomiasis Research (NITR); Eng. Dr. E. C. Oriaku, Director, Engineering Research Development Production (ERDP); Eng. Dr. Edith Ishidi, Exco Member, The Nigerian Society of Engineers, Abuja; Eng. Dr. Diya' Uddin Basheer Hasan, Director (Research), National Research Institute for Chemical Technology (NARICT); Mr. Nisar Ahmad, Deputy Director (Systems), COMSATS; and two resource persons of the workshop from the Pakistan Council for Scientific and Industrial Research (PCSIR), Mr. Arif Karim and Mr. Faisal Ghazanfar.

Dr. (Engr.) Charles Agulanna, welcomed the participants and highlighted the relevance of the role of PRODA to the theme of the workshop. Dr. Agulana hoped that the event would prove useful in building relevant capacities of the participants.

In his message, the Executive Director COMSATS thanked ISESCO and FMST, Nigeria, for their cooperation. Sharing the experience of the previous workshops on the theme, Dr. Qureshi informed that more than 350 scientists, engineers and technicians have been trained so far on troubleshooting and maintenance of various instruments. Dr. Qureshi

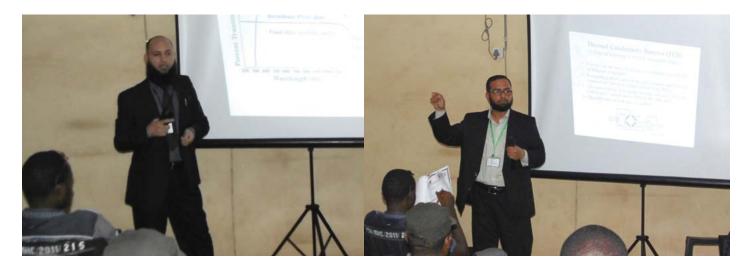


hoped that the event would facilitate useful linkages among the participants and experts for future networking and interaction. In a written message, H.E. Dr. Abdulaziz Othman Altwaijri, Director General ISESCO, expressed satisfaction over ISESCO-COMSATS collaboration and his commitment for continuous and fruitful partnership for the benefit of common Member States.

The Chief Guest, Dr. Lawal commended both ISESCO and COMSATS for organizing the much needed national workshop in Nigeria and informed that there was a growing number of non-functional equipment in research laboratories in Nigeria due to lack of repairing capacity. In this context, she considered this workshop very useful for Nigeria.

In his keynote address, Mr. Arif Karim, one of the Resource Persons for the workshop, highlighted the need and importance of the workshop for scientists and technicians and explained the workshop methodology.

The workshop was comprised of 10 technical sessions including lectures, hands-on training and visits to different labs of PRODA and National Orthopedic Hospital, Enugu. During the technical sessions, the participants were imparted training on troubleshooting and







repairing of Atomic Absorption System; Spectrophotometer; XRF Systems; Gas Chromatograph; HPLC Systems; Mass Spectrometer; Flame Photometer; High Vacuum Systems; Thermal Analyzer (TGA/DSC); Thermal Equipment (Oven & Furnace); Melting Point Apparatus; Bomb Calorimeter; Viscometer; Refractometer; High Temperature Carbon Sulfur Analyzer; Flue Gas Analyzer; Inverter System; pH Meter; Conductivity Meter; and Laboratory Balances.

The resource persons from Pakistan

Council of Scientific and Industrial Research (PCSIR), Pakistan, Mr. Arif Karim and Mr. Faisal Ghazanfar trained over 40 researchers, academics, technicians, and engineers from different organizations of Nigeria.

Using the knowledge and techniques acquired during the workshop, the participants and experts successfully repaired a number of costly and important equipment worth US\$90,000, such as the Bomb Calorimeter, Adept HPLC, X-ray Machine, Flue Gas Analyzer,

Ultrasound Machine, UV/Visible Scanning Spectrophotometer and a few other Spectrophotometers, ViscoBath, Melting Point Apparatus, Electric Vacuum Drying Oven, UV Spectrophotometer, Melting Point Apparatus, Online UPS, Analytical Balance, Solar-Invertor, Oscilloscope, Electric Transversal Machine, and Mixer and Shaker. These repaired instruments belonged to labs of PRODA and other organizations including UNIZIK University and National Orthopedic Hospital as beneficiaries of the workshop activities.



The workshop encouraged and promoted self-reliance among Nigerian scientists and institutions in repairing and maintaining scientific equipment thus helping them save time, effort and money.

The closing ceremony of the event was held on May 27, 2016, which Mr. Abayoni Oguntunde, Director, FMST, Nigeria, attended as Chief Guest. Mr. Nisar Ahmad, Deputy Director (Systems) COMSATS presented technical report of the workshop. Engr. Dr. Charles Agulanna, Director General, PRODA, acknowledged the support of COMSATS and ISESCO in organizing a much needed workshop in Nigeria.

Regional Workshop on Biosafety and Biosecurity in Life Sciences Research (24-28 April 2016, Islamabad, Pakistan)

Under the biennial cooperation agreement between COMSATS and ISESCO (2015-2016), a Regional Workshop on Biosafety and Biosecurity in Life Sciences Research, was held in Islamabad, Pakistan, on April 26-28, 2016, in partnership with Pakistan Academy of Sciences (PAS).

The purpose of the workshop was to

raise awareness about biosafety among researchers, laboratory personnel and academicians; share recent developments, emerging trends and standards in the area of biosafety and biosecurity; as well as build and strengthen necessary linkages among researchers in the developing countries.

The three-day workshop comprised of six technical sessions, a moderated discussion forum on 'Emerging Challenges in Biosecurity in Asia' and a poster contest. There were 11 invited talks, 13 contributed lectures, and 10 poster presentations. The 22 resource persons of the workshop, including 8 foreign speakers, belonging to Bahrain, Jordan, Kazakhstan, USA, Iran and Nigeria, made technical presentations on various topics under the theme. The event brought together over 150 participants from over 40 R&D organizations, universities, and government institutions from 20 cities of Pakistan.

The workshop was inaugurated by Mr. Syed Abu Ahmad Akif, Federal Secretary, Ministry of Climate Change, Government of Pakistan, on April 26, 2016, at the premises of PAS. The inaugural ceremony was attended by over 170 participants including academicians, students, science administrators and media personnel.

Dr. Zabta Khan Shinwari introduced the Academy as a supreme body of Pakistan promoting science in the country. He pointed out the importance of the dates of the event in relation to the National DNA Day (25th April) that commemorates the completion of the Human Genome Project in April 2003 and the discovery of DNA's double helix in 1953.

The ISESCO Representative in UAE, Dr. AbdulAzeez Hameed Ali, on behalf of Director General ISESCO, Dr. Abdulaziz Othman Altwaijri, thanked COMSATS and PAS for collaborating with ISESCO for coorganizing this workshop and appreciated partner organizations' achievements over the years.

In his address, the Executive Director COMSATS took stock of the rapid developments in life sciences research and highlighted the theme of the event and relevant issues in the developed and the developing world.

Mr. Akif delivered the inaugural address on behalf of Pakistan's Federal Minister for Climate Change. He called for developing a National Biosecurity Plan to address the concerns regarding Pakistan's preparedness against bio-threats in various sectors, including environment, agriculture, and





health. He assured his Ministry's support for any initiative in this regard.

The deliberations of the three-day workshop were spread over seven technical sessions covering research and findings related to: Biosafety and lab safe handling; Biosecurity; and Bioethics. The key topics discussed in the workshop included: international biosecurity treaties; sustainable biosafety education, training and networks; emergence of biosecurity, biosafety and bioethics in academic medicine and public health; biological risk assessment/mitigation and communication; role of institutional biosafety committees (IBC); global health security; issues related to transgenic plants; standardization and best practices for biosafety; biological waste management; and code of conduct for life scientists.

The country case-studies and an overview of the current trends in the Islamic States including, Iran, Jordan, Pakistan, and Nigeria were also presented. During the discussion session, need was stressed for sharing information on global biological holdings, research facilities, and infectious disease patterns; increasing awareness of issues pertaining to biosafety and biosecurity among researchers; enhancing interdisciplinary coordination to support global biosecurity; and ensuring bioscientists' compliance with national and international guidelines for laboratory biosafety and biosecurity.

A poster exhibition during the event invoked interest of future scientists and researchers in adopting best practices in life sciences research.

The recommendations called for enhanced

cooperation among the collaborating institutions; active participation of scientists and researchers from common Member States in building relevant capacities; increasing awareness and education in biotechnology ethics; developing relevant curricula; and creating necessary regulatory bodies.

Mr. M. Humayun, Federal Secretary, Ministry of Federal Education and Professional Training, Government of Pakistan, formally concluded the event on April 28, 2016. He considered biosafety, biosecurity and bio-containment important areas of concern around the globe and lauded COMSATS, ISESCO and PAS for successfully holding the event on this crucial topic. He considered the strong participation of both young and experienced researchers very encouraging.





Activities of COMSATS' International Thematic Research Groups

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ACTIVITIES OF COMSATS' INTERNATIONAL THEMATIC RESEARCH GROUPS

COMSATS' International Thematic Research Groups (ITRGs) are based on research collaboration among clusters of scientific institutions in specific fields of Science and Technology related development needs of Member States. Based on their respective expertise, selected Centres of Excellence of COMSATS are designated as the Lead Centres of these Groups while the membership is open to all relevant institutions. The member institutions of a Group are expected to complement one another's scientific capacities for a coherent goal-oriented R&D activity under the guidance of the designated Group Leader from the Lead Centre.



COMSATS' International Thematic Research Group on 'Climate Change and Environmental Protection'

Fifth meeting of COMSATS' ITRG on 'Climate Change and Environmental Protection' (28th September 2016, Beijing, China)

The fifth meeting of COMSATS' International Thematic Research Group (ITRG) on 'Climate Change and Environmental Protection' was held on 28th September 2016, in Beijing, China, in conjunction with the 15th CTWF International Symposium on Atmospheric Aerosol (19-24 September 2016) and the International Lecture Courses on Atmospheric Aerosols (25-27 September

2016). The meeting was hosted by the International Center for Climate and Environment Sciences (ICCES), China, and chaired by its Director, Prof. Zhaohui Lin, who is the designated Group Leader.

The objective of the meeting was to review the progress of the Group on execution of the joint research project, entitled 'Characteristics and Mechanism of the Extreme Climate Events under the Climate Change Background'. This year's meeting was attended by the existing group members belonging to China, Pakistan, Iran and Thailand. A number of other scientists belonging to Pakistan, Brazil, Thailand, Nigeria, Iran, Jamaica, Ghana, Egypt and Sri Lanka, participated in the meeting to contribute to the joint research project. In all, 21 scientists represented 18 organizations in the meeting.

In his opening remarks, Prof. Lin warmly welcomed the participants and informed that ICCES had a long history of association with COMSATS, being one of the founding members of COMSATS' Network of Centres of Excellence. Mr. Farhan Ansari, Sr. Assistant Director (Programmes), COMSATS, felicitated ICCES for consistently hosting the deliberations of the Group by holding its meetings during the last few years as well as the Center's active participation in COMSATS' programme.

Subsequently, Mr. Ansari made a presentation to highlight the history, mission, mandate, structure and technical activities of COMSATS. He acquainted the participants with the objectives and implementation mechanism of the ITRG



programme, as well as recalled the key outcomes of the previous meetings of the Group. He encouraged the members of the Group to publish joint research papers based on their collaboration under this programme, giving due acknowledgement to COMSATS.

In his presentation, Prof. Lin reviewed the outcomes of the previous meetings of the Group, and said that the overall objectives of the research project undertaken by the group are: collecting meteorological datasets from participating developing countries for climate change studies, revealing the characteristics of extreme weather and climate events, understanding the linkage between extreme climate events of different regions in the world for understanding the mechanisms responsible for these events, and providing training opportunities to participating scientists to enhance their research capabilities. Highlighting the significance and impacts of atmospheric aerosol, Prof. Lin suggested including this component in the overall research project of the Group.

During the technical session, the participants of the meeting presented their country-specific meteorological data, on-going projects, research expertise and

interest. It was informed that a joint paper on studying floods and droughts using GIS was under preparation by two ITRG members, Dr. Shahina Tariq (Pakistan) and Dr. Chandima Gomes (Malaysia), for which COMSATS' support was acknowledged.

The Group reviewed its progress and identified the following six topics for future work:

- (i) Land use, aerosol and climate change,
- (ii)Climate change adaptation and sustainability,
- Monitoring and comparison of (iii) aerosol,
- Monitoring and comparison of (iv) extreme events,
- Urbanization and environmental (v)impact, and
- Simulations and prediction of (vi) aerosol and their validation.

The Group also designated respective coordinators for the afore-mentioned topics/sub-groups.

The meeting finalized the Work Plan and time-line for the activities of the aforementioned sub-groups/topics for the

period 2016-2017. It was decided that the members will share the information/ experiences related to these topics/areas by the end of October 2016, which includes the following: (i) data (type, period, frequency, site information, location map, version, data policy, etc.); (ii) related research information; (iii) models; and (iv) available observation equipment.

The Group also agreed on drafting proposals and conducting premeeting assessments through e-mail communications and web-conferencing, as well as organizing trainings/workshops and facilitating expert-exchange through short-term visits and doctoral scholarships.

The Group also agreed to publish joint research papers on their collaborative research findings, acknowledging COMSATS' support. The meeting concluded with the firm commitment of ITRG members to dedicatedly contribute towards the joint research project and submit timely progress reports.

Activity in Different Countries

After the aforementioned meeting, the following activity took place.



Pakistan

- Dr. Muhammad Imran Shahzad of CIIT has been successfully working on "Simulation and Validation of Dust for 2011-2015 over region bounded by 50W, 20S, 85E, 40N", with encouraging preliminary results.
- Prof. Shahina Tariq, CIIT, Islamabad, worked together with the Department of Meteorology and Pakistan Meteorology Department on a joint publication "Drought Prediction for Arid Region of Pakistan using Ensemble Multi Model Technique" in "Theoretical and Applied Climatology".

Sri Lanka

Mr. Sherly Shelton, Sri Lanka, succeeded in completing the report "Annual and Seasonal Changes in Daily Precipitation Extremes in the Mahaweli River Basin, Sri Lanka from 1975 to 2014".

Thailand

Currently, research work on three projects is ongoing in the Faculty of Social Sciences, Srinakharinwirot University, on:

- Land Use Scenarios of Huayluang River Basin and Udonthani Province, Integrated analysis of climate, land-use and water for resilient urban megacities';
- 'A case study of Thailand, Lao PDR and Vietnam, Assessment of Food Security Impact and adaptation under Climate Change'; and

 'A Case Study of Rice Farmland in Phra Nakhon Si Ayutthaya Province, Thailand'.

Mr. Kritanai Torsri, Hydro and Agro Informatics Institute (HAII)/ICCES made good progress on drought/flood events using the Standardized Precipitation Index (SPI), to investigate dryness and moisture in Thailand.

Nigeria

Studies were carried out on the following:

- Relation between MODIS Fine and Coarse Mode Aerosol Optical Depth and Atmospheric Visibility At Ilorin Nigeria;
- Correlation of Visibility with Fine and Coarse Mode Aerosol Optical Depths at Ikeja, Nigeria;
- Variability of Extreme Rainfall Events of Nigeria; Possible Driving Mechanism;
- Variations of heat and cold waves based on four identified homogeneous temperature regions over West Africa. At the Department of Physics, University of Ibadan, Nigeria.

Moreover, various scientists and officials made visits to different Institutions to promote and strengthen joint research activities and collaboration in the member countries/institutions. About 49 publications were also issued during 2016.

COMSATS Thematic Research Group on 'Agriculture, Food Security and Biotechnology' Second Meeting of COMSATS Thematic Research Group on 'Agriculture, Food Security and Biotechnology' (19 October 2016, Khartoum, Sudan)

COMSATS' International Thematic Research Group (ITRG) on 'Agriculture, Food Security, and Biotechnology' held its second meeting on October 19, 2016, at the Industrial Research and Consultancy Centre (IRCC), Sudan. This ITRG was formally launched on 10th June 2015 at the Group's Foundation meeting, jointly organized by COMSATS and the National Research Centre, Egypt, which was later designated as the lead Centre for the Group.

Representing the host institution, Dr. Widad H. AbdelHalim, Director General IRCC, chaired the 2nd meeting of the Group. Representatives from IRCC and COMSATS, Members of the Group belonging to University Cheikh Anta Diop (UCAD), Senegal, and officials of COMSATS Institute of Information Technology (CIIT), Pakistan, attended the meeting besides the five scientists and researchers from Iranian Research Organization for Science and Technology (IROST), Iran; Agriculture Fisheries Development Fund (AFDF), Oman; University of Khartoum, Sudan; and Agriculture Research Corporation (ARC), Sudan.

The meeting started with a presentation by Ms. Huma Balouch, Sr. Assistant Director



(Programmes), COMSATS Secretariat, on the historical perspective, mandate, structure and technical programmes of COMSATS. Ms. Balouch also explained the background and objectives of COMSATS' ITRGs, and what COMSATS' expected from the Group's 2nd meeting. The technical session of the meeting commenced with a talk by Dr. Ghazi Hamid Badawi, Assistant Professor, Department of Agronomy, University of Khartoum, Sudan, who introduced topics relating to the theme of the Group's proposed collaborative research project. Proposals were also submitted by IRCC and Agriculture Research Corporation (ARC), Sudan.

An introduction of the members of the group highlighted the objectives and strengths of their organizations. These participants were: Dr. Tayyaba Yasmin, Head, Department of Biosciences, CIIT, Pakistan; Dr. Diegane Diouf, Professor, UCAD, Senegal; Dr. Majid Javanmard

Dakheli, Director, Agriculture Institute, IROST, Iran; Dr. Shahzad Kouser, Assistant Professor (Agro-Economics), CIIT, Pakistan; Ms. Halima Rashid, Expert, AFDF, Oman; and Dr. Amani A.M. Idris, Assistant Professor (Agronomy), National Coordinator Wheat Research Programme, ARC, Sudan. The participants helped in identifying areas of mutual interests in the field of Agriculture, Food Security, and Biotechnology and highlighted the potential of their institutions.

Based on the understanding developed during the first half of the meeting, the deliberations focused on deciding the title of the joint research project, identifying the most effective mechanism for implementation and decision-making on related matters of cooperation. After due deliberations, the Group agreed on the title of the research project as 'Improvement of Wheat Quality and Productivity using both Traditional and Modern Techniques'. Later, the participants deliberated and

agreed on the following objectives for the project:

- enhancement of heat and salinity stress tolerance in Wheat:
- screening and evaluation of Wheat germplasm for high productivity;
- producing a suitable Wheat variety for processing; and
- · application of modern molecular techniques (DNA markers, protein markers, proteomics, and transcriptomics) in Wheat breeding.

Dr. Ghazi agreed to share the detailed research proposal along with a time-line and methodology for efficient execution of the project with cooperation from all members. The Group members resolved to take active part in its undertakings and offered to carrying out major portions of the research at their own labs.

COMSATS' Thematic Research Group on 'Renewable Energy Technologies'

Foundation Meeting of COMSATS' **International Thematic Research** Group (ITRG) on 'Renewable Energy' (2 November 2016, Zahedan, Iran)

The International Thematic Research Group (ITRG) on 'Renewable Energy' was launched on 2nd November 2016, in Zahedan, Iran, at the Group's foundation meeting that was jointly organized by COMSATS, the Iranian Research





Organization for Science & Technology (IROST), and the University of Sistan and Baluchestan, Iran (host institution).

The meeting was chaired by Prof. Nasrin Moazami of IROST, the designated Group Leader and was attended by about 40 research scientists belonging to Iran, Bangladesh, Kazakhstan, Syria and Spain.

COMSATS was represented by Mr. Farhan Ansari, Sr. Assistant Director (Programmes), who gave a presentation on COMSATS. He also gave an introduction to the objectives and implementation mechanism of COMSATS' ITRG programme. He thanked IROST and University of Sistan and Baluchestan for jointly hosting the meeting and hoped that the meeting would achieve its objective of initiating a joint research project.

Prof. Nasrin Moazami welcomed and thanked the participants for their attendance and willingness to collaborate in the field of renewable energy. Prof. Moazami stated that the renewable energy resources were abundantly available in the developing countries, which must be adequately utilized to meet their present and future development needs. She considered the Group a useful forum for facilitating collaboration among the developing countries in the field of renewable energy.

During the technical session, the participants shared their areas of expertise as well as ongoing research activities, such as:

- Dr. Mohamed Dakkak, Associate Professor, Renewable Energy Lab, Higher Institute for Applied Science and Technology (HIAST), Syria, praised the research expertise and facilities of Iran in different fields of renewable energy. He informed that his institution is engaged in the design and development of PV systems, and his personal research interest relates to the performance of hybrid PV systems.
- Dr. Gauhar Mussabek, Senior Researcher, Department of Solid-state Physics and Non-linear Physics, Al-Farabi Kazakh National University, Kazakhstan, informed that her research area pertains to the fundamental and applied research on solar cells and PV systems.
- Ms. Afrina Sharmin, Scientific Officer, Renewable Energy Technology, Institute of Fuel Research and Development (IFRD), Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh, identified the thin-film solar cells and solar-thermal appliances as the area of her research activities.
- Prof. Ebrahim Asl Soleimani of the Thin Film and Nano Electronic Research Center, Iran, informed that his research expertise relates to developing silicon wafers for solar cells, and his Center has excellent facilities for research work on the same.
- Dr. S. Masoud Barakati, Assistant
 Professor, Faculty of Electrical and
 Computer Engineering, University of
 Sistan and Baluchestan, Iran, highlighted
 the need of establishing a reference lab
 for PV solar systems, in order to make

- significant progress in this field.
- Dr. Akbar Shabanikia, Technical and Executive Deputy, Renewable Energy Organization of Iran (SUNA), Iran, informed that his current research activities relate to solar thermal appliances and biomass energy.

In order to identify the common areas of research and identify the potential topics for research project, the participants placed themselves in three groups including:
i) Bioenergy, ii) Solar Energy, and iii)
Fuel Cell Technology. Accordingly, the following two topics were agreed to be executed by the group:

- Measurements and Characterization of New Silicon Crystalline Solar Cells; and
- ii. Development of Microbial Fuel Cells for Bioelectric Generation and Wastewater Treatment.

It was decided that the Group members will jointly prepare comprehensive project proposals on the aforementioned topics, which will be submitted to the donor agencies for acquiring necessary funds. The Group members agreed to share the research facilities available in their respective institutions and publish joint research papers based on their findings, acknowledging the support provided by COMSATS. The meeting concluded with the firm commitment by ITRG members to actively participate in the research activities of the Group.



COMSATS' International Thematic Research Group on 'Natural Products Sciences'

COMSATS International Thematic Research Group on 'Natural Products Sciences' is executing the joint research project entitled, 'Drug Discovery from Nature for Neglected Diseases'. As part of the Group activity and objective of training scientists to achieve the Group's goals, the Lead Centre of the Group the International Center for Chemical and Biological Sciences (ICCBS), imparted training in medicinal plant research to the following eight scientists from Turkey, Iran and Nigeria.

- 1. Ms. Mahdiealsadat Hosseynimoghadam University of Medical Sciences, Iran
- Ms. Aseemova Meirkhan 2. Kazakh State National University, Kazakhstan
- Mr. Osahon Kennedy Ogbeide 3. University of Benin, Nigeria
- Mr. Kissinger O. Orumwensodia 4. University of Benin, Nigeria
- Mr. Ekpeno Josiah 5. University of Ibadan, Nigeria
- Mr. Ibanga Okon Isaac 6. Akwa Ibom State University, Nigeria
- 7. Mr. Akinsola Adegboye Akande University of Ibadan, Nigeria
- 8. Ms. Fatma Ayaz Department of Pharmacognosy, Turkey

COMSATS' International Thematic Research Group (ITRG) on 'Information and **Communication Technologies** (ICTs)'

The ITRG on ICTs is being led by COMSATS Institute of Information Technology (CIIT), Pakistan. During the period under report, the Group continued its research work on joint research project entitled, 'e-Solutions for Community using Low-cost Wi-Fi'. The activities of the Group members from Pakistan related to: development of proposal for establishment of National Center of Artificial Intelligence in Pakistan, establishing Innovation Networks for connecting Pakistani Researchers with Industry, ICTs for community policing, Machine learning in Network Security, Cloud Computing Security, etc.

COMSATS' International Thematic Research Group on 'Mathematical Modeling'

The International Thematic Research Group on 'Mathematical Modeling' is executing a joint research project entitled: 'Mathematical Modeling and Simulation of Air and Water Pollution: Effects and Remedies'.

Various components of the research project are being undertaken by different members of the Group, which pertain to methods/models for transportation and

distribution of pollutants in air and water; models for studying the medical effect of heavy metals on human beings; pollution benchmark issues; and estimation of the impact of pollution on the environment. The research activities of the Group have generated the following scientific publications during 2016:

- Aziz, S. and Malik, S.A., (2016). Identification of an unknown source term for a time fractional fourth-order parabolic equation. Electronic Journal of Differential Equations, 293, pp.1-
- 2. Oyediran, O. B. (2016). Models for Computing Effect of Pollutants on the Lower Respiratory Tract. American Journal of Modeling and Optimization, 4(2), 40-50.
- Oyediran, O.B. (2017). Models for Computing Emission of Carbon Dioxide from Liquid Fuel in Nigeria. American Journal of Mathematical and Computer Modeling, 2(1), 29-38.
- Oyediran, O.B. Nonlinear Difference Equations and Stimulation for Zooplankton-Fish Model with Noise. IOSR Journal of Mathematics, (IN PRESS).
- Lugano W, David L., & Oyediran, O.B. Modelling CO, CO,, and NOx Evolution from Small and Medium Size Generator Set. (SUBMITTED).





Collaborations with National and International Organizations

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COLLABORATIONS WITH NATIONAL AND INTERNATIONAL ORGANIZATIONS

COMSATS has been endeavouring to expand its cohort of national and international partners to foster broader and more effective collaborations in Science and Technology and launch new programmes and activities with its Centres of Excellence for sustainable socio-economic development of the Members State. These partnerships aim to complement the programmes of COMSATS focusing on capacity-building of S&T community in developing countries.





Cooperation with ISESCO

Since 2004, COMSATS and ISESCO have been collaborating in executing various activities in different fields of science and technology, which have proved quite productive for both organizations, contributing to the socio-economic development of the common member countries. The collaboration is reviewed and revived through signing of periodic agreements between the two organizations.

During 2016, COMSATS and ISESCO jointly organized the following seven capacity-building events (details are given in section 3):

 Regional Workshop on Biosafety and Biosecurity in Life Sciences Research

- (26-28 April 2016, Islamabad, Pakistan)
- 9th National Training Workshop on 'Repair and Maintenance of Scientific Equipment in Universities, Research Institutions, and Small Scale Industries' (23-27 May 2016, Enugu, Nigeria)
- 3. 3rd International Workshop on 'Applications of ICTs in Education, Healthcare and Agriculture' (31 May to 1 June 2016, Amman, Jordan)
- 2nd International Conference on 'Agriculture, Food Security and Biotechnology' (17-18 October 2016, Khartoum, Sudan)
- International Conference and Exhibition on 'Renewable Energy Technologies' (18-20 October 2016, Islamabad, Pakistan)

- International Workshop on Nanotechnology for Young Scientists (28-30 November 2016, Selangor, Malaysia)
- 6th International Workshop on 'Internet Security: Enhancing Information Exchange Safeguards' (19-23 December 2016, Rabat, Morocco)

So far, 860 scientists, engineers, technicians and industry professionals have benefitted from these events.

As per the COMSATS-ISESCO biennial Cooperation Agreement signed on 15th July 2015, the following six capacity-building events are scheduled to be jointly organized during 2017:



- 1. 4th International Workshop on 'Applications of ICTs in Education, Healthcare and Agriculture', April 2017, Nigeria;
- 2. 3rd International Conference on 'Agriculture, Food Security and Biotechnology', April 2017, Pakistan; 3. 2nd International Conference on 'Mathematical Modeling', July 2017, Morocco;
- 4. 1st International Congress on 'Viruses and Vaccines in Tropical Areas', July 2017, The Gambia;
- 5. 7th International Workshop on 'Internet Security: Enhancing Information Exchange Safeguards', September 2017, Kazakhstan; and
- 6. 10th National Training Workshop on 'Repair and Maintenance of Scientific Equipments in Universities, Research Institutions, and Small Scale Industries'.

Cooperation with UNESCO

A proposal for joint project entitled 'COMSATS-UNESCO South-South Regional (Asia-Pacific) Technical Cooperation Programme (Biennium 2016-2017)' was re-submitted to UNESCO in July 2016, through Pakistan National Commission for UNESCO (PNCU), under UNESCO Participation Programme (2016-17). The same proposal had been

submitted for the Biennium 2014-2015 and was approved for a grant of US \$ 35,000 under UNESCO participation programme. However, the approved funds were not released by UNESCO at the time.

The primary objective of the proposed programme is to build scientific and technical capacities of common Member Countries of COMSATS and UNESCO in the Asia-Pacific region, utilizing expertise available within COMSATS' Network of S&T Centres of Excellence as well as other collaborating institutions.

The proposal includes organizing of 3-4 international workshops/conferences in common fields of interest to Member Countries of COMSATS and UNESCO. In this regard, three COMSATS' Centres of Excellence; BCSIR-Bangladesh, ICCES-China, and ITI-Sri Lanka, have formally consented to hosting these joint events. The proposed grant from UNESCO of US \$ 35,000 will be used on travel grants to the international participants/resource persons. The administrative and logistic expenditures of the events as well as costs of boarding and lodging of participants/ resource persons will be borne by the respective host institutions.

COMSATS will also contribute up to US \$ 10,000/- to the expenditures, primarily for provision of travel grants and boarding & lodging expenses to foreign speakers/ participants.

Cooperation with TWAS

COMSATS' collaboration with TWAS during 2016 remained limited to the joint publication, 'Excellence in Science' (Section 9).

Cooperation with NCP

A Memorandum of Understanding was signed between COMSATS and





the National Centre for Physics (NCP), Pakistan, on 14th July 2016, to promote academic and research activities in COMSATS' Member States. In this respect, he Executive Director COMSATS and Director General NCP, signed the MoU on behalf of their respective organizations, during a ceremony held at COMSATS Secretariat in Islamabad. The MoU aims to establish and reinforce cooperation between the two organizations for fostering research collaborations in diverse areas of Physics relevant to sustainable development in the countries of the South.

The guiding principle of the MoU is to promote cooperation by sharing scientific, technical and other relevant information through mutually agreed channels and to facilitate exchange of scientists, experts, researchers and students. The MoU also provides for holding joint conferences, seminars, symposia, workshops and trainings.

Under this Agreement, the young researchers from COMSATS' Member

Countries will have the opportunity to avail fellowships on annual basis, as well as access to various laboratories of NCP to conduct part of their dissertation work. The research groups thus available to these students include: High Energy Physics (Theoretical/ Experimental); Nanosciences; Ion beam/Accelerator Physics; Atomic & Laser Physics; Plasma Physics; Earth & Environmental Sciences; Cosmology; Mathematical Modeling & Simulation; and General & High Performance Computing.

Being the host institution for international research fellows, NCP will provide free accommodation and research facilities and COMSATS will provide travel grant to the selected fellows.

Interactions with the Host Country, Pakistan

The host country of COMSATS Secretariat, Pakistan, is an active and responsive patron to the organization's ongoing activities. Apart from the exofficio Chairpersonship of COMSATS Consultative Committee that rests with the Ministry of Science and Technology (MoST), Government of Pakistan, one of the public-sector University's under the Ministry, CIIT, has a heavy presence in COMSATS Coordinating Council. During 2016, the 19th Coordinating Council was successfully organized by CIIT with due support from MoST, Pakistan (Section 1).

During the latter part of 2016, MoST played an enhanced role in COMSATS' affairs, when the Federal Secretary MoST, Mr. Fazal Abbas Maken, was appointed the interim Executive Director COMSATS, subsequent to the retirement of the previous incumbent, Dr. I.E. Qureshi, in September 2016.

Furthermore, interactions continued during 2016 with the Ministry of Finance and Ministry of Law, Justice and Human Rights of Pakistan in connection with COMSATS' Endowment Fund (Section 10).



International Visits of Secretariat Officials

Visit to Nigeria (22-28 May 2016)

Visit to Morocco (18-23 December 2016) 60 Visit to Malaysia (27 November - 2 December 2016) 63 Visit to Iran (31 October - 2 November 2016) 63 Visit to Sudan (16-20 October 2016) 65 Visit to China (23-28 September 2016) 66 Visit to Jordan (28 May - 3 June 2016) 67 68



INTERNATIONAL VISITS OF SECRETARIAT OFFICIALS

The senior officials of COMSATS Secretariat undertake international visits from time-to-time to strengthen and expand the membership of COMSATS and its Network of S&T Centres of Excellence, participate in international meetings and develop partnerships and cooperative mechanisms with relevant institutions in different countries.



Visit to Morocco (18-23 December 2016)

A two-member COMSATS' delegation comprising of Mr. Tajammul Hussain, Advisor (Programmes), and Mr. Farhan Ansari, Sr. Assistant Director (Programmes), visited Rabat, Morocco, from 18th to 23rd December 2016, to participate in the International Workshop on 'Internet Security: Enhancing Information Exchange Safeguards'. Apart from overseeing the arrangements for the workshop, the delegation held meetings with the Head of ISESCO Center for Promotion of Scientific Research (ICPSR); senior officials of Mohamed V University;

Ambassador of Pakistan in Rabat, Morocco; Secretary General, Ministry of Higher Education Scientific Research and Training, Morocco; Director Science and Technology, ISESCO and the Director of External Relations and Cooperation (ISESCO). A summary of their activities and meetings abroad is given below.

6th International Workshop on 'Internet Security: Enhancing Information Exchange Safeguards' (19th to 23rd December 2016)

COMSATS' Delegation performed various tasks related to the organization of the 6th International Workshop on 'Internet

Security: Enhancing Information Exchange Safeguards', which was successfully held from 19th to 23rd December 2016, in Rabat, Morocco. The workshop was attended by 40 young researchers, academicians, system administrators and cyber security professionals, belonging to Palestine, Uzbekistan, Iran, Sudan, The Gambia, Ivory Coast, and Morocco. The details are given in Section 3.

Meeting with Dr. Maha MEREZAK, Head of ICPSR

Mr. Tajammul Hussain, Advisor (Programmes), held a meeting with Dr. Maha Merezak, Head of ISESCO



Center for Promotion of Scientific Research (ICPSR), ISESCO, at her office on 19th December 2016, during which they discused matters related to the organization of the Workshop on Repair and Maintenance of Scientific Equipment during 2017 as well as the IWSN web-portal then being maintained by COMSATS.

Meeting with the Senior Officials of Mohamed V University, Rabat, Morocco

The delegation also visited the Mohamed V University, Rabat, on 20th December 2016, and held a meeting with its senior officials, Prof. Rajaa Cherkaoui El Moursli, Vice President for Research, Innovation and Partnership, and Prof. Nadia Motii,

Incharge International Relations. The primary objective of the meeting was to discuss matters related to the university's induction in COMSATS' Network of Centres of Excellence.

During the meeting, Prof. Rajaa Cherkaoui El Moursli handed over the duly filledin pro forma to COMSATS' officials to formalize the initiation process of the university's induction as Centre of Excellence of COMSATS. The officials of the MV University assured that the forthcoming Council meeting will be attended by the President of the University or his nominee for presenting the case to the Coordinating Council for approval during its 20th Meeting to be held in Cairo in 2017.

The structure and ongoing activities of the organization, including its programmes on capacity-building, International Thematic Research Groups (ITRG), scholarships and short-term training opportunities available at CIIT-Pakistan and other Centres of Excellence, were highlighted by COMSATS' delegates. Mr. Hussain invited a delegation of MV University to visit CIIT-Pakistan to explore the avenues of collaboration in the areas of mutual interest. COMSATS' information material and summary of support rendered by COMSATS to Moroccan institutions were also presented to the MV University officials.

Prof. Rajaa Cherkaoui El Moursli expressed the MV University's interest in participating in COMSATS' ITRGs on 'Mathematical Modeling' and 'Renewable Energy', which are two of the focus areas of the university. In this regard, she agreed to explore the possibility of hosting the next meeting of COMSATS' ITRG on 'Mathematical Modeling' at MV University during 2017, as well as offering scholarships to COMSATS' Member States.

Meeting with H.E. Mr. Nadir Chaudhri, Ambassador of Pakistan in Rabat, Morocco

The COMSATS' delegation visited the Pakistani Embassy in Rabat on 22nd December 2016, to meet the Ambassador







of Pakistan to Morocco. The delegation was accompanied by Mr. Tahir Naeem, Executive Director Inter Islamic Network on Information Technology (INIT), and Mr. Atiq-ur-Rehman, Sr. Programme Officer, INIT.

The Ambassador was informed about the history, mission, organizational structure and ongoing activities and programmes of COMSATS. Introductory material and a document on COMSATS-Morocco past collaboration, as well as the programme of 6th International Workshop on 'Internet Security: Enhancing Information Exchange Safeguards' were handed over to the Ambassador.

The Ambassador was informed that

COMSATS has been sponsoring Moroccan scientists for participation in its scientific capacity-building events, which are organized every year to fulfill the needs of COMSATS Member States.

The Advisor (Programmes) gratefully acknowledged the role played by the Embassy in facilitating the accession of Morocco to COMSATS as a Member State. The matter of induction of Mohamed V University, Rabat, as a Centre of Excellence of COMSATS was also brought

to the Ambassador's notice, who was requested to facilitate earliest completion of this process by pursuing the matter with the President of Mohamed V University.

The Ambassador was also informed about the mechanism of the Annual Membership Contributions (AMC) made by the Member States, which are used to build scientific capacity of contributing Member States. In this regard, the Ambassador was requested to pursue the matter of payment of Morocco's AMC to COMSATS with the relevant officials of the government of Morocco. In order for Moroccan students to avail the opportunity, the Ambassador was requested to facilitate Moroccan universities and students to benefit from the standing offer of 100 postgraduate scholarships made to COMSATS' Member States by COMSATS Institute of Information Technology (CIIT), Pakistan. The Ambassador was pleased to learn about the ongoing activities of COMSATS for scientific capacity-building of developing countries, in general, and Member States, in particular. He assured COMSATS' delegation of the Embassy's full support towards the activities of the Organization.

Representing INIT, Mr. Tahir Naeem briefed the Ambassador regarding the objectives and activities of INIT. Mr. Naeem, who is also the Director (Planning, Development and Human Resource Development, CIIT), highlighted the current ranking and key statistics of CIIT. In this regard, he informed that the next edition of the Vice Chancellors' Forum organized by CIIT every year will be held in Morocco during February 2017 (to be hosted by ISESCO), for which the Embassy's support was sought. The Ambassador praised the activities and achievements of CIIT and INIT, and assured of his support.

Meeting with Mr. Mohamed Aboussalah, Secretary General, Ministry of Higher Education, Scientific Research and Training, Morocco

On 22nd December 2016, the delegation visited the Ministry of Higher Education, Scientific Research and Training, Government of Morocco, in order to meet with its Secretary General, Mr. Mohamed Aboussalah. Mr. Noureddine Touhami, Director of Cooperation and Partnership, Ministry of Higher Education, Scientific



Research and Training, Government of Morocco, also attended the meeting.

During the meeting, the Advisor (Programmes) gave an overview of his interaction with other Moroccan officials earlier, introducing COMSATS and highlighting its collaboration with Morocco. Mr. Aboussalah was requested to facilitate the completion of the process of Mohamed V University's induction in COMSATS' Network. While discussing the capacity-building programme of COMSATS, the Advisor (Programmes) highlighted the benefits of workshop on repair and maintenance of scientific instruments, which is organized by COMSATS and ICPSR (ISESCO), every year. He also invited Mr. Aboussalah to visit COoMSATS Secretariat as well as CIIT in Islamabad.

Mr. Aboussalah praised the activities of COMSATS and gratefully acknowledged the support provided by the rganization to Moroccan scientists over the years. He took keen interest in the scholarships available at CIIT as well as COMSATS-ICPSR workshop on repair and maintenance of scientific instruments. He informed that there were 24 public sector universities functioning under the Ministry.

Mr. Aboussalah also pledged to facilitate the process of Mohamed V University's induction in COMSATS' Network of Centres of Excellence.

Meeting with Dr. Tariq Mahmood, Director (Science and Technology), **ISESCO**

On 23rd December 2016, the delegation of COMSATS held a meeting with senior officials of the Science Directorate of ISESCO, namely Dr. Tariq Mahmood, Director (Science and Technology), Dr. Aicha Bammoun, Science Expert, and Dr. Ismail AbdelHamid, Science Expert. Also attending the meeting were Mr. Tahir Naeem and Mr. Atiq-ur-Rehman of INIT. During the meeting, the officials of ISESCO, COMSATS and INIT deliberated upon the activities to be jointly organized during 2017, under the Cooperation Agreement for 2016-17 signed by the respective heads of COMSATS and ISESCO on 15th July 2015, in Rabat. In this regard, the dates and venues of the activities were decided through mutual consensus.

Meeting with Dr. Ahmed Saïd Ould Bah, Director of External Relations and Cooperation, ISESCO

The Delegations of COMSATS and INIT held a meeting with Dr. Ahmed Saïd Ould Bah, Director of External Relations and Cooperation, ISESCO, at his office on 23rd December 2016. The Advisor (Programmes) briefed Dr. Ahmed Saïd Ould Bah about COMSATS, its ongoing activities and partnership with ISESCO since 2004. Mr. Tahir Naeem (INIT)

briefed Dr. Ahmed Saïd Ould Bah on the activities of his organization and its partnership with ISESCO and COMSATS. During the meeting, joint activities to be organized by the three organizations under ISESCO-COMSATS joint cooperation programme for 2016-17 were discussed. Dr. Ahmed Saïd Ould Bah expressed pleasure on ISESCO's past and ongoing productive cooperation with COMSATS and INIT.

Visit to Malaysia (27 November - 2 December 2016)

Senior Assistant Director (Programmes) COMSATS, Ms. Huma Balouch, undertook a visit to Selangor, Malaysia, from 27th November to 2nd December 2016 with an objective to represent COMSATS at and make necessary organizational arrangements for the International Workshop on Nanotechnology for Young Scientists (IWYS-2016) held in Selangor, Malaysia, from 28th to 30th November 2016 (Section 3). The Workshop brought together around 150 leading scientists, researchers, engineers, practitioners, technology developers and policy makers in nanotechnology to exchange information on the progress of their latest research and innovation.

Visit to Iran (31 October to 2 November 2016)

Mr. Farhan Ansari, Sr. Assistant Director (Programmes), visited Zahedan, Iran, from 31st October to 2nd November 2016. A summary of his engagements is given below.

Regional Expert Meeting on 'Renewable Related Energy Focusing on Microalgae Technology Using Ocean Resources Including Solar and Fuel Cell'

The Regional Expert Meeting on 'Renewable Related Energy Focusing on Microalgae Technology Using Ocean Resources Including Solar and Fuel



Cell' was held from 31st October to 1st November 2016, in Zahedan, Iran. The event was organized by COMSATS in collaboration with its Centre of Excellence in Iran, the Iranian Research Organization for Science & Technology (IROST), and the University of Sistan and Baluchestan, Iran. The event was attended by over 50 participants belonging to Iran, Bangladesh, Kazakhstan, Syria and Spain. Mr. Ansari participated in the event, and performed various tasks related to its organization, the details of which are given in Section 3.

Foundation Meeting of COMSATS' International Thematic Research Group (ITRG) on 'Renewable Energy' (2nd November 2016)

The foundation meeting of COMSATS' International Thematic Research Group (ITRG) on 'Renewable Energy' was held on 2nd November 2016, in Zahedan, Iran, in conjunction with the aforementioned meeting. It was chaired by Prof. Nasrin Moazami (IROST), who is the designated Group Leader and attended by about 40 research scientists belonging to Iran, Bangladesh, Kazakhstan, Syria and Spain. Mr. Ansari represented COMSATS during the meeting, besides performing various tasks related to its organization. He also made a presentation on COMSATS and its ITRG programme. The details are given in Section 3.

Meeting with the President and other Senior Officials of the University of Sistan and Baluchestan, Iran

Prof. Bandani, President of University of Sistan and Baluchestan, Iran, held a farewell meeting with the foreign participants of the afore-mentioned events on 2nd November 2016. The meeting was also attended by senior officials of the University as well as the Group Leader of COMSATS' ITRG on 'Renewable Energy'. Mr. Ansari informed Prof. Bandani about the history, mandate and ongoing programmes and activities of COMSATS, especially its ITRG programme. He explained the past and ongoing collaboration between COMSATS and its Centre of Excellence in Iran, IROST. He also shed light on the scholarship opportunities offered by CIIT-Pakistan and other Centres of Excellence to students/researchers belonging to COMSATS' Member States, including Iran. Mr. Ansari lauded the University of Sistan and Baluchestan for hosting the afore-mentioned events. He hoped that collaborative ties between COMSATS and the University will further strengthen in future. The participants of the events belonging to HIAST-Syria, BCSIR-Bangladesh and KazNU-Kazakhstan also informed Prof. Bandani regarding ongoing activities of their respective organizations.

Prof. Bandani expressed satisfaction on hosting the afore-mentioned events, which he considered highly relevant to the priorities of his country and province. He was pleased to learn about the ongoing activities of COMSATS as well as three





of its Centres of Excellence that were represented during the meeting. He expressed keen interest in COMSATS' capacity building programmes and offers of postgraduate scholarships. He assured to facilitate Iranian researchers in benefitting from COMSATS' programmes. He also expressed interest in expanding the collaboration with COMSATS and CIIT, Pakistan.

Visit to Sudan (16 - 20 October 2016)

The 2nd International Conference on Agriculture, Food Security, and Biotechnology was held in Khartoum, Sudan, from 17th-18th October 2016 (Section 3). Being member of the Conference's Organizing Committee, Ms. Huma Balouch, Senior Assistant Director (Programmes) represented COMSATS in the event. On the sidelines of the Conference, she also coordinated the 2nd meeting of COMSATS International Thematic Research Group on Agriculture, Food Security, and Biotechnology, held at Industrial Research and Consultancy Centre (IRCC), Khartoum, on 19th October 2016 (Section 4). In addition, Ms. Balouch also met the Minister for Higher Education and Scientific Research, and Secretary, Ministry of Industry, Sudan, and visited the Sudanese Centre of Excellence of COMSATS and the University of Khartoum. Brief account of these activities is as follows.

Meeting with Minister for Higher Education and Scientific Research,

A meeting was held with the Minister for Higher Education and Scientific Research, Sudan, H.E. Prof. Somaia Abukashawa, on 17th October 2016, at the Ministry of Higher Education and Scientific Research, Sudan. The meeting was also attended by H.E. Mr. Yagoub Mohamed Altaib, State Minister for Agriculture & Forestry; H.E. Mr. BaharIdris Abu Garda, Federal Minister of Health; Prof. Azhari Omer Abdelbagi, Undersecretary MoHESR; and Dr. Widad H. AbdelHalim, Director General IRCC, Sudan. Ms. Balouch briefed them about COMSATS as a facilitator of South-South cooperation through its Network of Centres of Excellence, and its activities and collaborations with Sudanese institutions. The Minister appreciated the efforts of COMSATS for strong cooperation with the Government of Sudan and hoped it will further strengthen in future. She also appreciated CIIT's standing offer of 100 postgraduate scholarships for students from COMSATS' Member States.

Meeting with the Secretary, Ministry of Industry, Sudan

Ms. Balouch also had a brief meeting with Sudan's State Minister for Industry, H.E. Dr. Abdo Daoud Suliman Abdallah, on occasion of her visit to Khartoum.

Dr. Widad Hassan, Director General IRCC, also attended the meeting. Mr. Abdallah and Ms. Balouch briefly discussed proposals to be included in MoU on cooperation between IRCC and Pakistan Council for Scientific and Industrial Research (PCSIR). The Minister appreciated COMSATS' role in IRCC with PCSIR.

Visit to the Industrial Research and Consultancy Centre (IRCC), Sudan

Ms. Balouch also visited COMSATS' Centre of Excellence in Sudan, the Industrial Research and Consultancy Centre (IRCC) along with the participants of the Conference. IRCC is one of the major R&D centres operating under the Sudan's Ministry of Industry and has been affiliated with COMSATS since 2007.

The participants of the meeting were shown around the laboratories of IRCC to visit various departments and laboratories and see the sophisticated instruments, such as MS Spectrophoptometer, Gas Chromatograph, High Pressure Liquid Chromatograph, and Spectrum Analyzer with low and high resolutions. They were informed about various activities of each division, such as the Chemical Industries Department working on plastic technology, fertilizer technology, pesticide formulation, agrochemicals and pharmaceutical & aromatic plants; and the Food Industries Department working on food science,

technology and biotechnology and its research projects including fruit concentrate, isolation and production of baker's yeast from local materials and the production of infant & baby food from local materials.

The visit proved very useful for the participants to observe the state-of-the-art research facilities at IRCC, thereby opening new avenues for collaborative research between IRCC and COMSATS' other Centres of Excellence.

Visit to University of Khartoum

Ms. Balouch along with the participants of the Conference was also invited to visit the Faculty of Agriculture, University of Khartoum, on 19th October 2016. The participants met with the staff of the Faculty and Heads of Departments of Agricultural Economics, Agronomy, Crop Protection, Horticulture, Food Science and Technology, and Biotechnology Centre, Agribusiness Centre and Soil and Environment Sciences.

Dr. Amel Mustafa Mubarak, Head of the Department of Agriculture Economics welcomed the delegation and gave a presentation on the University's human resource capacity in terms of teaching, research and laboratories. The presentation was followed by and interactive discussion, which was led by Dr. Abdelateif Hassan Ibrahim, Assistant Professor for Agricultural Finance and Economic

Modeling, University of Khatoum.

Visit to China (23-28 September 2016)

Mr. Farhan Ansari, Sr. Assistant Director (Programmes), visited Beijing, China, from 23rd to 28th September 2016, primarily for organizing the following two collaborative events of COMSATS.

15th CTWF International Symposium on Atmospheric Aerosol and the International Lecture Courses on Atmospheric Aerosols, Beijing, China

The 15th CTWF International Symposium on Atmospheric Aerosol (19-24 September 2016) and the International Lecture Courses on Atmospheric Aerosols (25-27 September 2016) were held in Beijing, China, and hosted by COMSATS' Centre of Excellence in China, the International Center for Climate and Environment Sciences (ICCES), in collaboration with COMSATS, CAS-TWAS-WMO Forum (CTWF), the Aerosol Comparisons between Observations and Models (AeroCom), and the International Satellite Aerosol Science Network (AeroSAT). The events were attended by over 150 participants from Iran, Pakistan, Norway, China, USA, Sweden, Finland, Japan, Netherlands, France, Nigeria, Brazil, Germany, United Kingdom, Spain, Ghana,







Thailand, India, Sri Lanka, Egypt, Belgium, and Switzerland. Mr. Ansari represented COMSATS during the International Lecture Courses on Atmospheric Aerosols (25-27 September 2016), and facilitated its organization. The details are given in Section 3.

Fifth Meeting of COMSATS' ITRG on 'Climate Change and Environmental Protection', Beijing, China

The fifth meeting of COMSATS' International Thematic Research Group (ITRG) on 'Climate Change and Environmental Protection' was held on 28th September 2016, in Beijing, China, and was hosted by the ICCES, China. Director, Prof. Zhaohui Lin, who is the designated Group Leader, chaired the meeting, which was attended by 21 scientists representing 18 organizations. Mr. Ansari represented COMSATS during the meeting, and coordinated its proceedings. Details are given in Section 4.

Visit to Jordan (28 May-3 June 2016)

A two-member delegation of COMSATS including Abdul Majid Qureshi, Research Scholar and Dr. Bilal Zaka, Director at COMSATS Institute of Information Technology, visited Jordan from May 28 to June 3, 2016, in connection with the

organization of 3rd International Workshop on 'Applications of ICTs in Education, Healthcare and Agriculture' (Section 3). Besides the workshop, the delegation also held a meeting with the Ambassador of Islamic Republic of Pakistan in Amman, Jordan. The summary of activities and meetings of the delegation during the visit is given below.

3rd International Workshop on Applications of ICTs in Education, Healthcare and Agriculture

The 3rd International Workshop on Applications of ICTs in Education, Healthcare and Agriculture was held from 31st May to 1st June 2016. The technical proceedings of the workshop consisted

of six sessions. Mr. Oureshi coordinated various activities of the event.

Meeting with Lt. Gen. (R) Shafaat Ullah Shah, Ambassador of Pakistan in Amman, Jordan

COMSATS and CIIT officials visiting Jordan called on the Pakistani Ambassador, Lt. Gen. (R) Shafaat Ullah Shah, on June 1, 2016, to apprise him about COMSATS' programmes and activities and important engagements of COMSATS in Jordan. The Ambassador considered the activities important for strengthening the relations between COMSATS and Jordan. He asserted the need to reaffirm ties with scientific and educational exchanges. The Ambassador lauded the efforts of





COMSATS and expressed his desire to extend the offer of Postgraduate Scholarships to appropriate forums for action.

Dr. Bilal Zaka informed the Ambassador that CIIT was among the largest public sector universities offering quality programmes at the undergraduate, postgraduate and doctoral levels. He urged the Jordanian students to benefit from the Programmes of CIIT through virtual mode. The Ambassador suggested that appropriate technical and vocational programmes may also be introduced through the CIIT-Virtual Campus particularly in the areas of Agriculture and Robotics.

Mr. Omer Manzoor Malik, Deputy
Head of the Mission, was also present
at the occasion. A set of documents
about COMSATS was presented to Mr.
Shafaat Ullah. The Ambassador thanked
the representatives of COMSATS and
CIIT for providing valuable information
and assured his Embassy's support in
promoting cooperation by COMSATS and
CIIT.

Visit to Nigeria (May 22-28, 2016)

Mr. Nisar Ahmad, Deputy Director (Systems) COMSATS, visited Nigeria from 22nd to 28th May 2016, in connection with holding National Training Workshop on 'Repair and Maintenance of Scientific Engineering Equipments Universities, Research Institutions and Small Scale Industries'. The event was held in Enugu, Nigeria. Apart from the coordination of various workshop activities, Mr. Ahmed held meetings to strengthen ties and enhance networking with Nigerian institutions. Some useful sideline discussion, in this regard, was held with Dr. Habiba Lawal, Permanent Secretary, Federal Ministry of Science and Technology (FMST), Nigeria; Eng. Dr. Charles N. Agulanna, Director General/ CEO PRODA, FMST; Mr. Abayomi Oguntunde, Director, FMST; Eng. Dr. Edith Ishidi, ExCo Member, The Nigerian Society of Engineers, Abuja; and Eng. Dr. Diya' Uddin Basheer Hasan, Director (Research), National Research Institute for Chemical Technology (NARICT).

In the meeting with Dr. Lawal and Mr. Oguntunde, Mr. Ahmad briefed them about COMSATS' international activities with special focus on the ongoing national workshop. Dr. Lawal, showed keen interest in Nigeria benefitting from the capacity-building activities of COMSATS'

in future as well. The matter of Nigeria's Annual Membership Contribution (AMC) to COMSATS was also discussed and Mr. Ahmad handed over copies of some earlier correspondence on the subject to Dr. Lawal. Dr. Lawal, however, informed that Nigeria's AMC had been approved and would be transferred to COMSATS' accounts soon. Further, the possibility of Dr. Lawal's visiting COMSATS was also discussed.

In meetings with Eng. Dr. Edith Ishidi and Eng. Dr. Diya' Uddin Basheer Hasan, Mr. Ahmad briefed them about COMSATS and its International activities. Both the officials expressed keen interest in COMSATS' International activities and possibilities of their organization's participation.

A meeting was arranged at the office of Director General, PRODA which was attended by the Eng. Dr. Charles N. Agulanna, Director General/CEO PRODA, FMST, and senior officials of the institute. Dr. Agulana showed interest in COMSATS' capacity-building programme and future collaboration with COMSATS. The senior officials of PRODA expressed satisfaction over the ongoing national workshop on repair and maintenance (Section 3).

Some visits were also arranged by local hosts to different laboratories in PRODA and National Orthopedic Hospital, Enugu, for enhancing the skills acquired during the training sessions.





An Overview of Major Activities and Achievements of COMSATS' Centres of Excellence

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AN OVERVIEW OF MAJOR ACTIVITIES AND ACHIEVEMENTS OF COMSATS' CENTRES OF EXCELLENCE

A group of twenty R&D institutions from different developing countries, predominantly COMSATS' Member States, is affiliated with COMSATS constituting its Network of International S&T Centres of Excellence. The Network Members serve as COMSATS' technical resource for South-South cooperation, in line with their mandates for programmes of scientific research and development. This section covers reports received from COMSATS' Centres of Excellence, as well as news of some Centres covered in COMSATS Newsletter over the reporting period.

This section of presents and overview of various undertakings by COMSATS' Centres of Excellence, during 2016 as well as the potential they offer in their fields of specialization. Section A is based on the annual activity reports received by the Centres of Excellence, whereas Section B is a compilation of the news items from COMSATS bimonthly newsletter. Reports were received from BCSIR, Bangladesh; CERTE, Tunisia; CIIT, Pakistan; ITI, Sri Lanka; KazNU, Kazakhstan; ICCES, China; and RSS, Jordan. Highlights from Newsletter pertain to TÜBITAK MAM, Turkey; NMC, Nigeria; ICCBS, Pakistan; IRCC, Sudan; Embrapa Agrobiologia, Brazil; NRC, Egypt; and TIRDO, Tanzania.

A. REPORTS RECEIVED

Al-Farabi Kazakh National University (KazNU), Kazakhstan



Al-Farabi Kazakh National University (KazNU), Kazakhstan, is the oldest classical university of the Republic

of Kazakhstan. The University aims to integrate itself into global educational space by undertaking basic and applied research. The faculty of KazNU includes 10 academicians and 7 correspondent members of Kazakhstan's National Academy of Sciences, and 446 Ph.Ds in sciences.

KazNU Statistics 2016		
students	17,347	
lecturers	1,916	
research scientists	1,862	
employees	3,887	

The activities of KazNU focused on:

- Life Science, Biotechnology and the Environment;
- Mathematics, Information
- Technology and Engineering;
- Chemical and Technological
- · Sciences (Chemistry and Chemical
- Engineering);
- Physic and Engineering Science, Nano-Technology and Materials Science;
- Social Humanities, as Basis for Sustainable Industrial and
- Innovation and Socio-Economic Development of the Country.

Conferences, Seminars and Workshops

In 2016, the University conducted 145 scientific events which included:

- Planned 20 international and 5 republic scientific conferences;
- Off schedule 36 international and 12 republic scientific conferences;
- 7 international and 25 republic roundtables;
- 4 international and 23 republic scientific seminars;
- 13 on-line conferences.

International Collaboration

Partnerships in the framework of bilateral agreements connect Al-Farabi KazNU with more than 400 leading universities and research centres from 46 countries. As part of the agreements, joint research projects; publications; participation in conferences and summer schools; scientific training including students training, language courses, training of specialists and highly qualified scientific personnel were arranged.

The University takes part in the programmes and projects of international organizations and foundation, such as TEMPUS, ERASMUS+, Partner programme "Newton-Al Farabi", NATO, UNESCO, the American Councils, the Swiss National Scientific Fund (SNSF), Volkswagen Fund, the Japan Fund, foreign universities and research centres.

Al-Farabi KazNU also signed a cooperation agreement with University of Lahore, Pakistan, for mutual cooperation in different academic areas on 22nd June 2016.

Research and Development

The project 'Al-Farabi university - smart city' is aimed at transforming the university into a modern institution, where two main components, i.e., the technological and spiritual-moral, are to be developed.

Projects

In 2016, the University scientists carried out 345 research projects of the following





natures:

- The Ministry of Education and Science granted funding for 247 projects for a period of 2015-2017;
- · Seven projects under the framework of MES target programme financing;
- Two projects of JSC covering National Agency for Technological Development;
- Eighty-nine research projects within economic contracts with different organizations and enterprises;
- A hundred and eighty nine projects were granted from international foundations and organizations.

Patents Acquired

The scientists and university staff applied for patents for 51 inventions, 180 state registration of rights for intellectual property, and 2 foreign patents by National Institute of Intellectual Property. In response, there have been 55 positive decisions and 213 protective documents.

Publications

The researchers and teaching staff of the University contribute papers to a number of international publications every year. In 2016, Kazakh scientists published 2,677 scientific papers indexed in the database Sciverse Scopus. Over 14% numbering to 386 of these publications were from KazNU scientists. Moreover,



employees, professors, and the teaching staff published 283 scientific papers in the Thomson Reuters database, constituting 17.4% of the total contributions from Kazakh scientists.

Infrastructure Development

In 2016, Al-Farabi KazNU created a cluster of engineering and high technologies, which includes the Science and Technology Park, a Centre of Process Innovations (Engineering and Commercialization Center) and a Centre of Green Technologies.

The main objectives of the Science and Technology Park is to support innovative developments of university scientists and further commercialization of research results, besides creation of conducive environment for the growing startup companies among Al-Farabi KazNU students.

The Centre of Process Innovations (Center for Engineering and Commercialization) facilitates for execution of orders in the framework of economic contractual projects using high-tech modern equipment. It also helped in launching the first Kazakhstan nanosatellite "al-Farabi -

The Centre of Green Technologies is an urban 'MINI-EXPO' for innovative projects on "Green energy".



Awards and Achievements

- The Rector of Al-Farabi KazNU, Prof. Galym Mutanov, was awarded the International Prize by Islamic Educational, Scientific and Cultural Organization (ISESCO) for his outstanding contributions in the field of mathematical modelling and management of technical and socioeconomic systems.
- According to the study of the World QS University Rankings (UK), Al-Farabi KazNU entered the top 250 best universities in the world, securing the 236th spot in the list.
- Al-Farabi KazNU is the only University to enter the top 200 "green" universities in the world according to UI Green Metric Ranking of World Universities – 2016 rankings.
- Eighteen scientists from KazNU were given in 2016 Top Springer Author award, founded by the largest international publishing house Springer Nature in collaboration with JSC Scientific and Technical Information National Center.
- Under the framework of forum, "Science and Innovation - the basis of economic development", a number of scientists won the independent international award "Leader of Science 2016". The award is based

on publication activity and citations, according to Web of Science Resource (Thomson Reuters). "The most cited young scientists of Kazakhstan for 2008-2015" in the field of Physical Sciences were KazNU's Associate Professor, M.K. Dosbolaev (Physics and Mathematics), and Associate Professor, B.M. Uralbekov (Chemical Sciences).

Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh



Bangladesh Council of Scientific and Industrial Research (BCSIR) is a non-profit multidisciplinary public-sector research

organization with the main task of BCSIR is to foster the R&D sector in the country.

In 2016, BCSIR accomplished a significant number of tasks pertaining to laboratory development; induction of fresh scientists; fellowships and research grants for its own R&D activities and Bangladeshi universities.

Research and Development

During 2016, BCSIR carried out research in different areas based on Bangladesh's national needs under different categories, i.e., Research & Development of BCSIR; Annual Development Program of the Government of Bangladesh; Special Allocation Project from the Ministry of Science and Technology, Government of Bangladesh; Climate Change Trust Fund from the Ministry of Environment and Forest, Bangladesh; and Foreign-funded Projects.

International Collaboration

During the period, the Centre for Technology Transfer and Innovation of BCSIR and Gyeongsang National University, South Korea, signed an agreement for scientific and technical cooperation on the period of 2016-2019.

Events

- During 2016, BCSIR organized 15 seminars on its R&D projects. Four-day workshops were organized by different institutes of BCSIR in collaboration with various stakeholders, with a view to getting feedback for future planning with regard to R&D.
- A science fair was also organized that also comprised a few technical sessions.

Ongoing R&D Projects		
S. No	Category	Number of Projects
1	R&D project	220
2	Annual Development Program	3
3	Special Allocation Project	8
4	Technical Assistance Project	1
5	Climate Change Project	1



Achievements of BCSIR in these sectors in 2016 are as follows:

Research and Academic Output of BCSIR		
Research paper	100	
Process	13	
Patents	09	
Graduate student supervision	165	

Capacity Building

- BCSIR provided training to 260 scientific professionals on different scientific equipment. Also, the erudite scientists of BCSIR supervised 165 M.Sc theses of different universities in 2016.
- BCSIR in collaboration with South Korea's Gyeongsang National University (GNU) held a workshop on 'Green Microbe Based Biopesticide for Disease Free Production of Rice and Other Crops' on 3rd October 2016.
- An International Conference on Engineering Materials and Metallurgical Engineering (ICEMME 2016) was held in BCSIR from 22nd to 24th December 2016.
- The Council also organized the 1st
 Technology Business Model Workshop on 22nd December 2016.

COMSATS Institute of Information Technology (CIIT), Pakistan



COMSATS Institute of Information Technology (CIIT) has achieved phenomenal growth during the past 16 years. According to the rankings of the Higher Education Commission (HEC), Pakistan, CIIT stands at number three in General Category and at number six among all universities within Pakistan.

Based on the Nature Index, CIIT ranked at number 1 during 2016. The Institute has been ranked number 1 among all Pakistani Universities in TIMES Higher Education Rankings, (THE) World University Rankings (WUR) 2016-17, and has been placed among top 600-800 world Universities as well. Moreover in

2016, it was ranked among the top 250 Asian Universities as per QS University Rankings and was among 401-500 in QS World University Rankings in the category of Computer Science and Information Systems.

Major Research Activities

A total of 558 research projects, 190 travel grant applications and 21 Seminars/ Workshops were submitted to different funding agencies, of which 128 research projects 62 travel grant applications and 12 seminar workshops were approved. In order to attract young faculty into the mainstream research, a CIIT Research Grant Programme (CRGP) is in place to award grants up to Rs. 200,000/- for research proposals of 1-2 year duration. In 2016, under this programme, 87 research proposals were approved and funds released to the awardees. Also, a total of 971 Research Productivity Awards (RPA) were conferred upon CIIT scientists and researchers to encourage a culture of research in the institute.

Around 461 Ph.D faculty members of CIIT have been approved as Ph.D supervisors by HEC thus facilitating research initiatives of CIIT and its broader educational community.

The Office of Research Innovation and Commercialization (ORIC) at

Important Statistics of CIIT for 2016		
Total Student Enrollment	35,254	
Campuses	8 (including 1 virtual campus)	
Faculty	3,240 (including 1130 Ph.Ds)	
Departments	18	
Academic Programmes	97	
Officers	828	
Staff	2,543	
Number of faculty members sent on scholarships abroad for MS & PhD	589	
Number of Publications as per SCOPUS	9,119	
Publication in high Impact factor papers	1,500	

The following patents were acquired by CIIT during the period under review.

S. No.	Application No	Patent No	Country	Title
1	11/953035	95,120,12	US	Novel sonoelectrolysis for metal removal
2	13/049843	93,404,34	US	Recovery of Nickel from industrial pickling acid solutions
3	262/2013	142414	PK	A novel and efficient synthesis of Dehydro1, 4-benzoxazines using sulfonium salts.
4	13/918,407	94,488,05	US	Software controlled data prefetch buffering

CIIT also undertook diversification of CIIT's research portfolio by identifying and submitting research proposals to various multi-faceted national and international funding agencies. The Office also developed a Research Proposal Management System (RPMS) to foster professionalism in ongoing data management system.

Capacity Building

During 2016, the following 12 seminars, workshops, conferences and forums were held.

- Workshop on Applying Quantitative Research Techniques using SPSS, 10-11 February 2016;
- Workshop on Critical Thinking and Developing Research Problems, 24-25 February 2016;
- Workshop on Effective Professional Writing, 29-30 March 2016;
- Workshop on Scientific Manuscript Writing, 25-26 July 2016;

- Workshop on ISO 17025
 Accreditation; Understanding the Challenge, 10–11 August 2016;
 Workshop on Effective Negotiation Skills, 30 August 2016;
- Workshop on Teaching with Care, 27-28 September 2016;
- 7. Workshop on SPSS for Public Health and Life Sciences Research, 7-9 November 2016;
- 14th Conference on Frontiers of Information Technology, 19-21December 2016.
- 9. Training Session on Defensive Driving Skills, 23-25 November 2016;
- 10. Consultative Meeting of All Women Chambers of Pakistan, 14-December 2016;
- 11. Workshop on Drug Discovery and Development, 21-23 December 2016; and
- Workshop on Corporate Strategic Foresight and Strategy Development, 22 December 2016.

Research and Innovation

CIIT has initiated development of a series of business/technology incubators named CUBATORs, and is currently hosting 38 companies at its incubation centres. The institute's Student Startup Business Center was established with support from the Higher Education Commission of Pakistan and the Promotion of Education in Pakistan Foundation, Inc. (USA). The goal of the programme is to promote entrepreneurship in talented students' and enhance their learning experience. The SSBC has been successfully implemented in five CIIT Campuses, namely, Islamabad, Lahore, Sahiwal, Vehari and Attock, and has enrolled over two dozen start-ups out of the hundreds of ideas received.

Collaborations

Agreements Reached

During 2016, visits of various delegations





resulted in signing of 10 national and 19 international Memoranda of Agreements on facilitating exchange of the faculty, students' mobility, and joint research programmes. The agreements were reached with Turkey's Yasar University and Istanbul University, Iran's Balochistan-Sistan University, Oman's Sultan Qaboos University and China's Beijing University of Technology (BJUT). Moreover, the North Dakota Water Resources Research Institute entered into collaboration with CIIT Lahore Campus for a US State Department funded project.

Important Visits and Exchanges

During 2016, a total of 135 individuals from various countries, including USA, UAE, Turkey, Canada, China, Germany, Belarus, Serbia, Switzerland, Maldives, Chicago, Iran, Oman, Italy, Morocco, Turkmenistan, UK, Norway, and Myanmar visited CIIT. The important visitors included:

- · Ambassador of Turkmenistan in Islamabad, Movlamov Atajan Nurlyevich, and the Embassy's first Secretary, Mr. Gurbanov Bengench;
- A delegation from Morocco, comprising Professor Idriss Mansouri, President, University of Hassan II De Casablanca; Professor Omar Assobhei, President, Sidi Mohammad Ben Abdellah University, Fez; and Dr. Abdelilah



Benmlih, Dean, Sidi Mohammed Ben Abdellah University, Fez;

- · Dr. Shabbir Dastgir, Senior Lecturer, from Huddersfield University, UK;
- Mr. Sébastien Cartier, Higher Education Attaché, Cultural and Cooperation Department, French Embassy in Islamabad, Pakistan;
- A delegation from Belarus, comprising Chairman, State Committee on Science and Technology (SCST), Dr. Alexander Shumilin, and Head Sub-Division International Science, Technology & Innovation Cooperation Department SCST, Mr. Sergei Siniukovich, and Mr. Yauhen Hurynau, Head of the Division on Cooperation with the Countries of Asia, Africa and Latin America, Department of International Cooperation in Science, Technology and Innovation, Belarusian Institute

of System Analysis and Information Support.

Cooperation with International **Organizations**

Under CIIT-TWAS collaboration the following exchanges took place during the year 2016: postdoctoral, 05; postgraduate (Researchers), 13; Postgraduate (PhD), 03; Visiting Scholar (Short-term), 01.

During the period, CIIT successfully completed a 12-month UNESCO supported research project, titled "Survey, Identification and Combating Bio-Growth at Sirkap and Dharmarajika Sites in Taxila, Pakistan", which was marked in a ceremony on February 11, 2016, at CIIT, Islamabad.

International Students Enrolled in Graduate Programme		
S #	Country	Number of Students
1	Nigeria	20
2	Somalia	1
3	USA	1 UG
4	Afghanistan	266 (3 + 263 UG*)
5	Turkey	1
6	Iraq	1
7	China	2
8	Jordon	1
9	Germany	1 UG*
10	Sudan	2
11	Cameroon	6
12	Gambia	1
	Total	303

International Students

During 2016, a total of 303 (38 MS & Postgraduate programmes 265 undergraduate) international students from 12 countries were enrolled at CIIT from Afghanistan, Cameroon, China, Gambia, Germany, Iraq, Jordan, Nigeria, Somalia, Sudan, Turkey, and USA, in Electrical Engineering, Mathematics, Meteorology, Management Sciences, Physics, Pharmacy International Relations and Bio-sciences departments.

Awards and Achievements

CIIT won the 1st Federation of Pakistan Chambers of Commerce and Industry (FPCCI) Achievement Award for its outstanding services in the category of Education and Training, becoming the first ever Higher Education Institution in Pakistan to receive the award. Moreover, in recognition of the quality of their work, a number of faculty members and students of CIIT were given special awards; namely:

- · Dr. Habib Bokhari, Professor, Department of Biosciences, CIIT, Pakistan won the Horizon 2020 Research Grant.
- · Ms Andleeb Zahra, a PhD Student,

- Department of Biosciences, CIIT, Islamabad, was selected for British Council Award for Women on March 25. 2016.
- Dr. Humaira Shaheen, Assistant Professor, Department of Biosciences, CIIT Islamabad became the member of reviewer team of journal "Sustainability in Environment - Scholink" on April 05, 2016.
- · Dr. Khalid Latif, Associate Professor, Department of Computer Science, CIIT Islamabad received Ernst-Mach Fellowship from Austrian Agency for International Cooperation in Education

- and Research (OeAD-GmbH), Center for International Cooperation and Mobility (ICM).
- · Dr. Tahira Jibeen, Assistant Professor, Department of Humanities, CIIT, Lahore, was awarded 5th HEC Outstanding Research Award 2013/2014 by Higher Education Commission of Pakistan. HEC also gave Dr. Muhammad Kamran, Assistant Professor, Department of Computer Science, CIIT, Wah, 'The Best Research Paper Award'.

Industrial Technology Institute (ITI), Sri Lanka



Industrial Technology Institute (ITI), Sri Lanka, comprises of five research

and development divisions, four technical services divisions and offers 10 different supporting services. The Institute conducts multidisciplinary scientific and industrial research to transfer the technology for rapid industrial development and provide technical services. Celebrating the years of excellence in its operations, ITI celebrated its 60th Anniversary in 2016.

Development of Infrastructure and **Facilities**

The Chemical Residual Unit of ITI was





upgraded to a fully functional laboratory for Residual Analysis. During the year, another high-end analytical instrument, ICP-MS, was added to its collection of the state-of-the-art analytical instruments.

Moreover, ITI took initiatives to establish state-of-the-art Pharmaceutical and Petroleum testing laboratories under a mandate given by the Government of Sri Lanka.

Events and Conferences

- On 21st July 2016, ITI organized a ceremonial transfer of the 2nd batch of kidney dialysis solution to the Kandy Teaching Hospital.
- A soft opening of the Modern Research and Development Complex was held on 8th December 2016 at Malabe.

International Collaborations

- An agreement was signed between the ITI and Korea Food Research Institute (KFRI) on Biological activity evaluation system.
- A Memorandum of Understanding was signed in Kunming, China, between China–South Asia Technology

- Transfer Centre and ITI, Sri Lanka, on establishing China–Sri Lanka Technology Transfer Centre (CSLTTC) in Sri Lanka.
- GIZ, Sri Lanka, and ITI collaborated in a programme to develop SMEs of Sri Lanka. Through this collaboration, ITI has been invited to accelerate transfer of the technology developed by ITI and encourage establishment of SMEs by local entrepreneurs, especially in the less developed regions of Sri Lanka.
- A Memorandum of Understanding was signed between Sichuan Institute of Atomic Energy, China, and ITI, Sri Lanka, to strengthen technical cooperation in the field of food irradiation.

Individual and Institutional Awards

- Dr. Iresha Kottagoda received the Life-time APEX award for 'professional excellence in science and technology (2016)'.
- Dr W. W. P. Rodrigo received the 'Presidential Award for Scientific Publications 2014' organized by National Research Council, Sri Lanka.
- Dr. N. P. Liyanawaduge won the Postgraduate Research Merit Award from Sri Lanka Association for the

- Advancement of Science for research on Effect of Ca and Sr doping in YBa2Cu3O7-d
- ITI was a finalist for WAITRO (World Association of Industrial and Technological Research Organization) innovation award 2016 in 'Business Innovation' category for the 'Kithual Activation and Sap Production Enhancing Reagent (KASPER)' and also in 'Social Innovation' category.

International Center of Climate and Environment Science (ICCES), China



The International Center for Climate and Environment Sciences (ICCES), China, originated from the former

Center for Climate and Environmental Prediction Research (CCEPRE). Since its establishment, ICCES has been supported by the Institute of Atmospheric Physics (IAP), Chinese Academy of Sciences (CAS), and by the Ministry of Science and Technology (MoST), Government of China.

Major Research Activities

ICCES continued working on development and application of Dynamical Earth System Model, meteorological and environmental forecast and related disaster assessment theory and technique, data assimilation theory and methodology, earth system theory and natural cybernetics.

ICCES accomplished the numerical experiment of ensemble hind casting for thirty years based on IAP-AGCM 4.1, evaluating the ability of the Model's for forecasting summer climate. It also improved on the development of ocean circulation and land surface models and interaction between land and atmosphere. Moreover, the Centre:

· assessed improvement of plant

ICCES Statistics 2016		
Faculty	14 professors 11 associate professors 17 assistant professors and 2 senior engineers	
Degrees awarded	5 PhD 8 Masters	
Student Enrolment	18 PhD 18 Masters	
Fellowships	8 joint training students 4 international PhD students	
Publications	54 peer-reviewed scientific papers	

germination in global dynamical vegetation model;

- studied the forest ecosystem's response to climate change by using IAP-DGVM;
- completed the simulation of global fire model comparison project and relevant analysis;
- executed he simulation and evaluation of cloud and its short wave radiation effect in East Asia by CAS-ESM;
- executed the simulation and prediction of Eurasia snow water equivalent by CMIP5;
- improved real-time numerical climate prediction system and research on methodology of forecasting.

Moreover, by applying ENSO ensemble forecast system, ICCES successfully predicted the super El Nino (2015/16).

About 62 projects are on-going at ICCES of which 20 are funded by the Ministry of Science and Technology (MOST), Ministry of Finance (MOF), China; 27 by National Natural Science Funds of China (NSFC); 8 by the Chinese Academy of Sciences (CAS) and 5 by different organizations.

Capacity Building

Events

A CAS-TWAS-WMO Forum on Climate Science (CTWF) was jointly established in 2000 by Chinese Academy of Sciences (CAS), ICCES, The World Academy of Sciences (TWAS) and the World Meteorological Organization (WMO).

The CTWF 2016 international conference was held on September 19-24, 2016 in tandem with the 15th AeroCom (Aerosol

Comparisons between Observations and Models) and 4th AERO-SAT (International Satellite Aerosol Science Network) workshops, and was followed by an International Lecture Course on "Atmospheric Aerosol" (Section 3).

The 5th meeting of COMSATS' International Thematic Research Group (ITRG) on 'Climate Change and Environmental Protection' was held on 28th September 2016 and hosted by the ICCES. Details are given in Section 7.

Visiting Scholars, International Students and Postdoc Researchers

During her visit (September-November 2016) to ICCES, Dr. Mojisola Adeniyi, University of Ibadan, Nigeria, under the TWAS-UNESCO Associateship, applied the IAP-AGCM4.1 model to simulate the intra-seasonal variations and climatology of West Africa monsoon regime and evaluated the model performance. Her work was greatly helpful in promoting IAP's climate system model in West Africa.

The ICCES also invited Dr. Filipe Costa and Dr. Rafael Santana from Universidad Federal da Bahia (UFBA), Brazil, who introduced results of the latest research on data assimilation; and participated in the seminar on Earth System Model.

The ICCES has been encouraging students and young scientists from the developing



countries to enroll in the Ph.D. or Post-Doctoral studies through the CAS-TWAS PIFI programme. Accordingly, three students were granted the scholarships in 2016, while two continued their Post-Doctoral research at ICCES.

International Collaborations

International Projects

ICCES participated in the key project on'Climate change research and observation' programme launched by the Chinese Academy of Sciences under the 'Belt and Road Initiative'. The project aims at building a climate change research network and integrating the datasets for climate change research among the Belt and Road neighboring countries to address and adapt to climate change.

Memorandum of Understanding

Prof. Zhaohui Lin, Director ICCES, signed an MoU with the Faculty of Social Science, Srinakharinwirot University, during his visit to Thailand in December 2016. The Memorandum was on strengthening collaboration in the research of extreme weather and climate events, land use, and water circulation, as well as hosting joint international workshops.

Another MoU was signed between Chiang

Mai University and ICCES. Dr. Somporn Chantara and Dr. Wan Wiriya signed the MoU on behalf of the University and ICCES, respectively.

Awards

Academician Qingcun Zeng, Founder Director of ICCES, was awarded the 61st International Meteorological Organisation (IMO) Prize on Jue. 22, 2016 by the Executive Council of World Meteorological Organization, Geneva, Switzerland, for his contributions to satellite meteorological remote-sensing theory, numerical weather prediction theory, meteorological disaster prevention, as well as the Earth System Model.

Royal Scientific Society (RSS), Jordan



Research Scientific Society (RSS), the largest applied research institution in Jordan, inter alia, provides consultancy and

technical support services for scientific capacity-building. The society serves as the local as well as regional reference point of knowledge for science and technology. During the period, the following new testing services were offered:

- Screening for overall migration of plastic materials and articles into food products;
- Testing for the presence of Toluene in local and imported products;
- Testing for the presence of hydrogenated oil in dairy products.

Major Research Activities

Major R&D activities of RSS for the year included the following projects:

- · 'Turning industrial wastewater to wealthbiodegradable plastics', funded by the Support to Research, Technological Development and Innovation in Jordan Phase II (SRTD II), December 2016;
- · 'Investigating Novel Materials to Purify and Store Green Hydrogen Utilized in Powering Proton Exchange Membrane (PEM) Fuel Cell Stacks', funded by the Support to Research, Technological Development and Innovation in Jordan Phase II (SRTD II), December 2016;
- 'Arab Fuel Cell and Multi-Purpose Electrolyzer Powdered by Solar Energy', funded by the Support to Research, Technological Development and Innovation in Jordan Phase II (SRTD II), December 2016;
- 'Low Temperature Retorting of Jordanian Oil Shale' funded by the Support to Research, Technological Development and Innovation in Jordan Phase II (SRTD II), December 2016;



- 'Investigation of Ready Mix Concrete Performance Utilizing Recycled Waste Water in Jordan' funded by the Support to Research, Technological Development and Innovation in Jordan Phase II (SRTD II), December 2016;
- 'Studying the vulnerability of groundwater resources surrounding the landfills' Funded by Swiss Agency for Development and Cooperation (SDC), October 2016;
- 'Dry Sanitation: Towards Empowering Jordanian Local Communities in Water Demand Management' funded by Enviro-loo Company, August 2016;
- 'Fostering Solar Technology in the Mediterranean area – FOSTEr in MED' funded by the European Union ENPI CBC MED Programme, July 2016;
- Developing a process for producing ultrafine kaolin from Jordanian kaolin clay to replace titan (Titanium Dioxide, TiO2) in water-based paints' funded by the Higher Council for Science and Technology, June 2016;
- 'A Novel approach for synthesis of sulfur nanoparticles for controlling the fungi diseases in plants' funded by Abdul Hameed Shoman Foundation, May 2016;
- Foundation Stone Laid for Jordan's 'First Zero Net Energy Building' at RSS, February 2016;
- 'Application of eco innovation in the chemical sector' funded by UN Environment, February 2016.



Capacity Building

The following RSS officials participated in COMSATS' activities during 2016:

- Eng. Mohammad Abu Othman participated as a speaker in the 1st UKM-ISESCO-COMSATS International Workshop on Nanotechnology for Young Scientists (IWYS), in Malaysia, December 2016.
- Eng. Muhieddin Tawalbeh participated as a speaker in the International Conference and Exhibition on Renewable Energy Technologies, hosted by COMSATS in collaboration with ISESCO and PCRET in Pakistan, October 2016.

 Eng. Ahmad Abu Safa attended the International Conference on Environmentally Sustainable Development, hosted by CIIT in Pakistan, April 2016.

RSS itself organized the following activities:

- A training course on International Standards of Inspection of Liquefied Petroleum Gas Code NFPA 54 & 58, November 2016;
- The 3rd International Workshop on 'Applications of ICTs' in collaboration with COMSATS, ISESCO, the Inter-Islamic Network on Information Technology (INIT), and the United Nations Economic and Social Commission for Western Asia (UNESCWA), June 2016;
- A training course on 'verification, calibration and preventive maintenance of medical equipment' in collaboration with the National Metrology Institute of the Federal Republic of Germany (PTB), May 2016;
- Workshop on 'Material Flow Cost Accounting' (MFCA) in collaboration with UNIDO and Amman Chamber of Industry, April 2016;
- The First Middle East and South Asia Conference on 'Epigenetics and Genomics of Infectious Diseases' in collaboration with Gryphon Scientific,



March 2016;

International Seminar on 'Islam and Science', May 5, 2016;

International Collaborations

RSS strengthened its international linkages by signing the following MoUs and agreements:

- · An agreement with the National Academy of Sciences for 'The occurrence and fate of pharmaceutical residues from their sources to water bodies and food chain', December 2016;
- An agreement with the Swedish International Development Cooperation Agency – (SIDA) for 'The MENA Region Initiative as a Model of NEXUS Approach and Renewable Energy Technologies', November 2016;
- MoU with Global Scientific Institute, University of California, Berkeley, to enhance research and education, October 2016;
- MoU with the Norwegian refugee council to collaborate on projects and activities which support the mission of both institutions, September 2016;
- Agreement with Friedrich-Ebert-Stiftung (FES) on 'Photovoltaic (PV) Awareness Campaign for School Students in Southern Jordan', March 2016.

Research Output

The following four patents were granted to RSS during 2016:

- A system and method for measuring the content of smoking materials used for smoking articles;
- · A portable device for converting grey water to potable water;
- Adjustable angular clay brick cutting device;
- An integrated direct absorption selfstorage solar collector.

Moreover, 26 papers were published by RSS researchers during 2016, including those in peer reviewed journals and



presented in international conferences.

Individual and Institutional Awards

The following awards were won by RSS:

- · 'National ENERGY GLOBE Award Jordan 2016' by the Austrian Energy Globe Foundation for the best environmental project in Jordan;
- 2016 TWAS Prize for Young Scientists;
- Best paper award in 4th European Conference on Renewable Energy Systems;
- Best paper award in the 9th International Conference on Sustainable Energy and Environmental Protection.

Water Research and Technologies Center (CERTE), Tunisia



Water Research and Technology Center (CERTE), Tunisia, is focused on R&D and creation of innovative technologies in the field of water. CERTE is

composed of three research laboratories, including waste water treatment; water resources; and treatment of natural water.

CERTE negotiated a new research

CERTE Human Resource		
Researchers	60	
contract researchers	20	
Engineers	11	
Technicians	28	
administrative staff	31	

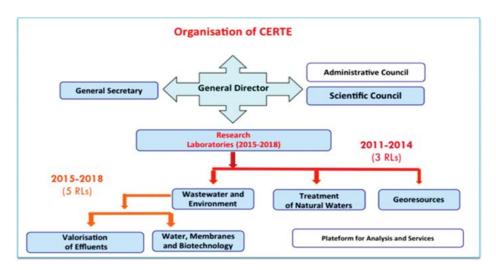
programme with Tunisian government to be implemented at the Centre's laboratories during 2015-2018. The new structure of CERTE is depicted below.

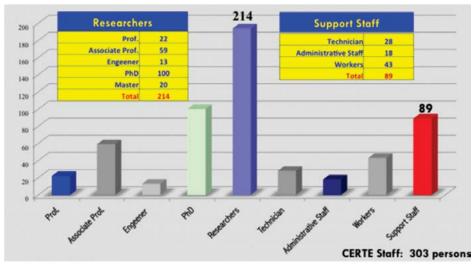
CERTE Output 2016		
Publications	127	
Graduates	39	
Theses	26	
Books	3	
HDR Diploma	3	
Patents	2	

Research Activities

The main activities of CERTE during 2016 covered many topics related to:

- · Hydro-geophysics and geostatistics;
- Hydrology and hydrogeology modelling;
- · Geology, geochemistry and mineralogy;
- · Modelling of water resources and impact of climate change;
- · Improving the quality of drinking water,





and desalination of brackish and marine water;

- Wastewater (urban, industrial, agricultural) process and technologies improvement;
- Water pollution, health, toxicity, risks, corrosion, LCA, diagnosis/evaluation;
- New approaches, and techniques in local water management;
- Application of membranes;
- Phyto-Remediation;
- Disinfection of wastewater and rural sanitation.

CERTE acquired the following two patents during 2016:

 Use of Doped Silane Coatingas an Anticorrosive Pretreatment for Bronze Protection and Conservation', Patent reference N: 24054 (INORPI);

• 'Development of culture media for the production of microorganisms from

dairy industries discharges', Patent reference: Brevet N° TN 2016 /0510 (INORPI).

Conferences, Seminars and Workshops

The events organized by CERTE in 2016, include:

- Workshop on 'Water: Innovation and Valorisation of Result Researches' in collaboration with JICA (Japanese International Cooperation Agency), at Tunisian Union of Industry, Commerce and Handicrafts, 10th March 2016;
- High Level National Workshop on "Water Integrity Capacity Building" funded by Sida and coordinated by SIWI (Suede), February 2016;
- Events under the project entitled 'Fostering partnerships for the Implementation of Best Available Technologies for Water Treatment and Management in the Mediterranean' financed by European Union under its 7th Framework Programme;
- Training on Business Development and Science Market, 1st and 2nd April 2016.
- International Collaborations

CERTE is currently partners in several bilateral projects funded by institutions from Algeria, Egypt, France, Germany, Morocco, Portugal, Japan, Spain and Sweden, and caters to multilateral cooperation with European Commission.



B. HIGHLIGHTS FROM OTHER CENTRES OF **EXCELLENCE**

EMBRAPA Agrobiologia, Brazil



EMBRAPA Agrobiologia, Brazil, enjoys high reputation

at national and international levels owing to its scientific contributions in the fields related to Biological Nitrogen Fixation, organic agriculture, biotechnology, greenhouse gas emissions and land reclamation. EMBRAPA Agrobiologia covers an area of 862 hectares constituting a central building, experimental fields, research pavilion, library, six green houses, and nineteen laboratories..

Capacity Building

- In 2016, EMBRAPA Agrobiologia conducted a five-module course on recovery of degraded areas. The module course was developed for increasing awareness regarding necessary technology and research in the area.
- EMBRAPA Agrobiologia signed a technical cooperation agreement with Pecege Institute (I-Pecege) of Brazil for upgrading of the software known as 'Beng', which would serve as a database for calculation of energy balance of sugarcane crop.



Industrial Research and Consultancy Centre (IRCC), Sudan



The Industrial Research and Consultancy Centre (IRCC), Sudan, is dedicated to national industrial development through industrial

research and consultancy services. It also conducts various capacity-building activities for enhancing the caliber of professionals and academicians.

Capacity Building

IRCC, in collaboration with Sudanese Ministry of Industry, initiated a national programme on industrial development which includes 60 training programmes. These training programmes are meant to benefit more than 10,000 beneficiaries

from industrial sectors of Sudan. Different training programmes in this regard have been so far conducted by IRCC in 2016, in different fields including Textile Dyeing and Processing, Safety Management for Industrial Chemistry, Evaluation of Milk Quality and Dairy Products, General Electronics, and Mining.

International Center for Chemical and Biological Sciences (ICCBS), Pakistan



The International Center for Chemical and Biological Sciences, Pakistan, is considered one of the leading academic research institutions

in chemical and biological sciences in Pakistan, and enjoys good reputation international reputation. ICCBS has been a UNESCO Category II institution since 2015. The Center also serves as the Centres of Excellence of COMSATS, TWAS, WAITRO, OIC and UNCSTD. ICCBS focuses on; research and training for high quality professionals; and extending diagnostic, analytical and clinical testing services to local and regional clients from private and public sectors. MoU and Agreements

ICCBS signed a Memorandum of Understanding with Academy of Sciences





of the Republic of Tajikistan (ASRT) for cooperation, inter alia, in natural products, drug delivery system, medicinal plant chemistry, and pharmacology of herbal medicine. The MoU was signed during a ceremony held at Dr. Panjwani Center for Molecular Medicine and Drug Research (PCMD), ICCBS.

Awards and Achievements

- The Director ICCBS was inducted as 'Adjunct Distinguished Professor' by University of Petra, Jordan in recognition of his distinguished scientific research and services in chemistry. A certificate was also awarded to Prof. Choudhary, Director ICCBS, in this regard.
- Twelve scholarships were awarded to PCMD, ICCBS, by French Government for capacity-building of young researchers, students and faculty members.
- Prof. Dr. Khalid M. Khan of ICCBS was selected as member of the steering committee of the International Chemistry Olympiad (IChO).
- ICCBS has gained the status of United Nations Category II Institute after formal signing of an agreement with UNESCO. The decision to place ICCBS under the auspices of UNESCO as a Category-2 Centre was approved during the 38th General Conference of the Organization.

International Collaborations

H.E. Dr. Bibi Ameenah Firdaus Gurib-Fakim, President Republic of Mauritius, paid visit to different laboratories of ICCBS and proposed bilateral cooperation in different areas, including education, health, tourism and trade.

Capacity Building

ICCBS, inter alia, conducted a one day seminar on 'Science and Society- Science Communication and Public Engagement' on 19th October 2016.

National Mathematical Centre (NMC), Nigeria



The National Mathematical Centre (NMC), Nigeria, is an inter-university organization and promotes research capacity-building in

mathematical sciences.

Capacity Building

A two-day International Workshop on Mathematics Fundraising/Strategic Planning was held in NMC. The event marked the launching of UNESCO Chair Programme on Mathematics at NMC. The workshop included discussion on curriculum development networking and partnerships.

National Research Center (NRC), Egypt



The National Research Center (NRC), Egypt, is the largest research and development institution in the country devoted to basic as well as applied research in fields of national interest. Affiliated

with Ministry of Scientific Research, Egypt, NRC was established to foster basic and applied scientific research in public health, agriculture, and industry in sectors of national economy.

NRC celebrated its 60th Anniversary in the second half of 2016.

Tanzania Industrial Research and Development Organization (TIRDO), Tanzania



Tanzania Industrial Research and Development Organization (TIRDO), Tanzania, is mandated to conduct industrial research

and offer consultancy/technical services to



Tanzania's industrial sector.

International Collaborations

A delegate from TÜBİTAK Marmara Research Center (MAM) visited TIRDO from 25th to 28th May 2016 to discuss possibilities of cooperation in different areas of science, technology and research, including earth and marine sciences, environment and cleaner production, materials technology, energy, chemical technology, genetic engineering biotechnology, and food and food biotechnology.

TÜBITAK Marmara Research Center (MAM), Turkey



TÜBITAK Mramara Research Center (MAM), Turkey, is an internationally recognized organization involved in research on



conventional technologies for enhancing Turkish industry and solving technological problems.

Test and Analysis Services for Europe and Africa

TUBITAK MAM has commenced on demand industrial test and analysis services for international clients.

Capacity Building

President TUBITAK MAM delivered a talk on Smart Cities and Mobility at the World Automotive Conference held in Istanbul from November 29th to 30th, 2016, and briefed the participants on 'Smart Mobility Cluster' led by TÜBİTAK MAM focusing on Smart Vehicles, Internet of Things and Continuous Data Collection. The cluster is working towards solving mobility problems in congested urban areas, especially in Istanbul.



Reports of Special Assignments

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REPORTS OF SPECIAL ASSIGNMENTS

For the benefit of its Member States, COMSATS undertakes special assignments, such as conducting scientific studies, undertaking pilot projects, or implementing educational programmes. Two of COMSATS' projects have been successfully transformed into full-fledged institutions, i.e., COMSATS Institute of Information Technology (CIIT) and COMSATS Internet Services (CIS), while a third project on telehealth is being expanded. The administration related to graduate students from Member States studying at CIIT is also a special assignment of the Secretariat. Activities under COMSATS' Science Diplomacy Programme have also gained momentum in line with the Coordinating Council's aspirations.



Board of Governors, COMSATS Institute of Information Technology

The Board of Governors, COMSATS Institute of Information Technology (CIIT), held one regular, three special and two emergency meetings, under the chairpersonship of the Executive Director. During the period under report six meetings of Board of Governors were held to address various issues including those needing urgent attention. A summary of the proceedings of these meetings is given below.

33rd (Special meeting) of Board of Governors

On 27th January 2016, the Federal Minister

for Science and Technology convened the 33rd Meeting of the Board as the Chancellor of the University. Three agenda-items were placed before the board viz; (a) draft bill of the COMSATS University (b) establishment of virtual campus of CIIT and (c) appointment/ extension of the Rector CIIT.

The Board directed to finalize the draft bill for further processing by the Ministry of Science and Technology without referring it back to the board. The Board approved continuity of the distance learning programmes at CIIT virtual campus and directed that CIIT should finalize the future working of the virtual campus in the light of the HEC guidelines. The Board extended the tenure of the incumbent Rector by one year.

34th (Special Meeting) of Board of Governors

The meeting was conducted on 29th March 2016 to consider actual expenditures of 2014-15, budget estimates 2015-16 and budget proposals for 2016-17. The Board further considered adjustment at faculty positions and creation of 150 positions of staff grade employees.

The Board approved the budget subject to approval of the finance and planning committee (F&PC). The Board also issued directives for organization of Pak - China Business Forum activity with the support of other organizations and companies.

35th and 36th (Emergency meetings) of Board of Governors

The 35th meeting was convened on 11th June 2016 to deliberate on the urgent issue of cancellation of the PhD degree of a faculty member due to plagiarism. The faculty member was suspended with the concession of giving him a fair chance to defend himself.

The Board met for its 36th Meeting on 17th June 2016 to hear in person the faculty member and ordered his removal from service as he did not appear for defense. The BoG further directed to issue a public statement regretting the unfortunate incident with a resolve of zero tolerance for plagiarism in future.

37th (Special meeting) of Board of Governors

The 37th special meeting was held on 13th July 2016 to consider the past, present and future of National Testing Services (NTS). After detailed discussion, the Board decided to re-nominate five officials as ex-officio members of NTS as per article 3 (a) (i) of the Articles of Association of NTS-Pakistan.

38th (Special meeting) of Board of Governors

The 38th Meeting of the Board was held on 27th July 2016 to consider the working of the virtual campus of CIIT. The BoG approved the scheme of virtual campus in respect of the completed and the ongoing programmes initiated during the first two months of 2016. It also issued instruction to devise a quality assurance mechanism for the campus to be presented for the approval of the Board along with the future plans.

39th Meeting of the Board of Governors

This meeting was held in two separate sessions, one on 23rd November and the second on 6th December 2016. The minutes of the 32rd, 33rd, 34th, 35th, 36th,

37th, and 38th meetings were approved. This meeting was apprised on implementation status of the decisions taken in last seven meetings. The Rector CIIT briefed the board regarding the progress, programmes and future plans of CIIT. The Board expressed its satisfaction on the overall progress and plans of the University and granted approval to:

- Recommendation of academy council decided in its 22nd, 23rd and 24th meeting,
- Recommendations made by finance and planning committee in its 21st and 22nd meeting,
- Recommendations of the selection board,
- Appointment of chairman of academy department,
- Nominations of the Deans on the Board of Governors,
- Reconstitution of Finance of the planning committee,
- Reconstitution of the board of management for employee benevolent and group insurance fund,
- Adoption of salary package of the Vice Chancellor of Public sector universities for the Rector CIIT; and
- Appointment of auditors for the financial years 2015-16, 2016-17 and 2017-18.

To initiate the process for appointment of Rector CIIT, a committee comprised of Federal Secretary, Ministry of Science and Technology, Pakistan, Chairman Higher Education Commission of Pakistan, Director CIIT Wah Campus, and two eminent academicians was constituted to find a suitable candidate for the post. Registrar CIIT was nominated as member/secretary of the committee.

Board of Management, COMSATS Internet Services (CIS)

Operational since 1996, COMSATS Internet Services (CIS) offers diversified services like Wireless broadband, Domain and Web hosting, On-demand broadband, Data Center Services, Video conferencing, Website designing and development, Search Engine Optimization, Virtual Private Servers, Networking, IT training, and internet-related research facilities.

CIS offers eight brands of services which form 'The Colors of CIS'. These are Tornado® (Wireless broadband), HawaiiTM (Domain, hosting, and VPS) and COMSpeedTM (Optical Fiber Connectivity). CIS' value-added





services include HurricaneTM (Ondemand broadband), PrismTM (Website development), ViaconTM (Video conferencing), and COM meetingTM (web Conferencing Service). CIS also offers social services in the form of ComClinicTM (Tele-health service). All processes and procedures at CIS are ISO9001:2008 certified.

Currently, CIS is operating in 17 cities of Pakistan, with more than 10,000 customers from prominent organizations in public and private sector, well-known national and international companies and firms, software and business companies, foreign missions, consulate and embassies, non-governmental organizations, universities, social development and research organizations.

The affairs of CIS Islamabad are managed by a Board of Management (BoM) headed by Executive Director COMSATS. The Board held its 28th meeting on 2nd December 2016 chaired by Mr. Fazal Abbas Maken, Executive Director COMSATS. The Board discussed various issues including general progress, financial performance and current status of CIS projects under Public Sector Development Programme. The board was informed about the completion of CIS' building and its inauguration on 16th May 2016. CIS

is now operating from the new building known as CIS Technology Park Building after shifting all offices including Data Centre. The top two floors of the building have been occupied by IT companies engaged in development of software and mobile applications.

The Board appreciated the efforts of the outgoing CEO, CIS Mr. Muhammad Amir Malik, for making the ISP a vibrant organization and also advised the management to fill the subsequent since his resignation. The post of CEO CIS was advertised and the short listed candidates were interviewed by a Selection Board, chaired by the Executive Director COMSATS. Mr. Jamshed Masood was selected as the new incumbent who assumed charge on 3rd January 2017.

The Board decided that future strategic plan for CIS should be prepared and a Chartered Accountancy Firm, having appropriate legal expertise, should be engaged through open competition. The firm so engaged shall prepare and submit a comprehensive document indicating CIS' assets, liabilities and suggest options for assigning its legal status.

Other Activities of CIS

Inauguration of CIS Technology Park Building, Islamabad

The CIS Technology Park building was inaugurated on 16th May 2016 by Dr. Imtinan Elahi Qureshi, Executive Director COMSATS. The officials from COMSATS' Member countries were also invited on this occasion.

New Nodes

During 2016, CIS launched three new nodes in Gujranwala, Gujrat and Sukkur cities of Pakistan.

Financial Performance

CIS had generated total revenue of PKR 245.27 million during the financial year of 2015-2016 with a net profit of PKR 21.52 million. Annual revenues generated during the financial year of 2014-2015 were PKR 195.582 million with net profit of PKR 17.72 million. The revenues generated during the first quarter of the current financial year is Rs. 64.98 million with net profit of Rs.5.67 million.

Bandwidth Growth

To ensure high uplink and downlink speeds for its customers, CIS gets bandwidth from multiple providers. Purchase of bandwidth grew from 700 Mbps in 2015 to 1800 (current bandwidth) Mbps in 2016. This growth in bandwidth reflects the growth of CIS as bandwidth is the fuel for an ISP.

Participation in CIIT's Pak-China Business Forum, Islamabad

CIS participated in Pak China Business Forum (PCBF) at Lahore organized by CIIT Islamabad for 19th to 22nd March 2016 where stalls were set up for marketing, exhibiting CIS products and Tele-health facilities.

Launching of CIS Tele-Health Centers, Islamabad

Inauguration ceremony of CIS Tele-Health Center Islamabad was held on December 02, 2016, and chaired by Mr. Fazal Abbas Maken, Executive Director COMSATS

Future Plans

- With its existing data centers located at Islamabad, Lahore and Karachi, CIS plans to establish another one in Faisalabad.
- With its pilot projects of telehealth complete with 13 rural Tele health clinics operational in the adjoining areas of Islamabad, Rawalpindi, Peshawar, Swabi, Lahore, Multan, Khairpur, Quetta, Musakhail and Gwadar, CIS intends to extend the facilitates to underdeveloped/ remote areas with free healthcare consultations.

COMSATS Tele-Health Programme

Collaboration with MALC

During the year 2016, COMSATS eHealth Programme continued with a to focus on new collaboration with Marie Adelaide Leprosy Centre (MALC), who suggested Mirpur Khas for the first Telehealth setup under MALC-COMSATS collaboration for Telehealth. In this connection, Deputy Director Systems of COMSATS visited Mirpur Khas with to ascertain existing health, accommodation and IT facilities at the MALC centre for setup a Telehealth clinic in the centre to be linked initially with COMSATS Resource centre and later with MALC headquarters in Karachi. On this occasion, Deputy Director COMSATS invited the CEO of MALC to visit COMSATS Secretariat in Islamabad, in response to which the CEO and his team visited COMSATS Secretariat in March 2016. The MALC Officials were briefed about COMSATS and its Telehealth programme and shown the Telehealth



Resource centre and live Teleconsultation at CIS Telehealth centre. They appreciated COMSATS' Telehealth setup and requested for early commencement the first Telehealth centre at MALC. The CEO (MALC) suggested Tando Jan Mohammad instead of Mirpur Khas for the setup.

Activities relating eHealth Association of Pakistan

COMSATS, through its Principal Medical Officer, participated in the activities of eHealth Association of Pakistan (eHAP) in the capacity of joint secretary of the association for the year 2016. Since the General Secretary of eHAP vacated the position in the second half of the year, the Pr. Medical Officer took up the additional responsibilities of the General Secretary for a brief period. The responsibilities were to conduct core group and board meetings among the members through Skype, preparation of a road map for the organization and other routine matters of the association. The routine activities include core group meetings that are held every month and board meetings held thrice a year through Skype.

Other Activities

Other activities performed during 2016 included initial correspondence with Wish International, working in health sector in the province of Khyber Pakhtoon Khuwa, Pakistan. The Organization approached COMSATS for assistance to implement a

Telehealth system project for burn patients at Hayatabad Medical Complex (HMC), Peshawar, three burn-trauma centers in Chitral, Dir and Bannu in Pakistan, and two burn-trauma centers at Chamkani and Shinwari districts in Afghanistan. Wish wanted to include supply and installation of Telehealth equipment at each location, related software/hardware including connectivity of all centers with each other and with HMC. Another NGO, i.e., Huda Health Care also approached COMSATS for guidance in setting up Telehealth centres near Lahore. Both the NGOs were duly facilitated by COMSATS, accordingly.

Webportal (www.ehealthcomsats.com)

The webportal of COMSATS e-Health programme was shifted to a new server to ensure its security. The contents were modified and various web pages were reorganized.

It was agreed that in future a new interface will be designed by adding new features in 2017. It is also anticipated that the whole portal will be upgraded to meet international standards.

COMSATS Scholarships

COMSATS Graduate Scholarship programme is aimed at enhancing the pools of highly educated individuals in COMSATS' Member Countries. During the Coordinating Council Meetings held annually, the Centres of Excellence are



urged to generously offer scholarships to students from COMSATS' Member States to help them undertake advanced research and study in different fields of science and technology.

The Scholarship programme is channeled through its Centres of Excellence and institutional collaborations with partner institutions. A large number of scholarships were granted to students from COMSATS' Member States to enable them to pursue their higher studies in different disciplines. The scholarship programme covers all related expenses; which includes 100 % tuition fee; 50 % rebate on boarding/lodging; upto 80 % concession on admission and other fees as well as travel grant from COMSATS Secretariat.

During the 19th Coordinating Council Meeting of COMSATS (May 2016), CIIT's offer of standing 100 scholarships for students from Member Countries was reiterated. The scholarships are given for postgraduate studies or post-doctoral research in various disciplines at any of CIIT's seven campuses. COMSATS Secretariat regularly circulates the call for CIIT's scholarships to all its Centres of Excellence and Focal Points in Member States. In response, COMSATS Secretariat received 71 nominations for MS and Doctoral studies.

After necessary processing the postgraduate scholarships were awarded to 12 nominees belonging to Nigeria (7),

Bangladesh (1), China (1), Palestine (1), and Ghana (2) for their MS and Doctoral studies in various departments of CIIT, including Chemistry, Immunology and Microbiology, Computer Science, Environmental Engineering, International Relations, Remote Sensing and GIS.

COMSATS Science Diplomacy Programme

Realized as a result of deliberations of the 18th Coordinating Council Meeting held in Sri Lanka, May 2016, and underscored in its Communiqué, lectures under COMSATS Science Diplomacy Programme continued during 2016. Following are brief accounts of the same.

'Science Diplomacy: An Overview'

A lecture on 'Science Diplomacy: An Overview' was delivered by Executive Director COMSATS Dr. Imtinan Elahi Qureshi, on February 29, 2016. The second lecture under the programme, was delivered to a gathering of scholars and academicians at the Faculty Development Academy of COMSATS Institute of Information Technology (CIIT), Islamabad.

The lecture entitled 'Science Diplomacy: An Overview' outlined how 'science' and 'diplomacy' together serve related but different inter-related purposes in supplementary and complementary manners for interaction with the outside world.

The lecture established the historical context of Science Diplomacy, as well as its reincarnation in the modern world. He highlighted the role of the American Association for the Advancement of Science (AAAS) and Royal Society for the advocacy of science in the past. Defining the scope and dimensions of Science Diplomacy, the related mechanisms employed in developed countries





were also discussed. It was noted that Science Diplomacy is being used as soft power by developed countries through disbursement of aid, technology-transfer and sharing scientific know-how. The successful examples of Science Diplomacy ventures over the decades were quoted, such as: European Organization for Nuclear Research (CERN), International Thermonuclear Experimental Reactor (ITER), and International Space Station (ISS). It was noted that Science Diplomacy can help the developing countries on three major fronts: Capacity Building; South-South Cooperation; and preservation of National Resources. Some examples of field specific science diplomacy quoted include Cuba (Medicine), and Brazil (Agriculture), as well as other initiatives and institutional mechanisms applied in Africa (NM-AIST), Asia (ECO), and the Middle East (ESCWA).

COMSATS' Science Diplomacy efforts since its creation in 1994 were also highlighted, which included important interactions and active liaison with the diplomatic missions in Pakistan and other Member States, and joint research programme, entitled COMSATS' International Thematic Research Groups.

Dr. Qureshi concluded his lecture with two proposals from COMSATS for urging the Government and other relevant institutions of Pakistan; one appointment of a Science and Technology Advisor to

the Prime Minister of Pakistan, and the other institutionalizing 'Grand Challenges Pakistan' for identifying and addressing major issues of Pakistan and working out their practical solutions through Science and Technology. It was noted that Canada, India, Israel, Thailand, Ethiopia, Brazil, Japan, China, as well as Africa are already benefitting from such initiatives taken by governments or independent organizations. Such programmes, it was noted, should be emulated to have targeted solutions for specific issues of the countries based on indigenous existing or improvised means.

The lecture was followed by a questions and answers session that had participation from individuals belonging to various fields of specialization and backgrounds, including, biosciences, mathematics, physics, chemistry, management sciences, environment, and public policy.

'Biosurveillance: Science Needs for Microbial Forensics'

A lecture on Biosurveillance: Science Needs for Microbial Forensics' was arranged on April 19, 2016, at COMSATS Secretariat, Islamabad, Pakistan and was delivered by Dr. Habib Bokhari, Professor of Microbiology & Immunology at the Department of Biosciences, COMSATS Institute of Information Technology (CIIT), Islamabad. It was attended by Faculty members and students from Biosciences Department, CIIT; Faculty

Development Academy (FDA), CIIT; Attaur-Rahman School of Applied Biosciences (ASAB), National University of Science and Technology (NUST); Islamic International Medical College (IIMC), Riphah University; Shaheed Zulfiqar Ali Bhutto Medical University; Abasyn University; as well as representatives from National Veterinary Lab, Islamabad; Pathology Department of Pakistan Institute of Medical Sciences (PIMS); and COMSATS Secretariat.

The lecturer emphasized at increasing awareness on microbial forensics among the members of the larger scientific communities. He elucidated the major issues to be addressed for global development of the science of microbial forensics, including the fundamental understanding of microbial forensics, relationship between microbial forensics, public health and biosurveillance, unprecedented genomic diversity, factors responsible for emergence and reemergence of infectious diseases, and history of biological warfare from 6th Century B.C till date.

He briefed the participants about the Epidemiologic Triad of disease causation, consisting of host, pathogens and environment. He informed that the role of an epidemiologist is to break at least one of the sides of the triangle, disrupting the connection between the environment, the host, and the pathogen for stopping the



propagation of disease. It was explained that incidents of recent outbreaks around the globe of infectious diseases could take a huge economic toll on countries. A number of examples of such losses included that of SARS with economic tolls of US\$ 40-50 billion worldwide; foot-and-mouth disease (in UK), US\$ 18-25 billion; and Avian Flu, US\$ 25-30 billion. It was opined that epidemics of cross-boundary nature could also result due to strained relations among nations, such as the outbreak of mad cow disease led to a trade conflict between the USA and Canada in early 2000s.

Dr. Bokhari noted that due to low cost of production, bio-weapons/bio-terrorism would be the major threats to public well-being in 21st century. He shared the list of bio-weapons reported to have been researched, developed, and produced in 1993 by USSR, and in US Bio-weapon Programme 1945-1969. He noted that the world community has acknowledged the huge potential of biohazards to adversely affect the masses and has adopted conventions to restrict its use by means of Geneva Protocol 1925, Biological Weapon Convention 1972, and U.N. Security Council Resolution 1540 (2004).

Furthermore, he considered it important to cater to relevant scientific needs of microbial forensics. The aim should be to prevent and reduce the likelihood of outbreaks—natural, accidental, or intentional; detecting threats early to save lives; and respond rapidly and effectively using multi-sectoral, international

coordination and communication. He highlighted the role of microbiologists in identifying and responding to the infectious diseases and other biological threats and considered coordination between microbiologists, veterinarians and public health officers crucial for preparedness for the epidemics/pandemics that may emerge in future. He emphasized that establishing robust microbial forensic capabilities could enable the epidemiologists, public health policy makers, and law enforcement agencies to prevent, attribute and apprehend effectively.

During the concluding Q&A session, key observations were made on issues related to: potential of pathogens genome sequencing for pathogens source tracing, attribution, and forensics; developing metadata standards for operational biosurveillance; monitoring of poultry farming as possible source of epidemics; need to create a regulatory body to monitor concerns regarding biohazards; and necessary sensitization of the public health specialists and legislators.

'Scientific Perspective on Sustainable Development Goals for Pakistan'

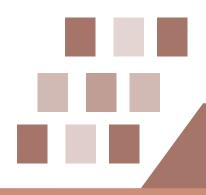
A talk on 'Scientific Perspective on Sustainable Development Goals for Pakistan', was given by Dr. Seeme Mallick from the Centre for Climate Research and Development, COMSATS Institute of Information Technology (CIIT) on 23rd May 2017. Students, academics, researchers, doctorate scholars and COMSATS' designated Science Ambassadors and other

officials attended the lecture.
The talk focused on the need for adopting clean, economic and affordable energy mechanisms to address several development issues facing Pakistan and other COMSATS Member States.

Dr. Mallick reviewed SDGs in the context of Pakistan. She opined that each SDG has its own significance for Pakistan, which mainly include: No Poverty; Zero Hunger; Good Health; Quality Education; Gender Equality; Clean Water and Sanitation; and Reduced Inequality. She considered that success of the SDGs was positively correlated to a nation's advancement in science and technology.

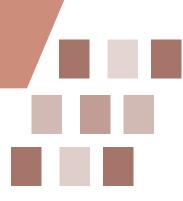
Dr. Mallick considered COMSATS as the right forum to design a plan for Science and Technology-based approach for the implementation of SDGs in its Member States including Pakistan.

Later, the participants shared their thoughts on efficient use of renewable energy; need for action plan at national and regional levels for achieving the SDGs; involvement of science-based institutions; prioritization of SDGs based on local needs and resources; need for development of common fund for helping the resource-constrained countries; effect of China Pakistan Economic Corridor on energy development; need to raise awareness on relevant issues; and on the use of 'reverse metering' to help optimize the available energy within the power systems without damaging the grid.



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PUBLICATIONS AND INFORMATION DISSEMINATION

Information dissemination through publications is an important mechanism of outreach for COMSATS, which is done through four major tools: bimonthly Newsletter, bi-annual journal 'Science Vision', COMSATS' Series of S&T Publications and COMSATS' official website, apart from other promotional material. From time to time, COMSATS also collaborates with different institutions to bring out joint publications.

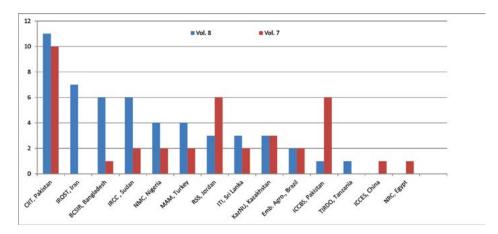
COMSATS Newsletter

COMSATS Newsletter has been the most effective tool regularly used for information dissemination during the last few years. Up till the end of 2016, a total of 47 issues of the newsletters have successfully kept the stakeholders abreast of COMSATS' activities and aspirations.

Most prominently, the Newsletter includes an editorial by the Executive Director COMSATS, and updates on activities of COMSATS Secretariat and COMSATS Centres of Excellence. In addition, it contains sections on science and technology indicators of Member States;



opinion articles; Science, Technology and Development section; profile of member COMSATS Technical Advisory Committee; and COMSATS brief and announcement of the upcoming events.



In 2016, the last issue of 7th volume (2015) and five issues of 8th volume (2016) of COMSATS Newsletter were published. All the six issues covered the highlights of the activities of COMSATS Secretariat as well as its Centers of Excellence. The following reports were covered in the 8th Volume:

- Workshop on Biosafety and Biosecurity;
- 19th Meeting of COMSATS Coordinating Council;
- International Conference and Exhibition on RETs (ICERET-2016); and
- COMSATS International Capacity Building events in Morocco, Malaysia and Iran

The special section in the last issue of Volume 7 covered Second International Workshop on 'Applications of ICTs in Education, Healthcare and Agriculture', held in Rabat.

The section on 'Science and Technology Indicators of Member State' was continued during 2016. This section highlighted the social, economic and scientific standings of a particular member country with respect to its potential. The brief analyses on

various aspects is done based on data from credible sources, such as the World Bank, World Fact Book and United Nations Development Program (UNDP). In the last issue of volume 7, a brief profile of Iran was also given. In the 8th volume, the following countries were included: Jamaica, Senegal, Palestine, Morocco, and Pakistan. The profile of Pakistan was presented along with an interview of Mr. Fazal Abbas Maken, the Federal Secretary, Ministry of Science and Technology, Government of Pakistan.

Under the section on COMSATS'
Centres of Excellence, the activities and achievements of the centres for the year were included, which were derived from the material shared by the respective centres and from web search. The news covered during the period related to important collaborations; events organized; establishment and enhancement of facilities; services provided; appointments, awards and achievements; important visits and exchanges; research undertakings; and work on important projects.

The Opinion Articles by different authors presented meaningful views on various issues, such as intellectual property and innovation; energy and poverty; science diplomacy in the middle east; enquiry based science education; synthetic biology; and microbial forensics.

The news covered in the section 'Science, Technology and Development', inter alia, pertained to advancements in biofuel production, silicon microchips, drug discovery, anti-venom for snakes, seismic and rain forecast applications, quantum computing; and innovations such as moth allergy detection kit and drug delivery with drones.

The last issue of 2015 and the first two issues of 2016 featured the profiles of the following heads of Centers of Excellence: Professor Dr. Ahmad Ghrabi, Director General CERTE, Tunisia; Dr. Fathollah Moztarzadeh, President Iranian Research Organization for Science and Technology (IROST), Iran; and Mr. Md. Nazrul Islam, Chairman Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh. In latter issues of the Newsletter, this section was replaced with profiles of Member COMSATS Technical Advisory Committee, which focused on Professor Datin Paduka Khatijah Yusoff, Dean Faculty of Biotechnology and Biomolecular Sciences, Universiti Putra Malaysia (UPM), Malaysia; Professor Dr. El – Beltagy, Adel ElSayed Tawfik, Chairperson International Dryland Development Commission (IDDC); and Professor Arid Land Graduate Studies Research Institute; Egypt; and Professor Mohamed Hag Ali Hassan, Executive Director (interim), The World Academy of Sciences (TWAS), Italy.

The Newsletter is widely distributed to all the member countries, COMSATS' Centres of Excellence and other related organizations.



COMSATS' Journal, 'Science Vision'

Cognizant of the importance of exchange of scientific information, COMSATS utilizes the journal, Science Vision, as a medium to reach out to scientists in the developing countries with useful scientific information and research.

During 2016, Volume 21 (1&2) was finalized by including 8 papers on different themes like nuclear paradigm, environment, innovation, materials science, and sustainable development goals. In-house processing and invitations for more papers are at hand. A regular call for contents is included in COMSATS Newsletter.

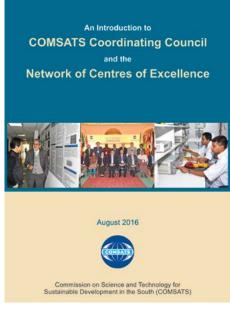
An Introduction to COMSATS Coordinating Council and the Network of Centres of Excellence

Success of COMSATS' operations greatly depends on appreciation of its different organs, especially on part of decision maker and political leaderships of COMSATS Member States. COMSATS' Network and Coordinating Council represent the active technical machinery of the organization, which hinges on the

patronage of the governments of Member Countries.

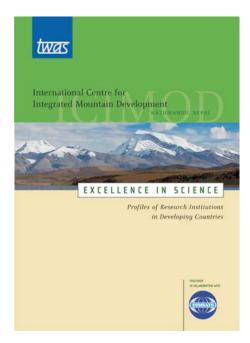
In this regard, a publication, entitled 'An Introduction to COMSATS Coordinating Council and the Network of Centres of Excellence' was brought out in 2016. The informative document contains consolidated information on background, scope, history, and manpower and expertise available in the Network. The document also contains profiles of Network institutions, as well as the Members of the Coordinating Council.

The document is available on COMSATS' website for information of all concerned.



COMSATS – TWAS 'Excellence in Science': International Centre for Integrated Mountain Development (ICIMOD)

COMSATS is open to collaborations in publications based on shared values and ideas. In this regard, COMSATS and TWAS have been collaborating for publishing profiles of scientific institutions in developing countries under the name 'Excellence in Science' since 2010. The third publication under the collaboration



covering 'International Centre for Integrated Mountain Development, Kathmandu, Nepal', was brought out in 2016. The content was compiled and edited by TWAS, whereas it was published by COMSATS as per mutually agreed specifications.

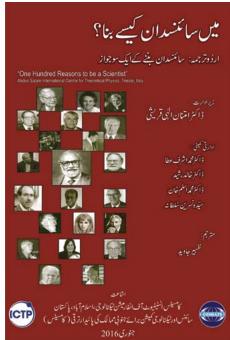
Both the organizations uploaded the new booklet available on their official websites on a devoted web-page. One thousand copies were printed in Islamabad, Pakistan; out of which 700 were directly dispatched to TWAS (Trieste). Other recipients of the publication included COMSATS' Focal Ministries and Centres of Excellence, as well as S&T institutions in Pakistan.

One Hundred Reasons to be a Scientist – (Urdu Version)

COMSATS Secretariat formally launched the Urdu version of Book 'One Hundred Reasons to be a Scientist' in second half of 2016. The translation was completed with the help of a panel of 20 specialists in four years under the overall editorship of Executive Director COMSATS. The book compring 91 chapters is available on COMSATS' official website. The translation was supported by Pakistan's

National Language Promotion Department (NLPD).

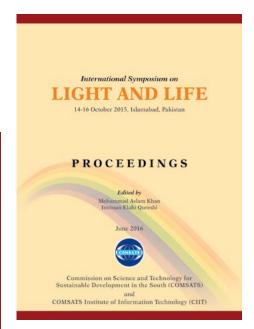
The launching ceremony was presided over by former Rector International Islamic University Islamabad and renowned Literary Critic, Prof. Fateh Muhammad Malik, on 18th August 2016, and attended by more than 100 students and scholars from scientific, academic and literary circles.



COMSATS' Series of Publications on Science and Technology

In 2015, COMSATS jointly organized an event to observe UNESCO's International Year of Light and Light-based Technologies, under the title International Symposium on Light and Life. With COMSATS Institute of Information technology (CIIT) as the host, the event was organized in collaboration with Abdus Salam International Center for Theoretical Physics (AS-ICTP), Trieste (Italy); Ministry of Science & Technology, Government of Pakistan; Higher Education Commission, Islamabad; Pakistan Academy of Sciences,

Islamabad; and National Testing Services (NTS), Islamabad, National Center for Physics (NCP), Islamabad and COMSTECH Secretariat, Islamabad.



The event resulted in generating content of great intellectual worth relating to various topics covered in the symposium. Based on the quality of the work presented, it was decided to bring out the proceedings of this event, to which COMSATS Secretariat agreed to collaborate with CIIT to publish the proceedings under its series of S&T publications. The proceedings have since been finalized with the help of COMSATS Secretariat officials, inter alia, comprising eleven plenary and invited talks, two contributed talks, abstracts of all other papers presented at the symposium, as well as lists of titles of the poster presentations. The book is presently at the final stages of publication.

COMSATS' Website

The official website was updated regularly in 2016 for uploading up-to-date information on various undertakings and related aspects of the Organization. In this regard, announcements about the events, informational material, contact information and reports of activities were



regularly added on the website. Moreover, PDF versions of all the publications of COMSATS including the Newsletter, Annual Report and Science Vision, joint publications were uploaded on the website for wider access.







10

Financial Affairs of COMSATS

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FINANCIAL AFFAIRS OF COMSATS

COMSATS Secretariat administers the annual grant by the Government of Pakistan for meeting the recurring expenditure of the Secretariat, besides Annual Membership Contributions received from COMSATS' Member States, as well as COMSATS Endowment Fund.

Accounts and Audit

The accounts of COMSATS Secretariat are maintained by the Organization's Finance and Accounts Department according to International Accounting & Financial Standards. The financial year of COMSATS Secretariat begins from 1st July and ends on 30th June of the succeeding year. After closing of the accounts on 30th June every year, the accounts are audited by a reputed chartered accountancy firm. The audited accounts, along with Auditors' Report, are submitted to COMSATS' Management Committee for endorsement and the Coordinating Council for approval.

M/s. HLB IJAZ TABUSSUM & CO., Chartered Accountants, were engaged to conduct audit of the accounts for the financial year that ended on June 30, 2015. The Auditors' Report and Audited Financial Statements for the year ending on June 30, 2015, were approved by the Coordinating Council of COMSATS

during its 19th meeting, on May 17-18, 2016, in Islamabad, Pakistan, which are presented in this report.

Contributions of Member States

The voluntary contributions of Member States are kept as a trust fund and utilized to support technical activities and programmes of in the contributing country. During the year 2016, COMSATS received Annual Membership

Table: Annual Membership Contribution				
Country Name	Amount			
Pakistan	US\$ 20,000/-			
China	US\$ 20,000/-			
Jordan	US\$ 5,000/-			
Kazakhstan	US\$ 20,000/-			
Nigeria	US\$ 10,000/-			
Sri Lanka	US\$ 20,000/-			

Contributions (AMC) from six Member States as shown in the table. In addition to the AMC, the Government of Pakistan also contributes PKR 40 million (~US\$ 400,000) per annum towards the running expenditures of COMSATS Secretariat based in Islamabad, Pakistan.

COMSATS' Endowment Fund

The Ministry of Finance, Government of Pakistan, released US\$ 0.1 Million equivalent of PKR 10 Million as seed money to establish COMSATS' Endowment Fund. Request for release of the remaining amount, i.e., US\$ 0.9 Million has been made to the said Ministry. The Ministry subjected the release of the remaining amount to provision of notified copy of the Endowment Fund Rules in the Gazette of Pakistan, which have since been submitted to the Ministry of Law, Justice and Human Rights for vetting, which is in progress.

303 - Sawan Road, G 10/1, Islamabad-Pakistan, Tel: +92 (51) 235 48 01-03 Fax: +92 (51) 235 48 00

Email: admin@hlbitc.com www: hlbitc.com

Chartered Accountants

Other Offices: Gujranwala (Pakistan) Kabul (Afghanistan)

INDEPENDENT AUDITORS' REPORT TO THE COORDINATING COUNCIL

We have audited the accompanying financial statements of COMSATS Secretariat ("the Secretariat") which comprise of balance sheet as at June 30, 2015 and the income and expenditure account, the statement of changes in fund and the cash flow statement for the year then ended and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

The Secretariat's management are responsible for the preparation and fair presentation of these financial statements in accordance with the approved Accounting and Financial Reporting Standards for Medium Sized Entities (MSEs) issued by the Institute of Chartered Accountants of Pakistan, and for such internal control as the Secretariat's management determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to error or fraud.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the approved auditing standards as are applicable in Pakistan. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by Secretariat's management as well as evaluating the overall presentation of the financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

We conducted our audit in accordance with the generally accepted auditing standards. These standards require that we plan and perform our audit to obtain reasonable assurance about whether the above said statements are free of any material misstatements. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the above said statements. An audit also includes assessing the accounting policies used and significant estimates made by the Secretariat's management, as well as, evaluating the overall presentation of the above said statements. We believe that our audit provides a reasonable basis for our opinion.



Opinion

In our opinion, the financial statements give a true and fair view of the financial position of COMSATS Secretariat as at June 30, 2015 and its financial performance and its cash flows for the year then ended in accordance with the approved Accounting and Financial Reporting Standards for Medium Sized Entities (MSEs) issued by the Institute of Chartered Accountants of Pakistan.

Other Matters

The financial statements of the Secretariat for the year ended June 30, 2014, were audited by another firm of chartered accountants, who expressed an unmodified opinion on these financial statements, on December 2, 2014.

ISLAMABAD DATE: 23-8-28-6 HER Joz Toburn & CO.
Chartered Accountants
IJAZ AKBER-FCA

COMMISSION ON SCIENCE AND TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT IN THE SOUTH (COMSATS) SECRETARIAT BALANCE SHEET AS AT JUNE 30, 2015

	Note	2015 Rupees	2014 Rupees
NON-CURRENT ASSETS		Atapets	Trupees
Property and equipment	4	32,492,270	33,286,217
Investment property	5	824,347	867,734
Investment in Joint Venture	6	477,405	531,224
Long term loan	7	51,779,972	56,010,557
Long-term security deposits		593,351	600,851
- S - 2 7 N	_	86,167,345	91,296,583
CURRENT ASSETS			
Advances and prepayments	8	5,288,517	4,445,759
Short-term investments	9	45,047,117	34,735,929
Current portion of long term loan	7	2,700,000	1,800,000
Other receivables	10	4,582,204	4,350,860
Cash and bank balances	11	25,643,379	30,448,643
		83,261,217	75,781,191
TOTAL ASSETS	_	169,428,562	167,077,774
FUNDS AND RESERVES			
Technical assistance fund	12	32,000,000	32,000,000
Accumulated surplus		78,741,681	83,145,479
NON-CURRENT LIABILITIES		110,741,681	115,145,479
Deferred grants	13	36,965,459	33,785,687
Deferred liabilities	14	16,819,672	
Deferred nationales	14	53,785,131	13,335,383 47,121,070
CURRENT LIABILITIES		55,765,151	47,121,070
Creditors, accrued and other liabilities	15	4,901,750	4,811,225
	_	4,901,750	4,811,225
TOTAL FUNDS AND LIABILITIES	=	169,428,562	167,077,774
CONTINGENCIES AND COMMITMENTS	16		

The annexed notes from 1 to 22 form an integral part of these financial statements.

EXECUTIVE DIRECTOR

COMMISSION ON SCIENCE AND TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT IN THE SOUTH (COMSATS) SECRETARIAT INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED JUNE 30, 2015

	Note	2015 Rupees	2014 Rupees
INCOME			
Grant income	17	40,641,678	40,675,450
Other income	18	18,881,759	14,659,713
	_	59,523,437	55,335,163
EXPENDITURE	_		
Administrative expenses	19	63,896,317	56,636,960
Finance cost		30,918	21,995
	-	63,927,235	56,658,955
(DEFICIT) / SURPLUS FOR THE YEAR	_	(4,403,798)	(1,323,792)

The annexed notes from 1 to 22 form an integral part of these financial statements.

DEPUTY DIRECTOR (F&A)

EXECUTIVE DIRECTOR

LIST OF FOCAL POINTS IN COMSATS' MEMBER STATES

H.E. Mr. Yeafesh Osman

Minister

Ministry of Science and Technology

Dhaka, Bangladesh.

H.E. Prof. Wan Gang

Minister

Ministry of Science and Technology,

Beijing, China.

Dr. Yaneth Giha Tovar

Director General

The Administrative Department of Science,

Technology and Innovation - COLCIENCIAS

Bogotá D.C., Colombia.

H.E. Prof. Dr. Ashraf El-Shihy

Minister

Ministry of Higher Education and Scientific Research

Cairo, Egypt.

H.E. Dr. Badara Joof

Minister

Ministry of Higher Education, Research, Science and

Technology

Kotu, The Gambia.

H.E. Prof. Dr. K. Frimpong Boateng

Minister

Ministry of Environment, Science, Technology and

Innovation

Accra, Ghana.

H.E. Dr. Mohammad Farhadi

Minister

Ministry of Science, Research and Technology

Tehran, Iran.

Hon. Dr. Andrew Wheatley

Minister

Ministry of Science, Technology, Energy and Mining Jamaica, West Indies.

Dr. Khaled Elshuraydeh

Secretary General

Higher Council for Science and Technology (HCST)

Amman, Jordan.

H.E. Mr. Sagada Yerlan Kenzhegalievich

Minister

Ministry of Education and Science

Astana, Kazakhstan.

Mr. Jang Chol

President

State Academy of Sciences

Pyongyang, Korea, D.P.R.

H.E. Dr. Jamila El Moussali

Acting Minister

Ministry of Higher Education, Scientific Research and

Training

Rabat, Morocco.

Mrs. Belema Wakama

Permanent Secretary

Federal Ministry of Science & Technology

Abuja, Nigeria.

Mr. Fazal Abbas Maken

Federal Secretary

Ministry of Science and Technology

Islamabad, Pakistan.

H.E. Dr. Sabri Saidam

Minister

Ministry of Education and Higher Education Ramallah, Palestine

Hon. Fortunato T. De La Peña

Secretary

Department of Science and Technology (DOST) Manila, Philippines.

Hon. Mary Teuw Niane

Minister

Ministère de l'Enseignement Supérieur, des Universités, des Centres Universitaires Dakar, Senegal.

Hon. Susil Premajayantha

Minister

Ministry of Technology, Technical Education and Employment (MOTTEE) Colombo, Sri Lanka.

H. E. Dr. Tahani Abd Allah Atia

Minister

Ministry of Science and Communications Khartoum, Sudan.

H.E. Dr. Atef Nadav

Minister

Ministry of Higher Education Damascus, Syria.

H.E Prof. Makame M. Mbarawa

Minister

Ministry of Communication, Science and Technology Dar es Salaam, Tanzania.

Prof. Slim Khalbous

Minister

Ministry of Higher Education and Scientific Research Tunis, Tunisia.

Dr. Peter Ndemere

Executive Secretary Uganda National Council for S&T Kampala, Uganda.

Hon. Prof. Jonathan Moyo

Minister

Ministry of Higher and Tertiary Education, Science and Technology Development Harare, Zimbabwe.



Mr. Md. Faruque Ahmed Chairman BCSIR, Bangladesh



Dr. Gustavo Ribeiro Xavier Director General Embrapa Agrobiologia, Brazil



Prof. Lin Zhaohui Director ICCES, China



Dr. Eduardo Posada F. Director CIF, Colombia



Prof. Dr. Ashraf Shaalan President NRC, Egypt



Prof. Dr. Victor Agyeman Director-General CSIR, Ghana



Dr. Fathollah Moztarzadeh President IROST, Iran



Mr. Charles N. Grant Director General ICENS, Jamaica



HRH Princess Sumaya bint El Hassan President RSS, Jordan



Prof. Dr. G. M. Mutanov Rector KazNU, Kazakhstan



Prof. Stephen E. Onah Director/Chief Executive NMC, Nigeria



Prof. Dr. M. Iqbal Choudhary Director ICCBS, Pakistan



Prof. Dr. Raheel Qamar Rector CHT, Pakistan



Dr. G.A.S. Premakumara Director General ITI, Sri Lanka



Dr. Widad Hassan Abdel Halim Hassan Director General IRCC, Sudan



Prof. Ibrahima THIOUB Rector/President UCAD, Senegal



Dr. Maher Suleiman Director HIAST, Syria



Prof. Mkumbukwa Madundo Angelo Mtambo Director General TIRDO, Tanzania



Prof. Ahmed Ghrabi Director General CERTE, Tunisia



Dr. Orkun Hasekioglu President TUBITAK MAM, Turkey









ICCES-China



CIF-Colombia



NRC-Egypt



IROST-I















CIIT-Pakistan



UCAD-Senegal













COMSATS Secretariat Shahrah-e-Jamhuriat, G-5/2, Islamabad - 44000, Pakistan

Tel: (+92-51) 9214515-17, Fax: (+92-51) 9216539

E-mail: programs@comsats.org, URL: www.comsats.org