

Higher Education Commission, Islamabad



A View of the Head Table at the Launching Ceremony of the Translation of 'One Hundred Reasons to be a Scientist', 18th August 2016, Islamabad, Pakistan

| From the Executive Director's Desk | 01 |
|---|----|
| News/Activities/Highlights from COMSATS Secretariat | 05 |
| S&T Indicators of Member State: Morocco | 08 |
| Activities/News of COMSATS' Centres of Excellence | 10 |
| Opinion: Synthetic Biology in the Developing World: A Chance to Leap Frog in the Field of Life Sciences? | 12 |
| Science, Technology and Development | 14 |
| Profile of Member COMSATS' Technical Advisory Committee: Prof. Dr. El-Beltagy, Adel El Sayed Tawfik | 15 |
| COMSATS' Brief and Announcements | 16 |

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From the Executive Director's Desk – A Parting Message

It is time for me to say adieu to COMSATS community after a long association of eight years as Executive Director. I leave with the satisfaction of knowing that COMSATS has gone a few notches up as a prestigious international organization under my watch. The programmes and activities of COMSATS have been continuously upgrading during this period and duly shared with all stakeholders through this bi-monthly Newsletter, among other means. The publication of the Newsletter, started in 2009, was itself a new development after I took charge and has continued to date with the utmost regularity and improvements in scope and style. It has proved to be an effective show-case of COMSATS' international engagements.

The contributions to COMSATS that I was able to make during my two terms as Executive Director were duly recognized and appreciated by the honourable Members of the Coordinating Council during the 19^{th} annual meeting of the Council held in Islamabad, on $17^{th} - 18^{th}$ May 2016. The Resolution passed in this respect is reproduced on pages 2 and 3. I feel humbled by the trust shown in me

throughout my tenure by the elite scientists of developing countries, who are Council Members in their capacities as the Heads of the twenty R&D organizations that constitute COMSATS' International Network of Centres of Excellence. Without their support and encouragement, I could not have been able to discharge my responsibilities with the degree of success that is noted in the above-mentioned Resolution. This certainly does not mean that I myself or Council Members are fully satisfied with the progress made and milestones achieved. It simply means that the honourable colleagues are satisfied that the Executive Director and his team at COMSATS Secretariat did their best under prevailing conditions to achieve the aims and objectives of the organization. Any targets realized were the result of collective efforts of all COMSATS' stakeholders, and any shortcomings were noted by all with renewed resolve to improve performance. Clearly, COMSATS faces challenges, but it also has opportunities that can be utilized using the strength of its operational experience of more than twenty years and unique features of organizational structure.

It is not possible for me to present a complete SWOT analysis of COMSATS in this relatively short farewell message; however, I would like to share my thoughts on a couple of elements that are uppermost in my mind. First, we have to pay more attention to COMSATS' finances. As they say, 'money makes the mare go'. No organization can achieve much without sufficient financial resources, no matter how innovative, hard-working and dedicated its managers are. In a voluntary set-up like COMSATS, the financial support completely depends on the level of patronage of the Member States. If there is strong desire on the part of Governments to use a potent international platform to extract benefits for their S&T sectors, there should be plenty of Member States making voluntary payments. A combination of circumstances related to economic conditions, procedural requirements, policies and priorities could be attributed to the miniscule annual membership contribution offered voluntarily to COMSATS by its Member States. One could also possibly regard it as the lack of an aggressive strategy at the level of COMSATS Secretariat to tap all potential funding sources in support of its international activities. Based on this consideration, some new thinking was done and accommodated in COMSATS' Strategy for 2012-2016. The centrepiece of this strategy was to launch 'International Thematic Research Groups' under the leadership of prominent scientists from the Network Members focusing on scientific solutions of challenges faced by the Member States. The idea was to seek help from donors, who are usually more amenable to support specific scientific projects rather than making blanket contributions to the organizations promoting international scientific cooperation. The first part of this scheme worked very well, but the second part of securing funds from governments and aid agencies worked only in the case of China. The inherent utility of this approach is, however, beyond doubt and would eventually succeed in attracting international attention.

In view of the not very successful efforts to get recurring funds from Member States, an alternate approach is also in progress. As a part of COMSATS' Strategy, it was planned to get at least one-time donations, big enough to create a robust Endowment Fund that could supplement the financial inputs already at hand through the generosity of COMSATS' host country. This scheme is maturing slowly but surely, and may achieve early success if the Chairperson COMSATS decides to use his diplomatic leverage by personally approaching Heads of State/Government of Member Countries for this cause. The Secretariat has been playing its part by sending requests to the incumbent Chairperson, the honourable President of the Republic of Ghana, H. E. Dr. John Dramani Mahama, soliciting his kind support for raising an Endowment Fund of at least US \$20 M.

RESOLUTION

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

The participants of the 19th meeting of COMSATS Coordinating Council, held on 17-18 May 2016, at Islamabad, Pakistan, attended by fourteen Council Members or their representatives, wish to record their deep appreciation of the meritorious services rendered by Dr. Imtinan Elahi Qureshi as Executive Director COMSATS. The organization has achieved a higher international status because of his dedicated efforts. We recognize and duly acknowledge the following outstanding achievements of Dr. Qureshi during his tenure of eight years (2008-2016):

- Expansion of the Membership of the Commission, by virtue of the accession of the Kingdom of Morocco, the State of Palestine, and the Islamic Republic of The Gambia to COMSATS as Member States. The total number of Member States has risen from 21 to 24;
- Increase in Membership of COMSATS' Network of Centres of Excellence. During the tenure, BCSIR-Bangladesh, KazNU-Kazakhstan, ITI-Sri Lanka, CERTE-Tunisia, and UCAD-Senegal, joined the COMSATS' Network, while the Government of Morocco has also made nomination for membership to COMSATS' Network. The total number of Centres of Excellence increased from 16 to 20;
- 3. Rotation of the Chair of COMSATS after a gap of 18 years;
- 4. Organization of two General Meetings of COMSATS. The second General Meeting of COMSATS was held after a gap of 18 years;
- 5. Organization of three meetings of COMSATS Consultative Committee;
- Continuation of the regular meetings of COMSATS Coordinating Council. Eight Council meeting were held during the tenure;
- Launching of COMSATS' International Thematic Research Group (ITRG) programme. Currently, five ITRGs are working in the fields of climate change; natural products; ICTs; mathematical modelling; and agriculture, food security and biotechnology;
- 8. Launching of COMSATS' Science Diplomacy

Programme;

- 9. Launching of COMSATS' Distinguished Professorship Programme;
- 10. Launching of COMSATS' Science, Technology and Innovation Policy Panel;
- 11. Steady stream of capacity building events, in collaboration with international partner organizations, with the participation of scientists, engineers and technicians belonging to Centres of Excellence and Member States. More than 100 conferences/symposia were organized/coorganized and 13 serial workshops were held during the last eight years;
- 12. Preparation and approval of COMSATS' Strategy for the period 2012-2016;
- 13. Preparation and approval of COMSATS' Statutes;
- 14. Establishment of COMSATS' Endowment Fund;
- Effective and purposeful visits to all 20 Centres of Excellence of COMSATS in four continents, with a view to enhance their participation in the programmes and activities of COMSATS;
- Increase in the utilization of postgraduate scholarships at the COMSATS Institute of Information Technology (CIIT), Pakistan, by Member Countries;
- 17. Regular publication of COMSATS' Newsletter (new initiative), journal 'Science Vision', Annual Report (new initiative), and other information material about the organization;
- Signing of MoUs with several international and scientific organizations including UNESCO (first time);
- Increase in the grant from PKR. 20 Million to PKR. 40 Million by Government of Pakistan, for operational expenditures of COMSATS Secretariat and additional US \$20,000 for scientific activity support;
- 20. Extending support and providing guidance to expand the commercial activities and the sphere of tele-health programme under COMSATS Internet Services (CIS), while overseeing the completion of the building of a prestigious CIS Technology Park;
- 21. Performing his duties as Chairman Board of Governors of COMSATS Institute of Information Technology (CIIT) with a high degree of commitment.

The situation with respect to active participation of Member States in COMSATS' programmes is quite reasonable and the lack of cash contributions is considerably off-set by in-kind contributions and intellectual inputs. A scientific activity that COMSATS organises in a Member State is usually funded by the host country to the extent of local hospitality, administrative support, manpower involvement and intellectual contributions. Monetizing these aspects would present a much better picture of the benefits that accrue to Member States and to what extent these benefits depend on the funds provided by relevant States. However, even a monetized balance sheet for some countries clearly indicates a strong lopsidedness in favour of benefits accrued as against financial patronization of COMSATS. Hence, the argument that non-paying countries may not have been convinced that their contributions will bear commensurate rewards does not hold ground. On several occasions in my meetings with the officials of Member Countries, I have tried to make a case by claiming that giving us one dollar will be worth two dollars of benefits. In any case, the fiscal dilemma for COMSATS is there and is being partially addressed at present through increased contribution of host country, generation of funds through commercial projects, partnership and sharing of funds with international organizations, such as ISESCO, and keeping low salaries as compared to international standards, for COMSATS Executive Director and his Secretariat staff.

The second challenge for COMSATS' enhanced international impact is the publicity of its contributions to the cause of South-South cooperation and visibility of its work. The organization is certainly vibrant and dynamic, but what is lacking is its wider recognition as such. Here again, there has to be a shared responsibility of all stakeholders, and surely the Secretariat should be in the lead. The usual mechanism of achieving the desired results are already in place; we have a very informative and constantly updated website (www.comsats.org), and we print a Newsletter after every two months and get it distributed widely within the host country and to the Focal Points of Member Countries. All Ambassadors of Member States posted in Islamabad are regularly supplied multiple copies. The result is a reasonably good awareness of what COMSATS is doing, but occasions do arise, where functionaries of the governments in host country and elsewhere are found to be unaware of the role COMSATS is playing towards S&T capacity-building in their countries. The question of what more can be done in this regard is related to the following observations.

Up to this point, it was a COMSATS-specific narrative, but I would like to switch to a broader perspective and reflect on the existing state of affairs in Member States with respect

to their general progress in S&T sector. The scenario in this connection is quite mixed, not surprisingly, because the 'developing countries' are hardly a monolithic block. There are wide divergences within the group with respect to S&T strengths, political and economic conditions, policies and implementation frameworks. Thus China is way ahead in its own league and is vying to be a scientific superpower. There are other Member Countries, which are at the stage of struggling to reduce poverty through rudimentary technologies developed two centuries ago. With the exception of China and to a certain degree Iran, in almost all other countries the inadequate progress can be attributed to lack-lustre political will. The glaring examples of correlation between economic primacy and S&T capacity, as evidenced in developed countries from USA to South Korea, are fully acknowledged but insufficiently emulated. These conditions must change before a meaningful bridging of North-South divide can occur, for which organizations like COMSATS are working hard but facing resource constraints.

The onus to bring about a paradigm shift in the role of science in society squarely lies with scientific communities themselves. Under prevailing conditions in the South, it is not enough for individual scientists to remain preoccupied with their own research work, although it should be their primary focus. What they have to do is also to raise their voices in favour of pro-science policies and prioritization of the S&T capacity-building in their respective countries. These concerns have long been categorized as 'Science Advocacy'. More recently, Science Advocacy has been embedded in a re-defined domain of 'Science Diplomacy'. The conceptual framework of this newly emerging discipline is the interdependency of scientific knowledge and public policy. The national development plans and international agreements are increasingly being found to have strong scientific underpinnings. A deeper understanding of the relevant scientific content of a national project proposal, a bilateral agreement or a multilateral treaty may be crucial to safeguard national economic interest. For example, a lease agreement for mining of a natural deposit offered to a multinational company may have scores of scientific aspects based on mining engineering, ecological considerations or material science obscured from the eyes of unsuspecting negotiators. Other examples of informed decision-making based on the knowledge of environmental sciences or biotechnology can be cited for climate change conventions, trade treaties, agreements in health and agriculture sectors, etc. On the other hand, once the policy-makers realize that they will be increasingly dependent on the input of scientists in future, they would be more amenable to the proposals of establishing new laboratories and Centres of Excellence in emerging sciences. If one-sided requests for more funds for S&T did

not work, may be the realization of interdependency will do the trick. COMSATS was quick to realize the gamechanging possibilities of 'Science Diplomacy'. It cashed-in on an opportunity to team-up with The World Academy of Sciences (TWAS) and launched its own programme in Pakistan as early as 2015. Hopefully, its sphere will be enlarged after experience gained in Pakistan proves to be promising. This activity is also expected to open new avenues for COMSATS' international visibility, which needs to be boosted as noted in the preceding paras.

The readers of this message will certainly find these remarks from an outgoing Executive Director, who has worked all his life in scientific circles of a developing country, to be conveying an impression of optimism. To give such an impression is necessary, but it will not be realistic to expect that crises of faith do not occur in one's life. I must say I have not been immune to such episodes. However, the flame of hope must remain kindling to light up the way ahead. In the epochal enterprise of moving towards an egalitarian world with respect to scientific prowess, failure is not an option. Otherwise, the natural selection will take its course and weak links will be eliminated. This process of elimination may already have started in parts of Africa and Middle East. COMSATS never shied away from its duty of sounding the clarion call in this regard.

I am indeed happy to say that COMSATS Secretariat is lucky to have the services of a highly enlightened group of professionals, who are dedicated to the cause of socioeconomic progress of the South. I have highest admiration for all employees of COMSATS Headquarters and wish to thank them most sincerely for their unstinted cooperation during eight years of my association with COMSATS. Working with all of them was a pleasure and an excellent opportunity of educating as well as learning from the younger generation. I would also like to acknowledge with gratitude the help, encouragement and advice provided by the former Executive Directors, Mr. Parvez Ahmed Butt and Dr. Hameed Ahmed Khan; members of Technical Advisory Committee, Dr. Ishfaq Ahmad and Dr. M. H. A. Hassan; the Chairs of Coordinating Council, Prof. Eduardo Posada and Prof. Ashraf Shaalan; and several Secretaries of the Ministry of Science and Technology, Government of Pakistan, who were ex-officio Chairpersons of COMSATS Consultative Committee during different periods. It will not be out of place to renew the indebtedness of COMSATS to the Government of Pakistan for its consistent patronage and generous financial support.

Finally, it is my pleasure to wish all the best to the incoming Executive Director with the hope that COMSATS will continue its journey with ever greater successes.

NEWS/ACTIVITIES/HIGHLIGHTS FROM COMSATS SECRETARIAT

Urdu Translation of 'One Hundred Reasons to Be a Scientist' Launched

COMSATS' publications play an important role in pursuance of its mission and mandate of science popularization as a means of sustainable development. A recent addition in this regard is the Urdu translation of the book titled, 'One Hundred Reasons to be a Scientist'. The translated book was formally launched by COMSATS Secretariat during a ceremony held at the premises of the Higher Education Commission (HEC) of Pakistan, on August 18, 2016.

The original book in English language, published in 2004 by

the Abdus Salam International Centre for Theoretical Physics (AS-ICTP), Italy, was translated over a period of 4 years. It was earlier translated in four languages due to its inspirational value for young science students. COMSATS took the initiative of translating it into Urdu to make it accessible to a wider readership in Pakistan and abroad. The task was achieved under the editorship of COMSATS' Executive Director, Dr. I.E. Qureshi, with inputs from a panel of 20 subject specialists.



Pakistan's National Language Promotion Department (NLPD) facilitated the translation process.

The launching ceremony was presided over by the former Rector International Islamic University Islamabad (IIUI) and renowned literary critic, Prof. Fateh Muhammad Malik. It was attended by more than 100 students from different universities and scholars from scientific, academic and literary circles of the country.

Speaking at the ceremony, Prof. Malik deemed it to be a major achievement and a highly valuable addition to Urdu literature. He remarked, "Urdu translation of scientific

| | · |
|------------------------------|----------------------------------|
| Key Informatio | on about the Book |
| Number of Contributing | 91 |
| Scientists | |
| Published in English | 2004 |
| Publisher of English version | Abdus Salam International Centre |
| | for Theoretical Physics (AS- |
| | ICTP), Italy. |
| Published in Urdu | 2016 |
| Publishers of Urdu Version | COMSATS Secretariat, and |
| | COMSATS Institute of Information |
| | Technology, Islamabad, Pakistan. |
| Editor | Dr. I.E. Qureshi, Executive |
| | Director COMSATS |
| Editorial Committee Members | Dr. Muhammad Ashraf Atta, Dr. |
| | Khalid Rasheed, Dr. Muhammad |
| | Aslam Khan, Syeda Nasreen |
| | Sultana |
| Number of Technical Advisory | 14 |
| Committee Members | |
| ISBN | 978-969-7659-01-2 |

literature, such as this book, is a commendable effort for scientific renaissance in our society". Dr. Qureshi informed the audience about the enormity of the task owing to the complexity of highly advanced scientific narrative. "The aim of the book is to inspire our students to become scientists as science provides sustainable solutions to many of the development issues in Pakistan and other countries of the South", Dr. Qureshi said.

Dr. Anjum Hameed, Director, NLPD, read out the message of Mr. Irfan Siddiqui, Adviser to the Prime Minister of Pakistan on National History and Literary Heritage. While paying tribute to COMSATS Secretariat and COMSATS Institute of Information Technology for the initiative of translating and publishing this book, Mr. Siddiqui, in his message, said that Urdu version of the book would be a useful source for science education and popularization in Pakistan. Other distinguished speakers at the ceremony included: Acting Executive Director of HEC, Dr. Ghulam



Chief Guest and Other Distinguished Speakers at Launching Ceremony of the Translation of 'One Hundred Reasons to be a Scientist'



The Audience at the Book Launching Ceremony

Raza Bhatti and Advisors of COMSATS Institute of Information technology (CIIT), Ms. Syeda Nasreen Sultana, Dr. Ashraf Atta, Prof. Dr. M. Aslam Khan, and Dr. Mumtaz F. Jafri.

COMSATS and NCP, Pakistan, Sign Agreement for Research Cooperation

COMSATS and National Centre for Physics (NCP), Pakistan, signed a Memorandum of Understanding (MoU) on July 14, 2016, to cooperate for the promotion of academic and research activities in COMSATS' Member States. Dr. I.E. Qureshi, Executive Director COMSATS and Dr. Hafeez R. Hoorani, Director General NCP, signed the MoU during a ceremony held at COMSATS Secretariat. The signing ceremony was also witnessed by senior officials of COMSATS and NCP.

This agreement provides a framework for research and technical cooperation in the areas of physics relevant to sustainable development in the countries of the South. Areas of cooperation stipulated in the MoU include:

- Sharing of scientific, technical and other relevant information through mutually agreed channels;
- Facilitation of exchange of scientists, experts, researchers and students; and
- Holding of joint conferences, seminars, symposia, workshops and trainings.

Under this agreement, joint fellowships would also be offered to young researchers from COMSATS' Member States, on annual basis. The selected fellows will conduct part of their dissertation work, in any of the research groups of NCP, which 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. COMSATS will provide sponsorship to the



E.D. COMSATS and D.G. NCP Signing the MoU

selected fellows in the form of travel grant and NCP will provide free accommodation and research facilities.

Earlier during the signing ceremony, Dr. Qureshi briefed NCP officials about the programmes and activities of COMSATS and informed them how COMSATS was successfully promoting science and technology in its Member States despite financial constraints. He informed about the joint ventures of COMSATS with other international partner organizations, like ISESCO and UNESCO.

Dr. Hoorani introduced NCP and invited scientists and researchers from COMSATS' Member States to benefit from the state-of the-art laboratories, research equipment and the CERN data available at the Centre. He was of the view that the cooperation with COMSATS would enhance scientific and technological benefits to Pakistan and other Member States.

Executive Director COMSATS Delivers a Keynote Address at a Seminar on National Security

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

The seminar had high-level participation from different think tanks, science and technology institutions, universities, government departments and intergovernmental agencies. Minister for Science & Technology and Defense Production, Government of Pakistan, H.E. Rana Tanveer Hussain, graced the occasion as the Chief Guest. The honourable Minister appreciated the R&D work in S&T institutions of the country and urged the scientists to find ways and means to bring the benefits of science to common people. He said that



Executive Director COMSATS and Other Distinguished Speakers at the ISSI Seminar

the government was committed to supporting science, technology and education through provision of adequate budgetary support.

In his keynote address, Dr. Qureshi informed the audience about COMSATS' initiatives for sustainable development through science and technology, which he considered crucial for national security. He emphasized that science and technology activities are means of projecting 'soft power' of a country having a strong bearing on its international credibility leading to tangible security benefits.

Considering perception to be an important factor for how a country is treated among the world community, he deemed it important that scientists and engineers of Pakistan should be supported and encouraged to participate in scientific research through international collaboration.

Dr. Qureshi informed the august gathering about how COMSATS was contributing towards the development of the countries of the South and how Pakistan, as host country, is benefiting from COMSATS' international programmes and activities. He introduced COMSATS as an organization that emerged from Salam's vision and is working outside of UN structure with no regional and political affiliation.

He believed that COMSATS, with its S&T-led scientific activities in developing countries, is a source of good will for Pakistan internationally. COMSATS' Network of Centres of Excellence, International Thematic Research Groups and its Science Diplomacy Programme were mentioned as special contributors to COMSATS' mission.

Earlier, the seminar started with welcome remarks by Director General of ISSI, Ambassador Masood Khan, and introductory remarks by the Rector UMT, Dr. Hasan Sohaib Murad. Other speakers for the inaugural session included: Dr. Muhammad Latif, Adviser Research and Development, Higher Education Commission (HEC), Pakistan; Dr. Mujahid Kamran, Vice Chancellor, Punjab University, Lahore, Pakistan; Mr. Pervez Butt, former Chairman, Pakistan Atomic Energy Commission and Engr. Muhammad Asghar, Rector, National University of Science and Technology, Islamabad, Pakistan.

The speakers noted that there is a strong nexus between education, science and technology and national security and called for creating linkages between S&T sector, academia, and industry, and investing in innovation systems. A need was also felt to develop expertise in emerging frontiers of S&T, engage in science diplomacy, and encourage students to undertake higher studies in S&T disciplines.

During the course of the event, 18 speakers delivered talks on how science and technology-based approaches can be employed to achieve national security.

Promotions at COMSATS Secretariat

COMSATS Secretariat has limited human resource and relies on the extra hard work of its employees. The services of four senior officials were recognized and they were promoted to scales 19 and 20, based on their long-haul affiliation and excellent performance.

Among four promoted officers; Mr. M. Bilal Chouhan and Mr. Amanullah Khattak have been promoted as Director (Administration and Establishment) and Director (Finance and Accounts), respectively. Other two promoted officers are: Mr. Imran Chaudhry as Principal Programme Officer and Mr. Tanveer Aslam as Deputy Director (Accounts).

Mr. Chouhan joined COMSATS Secretariat on 7th May 1995. His most recent assignment at COMSATS was as Deputy Director (A&E). He has held different positions in COMSATS Secretariat during his over 20-year service. He holds a Master's degree in Political Science from the University of Punjab, Lahore, Pakistan.



Mr. Khattak joined COMSATS on 8th April 1999. During his over 16-year association with COMSATS, he has held different positions in Administration and Accounts, Technical, and Finance Departments. His most recent position was as Deputy Director (F&A).

Both Directors and other promoted

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officers have assumed charge of their new positions, with effect from 1st September 2016.

S&T INDICATORS OF A MEMBER STATE

In Spectrum: Kingdom of Morocco

The Kingdom of Morocco is the most westerly of the North African countries and is thus also known as the 'Maghreb' – the Arab West. It has Atlantic and Mediterranean coastlines, and a rugged mountain interior. Its rich culture is a blend of Arab, Berber, European and African influences.

In 1912, the French imposed a protectorate over the country. A protracted independence struggle with France ended successfully in 1956. The internationalized city of Tangier and most of the Spanish possessions were turned over to the new country during the same year. The Alaouite Dynasty, to which the current Moroccan royal family belongs, dates from the 17th century. Sultan Mohammed V, the current monarch's grandfather, organized the new state as a constitutional monarchy and in 1957 assumed the title of King. He was succeeded in 1961 by his son, Hassan II, who ruled for 38 years and played a prominent role in search for peace in the Middle East.

Since Spain's 1976 withdrawal from what is today called Western Sahara, Morocco has extended its de-facto administrative control to roughly 80% of this territory. Since 1991, the UN has been monitoring a cease-fire between Morocco and the Polisario Front – Western Sahara's liberation movement – and leads the ongoing negotiations over the status of the territory.

In early 2011, King Mohammed VI responded to the spread of pro-democracy protests in the region by implementing a reform programme that included a new constitution, passed by popular referendum in July 2011, under which some new powers were extended to parliament and the prime minister but ultimate authority remained in the hands of the monarch. In November 2011, the Justice and Development Party – a moderate Islamist party – won the largest number of seats in participant.

parliamentary elections, becoming the first Islamist party to lead the Moroccan Government. Nationwide parliamentary elections are scheduled for October 2016.

Morocco's HDI value for 2014 is 0.628, which put the country in the medium human development category, positioning it at 126 out of 188 countries and territories. Between 1980 and 2014, Morocco's HDI value increased from 0.396 to 0.628, an increase of 58.6 percent or an average annual increase of about 1.37 percent. The rank is shared with Namibia.

Table-A provides a review of Morocco's progress in each of the HDI indicators. Between 1980 and 2014, Morocco's life expectancy at birth increased by 16.4 years, mean years of schooling increased by 3.2 years and expected years of schooling increased by 5.7 years. Morocco's GNI per capita increased by about 111.6 percent between 1980 and 2014.

The population pyramid illustrated in Figure-A shows the age and gender structure of Morocco's population, obtained from the CIA World Factbook (2015). The population is



distributed along the horizontal axis, with males shown on the left and females on the right. This gives an insight into political and social stability, various policy implications as well as economic development.

The pyramid suggests that Morocco has a population of around 17.4% in the 15-24 years age-bracket while a large portion of the population, around 42%, lies in the 25-54 years age bracket. This suggests that Morocco is ready for transformational changes to benefit from a higher available workforce with a median age of 28.5 years (2015). However, lower literacy (68.5% in 2015) and higher youth unemployment (around 19.1% in 2015) may prove to be a significant challenge for the government.

According to the World Factbook, Morocco has capitalized on its proximity to Europe and relatively low labour costs to work towards building a diverse, open, market-oriented economy. Key sectors of the Moroccan economy include

| Table-A: Kingdom of Morocco's HDI Trends based on Consistent Time Series Data | | | | | |
|--|--------------------------------|-----------------------------------|-------------------------------|-----------------------------------|-----------|
| | Life expectancy at birth | Expected years of schooling | Mean years of schooling | GNI per capita (2011 PPP\$) | HDI value |
| 1980 | 57.6 | 5.9 | 1.2 | 3,238 | 0.396 |
| 1990 | 64.7 | 6.5 | 2.2 | 3,778 | 0.457 |
| 2000 | 68.6 | 8.4 | 3.4 | 4,307 | 0.528 |
| 2005 | 70.5 | 10 | 3.9 | 5,286 | 0.574 |
| 2010 | 72.6 | 11.1 | 4.2 | 6,285 | 0.611 |
| 2013 | 73.7 | 11.6 | 4.4 | 6,776 | 0.626 |
| 2014 | 74 | 11.6 | 4.4 | 6,850 | 0.628 |
| Source: UNDP Human Development Report 2015 | | | | | |

agriculture, tourism, aerospace, automotive, phosphates, textiles, apparel, and subcomponents. Morocco has increased investment in its port, transportation, and industrial infrastructure to position itself as a centre and broker for business throughout Africa. Industrial development strategies and infrastructure improvements, most visibly illustrated by a new port and free trade zone near Tangier, are improving Morocco's international competitiveness.

Since taking the throne in 1999, King Mohammed VI has been presiding over a stable economy marked by steady growth, low inflation, and gradually falling unemployment, although poor harvests and economic difficulties in Europe contributed to an economic slowdown. To boost exports, Morocco entered into a bilateral Free Trade Agreement with the US in 2006 and an Advanced Status Agreement with the EU in 2008. In late 2014, Morocco eliminated subsidies for gasoline, diesel, and fuel oil, dramatically reducing outlays that weighted on the country's budget and current account. Subsidies on butane gas and certain food products remain in place. Morocco also seeks to expand its renewable energy capacity with a goal of making renewable to be more than 50% of installed electricity generation capacity by 2030.

The Moroccan economy is primarily dependent on Services Sector (57.2% of GDP) employing 40.5% of the Labour Force and Industry (29% of GDP) employing around 20% of the labour force; while Agriculture only contributes to 13.8% of GDP, employing 39.5% of the labour force. Important agricultural products include barley, wheat, citrus fruits, grapes, vegetables, olives, livestock, and wine. While the significant industries in Morocco include automotive parts manufacturers, phosphate mining and processing, aerospace, food processing, leather goods, textiles, construction, energy, and tourism.

Important export partners of Morocco include: Spain, 22.1%; France, 19.7%; India, 4.9%; US, 4.3%; Italy, 4.3% (2015) with export commodities, including clothing and textiles, automobiles, electric components, inorganic chemicals, transistors, crude minerals, fertilizers (including phosphates), petroleum products, citrus fruits, vegetables, and fish. While import commodities majorly include crude petroleum, textile fabric, telecommunications equipment, wheat, gas and electricity, transistors, and plastics.

According to the World Bank (2016), in response to deteriorating fiscal trends, Morocco has embarked on a major fiscal consolidation effort since 2013. In 2013, the government initiated the reform of the subsidy system and began to rein in other recurrent and investment expenditures, while consolidating tax revenues. As a result, the fiscal deficit decreased from 7.2% of GDP in 2012 to 4.3% of GDP in 2015. Improvements on the external front have been even more spectacular. The current account



deficit, which culminated to 10% of GDP in 2012, was reduced to 2.3% of GDP in 2015. This reflected the combination of lower imports, as a result of the sharp fall in international oil prices, and higher exports from the "new" industries (automobile, aeronautics, and electronics), as well as from the agro-industrial sector. Notwithstanding the ups and downs of the agriculture sector, Morocco's economic growth has slowed down in recent years. On average, real GDP grew by 3.8% during 2013-2015, underperforming its trend of 4.6% per annum during 2003-2012.

The higher education system in Morocco comprises 13 public universities, 8 private universities, and 211 private institutes. Public universities are free, except for Al Akhawayn University and the International University of Rabat, which are tuition-based. Higher education is governed by the Ministry of Higher Education, Scientific Research, and Training.

The Morocco's membership to COMSATS came to effect with the signing of an accession agreement in a ceremony held in Rabat on July 14, 2015. H.E. Mr. Lahcen Daoudi, Minister of Higher Education, Scientific Research and Training, inked the agreement on behalf of the Government of Morocco. It is anticipated that formalities for the induction of Mohamed V University, Rabat into the COMSATS' Network of Centres of Excellence will be completed by early 2017.

Morocco's accession to COMSATS is highly important as it has been a cradle of learning since as early as 859 A.D. when the first university of the Muslim World, University of al-Qarawiyyin, was established in Fez, and even today Morocco serves as a gateway for Africa and Europe for exchanges on Innovation, Science and Technology. It is hoped that with its aspiration of becoming a vibrant knowledge economy, Morocco will benefit further by participation in COMSATS' activities.

ACTIVITIES/NEWS OF COMSATS' CENTRES OF EXCELLENCE

CIIT, Pakistan, Strengthens Academic Relations with Morocco, Turkmenistan, and UK

On 22nd July 2016, the Ambassador of Turkmenistan in Islamabad, Movlamov Atajan Nurlyevich, accompanied by his first Secretary, Mr. Gurbanov Bengench, visited CIIT, Islamabad Campus. His Excellency was received by the Head of Centre for Policy Studies (CPS), Ambassador Fauzia Nasreen, her team, and officials from CIIT's International Office. The meeting discussions focused on the progress of the academic linkages between CIIT and Institute of International Relations of the Ministry of Foreign Affairs of Turkmenistan; and Turkmen State Institute of Economics and Management, agreed upon earlier through two Memoranda of Understanding signed in March 2016.



Ambassador of Turkmenistan during a Meeting with CIIT Officials

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, visited COMSATS Institute of Information Technology (CIIT), Islamabad, Pakistan, on 26th July 2016. Prof. Dr. Raheel Qamar, Head, Bio Sciences Department/Dean of Research, Innovation and Commercialization; Dr. Abdul Aziz Khan, Advisor International Office; and Dr. Khalid Riaz, Dean, Management Sciences received the delegation. The visiting delegation appreciated CIIT's performance in education and research and they introduced the host officials about their universities.

The visiting officials showed keen interest in collaborating with CIIT for student and faculty exchange and joint research projects in the areas of Science, Technology and Business Administration.

On 27th July 2016, CIIT's International Office, with the coordination of its Career Development Cell, hosted a visit of

Dr. Shabbir Dastgir, Senior Lecturer, from Huddersfield University, UK, to seek cooperation between CIIT and Huddersfield University and explore possible avenues of collaboration. Areas of possible collaboration discussed during the meeting included: curriculum development, computer science and economics.

CIIT, Pakistan, and MAP Sign MoU for Collaboration

COMSATS Institute of Information Technology (CIIT) and Management Association of Pakistan (MAP) signed an MoU to collaborate for promoting modern managerial practices and techniques through trainings, workshops and seminars. This MoU was signed in Karachi, Pakistan, on 9th August 2016, by Syed Masood Hashmi, President MAP, and Dr. S. M. Junaid Zaidi, Rector CIIT.

French Government Awards 12 Scholarships for PCMD, ICCBS, Pakistan

The French government has awarded 12 scholarships for development of the faculty at Dr. Panjwani Center for Molecular Medicine and Drug Research (PCMD), International Center for Chemical and Biological Sciences (ICCBS), Pakistan. This came as a result of an earlier meeting of scientists from both the countries on July 12, 2016. The Director ICCBS, Prof. Dr. M. Iqbal Choudhary presided over the meeting, which was attended by Prof. Dr. Georges Massiot, Prof. Dr. Eric Dufourc, and Prof. Dr. Bruno Figadere from France, and ICCBS' officials. It was also decided during the meeting that the engineering staff of PCMD would be sent to France for technical trainings.

Prof. Choudhary stated that ICCBS and French research institutions have a deep-rooted tradition of joint research. During the last many years, hundreds of French scientists have visited ICCBS for pursuing their educational and research goals. He said this is an excellent opportunity for young researchers, students and faculty members of ICCBS to learn from the French scholars. Prof. Massiot, Prof. Dufourc, and Prof. Figadere also spoke at the occasion.

New Chief Executive Appointed for NMC, Nigeria

On 1st August 2016, the Federal Government of Nigeria appointed Prof. Ejugwu Stephen Onah as the new Director and Chief Executive of the National Mathematical Centre (NMC), Nigeria. Prof. Onah has succeeded Prof. A.R.T. Solarin. Before this, Prof. Onah's most recent assignment was as the Deputy Vice-Chancellor (Academic), University of Agriculture, Makurdi, Benue State, Nigeria.

In his address on assuming charge, Prof. Onah read out the

message from the President of the Federal Republic of Nigeria, His Excellency Muhammadu Buhari (GCFR), which was conveyed through the Honourable Minister of Education, H.E. Adamu Adamu. The message was to bring the spirit of change and encourage accountability, probity and transparency in all official dealings.

President RSS, Jordan, Delivers Keynote Address at TWAS' Science Diplomacy Course

The President of the Royal Scientific Society (RSS), Jordan, HRH Princess Sumaya bint El Hassan, gave a keynote address at the opening of a high-level summer course on Science Diplomacy, organized in Trieste, Italy. The course was organized by the American Association for the Advancement of Science (AAAS) and The World Academy of Sciences (TWAS), from July 11 to 15, 2016. It brought together high-level science leaders from around the world who offered their vision of science diplomacy as a tool to help nations to unite for cooperative research and policydevelopment efforts, to drive economic growth and to solve regional and global challenges.



interview with TWAS [Photo Credit: D. Albertacci/TWAS]

In an interview with TWAS, HRH Princess Sumaya considered science and education crucial to shared progress. She opined that only science could provide people with the tools to discuss controversial issues across borders. She cited clean water, public health and environmental protection as particular examples. "Science allows people to create a conversation that leads to a shared vision for the future," said the Princess. She added that science diplomacy had a vital role to play in defining where science can offer the most hope, especially in areas where politics have failed in the past.

Princess Sumaya is an internationally respected advocate for research and education and chairs the Board of Trustees of the Princess Sumaya University for Technology, Jordan. She is also the Co-Chair of World Science Forum (WSF) 2017, which will be held in Jordan in November next year.

Detailed interview of Her Royal Highness can be viewed at: <u>http://twas.org/article/princess-sumaya-science-hope</u>.

RSS' Project, FOSTEr in MED, Concludes

In July 2016, RSS, Jordan, concluded its project entitled "Fostering Solar Technology in the Mediterranean area – FOSTEr in MED" in Aqaba. The project that spanned three years and eight months was concluded by launching a 17 kWp Building-Integrated Photovoltaic System (BIPV) at the University of Jordan - Aqaba Branch. The project brought together partners from Italy, Jordan, Spain, Lebanon, Egypt, and Tunisia.

FOSTEr in MED project was funded by the European Union within the 'European Neighbourhood and Partnership Instrument Cross-Border Cooperation Mediterranean Sea Basin (ENPI CBC MED') Programme, under Priority 2 – Top c 3 – Solar Energy. The project's specific objectives were transfer of knowledge in the solar energy innovative field, share design methodology implementation, and promote solar energy innovative technologies at civil society level. Efforts were made to transfer knowledge and technical competencies to targeted groups, designers, private sector (especially SMEs), citizens and local administrators.

Specifically, the FOSTEr project promoted the adoption of innovative solar photovoltaic (PV) technologies in the Mediterranean area. It took a multi-layer strategic approach with the involvement of the local stakeholders, in order to ensure that the results of the project activities have a multiplicative effect at the Mediterranean Basin level, in terms of outcome replication, dissemination, and transferability of results, both beyond the partnership and after the end of the Project.

National Research Centre, Egypt, Turns 60

The National Research Centre (NRC), Egypt, is celebrating its 60th Anniversary during the

second half of 2016. NRC, Egypt, is the largest multidisciplinary R&D centre in Egypt, devoted to basic and applied research in major fields of interest, including industry, health, environment, agriculture, basic sciences and engineering. The Centre has a



research staff of 4,735; 14 divisions; and 108 departments.

COMSATS congratulates the National Research Centre, Egypt, on its 60th Anniversary.

SYNTHETIC BIOLOGY IN THE DEVELOPING WORLD: A CHANCE TO LEAPFROG IN THE FIELD OF LIFE SCIENCES?

Dr. Faisal F. Khan*

Biotechnology is going through some major developments at a breathtaking rate. Experts and thought leaders in the field, and outside it, believe it is something similar to the 'PC revolution' of the computer sciences, which brought the computer from sophisticated research laboratories down to households for personal use by the common man (hence 'personal computer' or the 'PC'). Many also believe that the kind of impact computers had on our lives in the 20th century and onwards is what biology will have during the 21st century.

In Nicholas Negroponte's words from the MIT Media Lab, 'Biology is the new Digital'. But how? How is all this happening? There are two main reasons:

a. Costs: Dropping Down Exponentially

It all started with the great new ambition among biologists in the 1990s, to sequence (or read) the entire human DNA - the hereditary material that encodes all the physical appearance, disease susceptibility, and other traits passed on by every living organism from the parents to progeny. This came to be known as the 'Human Genome Project'. The whole effort involved hundreds of scientists from around a dozen countries and cost more than 3 billion US dollars to get them to finish the first ever draft of the human genome. The feat was carried out using the 'chain-termination DNA sequencing technology', also known as Sanger Sequencing, after its inventor and twice Nobel Laureate, Fredrick Sanger¹. These were machines the size of large photocopiers that were lined up at an industrial scale and used in parallel to run small bits or fragments of the human DNA that could then be read and assembled together into complete genome.

Soon after the announcement of the first draft of the human genome by the then US President Bill Clinton in 2001, a surge in demand was witnessed for sequencing the DNA of all sorts of organisms by different scientists - from viruses and diseasecausing bacteria to economically-important crops, model organisms used in scientific research to human samples from patients with genetic disorders. This was also matched by a huge interest in academia and the industry in further developing the DNA sequencing technology that could 'read' DNA much faster, with a much smaller error-rate and most importantly at a much cheaper cost. Suddenly, within the span of a few years, new methodologies emerged, like pyrosequencing, SOLiD and Solexa, that had much higher throughput and exponentially lower costs as compared to Sanger sequencing. These new methods came to be known as 'next-generation sequencing' (NGS) technologies².

Soon after that, biologists grew confident enough to chase the US\$ 1,000 mark as the cost for sequencing an entire human genome. Illumina was the first company to reach the milestone in 2014³, when they claimed to have achieved the target of bringing the cost of sequencing an entire human genome to lower than US\$ 1,000.

Parallel to that, single molecule sequencing technologies like nanopore sequencing were also cooking up. These cuttingedge 'third generation' technologies enabled miniaturization of sequencing machines at a scale that draws parallels again from the IT industry. Just like main frame computers, decreased in size to the desktop and laptops and now mobile phones, large sequencing machines turned smaller and smaller into desktop ones, until a UK-based company, Oxford Nanopore, released the minION which was a sequencer the size of a USB stick⁴. This immediately brings down the size and cost of sequencing hardware to a whole new level. In a 2016 conference, Oxford Nanopore announced the smidgION, which was an even smaller version that one can plug into the iPhone⁵. This goes on to show the pace of developments and what the near future would look like.

In a nutshell, what cost us 3 billion US dollars in 2001 can now be achieved in under a thousand dollars. If we plot the developments against Moore's Law (which is a plot that showed that computer processing power would double almost every 18 months), we can clearly see DNA sequencing developing at a rate that is several folds faster than computer processing. An almost similar drop in costs and surge in development is observed in DNA synthesis, which is akin to 'writing' or 'printing' DNA molecules,

b. Inter-disciplinarity: Cross Pollination of Engineering Principles and Biology

Besides the exponentially decreasing costs, there is another key trend which is catalyzing this major shift in biotechnology, i.e., inter-disciplinarity. As the human genome was being deciphered at the beginning of the 21st century, engineers, especially in MIT, were starting to look at DNA using a completely different lens⁶.

The main source of motivation for deciphering the human genome for biologists was the usual curiosity to discover what's inside the 'code of life'. This is the usual reductionist's

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approach which biologists have been using for centuries to discover the complex and messy secrets of life. Instead of long and messy chemical molecules, engineers, wearing their builders hat, started to treat DNA as abstract parts, similar to those we see in electric circuits. These parts are pretty well characterized, which means for a given input, the output is well studied and documented. Such parts are also standardized which means they are 'compatible' with one another and can be wired in a circuit in a variety of combinations with many other components. This was a paradigm shift in looking at how we engineer DNA, traditionally known as recombinant DNA technology. It did sound pretty audacious and ambitious in the face of the complexity and uncertainty we see in biological systems, but this new approach is proving to be a revolutionary shift for biotechnology research⁶.

This approach practically brings the ability to design and build new biological systems into reality. Biologists, for the first time, instead of tinkering with what's already out there, engineer new systems from scratch that can be deployed in living cells. In other words, just like an electronics engineer scribbles a circuit diagram on a piece of paper, goes into the workshop, gathers the list of components they need, and builds a new electronic circuit from scratch to perform a particular function, a biologist can go and choose DNA parts from a library and design a genetic circuit that can be built and deployed in a living cell to perform a particular function, which could be anything from eating up waste chemicals in a stream, cheaply producing an otherwise expensive drug or mass producing an industriallyimportant enzyme or fuel.

Synthetic Biology in the Developing World

The rapid and exponential drop in cost and size along with an engineering approach to developing biological systems has led to the emergence of a whole new field called 'synthetic biology', which is having profound implications on the entire biotechnology sector⁷. What could be developed through traditional genetic engineering for 100 million dollars in R&D expenses can now be carried out in around 50 thousand dollars only.

From an economic perspective, decreasing costs means increasing accessibility. If we look at the IT industry again, rapid developments in the performance of computers and smartphones, means new ones come to the market faster and old ones get cheaper at a faster rate. It is because of the same reason that we think twice before upgrading to the next iPhone or the latest laptop! But older gadgets getting cheaper at a faster rate also means more and more people having access to it. A common example from developing countries would be the rate of smartphone penetration in the masses especially in rural areas.

This increased accessibility and 'democratization' of technology also helps in enhancing the rate of innovation. Since more and more people have access, more people can play, tinker and test new ideas with the help of emerging technologies. This is exactly what we saw when the cost of computer components came down and young people started 'building' new things in their homes and garages. Suddenly, a whole new dimension of entrepreneurship comes in when startups emerge and bring revolutionary products to the marketspace. We all know the stories of Bill Gates, Steve Jobs and the homebrew computer club – how they started and what they ended up building (Microsoft and Apple), i.e., the envy of any economy in the world!

Similarly, in biology, experts expect a sharp increase in accessibility to DNA sequencing and DNA synthesis services leading to a rise in innovation and emergence of startups. Again, technology is expected to come out of sophisticated labs in pharmaceutical and biotech giants and university departments, and reach the hands of youngsters in garages doing startups outside formal laboratory settings. It has already become so cheap and easy to deploy that the largest library of DNA 'parts' has been developed by undergraduate students as part of the International Genetically Engineered Machines (iGEM) competition based out of MIT^e.

DNA is the software that runs all living organisms – plants, animals and microbes. This clearly shows that the impact of synthetic biology research will be multi-sectoral, e.g., health, agriculture, livestock, fisheries, forestry, energy, food and chemicals. It is, therefore, not surprising that many governments have already invested and are planning to invest millions of dollars in dedicated synthetic biology programmes. So much so that many large technology and traditionally nonbio companies, including Google, Microsoft, Autodesk, Fujifilm, Samsung, DuPont and others, are diversifying into the area.

The million-dollar question is whether developing countries are ready to benefit from this new wave of technology. Do we have the right strategies in place to leapfrog and invest in this new area and upgrade our existing biotechnology sectors? Do we have the right curricula in place to develop the right human capital for this emerging trend? Do we have the right infrastructure and friendly enough regulations? Are we building any understanding of the ethics around this new technology based on our value systems? Is there any chance that a developing country would bring forth the Bill Gates and Steve Jobs of this new sector? These are questions that ought to be raised sooner than later.

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SCIENCE, TECHNOLOGY AND DEVELOPMENT

Smart Threads Diagnostics & Tumour Targetting Nanorobots

The researchers from the Tufts University's School of Engineering, USA, have integrated nano-scale sensors,

electronics and microfluidics into threads that range from simple cotton to sophisticated synthetics. These threads can be sutured through multiple layers of tissue to gather diagnostic data wirelessly in real time, according to a paper published online on July 18, 2016,



in the journal '*Microsystems & Nanoengineering*' and reported by *Science Daily*. The data collected through these smart threads sheds light on tissue health (stress, strain and temperature), pH and glucose levels in the blood that can be used by physicians to determine how a wound is healing, and other issues related to body chemistry. The results can be transmitted wirelessly to a cell phone or computer. The threedimensional platform is able to conform to complex structures, such as organs, wounds or orthopedic implants.

In another news (Science Daily, August 15, 2016), researchers from Polytechnique Montréal, Université de Montréal and McGill University have developed new nanorobotic agents capable of navigating through the bloodstream to administer a drug with precision, by specifically targetting the active cancerous cells of tumors. The legions of nanorobotic agents are actually composed of more than 100 million flagellated bacteria and are, therefore, self-propelled and loaded with drugs that move by taking the most direct path between the drug's injection point and the target area of the body ensuring the optimal targeting of a tumour. As a result, the toxicity of the drug could be significantly reduced. This scientific breakthrough has just been published in the journal Nature Nanotechnology in an article titled "Magneto-aerotactic bacteria deliver drug-containing nano-liposomes to tumour hypoxic regions."

Quantum Computing Comes a Step Closer

A new device that successfully traps, detects, and manipulates an ensemble of electrons above the surface of superfluid helium has been reported (*Science Daily*, July 29, 2016).

The device has taken the University of Chicago, USA, scientists

a step closer to quantum computing, and is comprised of an integrated nanofluidic channel with a superconducting circuit. Because of their smaller size, electrons normally interact weakly with electrical signals. The new device, however, gives the electron more time to interact, and it is



this setup that makes it possible to build a qubit – the quantum computing equivalent of a bit. Quantum computers could provide the necessary computing power to model extremely large and complex scientific situations. While the unique

relationship existing between electrons and superfluid helium has long been known, holding electrons in a superconducting device structure has not been demonstrated before this work.

Liquid Metal Towards Flexible Electronics

Liquid metals, in particular, non-toxic alloys of gallium, have, so far, offered the most promising path for realizing many researchers' dream to achieve truly elastic electronic components that constitute flexible and dynamically reconfigurable soft circuit systems. Apart from being incredibly malleable, any droplet of liquid metal contains a highlyconductive metallic core and an atomically thin semiconducting

oxide skin that are all the essentials needed for making electronic circuits. To work out how to enable liquid metal to move autonomously, Professor Kourosh Kalantar-zadeh and his group from the School of Engineering at RMIT have done the foundation



work for the use of "electronic" liquid metals to make 3D electronic displays and components on demand, and create makeshift and floating electronics.

The research, which has potential applications in a range of industries, including smart engineering solutions and biomedicine, was published in *Nature Communications* on August 4, 2016.

Moth Allergy Detection Kit Developed

Following scientific determination that Asota caricae, commonly known as Tiger moth, is responsible for unexplained

fevers in the area, the researchers in the Indian State of Kerala began developing a kit capable of quickly diagnosing lepidopterism, a disease caused by moth allergens, which is often mistaken for dengue or chikungunya, because of similarities in symptoms. This report was published by K.S. Harikrishnan in *SciDev.Net* on



August 24, 2016. Karthikeya Varma, Director of the Aster-Malabar Institute of Medical Sciences (Aster-MIMS), Research Foundation, Kozhikode, a city in the Indian State of Kerala, said that a provisional patent has already been filed for this kit, which will make it easier for doctors to differentially diagnose the illness. It was a study conducted by a team of researchers at Aster–MIMS, published in April 2016, in *PLoS One* that showed the close association between proliferation of Tiger moth allergens and fever outbreaks. The study also showed that the moth allergens are usually not taken into account and patients get treated erroneously.

The new ELISA-based test kit will address this problem when used for detection of Tiger moth disease in all Aster hospitals. Aster-MIMS has already started a newly approved protocol for the treatment of Tiger moth disease.

PROFILE OF MEMBER COMSATS' TECHNICAL ADVISORY COMMITTEE

PROF. DR. EL-BELTAGY, ADEL ELSAYED TAWFIK

Prof. Dr. El-Beltagy, Adel El Sayed Tawfik, a member of COMSATS' Technical Advisory Committee since 2014, is currently the Chair of the International

Dryland Development Commission (IDDC), Professor at the Arid Land Agricultural Graduate Studies & Research Institute (ALARI) of Ain Shams University, Egypt, Chair Egyptian Academy of Science, Chair of the Executive Board of the Bibliotheca Alexandrina, Member of the Governing Board of the Regional Action on Climate Change (RACC) and Member of the Governing Board of the Science and Technology in Society (STS) forum, Kyoto, Japan.



In the past, Prof. El-Beltagy has served as Egypt's Minister for Agriculture and Land Reclamation, the first Under-secretary of the State for Land Reclamation, and held the Chair of the Board of Agricultural Research Centre (ARC), Egypt.

His other important past associations include:

- Governing Board of the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) (2011-2015), as President;
- The World Academy of Sciences (TWAS) (2011- 2015), as Board Member;
- Agricultural Research & Development Council (ARDC), Egypt (2007-2011), as Chairperson;
- Board of the Global Crop Diversity Trust (GCDT) (2007-2011), as Vice Chair/Member;
- Global Forum on Agricultural Research (GFAR) (2006-2010), as Chairperson;
- International Center for Agricultural Research in Dry Areas (ICARDA) (1995-2006), as Director General;
- Center Directors Committee (CDC) for Integrated Natural Resource Management Committee (INRM) (2003-2005), as Chairperson; and
- CDC for the International Agricultural Research Centers of the CGIAR (2002-2003), as Chairperson.

He has also been a member of various important national and international bodies, including Supreme Council of Science & Technology (2008-2011); CGIAR Change Steering Team (2007-2008); Consultative Group on International Agricultural Research (CGIAR) (2006-2011); FAO High-Level Committee addressing the implementation of the UN Millennium. Development Goals (MDGs) (2006-2011); the European Action on Global Life Sciences (EAGLES); CDC ICWG - Climate Change (2004-2006); and the UN Millennium Ecosystem Assessment Board (2004-2005).

Prof. El-Beltagy has also held high-level positions as a Chair of the Global Consortium to Re-build Agriculture in Afghanistan, CDC Task-Force for Central West Asia and North Africa (CWANA), CGIAR Consortium for Sustainable Agricultural Development in Central Asia and the Caucasus (CAC), Scientific/Technical Council of the International Sahara and Sahel Observatory (SSO), and Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD) of the Executive Board.

He is associated with several scientific societies including:

- The British Plant Growth Regulator Group (as Founding Member);
- International Plant Growth Substances Association (IPGSA);
- International Society of Horticultural Science (ISHS) (as Vice President for North Africa);
- American Society for Horticultural Science (ASHS);
- Society for Experimental Biology (SEB), UK;
- Egyptian Society for Horticultural Science;
- World Water Council (WWC);
- Arab Water Council (AWC); and
- International Water Resources Association (IWRA).

Owing to his outstanding services in various capacities, Prof. El-Beltagy has won recognitions and several awards. In 2015, he was awarded the Golden Medal of the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), in recognition of enhancing the agriculture development in the Mediterranean. His efforts for the international agriculture development, particularly in the Mediterranean countries brought him the 'Commander of the Order of Agricultural Merit' (France), in 2014. The Sultan Qaboos 'First Člass' Order for Culture, Sciences and Arts was given to him in 2009, for his contribution to the development of agriculture in the dry areas. He has also received State Recognition Prize in Sciences from the Government of Egypt, in 2009. Moreover, the Board of the Global Crop Diversity Trust, and the Association of Agriculture Research Institutions in Near East & North Africa AARINENA, awarded him the certificate of recognition in 2011 and 2010, respectively. His other awards include the following:

- Golden Medal by the Republic of Armenia (2006);
- The Academic Status Award by the Ministry of Agriculture of the Republic of Kazakhstan (2006);
- Al-Istiklal Medal by His Majesty King Abdullah II bin Al Hussein of Jordan (2005);
- Sahel & Sahara Observatory (OSS) Honorary Medal (2003);
- FAO Silver Medal (1989, 1991, 1992, 1993, and 1994); and
- Fellow of the University of Wales, Aberystwyth, U.K. (1993).

Prof. El-Beltagy has authored/co-authored more than 187 scientific publications.

Contact Details:

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COMSATS' BRIEF AND ANNOUNCEMENTS

Selected Forthcoming Scientific Events in **COMSATS**'Countries

| 25-27 September 2016 | International Lecture Courses on Atmospheric Aerosols, Beijing, China (www.comsats.org) |
|------------------------|---|
| 17-18 October 2016 | 2 nd International Conference on 'Agriculture, Food Security and Biotechnology', Khartoum, Sudan <i>(www.comsats.org)</i> |
| 18-20 October 2016 | International Conference and Exhibition on 'Renewable Energy Technologies', Islamabad, Pakistan <i>(www.comsats.org)</i> |
| 31 Oct. to 4 Nov. 2016 | 6 th International Workshop on 'Internet Security: Enhancing Information Exchange Safeguards', Rabat, Morocco (www.comsats.org) |

Scholarships offered by the COMSATS' Centres of **Excellence for Member States**

COMSATS Institute of Information Technology (CIIT), Pakistan, offers 100 scholarships for students/researchers for postgraduate studies in all disciplines offered by the university at its 7 campuses, as well as five post-doctoral fellowships.

The Iranian Research Organization for Science and Technology (IROST), Iran, offers 7 Ph.D scholarships [4 fully paid and 3 partially paid (50%)] and five-postdoctoral fellowships in disciplines offered by the Organization.

The International Center for Chemical and Biological Science (ICCBS), Pakistan, offers scholarships for MS and Ph.D studies in disciplines offered by the Center.

For more details, please write to Mr. Irfan Hayee, Deputy Director (Programmes), COMSATS Secretariat at irfancom@comsats.net.pk.

Recent Joint Publications of COMSATS

Science Vision - Call for Papers



www.sciencevision.org.pk

Joint Publication with TWAS Excellence in Science: International Centre for Integrated Mountain Development (ICIMOD)

COMSATS invites scholarly contribution for Volume 21 of its bi-

annual journal, Science Vision, which aims at highlighting the important scientific and technological developments having a

For more information, please visit the journal's website:

bearing on socio-economic conditions of the people.



Joint Publication with ICTP One Hundred Reasons to be a Scientist (Urdu translation)

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A BRIEF ON COMSATS

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

COMSATS, currently, has 24 developing countries as its members, spread across three continents, i.e., Latin America, Africa and Asia. A Excellence, is also affiliated with COMSATS to Member States. The mission of COMSATS is to help create a world where all nations are at peace with one another and capable of providing good quality of life to their populations in a sustainable way using modern S&T resources.

COMSATS NETWORK

10

KazNU-Kazakhstan

www.nmcabuja.org

ICCBS-Pakistan









HIAST-Syria www.hiast.edu.s





CERTE-Tunisia





TÜBITAK MAM-Turkey

