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



The Executive Director COMSATS and Rector CIIT with the Participants of the First Meeting of Thematic Research Group on ICTs

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From the Executive Director's Desk

COMSATS is on the move. Two countries, Iraq and Turkey, both with strong traditions of academic excellence but having very different levels of S&T capacity at present, have conveyed the concurrence of their governments to join COMSATS as Member States. The notifications in this respect were received by COMSATS Secretariat through the Ambassadors of relevant countries in Pakistan.

Iraq is ravaged by a 'war of choice'. It has to re-build its institutions and re-organize its society after years of mayhem. Iraq needs to be supported by all nations as they owe a lot to Iraq for its historical role as the 'cradle of civilization'. The fountains of knowledge and scholarship that flowed through the 'House of Wisdom' in Baghdad, for almost five hundred years, have nurtured the movements of enlightenment all over the world. Iraq's natural resources and the entrepreneurship of its people can, yet again, make this country a power-house of technological developments. Turkey, on the other hand, enjoyed economic stability and institutional consolidation over a fairly long period of time, especially during the last decade, leading to a robust socio-economic set-up. With its glorious past of leadership in learning, deep cultural roots in Asia and its present status of a newly industrialized country, Turkey is an ideal destination for scientific exchanges. With Turkey and Iraq expected to sign accession agreements in near future, COMSATS is confident of its enhanced role as a facilitator of South-South cooperation in different fields of Science and Technology that have a direct bearing on the overall socio-economic development in its Member States.

No less significant is the proposal of Bangladesh, an esteemed Founder Member of COMSATS, offering one of its largest and most prestigious R&D organizations, the Bangladesh Council of Scientific and Industrial Research (BCSIR), to become a part of the Network of International S&T Centres of Excellence of COMSATS. As underlined in all COMSATS' publications, the real strength of this organization lies in its affiliated Centres of Excellence, which are potentially the most effective resource of scientific and technological cooperation among COMSATS' Member Countries. Once the formalities of joining the Network are completed, it is earnestly hoped that BCSIR will most actively engage in the scientific exchange-programmes with other Centres of Excellence of COMSATS. The forthcoming meeting of the Coordinating Council (May 26-27, 2011), no doubt, will take note of these developments and guide COMSATS Secretariat to make the best use of new opportunities.

All the plans and policies of COMSATS are open for public debate. In particular, we offer the pages of this Newsletter for receiving creative ideas from our readers for us to make our programmes more focused and result-oriented.

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NEWS/ACTIVITIES/HIGHLIGHTS FROM COMSATS SECRETARIAT

FIRST MEETING OF COMSATS' THEMATIC RESEARCH GROUP ON ICTs

The first meeting of COMSATS' Thematic Research Group on 'Information and Communication Technologies (ICTs)' was held in Islamabad on 19-20 April 2011. The meeting was hosted by the COMSATS Institute of Information Technology (CIIT), which is also the Lead Centre of the Group. The institutions represented in the meeting were: CIIT-Pakistan; National Mathematical Centre (NMC) - Nigeria; Royal Scientific Society (RSS) - Jordan; and Universiti Teknologi Malaysia (UTM) - Malaysia. During the two-day event, the participating institutions deliberated on initiating collaborative projects in the field of ICTs and its technical and administrative aspects. The meeting was inaugurated on April 19, 2011, at the Islamabad Campus of CIIT. Twenty-one participants from Jordan, Malaysia, Nigeria, and Pakistan attended the inaugural session of the meeting.

In his Inaugural Address, the Executive Director COMSATS, Dr. I.E. Qureshi, pointed out that COMSATS has a versatile and vibrant Network of sixteen R&D organizations in different developing countries, which provides a strong technical base to promote South-South cooperation in S&T. "The present Thematic Research Group meeting" Dr. Qureshi said, "is aimed at developing an ICT-based research theme that would be beneficial for all participating countries. The concept of such a group-activity will serve the purpose of South-South cooperation, create opportunities of technology-sharing and enable successful completion of projects through cooperative efforts".



E.D. COMSATS Addressing the Participants of the Thematic Research Group Meeting on ICTs

The Technical Session of the meeting commenced with a Keynote Speech by the Group Leader, Dr. Sajjad Mohsin, Dean Faculty of Information Science and Technology (FIST) of CIIT, who shed light on topics relating to the theme of the Group. Presentations on 'WiFi Networks'; 'Precision Agriculture'; and 'e-Learning', were made by three officials of CIIT. These presentations were followed by short presentations by the representatives of other participating institutions, who highlighted the objectives and strengths of their organizations. These representatives were: Dr. Abdul Hanan Bin Abdullah, Dean Faculty of Computer Science & Information Systems, UTM; Mr. Oladejo Olutunji, Principal Programmer (MIS), NMC; and Mr. Shadi Tawafiq El-Asasfeh, Computer Systems Analyst, RSS. These presentations helped in identifying areas of mutual interests in the field of ICTs and highlighted the relevant potential of the participating institutions.

A consensus was built as to the title of the joint research project: 'e-Solutions for Community Using Low-cost WiFi'. In order to ratify the Group-members' compliance to their obligations towards the joint project and membership of the Group, a Memorandum of Understanding (MoU) was distributed among the representatives, to be signed by the Heads of the participating institutions/organizations. On the second day of the meeting, a short visit was paid by the Federal Minister for Science and Technology, Government of Pakistan, H.E. Mir Changez Khan Jamali to CIIT. The Minister expressed his appreciation over the efforts being made by COMSATS, CIIT and other members of the Group to embark upon a joint research-activity.

BCSIR-BANGLADESH TO JOIN COMSATS' NETWORK

As a continuous effort to expand its membership, COMSATS has vigorously pursued the matter of inclusion of more scientific institutions in its Network of International S&T Centres of Excellence from the developing countries, in general, and Member States, in particular.

The Ministry of Science and Information & Communication Technology (MoSICT), Government of Bangladesh, has recently nominated the Bangladesh Council of Scientific and Industrial Research (BCSIR) to become a part of COMSATS' Network. In this regard, detailed meetings were held between the Executive Director COMSATS and the Minister of Education, Government of Bangladesh, H.E. Mr. Nurul Islam Nahid during 5th Islamic Conference of Ministers of Higher Education and Scientific Research (ICMHESR) - Kuala Lumpur (October 2010), and Mr. Abdur Rob Howlader, Secretary MoSICT, during the 14th General Assembly Meeting of COMSTECH - Islamabad (January 2011). Later, correspondence was exchanged with the State Minister MoSICT, H. E. Mr. Yeafesh Usman. The case of BCSIR-Bangladesh to become COMSATS' Centre of Excellence would be submitted to the Coordinating Council for its consideration and appropriate decision, during its 14th Meeting to be held in Colombia.

COMSATS PARTICIPATES IN THE 'STAKEHOLDERS CONFERENCE ON STIP - 2010'

The Stakeholders Conference on Science, Technology and Innovation Policy (STIP) - 2010 was organized by the Ministry of Science and Technology (MoST), Government of Pakistan, on April 28, 2011, in Islamabad, Pakistan. The

Conference was presided over by the Minister for Science and Technology, H.E. Mr. Changez Khan Jamali. Apart from the Federal Secretary and other senior officials of MoST, the Conference was attended by representatives of various Federal and Provincial Ministries, Government Departments, and public R&D organizations of Pakistan.

In his Inaugural Address, the Federal Minister accentuated the need for addressing challenges relating to socio-economic progress through advancement in scientific R&D. Emphasizing the importance of preparing a new National STIP, the Federal Secretary recalled the stages the Policy document underwent over the last couple of years and hoped for meaningful deliberations during the working session, leading to further refinement of the draft Policy. The Executive Director COMSATS gave a detailed presentation on various technical aspects of the draft Policy and answered the queries and comments of the participating stakeholders. Moreover, he asserted that the success of the Policy would depend on its effective implementation and monitoring, for which a number of improvements in the existing planning and management structure of science and technology were proposed.

The Conference achieved its objectives as inputs from all the stakeholders were collected for incorporation in the draft Policy by the Review Committee.

AFGHAN DELEGATION VISITS COMSATS SECRETARIAT

A group of academicians from Afghanistan visited COMSATS Secretariat on March 23, 2011, and held a meeting with the Executive Director COMSATS and Rector CIIT, Dr. S. M. Junaid Zaidi. The delegation comprised Prof. M. Hassan Rashedi (Ministry of Higher Education, Government of Afghanistan), Prof. Zalmai Zaheeb (Kabul University), Mr. M. Atiq Mamozai (Kabul Education University), Prof. Dr. Del Aqa Waqar (Nangarhar University), and Prof. Dr. Abdul Qayuom and Prof. Homa Khalid (Kabul Polytechnic University). Also present in the meeting were other senior officials of COMSATS, CIIT, and COMSTECH.

The Executive Director COMSATS briefed the Afghan delegation about COMSATS and its major programmes and projects. Also, Dr. Qureshi made a reference to COMSATS' previous correspondence with Head of Foreign Relations and International Affairs, Afghanistan's Ministry of Higher Education, regarding offer to join COMSATS as a member country. It was agreed that the matter of Afghanistan's membership to COMSATS will be pursued through

Pakistan's Ministry of Foreign Affairs. Moreover, it was suggested that Afghanistan may immediately initiate collaboration with COMSATS through nominating some of its relevant scientific institutions for participating in COMSATS' Thematic Research Groups; nominating its scientists/researchers for participating in COMSATS' scheduled scientific events in its Member States; and nominating researchers/scientists for receiving short-term trainings at COMSATS' Centres of Excellence. The Rector CIIT made an offer of 50 postgraduate scholarships for students from OIC Member Countries, of which Afghanistan is also a member.

30TH MEETING OF COMSATS' MANAGEMENT COMMITTEE

The Management Committee that assists the Executive Director COMSATS for running the administrative and financial affairs of COMSATS Secretariat met on the 30th March 2011, at COMSATS Secretariat, and deliberated over a 9-point agenda. The Committee Meeting was chaired by

the Executive Director COMSATS. Mr. Asim S. Husain, CEO COMSATS Internet Services (CIS), and Mr. Zhang Shilin, Science Attaché at the Chinese Embassy in Islamabad, attended the Committee meeting for the first time as its members, replacing Mr. Parvez Ahmad Butt and Mr. Zhang Qi, respectively.

During the meeting, important activities of COMSATS Secretariat that had taken place since the Committee's last meeting were reviewed. These activities included Executive Directors' international visits for expansion and assessment of the

potential of COMSATS' Network of Centres of Excellence; campaign for COMSATS' Membership; participation in the 5th Islamic Conference of Ministers of Higher Education and Scientific Research (ICMHESR) and 14th General Assembly meeting of COMSTECH; as well as preparations in connection with the 14th Coordinating Council meeting to be held in Bogotá, Colombia, and 2nd Commission Meeting. The Director General (International Affairs) COMSATS presented COMSATS' Annual Activity Report 2010-11, while Dr. S. M. Junaid Zaidi and Mr. Asim S. Husain made presentations on the progress and activities of CIIT and CIS, respectively. Besides deciding upon matters relating to organization of the 2nd Commission Meeting, the membership of CIIT's Board of Governors and the publication of bi-annual journal, Science Vision, the Committee expressed satisfaction over the administrative and financial affairs of COMSATS Secretariat.



Officials of COMSATS Secretariat in a Meeting with the Afghan Delegation

ACTIVITIES/NEWS OF COMSATS' CENTRES OF EXCELLENCE

CIIT EXPLORES COOPERATIVE TIES WITH OIC AND IDB

A delegation of COMSATS Institute of Information Technology (CIIT), comprising its Rector, Dr. S. M. Junaid Zaidi; and Registrar, Dr. Arshad S. Malik, led by the Federal Secretary, Ministry of Science and Technology, Government of Pakistan, Mr. Irfan Nadeem, visited the Kingdom of Saudi Arabia from 4th to 8th March 2011. The purpose of this visit was to hold meetings with the officials of the Organization of Islamic Conference (OIC) and Islamic Development Bank (IDB), located in Jeddah, to strengthen CIIT's cooperative ties with these organizations.

The headquarters of both OIC and IDB were visited to explore possibilities of collaboration with an aim to: Promote S&T culture in the Islamic countries; Create a provision of 50 scholarships for MS level education in selected fields of S&T and 5 fully paid research fellowship (up to 8 weeks) every year; Institute 'OIC medals' and 'IDB medals' for distinctions in undergraduate and graduate-level studies at CIIT; Sponsorship of some development projects by IDB.

The CIIT delegation also visited Dar Al-Hekma, a college of higher education for women located in Jeddah. The college offers the state-of-the-art education in arts and science to women and provides an excellent prototype to CIIT, which is planning to establish an 'All Women Campus' in Pakistan's Province, Khyber Pakhtoonkhwa. CIIT intends to initiate cooperation for female student-exchange programme as well as curriculum development with Dar Al-Hekma.

BRITISH PRIME MINISTER DELIVERS A LECTURE AT CIIT

During his one-day visit to Pakistan, on April 5, 2011, the British Prime Minister, Mr. David Cameron delivered a lecture at COMSATS Institute of Information Technology, encompassing key elements of UK policy relevant to Pak-UK relations. He touched upon a broad range of issues, while declaring that his visit to Pakistan is a 'fresh start' in the strategic engagements with Pakistan.

The Prime Minister expressed his admiration for rapid development of CIIT while maintaining good standards of education. He was pleased to learn that a premier university of UK – The Lancaster University – has started dual degree

programmes in Pakistan in partnership with CIIT. Earlier, in his welcome address, the Rector CIIT, recalled that COMSATS, which is a parent organization of CIIT, was established at the behest of Pakistani Nobel Laureate and a Professor of Imperial College (London) – Prof. Abdus Salam.

CIIT HOLDS CEPEX-2011

The Department of Electrical Engineering, CIIT Islamabad held its annual COMSATS Engineering Project Exhibition - 2011 (CEPEX-2011), on 13th and 14th April 2011. CEPEX is a national-level event, whereby students, faculty, experts and industry are provided a platform to exchange knowledge and expertise to bolster national progress in the field of engineering and technology. The event was sponsored by Islamabad Chamber of Commerce and Industry; Bank Alfalah; Pakistan Telecommunication Authority; Pakistan Technology Board and National Testing Service. Thirty universities, 27 industries and over 600 participants from all over Pakistan participated in the event.

The proceedings of the event included: project exhibition, seminars and panel discussion, as well as an Industrial Expo. At the 'Engineering Project Exhibition', students from academic institutions from across Pakistan demonstrated their skills in various fields of engineering, which included embedded systems and micro-controllers; control, automation and robotics; signal processing and biometrics; communication and networking; mobile applications; and power

and energy. The seminars delivered by the experts from the National University of Science and Technology and Pakistan Technology Board covered topics under the theme: "Use of Information Communication Technology for Industry and Rural Development".

UiTM-MALAYSIA TO COLLABORATE WITH ICCBS

A three-member delegation of University of Technology Mara, Malaysia (UiTM) led by its Vice Chancellor visited ICCBS on March 4-5, 2011. Matters of mutual interest were discussed with the Patron in Chief, Dr Atta-ur-Rahman; Director Prof. Dr. M. Iqbal Choudhary; and other faculty members of ICCBS.

The Vice Chancellor apprised the officials of ICCBS that UiTM has decided to setup a Science Centre in the name of Dr. Atta-ur-Rahman in acknowledgement of his services to



The British Prime Minister, Mr. David Cameron, delivering a lecture at CIIT, Islamabad.

S&T and higher education sectors. Dr. Atta-ur-Rahman would also be awarded a D.Sc degree by the UiTM. Moreover, during the visit, the Malaysian delegation selected students for scholars exchange programme between the two countries.

WORKSHOPS AT TÜBİTAK MRC

The Food Institute of TÜBİTAK Marmara Research Centre (MRC), in collaboration with Ministry of Agriculture and Rural Affairs, Turkey, organized a workshop on 'Fluidised Bed Technology', on March 3, 2011. Many international and national companies, food and pharmaceutical industries and related departments of universities participated in the event.

The aim of this one-day workshop was to supply theoretical and practical information related to different food industries and create a network within the food sector. During the workshop, the participants were informed about different food processing techniques, such as drying, granulation, agglomeration, coating and encapsulation, and industrial application of these techniques in 'Fluidised Bed System'.

Another workshop on National Waste Mineral-Oil was organized by the Chemistry Institute of TÜBİTAK MRC, on February 24, 2011. Presentations were made on various topics of the main theme including: 'Creating the Waste Mineral-Oil Control and Monitoring System'; 'Mineral-Oil Database System'; and 'Waste-Oil Management Studies: The Case of Germany'. A panel discussion was also conducted to elucidate the participants on matters relating to the mineral-oil industry, waste-oil collection, transportation, and recycling and disposal problems.

RSS ANNOUNCES RESULTS OF THE RESEARCH PROJECT 'SOHITCOM'

The Royal Scientific Society (RSS) announced the results of its research project "Social Health and Information Technology for the Rural Communities in Jordan" (SOHITCOM), on March 7, 2011. The results were announced during an event organized in collaboration with the Jordanian Ministry of Health (MoH) and the Jordanian Knowledge Stations, and the support of the International Development Research Center (IDRC), Canada. The project aimed at addressing the healthcare challenges in rural and urban areas through development and implementation of a system to assess the viability of the concept of social networking using Information and Communication Technologies (ICTs). The system used various means of communication, such as Internet and mobile phones to increase awareness on medical information and gain access to a wide range of users.

The first phase of SOHITCOM focused on topics relating to

motherhood, childhood and expanding healthcare services for rural communities in remote areas and to provide medical advice through ICTs. In the second phase of the project, an integrated system was developed to facilitate the registration of newborns and to remind mothers for the vaccination of the newborns using mobile phones and the especially designed dissemination system. This system was placed in five health centers in five remote areas of Jordan. The results of this project have been encouraging and beneficial in timely providing the much needed medical advice.

EVENTS ORGANIZED BY RSS

RSS-Jordan, in collaboration with the United Nations Economic and Social Commission for Western Asia (UNESCWA), organized the "Expert Group Meeting on Promotion of South-South Cooperation in Technology Transfer," on 20-21 April 2011, at the El Hassan Science City, Amman, Jordan. The meeting was held to discuss priority areas of cooperation in technology-transfer, and share best practices in terms of case studies in the areas of water, energy, agriculture, and ICTs. This activity aimed to produce a collaboration framework with multiple owners for critical technology development, management, maintenance and services.

On March 27, 2011, RSS and the Economic Development Programme of USAID in Jordan organized a three-day workshop titled 'Research & Development in the fields of Energy, Water, and Environment', at El Hassan Science City, Amman, Jordan. The event had participation from Jordan and USA. This workshop aimed to introduce the Jordanian research experts to the services of the Clean Technology Center at RSS and also to increase scientific connections with experts from USA.



SCIENCE, TECHNOLOGY AND DEVELOPMENT

OZONE LAYER AND THE CLIMATE CHANGE

The existence of ozone hole over Antarctica gained a lot of attention from every walk of life in the eighties. The popular concern was that the hole in the ozone layer allows ultraviolet radiations to freely enter Earth's atmosphere and cause several health problems. Now a study published in *Science News* (21st April 2011) has indicated that the ozone hole is also closely related to changes in weather pattern. The report says that by putting atmospheric circulation patterns further south, the ozone hole that appeared in 1980s over Antarctica, brought more rains in the south of equator. Thinning of the ozone layer causes weather patterns to shift southward across the Southern Hemisphere, bringing more rains to a band that includes eastern Australia and the south-western Indian Ocean.

The scientists used two computer simulations to model how climate would behave with and without the ozone hole, then compared those findings to the observations of tropical rainfall between 1979 and 2000. The models with the ozone hole best matched with the rainfall record for that period that saw lots of precipitation between 15 and 35 degrees south latitude. The shift happens because ozone loss causes a westerly-flowing atmospheric jet to move further south, which in turn pulls a mid-latitude band of dry air toward the south. The region near the equator, in turn, gets wetter.

The studies show that ozone hole above Antarctica needs more attention of the scientists owing to its relationship with climate change.

RENEWABLE FUEL FROM ALGAE

Science Business (1st March 2011) has reported a remarkable discovery, which entails production of butanol from algae. Butanol can be used in present-day internal-combustion engines. The technology has the added advantage that it helps cleaning and oxygenating waterways having excess nitrogen and phosphorous coming from fertilizers in agricultural runoff.

The process involves accelerated growth of algae on troughs, drying it and extracting carbohydrates from these plant cells. Later, the carbohydrates are treated with acid to convert them into sugars. These simple sugars are subjected to fermentation followed by electrodeionization leading to the production of butanol. The scientists claim that butanol has several advantages over ethanol (presently the primary additive to gasoline) as it releases more energy-per-unit-mass and can be mixed in higher concentrations than ethanol. It is also less corrosive than ethanol and can be shipped through existing pipelines. Unlike corn, the current main feed-stock for ethanol, algae are not in demand as food.

Research work is in progress in the USA for large-scale production of butanol from algae.

HARVESTING SOLAR ENERGY WITH ARTIFICIAL LEAF

An artificial leaf that can turn sunshine into electricity has been invented by scientists of MIT, USA (*SciDev.Net*, 1st April 2011). The inventors hope that they have overcome a key obstacle in making a low-cost technology that could provide the poor with energy, using just sunshine and water as inputs. The scientists have informed that a silicon leaf has been built, which is about the size and shape of a playing card. It is coated on both sides with catalysts and needs to be immersed in water to work.

When the silicon absorbs the sunlight, it transfers the energy to the catalysts that split the water into hydrogen and oxygen. The resulting hydrogen can be collected and either burned directly or converted to electricity using a fuel cell. In both cases, the by-product is water, so the leaf has the potential to create a low-cost, clean and readily available source of fuel. It is expected that this technology will be commercialized within 2-3 years.

PREDICTION OF RARE TSUNAMI EARTHQUAKES

Earthquakes followed by tsunamis have terrorized the world during the recent years. The only hope to reduce the horrors of such calamities is the reliable prediction on reasonably adequate time-scale.

Tsunami-alert systems may soon benefit from a computer-based model that predicts more accurately those earthquakes that can potentially cause large destructive tsunamis (*SciDev.Net*, 21st March 2011). These rare tsunami earthquakes rupture more slowly and cause much larger tsunami waves than more common 'subduction earthquakes' of the same magnitude, such as the magnitude 9 event of Japan on 11th March 2011, which caused waves of upto 10 meters in height.

The Georgia Institute of Technology, USA, have devised a new system, RT erg (Realtime erg), which uses data received from around 150 seismic stations on the energy radiated by an earthquake and the rate of rupture to calculate how long it takes for the earthquake's energy to build up. Using live data, RT erg identified the Sumatra earthquake as a potential tsunami earthquake in eight and a half minutes. Efforts are being made to further reduce the warning time. The inventors have observed that any earthquake processing or tsunami working centre that receives global seismic information in real time should be able to easily adopt the methodology. It is expected that this system could improve the prediction of tsunamis that take more than ten minutes to reach the shore.

PROFILE OF COMSATS' INTERNATIONAL S&T CENTRE OF EXCELLENCE

NATIONAL MATHEMATICAL CENTRE (NMC), NIGERIA

Introduction

The National Mathematical Centre (NMC) of Nigeria was established by the Federal Government of Nigeria by issuing a Decree promulgated in 1989. NMC is COMSATS' Centre of Excellence in the Mathematical Sciences, which has the following vision, mission and functions:

Vision: The Vision of NMC is to develop appropriate initiatives and resources of international standing for the re-awakening and sustaining of interest in the mathematical sciences and their applications to life and by so doing produce Specialists and Teachers in the Mathematical Sciences at all levels of educational system in Nigeria.

Mission: NMC's Mission is to become a world-class Centre of Excellence for research and training in the mathematical sciences capable of promoting the development and socio-economic impact of mathematical sciences in Nigeria, as well as using mathematical sciences to solve important scientific and technological problems.

Functions: The functions of NMC are to:

- Train and develop high-level personnel in mathematical sciences: mathematics, statistics, computer science and physics;
- Create a Resource Centre to serve national and international communities as a focal point for advanced research and training in the mathematical sciences and its applications;
- Impart a series of specialized lectures or conduct courses for the purpose of up-grading post-graduate students in the field of mathematical sciences to a level where they can begin to understand and appreciate research work in the field;
- Conduct series of research lectures for advanced post-graduate as well as post-doctoral and other participants based on a set of pre-assigned research papers, with the objective of generating questions that would be collated, discussed and used to determine new research directions for the participants;
- Encourage and support activities leading to the improvement of the teaching and learning of the mathematical sciences at A-level;
- Prepare Nigeria for a leading role in the mathematical sciences;
- Enhance collaboration among mathematical scientists, nationally and internationally;
- Attract experienced mathematical scientists to work in Nigeria.

Research and Development

The Centre has carried out several important researches in the domain of 'Mathematical Modelling' and 'Financial Risk Managements'. At present, the Centre is focusing on research

in mathematical modeling of some diseases, e.g., Filariasis, Onchocerciasis, HIV/AIDS and Malaria and the fourth-order exponentially fitted method for IVPs for ODES. etc.

The Centre has visiting programme for mathematical scientists, under which mathematical scientists can visit the Centre for a short period to work on their individual- and group-research problems, using the library, computing and other facilities of the Centre.

Capacity-Building and Talent-Discovery

The Centre organizes and hosts national and international conferences, workshops, seminars, symposia and conducts specialized research lecture series for post-graduate students, post-doctoral and other participants.

The Centre conducts 'train-the-trainers' event through specialized workshops and trainings in Mathematical Sciences and Computer Science, as outreach programme all over Nigeria. As part of its mandates, the Centre prepares and presents candidates for contests in national and international Olympiads in these sciences.

Research and scientific activities are carried out under various Schools and Institutes of the Centre. These include: School of Postgraduate Studies; School of Mathematical Studies; School of Theoretical Physics; School of Computer Science; School of Statistics; School of Mathematics Science Education; Institute of Science Education; and Olympiads Institute.

Besides these Schools and Institutes, the Centre maintains: Mathematical Science Library; Computer Laboratory; Mathematics Kits; Science Researchers' Village and Participants' Hostel.

International Collaboration

NMC in its efforts to prosecute research and scientific activities has special academic collaborations with a number of other Centres of Excellence and R&D bodies within and outside Nigeria, among which are: TWAS and AS-ICTP (Italy); AIMS (South Africa); IMPA (Brazil); NCS, AUST, RMRDC, and NASENI (Nigeria), etc.

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**SELECTED FORTHCOMING SCIENTIFIC EVENTS
IN COMSATS' COUNTRIES**

- 24-26 July 2011 4th International Conference: Environmentally Sustainable Development (ESDev-2011), Abbottabad, Pakistan
(<http://www.ciit-atd.edu.pk/esdev/>)
- 3-5 August 2011 The First International Conference on e-Technologies and Networks for Development (ICeND2011), Dar-es-Salaam, Tanzania.
(www.sdiwc.net/tn/)
- 7-11 August 2011 IASL Conference, Kingston, Jamaica
(<http://www.iasl-online.org/events/conf/2011/>)

**WORKSHOP ON INTERNET SECURITY: ENHANCING INFORMATION
EXCHANGE SAFEGUARDS**
July 23-27, 2011, Damascus, Syria

A five-day Workshop on 'Internet Security: Enhancing Information Exchange Safeguards' is being jointly organized by COMSATS and ISESCO in collaboration with their affiliated and partner organizations. The Workshop, which is aimed at training professionals working in the field of network security, will cover major aspects of information security, ranging from theoretical understanding of cryptographic algorithms to practical subtleties of networked systems. Further information on the Workshop is available on: www.comsats.org.

**INTERNATIONAL TRAINING WORKSHOP ON SCIENCE EDUCATION FOR
SUSTAINABLE DEVELOPMENT**
June 27-28, 2011, Dhaka, Bangladesh

COMSATS, in collaboration with UNESCO and the Ministry of Education, Government of the People's Republic of Bangladesh, is organizing a two-day International Training Workshop on "Science Education for Sustainable Development". The training workshop, which is focused at deliberating on ways and means to customize the curricula in order to meet the needs of sustainable development, will be held at the Bangladesh Institute of Administration and Management (BIAM), Dhaka, Bangladesh. For more information, please visit: www.comsats.org.

CALL FOR PAPERS FOR COMSATS' JOURNAL – SCIENCE VISION

Science Vision is a biannual scientific journal of COMSATS. It primarily aims at highlighting the important scientific and technological developments that have a bearing on socio-economic conditions of the people. It invites research as well as review articles that have general scientific descriptions, with comprehensive elucidation of the impact of S&T discoveries and innovations for creating understanding of the contemporary issues and challenges. COMSATS invites scholarly contributions for the Vol. 16 of its journal. Scientists, researchers, policy-makers and young scholars from S&T organizations and R&D institutions are encouraged to contribute articles on any scientific field of interest relevant to the focus of the journal. As per the policy of the journal, contributors are compensated for their time and efforts with a modest amount of honorarium. COMSATS would like to thank the authors (individuals and institutions) in all member States that have contributed to the resumption of Science Vision with their erudite scientific literary work.

For more details, please visit COMSATS' official website: www.comsats.org or the journal's website: www.sciencevision.org.pk. Contributions may be sent to the Chief Editor at: comsats@comsats.org.pk.

A BRIEF ON COMSATS

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

COMSATS, currently, has 21 countries as its members, spread across three continents, i.e., Latin America, Africa and Asia. A network, of 16 International Science and Technology Centres of Excellence, is also affiliated with COMSATS to contribute to scientific development of its Member States. For detailed information, please visit COMSATS' website: www.comsats.org.

**COMSATS NETWORK
OF INTERNATIONAL S&T CENTRES
OF EXCELLENCE**

- Centro Internacional de Fisica (CIF), Colombia
- COMSATS Institute of Information Technology (CIIT), Pakistan
- Embrapa Agrobiologia, Brazil
- Higher Institute for Applied Sciences and Technology (HIAST), Syria
- Industrial Research and Consultancy Centre (IRCC), Sudan
- International Center for Chemical and Biological Sciences (ICCBS), Pakistan
- International Center for Climate & Environment Sciences (ICES), China
- International Centre for Environmental and Nuclear Sciences (ICENS), Jamaica
- International Centre for Material Science and Technology (ICMST), Ghana
- Iranian Research Organization for Science and Technology (IROST), Iran
- National Mathematical Centre (NMC), Nigeria
- National Research Centre (NRC), Egypt
- Royal Scientific Society (RSS), Jordan
- Tanzania Industrial Research and Development Organization (TIRDO), Tanzania
- The Biosphere Reserve – Beni Biology Station (BBS), Bolivia
- TÜBİTAK Marmara Research Centre (MRC), Turkey