Report

International Forum on Science Education

A Must for Quality Higher Education & Economic Development

9th April 2018
HEC Islamabad-Pakistan

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Executive Summary

The International Forum on Science Education was held in Islamabad on 9 April 2018 in conjunction with the 2018 meeting of the Global Council of the InterAcademy Partnership Science Education Programme (IAP SEP) and a workshop on "Fusion of OBOR Civilizations School Curriculum Design" on 9-10 April 2018. The three events were mainly hosted by the ECO Science Foundation in strong partnership with Higher Education Commision (HEC) of Pakistan, Pakistan Academy of Sciences and Alif Ailaan. The International Forum was themed; "*Quality Science Education at Schools- A Must for Quality Higher Education and Economic Development*". The Forum attracted more than 200 speakers including 20 international participants from 12 countries as well as some diplomats from Pakistan based Embassies of various countries. The International Forum engendered animated and constructive deliberations, culminating in the recomemdations and outcomes in an "Isalamabad Declaration".

The Forum included a series of panel discussions on a number of thematic areas of science education and explored the ideas around the challenges, implementation of effective science teaching and policy measures by expert panelists on science education around the globe. The International Forum deliberated in depth the interaction of the digital & development revolution, non formal science education, science museums, women in science, role of media in promoting science education and linkages between science & sustainable development and the STEM education following IBSE methods at various levels from preschool through primary, secondary and tertiary/higher education education to lifelong learning. The International Forum concluded that stakeholders need to put in more efforts and beef up the Science, Technology and Innovation infrastructure and through their expert use of social media and mobile communication, IBSE/STEM savvy children and youth can be the agents of change to lead humanity towards sustainability.

Acknolwedgements

ECO Science Foundation acknowledges the cooperation and support of organizing partners; the InterAcademy Partnership Science Education Programme (IAP SEP), Higher Education Commision (HEC) of Pakistan, Pakistan Academy of Sciences and Alif Ailaan for making this International Forum a great success. We would also like to thank all the international and national speakers, panelists and participations for your signigificant contributions to the Forum.

Credits:

Concept:

- Manzoor H. Soomro, ECOSF
- Lee Yee Cheong, IAP SEP

Planning:

- Manzoor H. Soomro, ECOSF
- Lee Yee Cheong, IAP SEP
- Mukhtar Ahmed, HEC
- G. Raza Bhatti, HEC
- Khalil Raza, ECOSF

Organization:

- Manzoor H. Soomro, ECOSF
- Khalil Raza, ECOSF
- G. Raza Bhatti, HEC

Logistics:

- Ghulam Abbas, ECOSF
- Adnan Ali Abbasi, ECOSF
- Awais Ahmed, HEC
- M. Aslam Baig, PAS
- Ghulam Hussain Soomro, Alif AIlaan

Social Media Coverage:

- Bilal Mehmood, ECOSF
- Nimra Tariq, Alif Ailaan

Report:

- Khalil Raza, ECOSF
- Adnan Ali Abbasi, ECOSF

Inaugural Session of the International Forum on Science Education

Dato Lee Yee Cheong, Chair Global Council InterAcademic Partnership on Science Education Programme from Malaysia was the Keynote Speaker. He delivered his keynote speech on "Digital Revolution, Development Revolution, Science Educaiton and Science Literacy". Dato Lee highlighted the significance and the emerging role of digital technology in shaping the ongoing digital revolution around the globe and particulary in the developing world. He stressed for adopting the Science, Technology, Engineering and Mathematics (STEM) subjects for children to ensure the sustained availability of human resources necessary for the digital revolution and the development revolution as well as equip the world with a rational and discerning citizenry to ensure global peace, harmony and prosperity. Dato Lee said that the world today is in the throe of the 4th Industrial Revolution which is caused by the nexus of billions of people connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge; and technology breakthroughs. Dato Lee underlined that One Belt and One Road (OBOR) is the visionary initiative of china that will transform economic and social and sustainable development along the Belt and Road. He also emphasized to promote Inquiry Based Science Education (IBSE) in the region to prepare younger generations to be well equipped to respond to the global challenges in the Future.

The Chairman, Higher Education Commission, Professor Dr. Mukhtar Ahmad in his address, said that Science, Technology and Innovation (STI) are critical inputs for sustainable economic development and poverty alleviation. He underlined that the effective science education at school level is the fundamental and building block to produce quality higher education, which is critical to achieve sustainable economic development in Pakistan and the developing world. He signified the role of Higher Educaiton Commission in promoting STEM education in Pakistan. Prof. Mukhtar Ahmad urged the participants and stakeholders to use this Forum as a platform to discuss and synergize strengths to ensure and promote quality science education at school levels, which would be critical input to quality higher education in Pakistan. The Chairman HEC thanked the ECOSF and IAP SEP for organising the Forum at HEC campus and providing an opportunity for unversity teachers to understand the importance of Quality STEM Education at schools for a quality education at the universities. He also appreciated that Industry was invited to join in the forum.

Prof. Dr. Manzoor Hussain Soomro, President ECO Science Foundation introduced the International Forum to the audience. In his address, Prof. Soomro thanked all organizing partners for their contribution towards the successful co-organization of this Forum. He said this Forum is an ideal space to generate the debate on science education in Pakistan, sharing of global experiences and the understanding of new paths for improvement of human life, sustainable economic growth and policy making by employing effective science education approach such as the IBSE at all levels. He particularly emphasized on adopting the IBSE program in schools to provide quality input for Higher Education Sector in Pakistan and other ECO member states. Quality higher education can lead to promote Science, Technology and Innovation and Sustainable Economic Development in the ECO region, he added. "We can achieve global competitiveness only if we promote and produce qualified human resources and a STEM workforce to the global challenges of water, climate change, energy and food security for future generations", he added.

Earlier, **President Pakistan Academy of Sciences, Prof. Dr. Qasim Jan** opened the Forum and welcomed all the international guests, delegates and local participants. He also spoke about the role of Pakistan Academy of Sciences for promotion science education in the national development of the country and endorsed the initiative of ECOSF for promotion of science education in Pakistan and neighbouring countries. He also appreciated the IAP SEP for promoting Science Education in Pakistan.

Pannel Discussions

The Forum included a series of panel discussions on a number of thematic areas of science education and explored the ideas around the challenges, implementation of effective science teaching and policy measures by expert panelists on science education around the globe. The International Forum deliberated in depth the interaction of the digital revolution, the development revolution and IBSE/STEM education from preschool through primary secondary and tertiary/higher education education to lifelong learning. The International Forum concluded that through their expert use of social media and mobile communication, IBSE/STEM savvy children and youth can be the agents of change to lead humanity towards sustainability. Each panel discussion concluded with Q&A, feedbacks and active interaction with the audience.

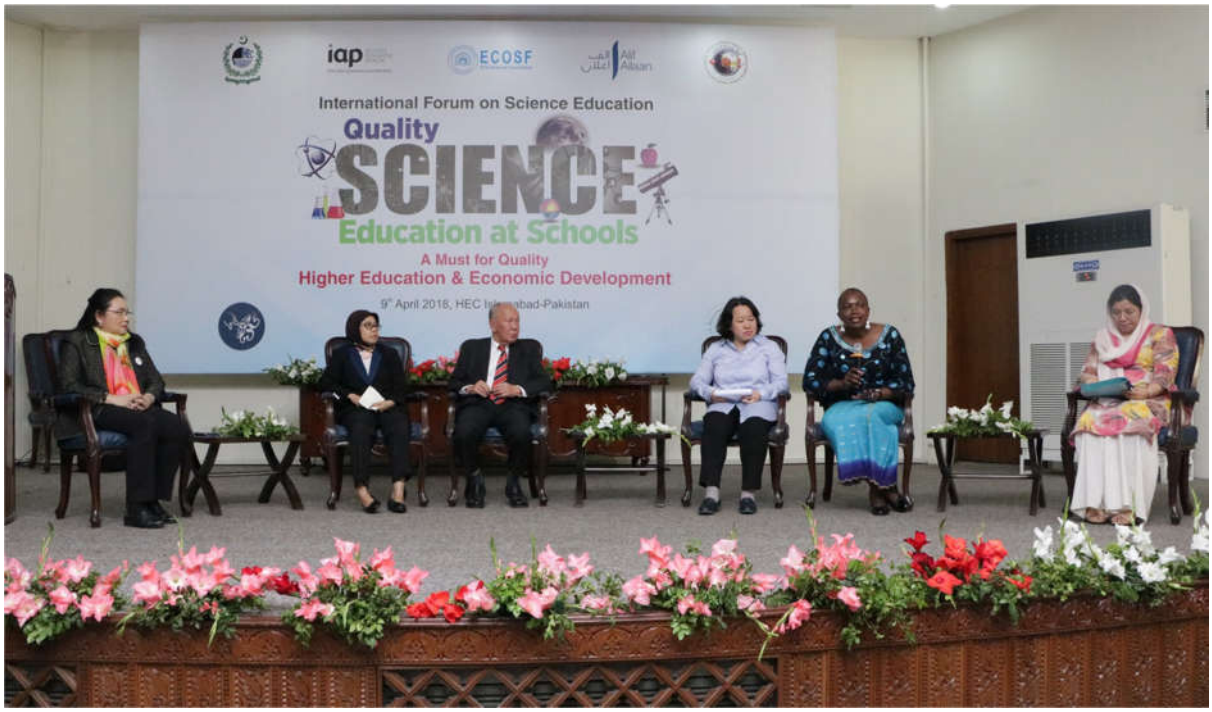
Pannel Discussion – I: IAP Science Education and Science Literacy- Global Perspective

The panel discussion on **IAP Science Education and Science Literacy- Global Perspective** highlighted and explored the initiatives and programmes of IAP SEP. Dato Lee Yee Cheong, Chairman IAP Science

Education Programme (SEP) moderated this panel discussion, where he generated a meaningful dicsussion on number of intiatives undertaken by IAP SEP to promote science education and literacry around the globe. The session brought together expert panelists who highlighted and shared their remarkable work on Science Education Programmes in their respective domains at a global scale.

The panelists in this session included:

1. **Dr Jackie Kado Olang, Executive Director - Network of African Science Academies (NASAC)**
   Inquiry Based Science Education (IBSE) in Africa through the Lens of NASAC
2. **Dr. R. Indarjani Deputy Director for SEAMEO QITEP in Science, Indonesia**
   Status of STEM Education in South-East Asian Countries
3. **Dr. He Zhu, Deputy Secretary General of China Association of Children's Science Instructors (CACSI) of China Association of Science and Technology (CAST)**
   Science Education in China and OBOR Education Exchange Programme
4. **Dr. Tasneem Anwar, Institute of Education and Development (IED), The Aga Khan University, Karachi Pakistan**
   The Fusion of OBOR Civilizations Curriculum Design
5. **Dr. Aphiya Hathayatham, Vice-President of the National Science Museum Klong Luang, Pathum Thani, Bangkok- Thailand**
   Science *Museum and Science Centers for Public Literacy in S&T*



Major takeaways of this Panel Discussion on **IAP Science Education and Science Literacy - Global Perspective** are as follows:

Dr. Jackie Kado Olang stressed that Inquiry Based Science Education (IBSE) is vital in making students more interested in studying science. Since science advice for policy development is critical, there is a need to share ideas and support public involvement in science. She shed light on the challenges of gaining and retaining the interest of girls in science subjects and subsequently in pursuing careers in science.

Dr. R. Indarjani shared the status of science education in South-East Asian Countries conducted by SEAMEO QITEP. Dr. Indarjani said that to incorporate new skills that enhance digital competencies among young students whilst prepare them with the 21st century employable skills. She said, "we have introduced several teachings and learning strategies including IBSE and STEM principles as effective approaches to Project and Problem Based Learning whilst foster scientific thinking, development of critical and creativity process and cultivation of the culture of discovery and innovation among students.

Dr. He Zhu: The Belt and Road Initiative-China's proposal to build a Silk Road Economic Belt and a 21st Century Maritime Silk Road in cooperation with related countries-was unveiled. The initiative aims to release the potential and vitality of the Belt and Road area through a consultative process and joint efforts, with the goal of bringing benefits to all. Within the framework of the Initiative, Children and Youth Science Center of CAST (CYSC) has made great efforts on building up resource sharing networks and promoting multilateral exchanges in the field of science education among the Belt and Road countries.

Dr. Tasneem Anwar IED-AKU shared the key features and updates on the *Fusion of OBOR Civilizations School Curriculum Design* as an initiative of IAP SEP. This project has brought together school educationists and curriculum developers to get down to brass tacks and work together to find connectivity of scientific discoveries in each civilization along the B&R and how such discoveries influence the cultures and civilizations for the betterment of human condition along the Belt and Road countries and regions.

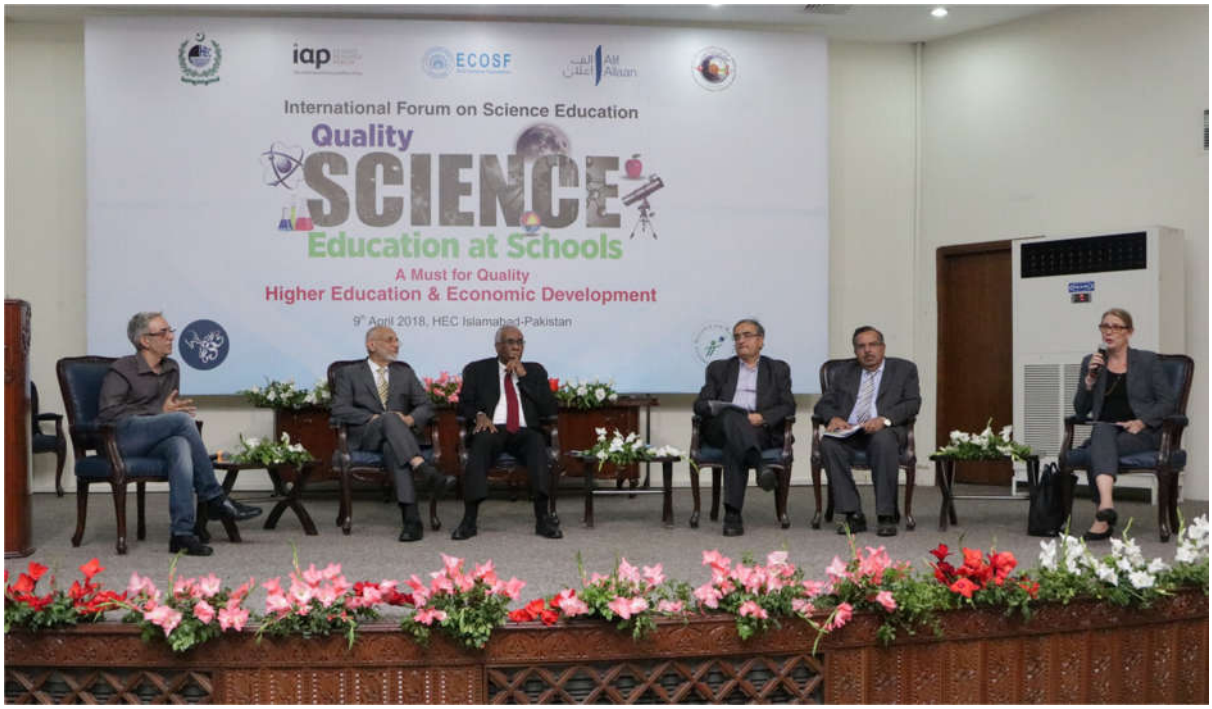
Dr. Aphiya Hathayatham Thailand commenced its first science museum so called National Science Museum (NSM) in 1995 and opened its door to the public in year 2000. Today, NSM has developed four science and technology museums in its complex comprising Natural History Museum, Information Technology Museum, Rama IV Museum (Museum of Biodiversity) and Futurium (Museum of Innovation). NSM, Thailand becomes the largest informal learning centre in Thailand and in South East Asia where people of all ages especially students come to enjoy science, technology and innovation. NSM not only presents various Science Museums and Science Centres but such places have been used as informal learning centre for people in western culture especially in European countries for more than a century. At the beginning, the term "museum" has been perceived as a place to display static objects from the past mostly related to natural history, geology, and paleontology. Not until the early 20th century that science museum started to introduce interactive concept in its exhibition and became more and more popular forms of interactive exhibitions but also it offers varieties of activities for different target groups throughout the year in order to raise public awareness and increase their literacy in S&T.

Panel Discussion II (a): Inquiry Based Science Education for Sustainable Development and inclusive Growth

The panel discussion on **Inquiry Based Science Education for Sustainable Development and inclusive Growth** focused on linkages between the Inquiry Based Science Education and Sustainable Development and Inclusive Growth. **Prof. Dr. Mustafa El Tayeb,** the President Future University, Sudan and member of Global Council of IAP Science Education Programme (SEP) contributed and moderated this panel discussion, where he provided a meaningful insight on importance of IBSE approach to augment Sustainable Development and Inclusive Growth. The session brought together expert panelists who highlighted and shared their wisdom on developing strong linkages between IBSE pedagogy and Sustainable Development.

Panelists:

1. **Ms. Vibeke Jensen, Director/Representative UNESCO Office in Islamabad**
   UNESCO Programme for STI and Sustainable Development
2. **Prof. Nisar Ahmad Siddiqui, Vice Chancellor Sukkur IBA University**
   Concept of Community Colleges and IBSE in Pakistan
3. **Dr. Ali Rejali, Team Leader Isfahan Mathematics House, Isfahan Iran**
   Teaching Mathematics through Non Formal Education Methods – Experiences of Isfahan Mathematics House
4. **Mr. Imtiaz Rastgar, Chairman of Rastgar Group**
   Role of Science Education in Economic Development and Industrial Growth
5. **Mr. Zarrar Khuhro, Dawn TV News**
   Role of Media in Public Literacy in Science and Technology



Major takeaways of this Panel Discussion on **Inquiry Based Science Education for Sustainable Development and inclusive Growth** are as follows:

Vibeke Jensen, UNESCO Representative to Pakistan, highlighted that Science, Technology and Innovation (STI) is crucial for inclusive and sustainable development. Ms. Jensen highlighted the importance of Science, Technology and Innovation in the context of United Nations Sustainabel Development Goals (SDGs). She said that governments and civil society need to renew their national as well as the international commitment to using STI for national development and achieving global peace to contribute to the overall agenda of the sustianable development at a global scale.

Prof. Nisar Ahmad Siddiqui made a presentation on the Concept of Community Colleges in Pakistan. He said Community Colleges are aimed at bridging the gap between rural and urban divide and to

provide equal opportunities to the underprivileged students, who otherwise could not afford to go for the quality education. The objective of establishing the community is to provide quality academic and vocational /technical programs at secondary and pre-secondary levels, characterized by continuous improvement, innovation, and community responsiveness. Through these colleges, we can provide quality education which is accessible and affordable for all, he added.

Dr. Ali Rejali shared his experience of establishing the Isfahan Mathematics Houses (IMH) at Isfahan-Iran for a better understanding of mathematical concepts and usefulness in everyday life without fear of mathematics. He showed that Mathematics Houses extend the possibility of popularizing sciences and Mathematical Awareness among School Students, University Students, Teachers, General Public and even the Blinds. Mathematics Houses are places for developing the sustainable development of the country and enrichment of the international relations for peace. Some activities in IMH related to Art and Mathematics as one of the interdisciplinary studies in the house were presented in some details so as to be replicated by the listeners.

Mr. Imtiaz Rastgar made a presentation on "Role of Science Education in Economic Development and Industrial Growth". He said that schools must have the latest science lab supplies and equipment to make science interesting and effective for students and to encourage them to make significant contributions in the field of science. For which he said the capable and creative teachers are a key players. He also recommended to establish science museums in all main towns across the country and the connect school level science to manufacturing. He concluded that innovation is key to achieve the economic development as science plays a key role in supporting the innovative ecosystems.

Mr. Zarrar Khuhro highlighted the role of media in promoting science. He shared his views that Media can play its role to promote scientific culture in our society. At the same, he was of the view that media shouldn't be solely blamed for lack of coverage as there is no demand from public at large for scientific news. Mr. Khuhro said that there is a gap in the academic discourse and laypersons understanding of science, and academia could and should take this responsibility of bridging the gap between the two narratives.

Panel Discussion II (b): Inquiry Based Science Education for Sustainable Development and inclusive Growth

The third panel discussion of the Forum also deliberated on **Inquiry Based Science Education for Sustainable Development and inclusive Growth** and focused on linkages between the Inquiry Based Science Education and Sustainable Development and Inclusive Growth. **Prof. Dr. N.M Butt**, Fellow, Pakistan Academy of Sciences contributed and moderated this panel discussion, where he provided good insight on importance of IBSE approach to augment Sustainable Development and Inclusive Growth. The session brought together some key expert panelists who shared their wisdom and remarkable work with the audiences.

1. **Dr. Athar Osama, Member S&T, Planning Commission of Pakistan**
   Towards a Smarter Nation - Science Education, Innovation and National Development

2. **Dr. Muhammad Sabieh Anwar, Associate Professor LUMS Syed Babar Ali School of Science and Engineering**
   Teaching Science: how to make it fun and interesting for students
3. **Prof. Dr. Nilofer Halai, Institute of Educational Development at the Agha Khan University, Karachi**
   Science Education for Future
4. **Dr. Lazzat Kussainova, Chairperson of the Committee of Science and Innovations (NGO), Kazakhstan**
   Women and Science

Major takeaways of this Panel Discussion on **Inquiry Based Science Education for Sustainable Development and inclusive Growth** are as follows:

Dr. Athar Osama highlighted the importance of Science and Technology in the national development. He said that science is the critical tool for building and organising empirically verifiable knowledge that is reliably applied for problem-solving in the natural world, Pakistan is clearly lagging behind, and there are many faults in its educational system. He said Pakistani governments have declared science a national priority, and our scientists have won prestigious international honours, a lack of scientific priorities driven by socio-economic development is inhibiting Pakistan from translating its scientific resources into growth and prosperity.

Dr. Sabeih Anwar shared the efforts of the Khwarizmi Science Society for over twenty years. Khwarizmi Society has attempted to bring science to the masses through festivals and grand celebrations. This is achieved through fascinating demonstrations, mathematical games and inquiry based puzzles and the use

of art and music. Dr. Anwar also shared the experiences of engaging in-class physical demonstrations at the advanced University level and overhauled the physics laboratory experience for undergrads and grads. He highlighted some of these experiments in his talk.

Prof. Dr. Nilofer Halai made her presentation on *Science Education for Future*. The focus of her discussion was on Science Education from the perspective of teacher development. These particular views on science education are based on not only my more than three decades of work in this area but also on the findings of three large studies undertaken in the area of Inquiry as a method of teaching, mentorship for teacher development and teacher educators practice, she pointed out. She said the teacher is the cornerstone of any reform effort in the teaching and learning in our schools and institutions of higher learning. If sufficient attention and investment in the education of teachers is not undertaken, both in content knowledge and pedagogy and student outcomes will remain abysmally low. Societies that have developed economically and socially are those who have invested in their teachers, she said.

Dr. Lazzat Abaevna Kussainova talked about the role of women in science. She emphasized that the development of a modern state requires the restoration of gender balance in the leadership of States and the creation of a more rational mechanism of governance at all levels. That is why event though the largest proportion of work force of females is in Republic of Kazakhstan, the advancement of women in power in the country is rather very low! Women in power is now seen as an instrument for the stable, humane and sustainable development of society, since the real equality of men and women changes the priorities of public policy. She underlined that the true democracy can only be spoken of when women are fully equal, even with men, in governments, parliaments and all the institutions of the state that ensure social justice and social stability.

Closing Session

In the closing session, the Forum adopted the Islamabad Declaration. Dato Lee Yee Cheong, Chair Global Council IAP SEP thanked all the organizers and participants and urged to implement the recommendations of the Islamabad Declaration through their respective organizations. Prof. Dr. Ghulam Raza Bhatti Member Operations and Planning of the HEC gave his concluding remarks and thanked all partners for organzing this succesful Forum. He said HEC is fully commited to promote science education at all levels. Prof. Dr. Manzoor Hussain Soomro President ECOSF in his closing remarks, appreciated the IAP SEP, HEC, PAS and Alif Ailaan for their cooperation and support in holding this Forum. In the end, Prof. Dr. Manzoor Hussain Soomro presented the ECOSF Insignia to organizing partners for their contributions and support.

Islamabad Declaration

Islamabad Declaration

In conjunction with the 2018 meeting of IAP SEP Global Council, the International Forum on Science Education was held in Islamabad on 9 April 2018, hosted by the ECO Science Foundation, the Pakistan Higher Education Foundation, Pakistan Academy of Sciences and Alif Ailaan. The International Forum was themed "*Quality Science Education at Schools- A Must for Quality Higher Education and Economic Development*". The Forum attracted more than 200 speakers and participants from 12 countries as well as some diplomats from Pakistan based Embassies. The International Forum engendered animated and

constructive deliberations, culminating in the recomemdations and outcomes in this Isalamabad Declaration.

The world today is in the throe of the 4th Industrial Revolution which is caused by the nexus of billions of people connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge; and technology breakthroughs in fields such as Artificial Intelligence, Robotics, the Internet of Things, Autonomous vehicles, 3-D printing, Nanotechnology, Biotechnology, Materials Science, Energy storage, and Quantum computing. The 4th Industrial Revolution is really the Digital Revolution. Its impacts on the developed world have been the widening wealth inequality and massive unemployment in traditional sectors of the economy.

The world is also in the grip of poverty. Some 60% of world population in the developing world still live in poverty. Their human condition is further exasperated by the adverse impact of climate change. Fortunately the developing world is following a different development model from the developed world. This model is based on inclusive infrastructure development and nurturing of enterprises in the agricultural, mineral resources, manufacturing, trading and other services sectors. This is exemplified by China which has lifted her huge population out of poverty in three decades by more than satisfying the basic necessities of life they term “clothing, food, shelter and transportation” guided by their age-old precept “To get rich build road first” . China is sharing her development model with the rest of the developing world through the One Belt One Road Initiative. This is “the Development Revolution” of the developing world!

After nearly 25 years of experience throughout the world through the persistent advocacy of the Interacademy Partnership (IAP) of some 110 national academies of sciences and 30 national academies of medicine under its Science Education Program (SEP), it has been proven that Inquiry Based Science Education (IBSE) methodology and approach for teaching and learning Science, Technology, Engineering and Mathematics (STEM) from preschool upwards, enhances the curiosity and creativity of children and youth and improves their language and numerical literacy. Moreover, IBSE/STEM education enables children and youth to think critically and to question certain cultural, social and consumption norms unless they have been proven by evidence, to be beneficial. In addition, IBSE for STEM education leading to higher education, will assure the human resources necessary for the digital revolution and the development revolution as well as equip the world with a rational and discerning citizenry to ensure global peace, harmony and prosperity.

The International Forum deliberated in depth the interaction of the digital revolution, the development revolution and IBSE/STEM education from preschool through primary secondary and tertiary/higher education education to lifelong learning. The International Forum is convinced that through their expert use of social media and mobile communication, IBSE/STEM savvy children and youth can be the agents of change to lead humanity towards sustainability.

Therefore the Islamabad Declaration, appreciating the efforts of Pakistan Academy of Sciences, ECO Science Foundation, Higher Education Commission of Pakistan and Alif Ailaan Pakistan in organizing the Forum,now:

- Calls on all IAP member academies of sciences and their IBSE/STEM partners to redouble their

commitment to IBSE/STEM education, especially the enhancement of IBSE/STEM education by the application of digital technologies through active participation of UNESCO's flagship programs like ICT and Education 2030, Mobile Learning Week and Open Source Education etc.

- Calls on all IAP member academies of sciences to lobby their national governments to establish more interactive science museums/science centres. In the interim, to get their national and provincial museums to set up a STEM section to spread STEM literacy to their citizens.
- Calls on IAP SEP Global Council to actively support Climate Change Education- the IBSE way.
- Calls on industry, particularly the infrastructure and digital technology related enterprises to assist national academies of science and their national governments to enhance STEM education (following IBSE approach) policies and initiatives to ensure the formation of the creative and innovative human capital.
- Calls on China under the One Belt One Road Initiative; (i) to invest in the IAP SEP Project of Fusion of OBOR Civilizations Curriculum Design for Schools; (ii) welcome the wider participation of the youth from developing countries in their OBOR Teenager Maker Camp and related digital activities; (iii) construct digitally interactive mobile exhibits (IBSE based approach) on the scientific and technological inventions and innovations in OBOR civilizations and (iv) uplift technical universities in developing countries in their digital technology curriculum by faculty and student exchanges and provision of laboratory equipment etc. Pakistan with China Pakistan Economic Corridor (CPEC) project could be a priority.
- Appreciates the establishment and efforts of Pakistan Alliance for Maths and Science (PAMS) and ECOSF for advocating and promoting IBSE/STEM education in Pakistan and ECO member countries respectively.
- Calls upon National Academies of Sciences in the 10 ECO member states to cooperate and collaborate with ECOSF for of IBSE and STEM in their countries.
- Calls on Pakistan, the host country of this International Forum to devote more resources to IBSE/STEM education in schools so as the assure quality intakes into their universities, which should lead to sustainable economic development.

Bionotes of Speakers & Panelists

Dato Lee Yee Cheong Honorary Chair, International Science Technology and Innovation Centre for South- South Cooperation under the Auspices of UNESCO (ISTIC); Chairman Global Council, InterAcademy Partnership (IAP) Science Education Program (SEP); STEM Advisor to Minister of Science, Technology and Innovation Malaysia; Pro-Chancellor, Infrastructure University Kuala Lumpur; Member of International Committee, LAMAP Foundation France; Commissioner, UN Broadband Commission for Sustainable Development; Board member of Future University Sudan; Senior Fellow of the Academy of Sciences Malaysia; Founder President, Academy of Engineering and Technology of the Developing World; Founder President of the ASEAN Academy of Engineering and Technology; Foreign Fellow of the Australian Academy of Technological Sciences and Engineering; Founding Board member of the InterAcademy Council (IAC). He was President of the World Federation of Engineering Organisations (WFEO); Co-chair of Task Force Science, Technology and Innovation of the United Nations Millennium Project; Member of the Board of Trustees of Engineers Against Poverty, U.K; Member of International Advisory Board of Grand Challenges Canada and Member of the National Economic and Social Council Kenya.

Prof. Dr. Mukhtar Ahmed, a PhD from University of California, Riverside, USA, has amassed over 25 years of educational development and management credentials. He has also been pivotal in the development of Higher Education management policy as well as Allied Matters. Dr. Mukhtar Ahmed has been the Chairman and Executive Director of the Higher Education Commission of Pakistan. Dr. Ahmed previously served as deputy Director General of Islamic Educational, Scientific and Cultural Organization (ISESCO) in Rabat, Morocco. There, he was responsible for the Directorates of Education, Science, Culture and Communication, ICPSR, CPID (Planning and Strategic Division) and ISESCO regional centers.

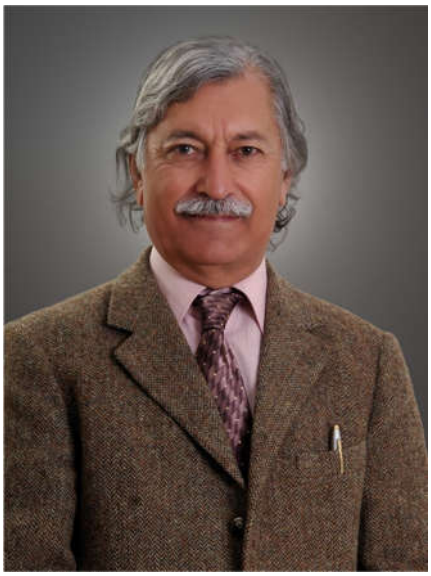
Prof. Dr. Manzoor Hussain Soomro is the President of ECO Science Foundation (ECOSF). He is a renowned Pakistani Scientist specializing in Crop Protection and Science Education. He has made outstanding contributions in the field science, technology research, policy management and Science, Engineering, Technology and Innovation (SETI). He is popularly known for being a strong proponent of Inquiry Based Science Education (IBSE) in the region. He is credited with establishing strong linkages between scientific research projects and their commercialization. Prof. Soomro has demonstrated outstanding scholarship and extraordinary service to the scientific community in the ECO Region and globally. He is

recipient of prestigious international and national academic awards and scholarships, and he has always remained a top performer throughout his academic career.

Prof. Soomro is highly credited and recognized for his extraordinary contributions in the establishment of the ECO Science Foundation (ECOSF) as its Founder President, which is a premier Scientific & Technological promotion organization and a Specialized Agency of Economic Cooperation Organization (ECO), which is a 10-countries Inter-Governmental Organization. Under his exceptional leadership, ECOSF has achieved many significant milestones and has promoted SETI in the region. He is one of the pioneers who launched and implemented the IBSE pedagogy and has implemented IBSE learning approach across the educational systems and human development, especially at schools, and promotes science education at grass root levels not only in the ECO region, but also at global forums.

Prof. Soomro made a groundbreaking identification and diagnosis of the Epidemic of Banana Bunchy Top Virus (BBTV), which resulted in essential protection mechanism of banana crop in Pakistan that had already claimed massive damage to the banana industry. This earned him the International Recognition and Appreciation, and as a result he was elected on the Advisory Board of International Banana Network for Asia & Pacific. He has led and implemented over 30 Industrial Projects in Pakistan Science Foundation. He has developed and Implemented science programmes with S&T Institutions, Universities, Provincial & District Governments, Scientific Societies and NGOs active in scientific and educational programmes for the masses. He is an architect of many major scientific programmes for international cooperation. In recognition of his contributions in the field of science education and strengthening cooperation between Pakistan and France, the French Republic bestowed upon him their erstwhile Civil Award “Order of Academic Palms” in 2013.

Prof. Soomro is acclaimed as one of the leading scientists in the field of agricultural sciences and STI promotion in the region, with 190 publications of different type in the field, 6 industrial patents and contributed to several books and chapters published and circulated internationally. He serves as the Regional Editor (West & Central Asia) of the Journal of Science, Technology Policy Management and Editor in Chief of Pakistan Journal of Nematology. Besides, he has been a Member of over 30 Boards of Governors of International and National Scientific Societies, Councils and Learned Bodies of the World.

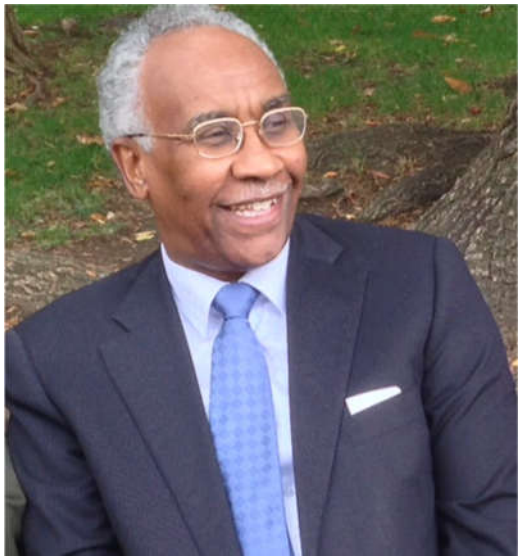


Prof. Dr. Qasim Jan is the President of Pakistan Academy of Science and Advisor of the OIC Standing Committee on Scientific & Technological Cooperation (COMSTECH), Islamabad, and Professor Emeritus at the University of Peshawar. He is/was a member of governing bodies of many institutions, peer-review committees, and on the editorial boards of several journals. He remained Chairman of the Himalayan Regional Committee of the International Lithosphere Program (1998-2004). From Oct. 1997 to Dec. 2000, he served as Vice Chancellor (VC), Univ. of Peshawar, and July 2001 to Jan. 2004, as founder VC of Sarhad Univ., Peshawar. In 2004, he was titled as Distinguished National Professor by the Higher Education Commission of Pakistan, and from Oct. 2005 to Feb. 2010 served as VC of the Quaid-i-Azam University, Islamabad. Dr. Jan is a fellow/member of many learned societies, including Academy of Sciences for the Developing World, Pakistan Acad. of Sciences (PAS), Nepal Geological Society (Honorary), and Mineralogical Soc. of Great Britain (Emeritus).

He has carried out extensive investigations of the geology, mineralogy, petrology, geochemistry, and

tectonics of the Himalaya-Karakoram of Pakistan, with emphasis on crust-building and geodynamic processes. These have contributed to 1) better understanding of the geodynamics of NW Himalaya, 2) petrologic and tectonic evolution of the lower and middle continental crust in general and Kohistan arc in particular, 3) chemical mineralogy of chromite occurrences in Pakistan, 4) knowledge on seismicity in northern Pakistan, 5) publication of the seminal book "Geology and Tectonics of Pakistan" (Kazmi & Jan 1997), 6) compilation of the first reconnaissance geological map of northern Pakistan (Tahirkheli & Jan 1980), and 7) provision of a broad data base useful in research, planning and mineral industry. He participated actively in several national and international research projects, has 270 publications, edited ten special volumes on the geology of the Himalaya-Karakoram, and co-authored two books.

In addition to heavy involvement in research, as a senior Professor and Director, Dr. Jan played an important role in developing an academic institution of international reputation in Geology. As VC, his responsibilities have included the overall administration, academic/financial planning and development, resource management, and research activities of the universities he headed. He has received many awards and honours, some of which are: 1) ISESCO Prize in S&T for contributions in Geology (2010), 2) Pakistan Civil Awards Hilal-i-Imtiaz (2010), Sitara-i-Imtiaz (1999), Tamgha-i-Imtiaz (1994); and Presidential Award Izaz-e-Fazeelat (1993), 3) Gold medals from Pak. Acad. Sciences (1980, 1997, 2009), 4) Ministry of S&T awards for outstanding research publications (1996) and Productivity Allowance for life-time research contributions (2001), and 5) Best book-authorship (Natural Sciences, 1995-97 period), Scientist of the Year (1990, 2009), and Earth Scientist of the Year (1986) awards, from PAS and National Book Foundation of Pakistan.



Prof. El Tayeb Mustafa, President of the Future University-Sudan since 2011, is the former Director of the Division for Science Policy & Sustainable Development at the United Nations Educational Scientific and Cultural Organization (UNESCO).

Dr. El Tayeb holds an Engineering Degree (B.Sc. Honors) from St. Petersburg (Leningrad) Mining Institute, a Master and a PhD from Bordeaux I University in France. He started his career in 1974 as a mining engineer/ geophysicist at the Geological Survey Department of the Sudan. His work covered the utilization of geophysics to civil engineering works, engineering geology and the exploration of mineral resources both in the various regions of the country. Between 1976 - 1980 he worked as a researcher in the Red Sea. His research covered areas such as marine seismic reflection, airborne gravity and magnetic surveys of the central Red Sea, development and adaptation of the shallow water seismic techniques to deep-sea research.

Pr. El Tayeb joined UNESCO in 1981 as a programme specialist in charge of the development of scientific research and higher education in the Arab region. Between 1986 and 1996 he assumed the post of the Chief of Section responsible for capacity building of science and technology infrastructure as well as the development of human resources in both Arab and African member States. From 1996 until 2009, He assumed the post of chief and then Director of UNESCO programmes on science and technology policies, strategies as well as the development of partnerships between universities, in all regions.

Pr. El Tayeb is the Secretary-general of the Sudanese National Academy of Sciences, a Founding Member of the Arab Academy of Sciences, a Corresponding Member of the Royal Academy of Science (Belgium), the Secretary of the UNESCO-EOLSS Joint Scientific Committee in Charge of the Encyclopedia of Life Support Systems. He also served for 10 years as Editor-in-Chief of the UNESCO World Science Report.

Pr. El Tayeb is a member of the Governing Board of the International Research and Training in Science and Technology Strategies in China, a member of the Governing Board of the International Center for South-South Cooperation in Science, Technology and Innovation in Kuala Lumpur, Malaysia, and a member of the organizing committee for the Daejeon Global Innovation Forum, Korea. He is also member of the Global Council for Science Education of the InterAcademy Panel. In November 2017, he was elected Chairman of the UNESCO Science Commission for the period 2018-2019.

Professor Dr. Noor M. Butt did his M. Sc Physics (1957) from Government College, Punjab University, Lahore, Pakistan and his Ph.D (Nuclear/Solid State 1965) and D.Sc (Physics, 1993) from the University of Birmingham, U.K. His classical work (1963) with O'Connor established the confirmation of Waller's theory (1923) of phonons at the Bragg diffraction peaks using diffraction of Mossbauer gamma-rays from LiF single crystals which has been extensively cited for several decades and printed in several books including those of Cambridge University Press (U.K.) and North Holland Publishers.

He has published over 160 research papers in the above-mentioned areas. Professor Butt has lectured and presented Research Papers in conferences in over 25 countries in the East and West. He is on the Editorial Boards of several National and International Journals (including J.Nanoparticle Research, JNR ,M/S Springer Verlag, Germany, 2008—todate and J.Nano Education,JNE, USA) and Member of Governing Bodies and Technical Committees of several organizations/Universities. He is Visiting/Honorary Professor at a few Universities in Pakistan.

Dr. Butt is Fellow of the Pakistan Academy of Sciences and the Islamic Academy of Sciences and has been President of a few Professional Societies of Pakistan. He is the First Joint Winner of International Kharazmi Award(KIA), Iran(1995). He was elected Hon. Member of the World Innovation Foundation (WIF). The WIF has world known Scientific and Engineering Professionals as its elected Members including about 90 Nobel Laureates.

He retired in 1996 as Chief Scientist/ Director General of PINSTECH, Pakistan's premier research Institute and he was the first to be given the position of Scientist Emeritus (Life-title) of PAEC in view of his outstanding services to the Pakistan Atomic Energy Commission (PAEC).Dr Butt has worked as Lecturer in Government College Lahore(1958-1961) and then worked for Atomic Energy Commission(1966-1996) at its premier research Institute at PINSTECH in various capacities and finally retired as Chief Scientist/Director General of PINSTECH which had over 2000 employees including over 400 professionals. Dr Butt worked as Chairman of Pakistan Science Foundation(2005- 2008) .

Dr Butt is the initiator of Nanotechnology in Pakistan. He worked as the Chairman of the National Commission on Nano Science and Technology ,NCNST (2003-2008), Ministry of Science and Technology

and as a result , several laboratories in Pakistan are now engaged in Nanotechnology in Pakistan. He has delivered about 60 lectures on Nanotechnology at home and abroad over the last 10 years.

Prof. Ali Rejali of Isfahan University of Technology (IUT), who graduated from Statistics Department of Stanford University in 1978 and who has been involved in doing theoretical research, training many undergraduates and graduates, as well as being involved in some statistical projects for industry and mathematics and statistics education projects, decided to devote his life for popularizing Mathematics and Statistics.

Ali is the co-founder of the Iranian national mathematics competitions and has a generally strong record of establishing enrichment activities in his country including the mathematics houses which he and his colleagues have established and recently which are grown up to an International Network of Mathematics Houses throughout the World. He has had considerable influence in setting the scene for the national mathematics syllabus in mathematics and statistics via lectures at national conferences and other representations.

He has spent one year at Harvard University in USA and was a scholar at Australian National University (ANU) and Australian Mathematics Trust (AMT) in Australia and Stanford University in USA during his sabbatical leaves. He has also had considerable influence in supporting teachers, as well as being the co-founder of many societies for mathematics teachers throughout the country and the founder of both the Iranian Mathematics Education conferences and the Iranian Statistics Conferences. Ali was involved in some major studies for improvement of mathematics and statistics education in Iran , as well as organizing many workshops on teaching Statistics and probability at school level (Joint ICMI/IASE Study: Teaching Statistics in School Mathematics, Mexico,2008). Ali has been actively involved in the World Federation of the National Mathematics Competitions (WFNMC) since its beginning and he had major role in many committees of the Federation, as well as being the chair and coordinator of some sections of WFNMC conferences in China and Australia. He is now a Vice President of and a member of the Program Committee of the WFNMC. He was one of the co chairs for some of the TSGs of ICMEs and invited speaker at a special program on “Mathematics, Education, and Society” at the 6th International Congress on Mathematical Education (ICME-6). He was also a plenary speaker at the IASE satellite Conference in Morocco in 2017. He was a member of the 16th International Commission on Mathematics Instructions (ICMI) study and one of the official representatives of Iran at ICMI. He is also the representative and organizer of the International Mathematics Tournament of Towns Competitions in Iran, as well as the Olympiad competitions dealing with realistic mathematics. Ali Rejali is the winner of some prestigious awards such as Paul Erdos Award of the WFNMC (in 2006), Behzad Award of the Iranian Mathematical Society (in 2012) and Popularization of Science Award of Iran (2017).

Mr. Nisar Ahmed Siddiqui became the Director (Vice Chancellor) of Sukkur Institute of Business Administration in 2004, after gaining wide experience in Management, Administration and Academia in national as well as international universities. He obtained his Masters in Economics from University of Sindh. He has ten (10) years' teaching experience in the fields of Mathematics, Economics and English Language. He then obtained his Masters in Education from University of Sindh. His academic achievement was rewarded with Gold Medal.

Mr. Siddiqui started his career as a Civil Servant in the Government of Pakistan. He served in various top level capacities such as Deputy Commissioner of the District, Commissioner of the Division and Home Secretary, a top slot in the Government. He has also worked as Secretary for Mines and Mineral Development. There he got an opportunity to negotiate and work with many international companies (German, Chinese and British) for establishment of Coal Powered Energy Plant in Pakistan.

Mr. Siddiqui proceeded to USA in 1987 and did his MBA with major in finance from Boston University. He got his place in the Dean's list there. His areas of research interest include a) Marketing of Dates in Pakistan; b) Conflicts in the process of 'Devolution of Power' in local government of Pakistan; and c) Factors for low-standards of education in Sindh (Pakistan). After return from USA apart from his government job, he had been teaching at the Institute of Business Administration, Karachi. He teaches Economics, Finance and Research Methodology. Mr. Siddiqui had also been working as the Managing Director SITE (Sindh Industrial Trading Estate), where he very closely interacted with multinationals such as Siemens, Philips, Glaxo, etc.

Ms. Vibeke Jensen, Representative/Director, United Nations Educational Scientific and Cultural Organization (UNESCO) Vibeke Jensen Prior to returning to Pakistan in November 2014, Ms. Vibeke Jensen was Director UNESCO Liaison Office, New York and simultaneously Director of the Secretary-General's Global Education First Initiative (GEFI). Born in Denmark, Ms. Jensen holds a Master's in History from the University of Copenhagen. She started her career in the Ministry of Labour in Copenhagen in 1987. In 1989 she joined UNESCO as assistant to the Coordinator for Women's programmes. In 1994 she was transferred as Education Programme Specialist to the UNESCO Office for the Sahel (Burkina Faso, Mali and Niger) in Ouagadougou, Burkina Faso. In 1997 she moved to the UNESCO regional office in Bangkok as Girls' and Women's Education Programme Officer. From 2004-2007, Ms. Jensen was on secondment to UNICEF Pakistan as the Girls' Education Specialist, and Education Section Chief a.i. In March 2007 she was nominated Head of the UNESCO Office in Viet Nam and in 2009 Director of the Cluster Office in Dar es Salaam

(Comoros, Madagascar, Mauritius, Seychelles, United Republic of Tanzania).

MRS. JACKIE OLANG KADO is the Executive Director of the Network of African Science Academies (NASAC) secretariat based in Nairobi, Kenya. NASAC is a consortium of science twenty-five science academies in Africa, with a membership drawn from all spheres of science. Her role ensures that NASAC activities are implemented in a coordinated and timely manner, and that secretariat functions are executed optimally. She has served science academies in various capacities since the establishment of NASAC in 2001. Mrs. Olang Kado holds a Masters Degree in Project Planning and Management (MA-PPM) from the University of Nairobi (UoN) and a Bachelor of Education (B.Ed.) degree in Mathematics and Commerce, also from UoN. She has functional knowledge of French and has specialized in project management for policy advice in science and for scientific institutions.

Dr. R. Indarjani (Doctor of Philosophy in Marine Biology from the Adelaide University, South Australia) **is Deputy Director for Program of SEAMEO Regional Center for Quality Improvement of Teacher and Education Personnel (QITEP) in Science, Bandung Indonesia.** This institution has committed to promote Inquiry Based Science Education (IBSE) through various and innovative trainings and workshops, producing learning resources, conducting education seminars and conferences and establishment of professional community learning in region. Her effort to promote the IBSE was also touch the policy level by defining IBSE as niche areas of the center and also conducting High Level Policy Forum on IBSE in 2015 that officially opened by the Minister of Education and Culture of Republic of Indonesia, requested commitment to implement proper IBSE in a science teaching and learning process in national level and regional level. Currently, she is conducting the multi years project on ICT-Based Program on Adopting 21st Curriculum through Science and Mathematics as mandated by SEAMEO Secretariat, Bangkok. In national level, she succeeds to bring STEM Education be adopted in National Curriculum as another approach in delivering effective science teaching and learning. She is a member of Global Council of International Academy Panel on Science Education Program (IAP-SEP) 2015-2018, Funding Fellow of the Academy of Engineering and Technology for developing World (AETDEW) 2017-2020.

Dr. Apjiya Hathayatham is a Vice President of the National Science Museum, Thailand. She holds M.Sc in Seed Technology from Mississippi State University, USA and Ph.D. in Science from the National Centre for Public Awareness of Science, The Australian National University, Canberra, Australia. She has been involved in the development of NSM from the very beginning since 1997. She was the first Director of the Information Technology Museum who had been responsible for its development from ground zero until its opening in 2012. In 2015, she got Deepak Rathore International Award for Science Popularization. She is a Co-opted Councillor of Asia Pacific Network of Science and Technology Centre/Museum (ASPAC), a Vice Chair of the Association of Academies and Societies of Sciences in Asia (AASSA) Special Committee on SHER Communication (Science, Health, Environment, and Risk), and a member of the Global Network of Science Academies on Science Education Program (IAP SEP) Global Council. She is now supervising the Office of Special Project Incubation which is taking care of the development of a new innovation learning centre so-called "Futurium."

Dr. He ZHU is the Deputy Secretary General of the China Association of Children's Science Instructors (CACSI) and Editor-in-Chief of the China Science and Technology Education Journal, published by CACSI. She started her career in science education as a project manager in the Children and Youth Science Centre of the China Association for Science and Technology (CAST) where she was in charge of many of CAST's national science education programmes.

In 2003, she joined the Leading Group for Drafting the National Scheme for Scientific Literacy as the chief coordinator of the research programme for making the State policy document. The Outline of the Scheme was issued by the China State Council in 2006 which set the objective of improving the scientific literacy of all Chinese citizens. She joined CACSI in 2010 and has since devoted herself to the field of vocational training and the development of science education teaching resources.

She has been a member of the Global Council of IAP Science Education Programme (IAP SEP) since 2013. She has a Masters Degree in Law from Peking University and an MSc in Political Sociology from the London School of Economics and Political Science. She is currently studying for her doctorate in Neural Information Engineering in Southeast University, China.

Dr. Athar Osama is the Member of the Planning Commission responsible for science and technology and one of the leading science and innovation policy advisers to the Government of Pakistan. He also the

founder of Pakistan Innovation Foundation (PIF) and the Muslim World Science Initiative. At PIF, Dr. Osama has spearhead fundraising and executive responsibility for developing and delivering several innovation programmes including a National Innovation Grand Challenges (NIGC) initiative, an annual Conference (Pakistan Innovation Forum), and National Innovation Awards. Prior to this, Dr. Osama was the Director of Middle East and Asia for Angle Plc. - a UK-based technology commercialization consulting, management, and venture capital firm that specialized innovation programmes, incubators, and research parks in Europe, North America, and the Middle East.

Dr Nelofer Halai is a Professor at the Aga Khan University, Institute for Educational Development in Karachi, Pakistan. She has played a leadership role in developing the doctoral program in Education at AKU which has now graduated 10 PhDs. She is the founding and the current president of the Pakistan Association of Research in Education (PARE) which is playing a key role in fostering a research culture in education in Pakistan. She is the recipient of the coveted Anna Marie Schimmel Award for doctoral studies, and received the Blanche Snell Award twice for dissemination of outstanding research findings, and she also received the Phi Delta Kappan Academic Leadership Award. Professor Halai's interests lie in two areas science education and higher education – PhD in particular. Her work on science education and doctoral program in Education has received national and international attention through her research and publications as well as invited lectures. Professor Halai is an active researcher with many national and international research projects to her credit with publications in international journals. She is the recipient of one of the first social science research grant from the Higher Education Commission (HEC) for her research on professional development of science teachers through inquiry teaching. Her latest book, enhancing primary science through school-based mentors: A study from Pakistan will be launched by Oxford University Press in 2018. This book focusses on science teacher education through mentorship.

Dr. Muhammad Sabieh Anwar is an Associate Professor of physics at the LUMS Syed Babar Ali School of Science and Engineering. He helped establish the physics department and was among the principal founders of the School's experimental facilities and curriculum. He remained Chair of the Physics Department for a period of five years. Ideas from his physics instructional laboratories have been replicated in five Pakistani universities. His research interests encompass spintronics, magnetism and optics. Sabieh has published around eighty research articles in international journals including Science and Physical Review Letters. He is the General Secretary of the Khwarizmi Science Society which is aimed at popularization of science at the grass roots levels. Prior to joining LUMS SSE in 2007, Sabieh was a post-doc in chemistry and materials science at University of California, Berkeley and a PhD student, as Rhodes Scholar, at the Oxford

University. He is recipient of the TWAS medal in physics in 2008 and the National Innovation Prize in 2015.

Dr. Tasneem Anwar is an Assistant Professor at the Agha Khan University- Institute for Educational Development, Karachi, Pakistan. Dr Anwar has recently completed her PhD in Curriculum and Instruction in STEM Education from the University of Minnesota, USA. Her doctoral dissertation study, explores Science, Technology, Engineering, and Mathematics (STEM) integration in Pakistan through design-based online teacher professional development. Dr Anwar has a rich experience of working on curriculum development, implementation and evaluation both in Pakistan and Minnesota, USA. As a former science teacher, teacher educator and researcher, her work focuses around facilitating STEM teachers to become reflective practitioners through coaching and learning both in face to face and online, popular social networking environments.

Mr. Imtiaz Rastgar is the Founder and Chairman of Rastgar Group comprising manufacturing, machinery distribution and service companies. Rastgar Engineering is a leading manufacturing and exporter of Auto Parts for assembly lines in Pakistan, Europe and North America. Rastgar & Co (Pvt) Ltd. is distributor and market leader in the field of Industrial Machinery for such renowned manufacturers as CompAir and Ultrafiter for Germany. He is a foundry man for the last 42 years with several kinds of casting successes to his credit and the Company Rastgar Engineering is founded on its specialization in high quality ductile iron casting and precision machining, producing safety critical components for the automotive and commercial vehicle market. Bulk of the production is exported to the US, Western Europe and ASEAN. From 2005 to 2007, Imtiaz Rastgar headed the Engineering Development Board of the Federal Ministry of Industries, Production and Special Initiatives, Govt. of Pakistan as CEO and Vice Chairman and Vice Chairman of Advisory Council of the Federal Ministry of Industries. Currently, he works as an Engineering Sector Expert for the Dutch CBI, Centre for Promotion of Imports from Developing Countries and also as an independent Market Development Consultant for SME Businesses. He has been instrumental in guiding and converting a large number of SME Enterprises to become active exporters to the EU and continues to mentor and guide family businesses to professionalize and expand into export markets." Imtiaz Rastgar is also Chairman of the Skill Development Council Islamabad, which has trained more than 15,000 mid career professionals in and around Islamabad and Northern Pakistan.

Zarrar Khuhro is a Pakistani journalist who has worked extensively in both the print and electronic media industry. He is currently co-hosting an hour long talk show *"Zara hat ke"* on the Dawn News TV.

Kusainova Lazzat (Abayevna) - Lawyer and Scientist, Chairman of the Committee of Science and Innovation of the International Organization Expo & Women, Kazakhstan

Lazzat Kusainova graduated with honors from the Faculty of Law of the Kazakh National State University named after Al-Farabi in 1993, located in the former capital of Kazakhstan – Almaty. In the same year, she was enrolled in full-time graduate school of the Faculty of Law of the Kazakh National State University named after Al-Farabi, where for three years she received scientific training at the Department of Environmental and Agricultural Law. Studying in graduate school in 1994, she began her teaching at the Kazakh State Law Institute as a teacher of Environmental and Land Law, and in 1995 she was accepted as a Junior Researcher at the Institute of Private law, headed by academician M. Suleimenov. After graduating from graduate school, in 1996 Lazzat Kusainova began her career in the public service of Kazakhstan, starting to work as a Lawyer of the Agency for Copyright and Related Rights.

In March 1997 she was invited to work in the Senate of the Parliament of the Republic of Kazakhstan, where she worked until March 1999 as a Consultant to the Committee on Foreign Affairs, Defense and Security.

The higher attestation Commission of the Ministry of Education and Science of the Republic of Kazakhstan she was awarded with scientific degree – Candidate of Legal Sciences, PhD. Theme of the candidate's dissertation: "The right of land use of peasant (farm) farms in the conditions of development of market relations in the Republic of Kazakhstan" (1998). In 1999, in connection with the beginning of the civil service reform in Kazakhstan, Lazzat Kusainova was invited to work in the newly established Agency for Civil Service Affairs. Here she worked as the head of the Department of Improving the Legislation of the Public Service. Her immediate task was to write the Law on Civil Service and its regulations.

In 2000, Lazzat Kusainova was invited to work in the Administration of the President of the Republic of Kazakhstan. Where she worked first as a representative of the President in the Parliament of Kazakhstan, and then was appointed Head of the Secretariat of the Commission on Human Rights under the President of the Republic of Kazakhstan – the socio-political Department of the

Presidential Administration.

From 2001 to 2008 Lazzat Kusainova worked in the Supreme Court of the Republic of Kazakhstan. Then she headed the publishing House "Yuridicheskaya kniga" (Law Book), which was engaged in the production of printed products of the Supreme Court of Kazakhstan – the magazine" Bulletin of the Supreme Court of Kazakhstan "and the magazine "Zanger".

At the end of 2008, Lazzat Kusainova started to work as an adviser to the Chairman of the Board of JSC National Scientific and Technological Holding Parasat, then until April 2010 she worked as a corporate Secretary of the Board of Directors of the Holding. In April 2010, having passed the competitive selection, Lazzat Kusainova was appointed Deputy Chairman of the Science Committee of the Ministry of Education and Science of the Republic of Kazakhstan, having worked in this position until January 2017. During this period, she developed The Law on Science of the Republic of Kazakhstan (2011) and the Law on Commercialization of the Results of Scientific and (or) Scientific and Technical Activities of the Republic of Kazakhstan (2014). From 2012 to 2013, Lazzat Kusainova studied at the National School of Public Policy of the Academy of Public Administration under the President of Kazakhstan. Having defended her master's thesis on "Formation of political management of the national scientific system in the Republic of Kazakhstan" (2013), she received a master's degree in Political Sciences.

Media Coverage

‘Quality science education at schools- a must for quality higher education’

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Islamabad: Muslim countries were urged to get united and jointly work to regain the prestige the Muslims used to enjoy in their golden era being leaders in science.

The views were expressed at the International Forum on Science Education held in conjunction with the 2018 meeting of Inter Academic Partnership on Science Education Programme (IAP SEP) at the Higher Education Commission (HEC) Secretariat on Monday.

The forum themed ‘Quality Science Education at Schools- A Must for Quality Higher Education and Economic Development’ was jointly organised by HEC, ECO Science Foundation, Pakistan Academy of Sciences and Alif Ailaan. Dr. Mukhtar Ahmed, Chairman, HEC, Dr. Qasim Jan, President, Pakistan Academy of Sciences, Dr. Manzoor Hussain Soomro, President, ECO Science Foundation, and around 200 speakers and participants from 12 countries of the world attended the forum. Dato Lee Yee Cheong, Chair, Global Council InterAcademic Partnership on Science Education Programme graced the forum as keynote speaker.

In his address, Dr. Mukhtar Ahmed, chairman, HEC said science, technology and innovation are critical inputs for sustainable economic development and poverty alleviation. He underlined that effective science education at school level is a building block to produce quality higher education, which is critical to achieve sustainable economic development in Pakistan. He signified the role of HEC in promoting

Science Technology, Engineering and Mathematics (STEM) education in Pakistan. He urged the participants and stakeholders to use this Forum as a platform to synergise strengths to ensure and promote quality science education at school levels, which would be critical input to quality higher education in Pakistan. “We can achieve global competitiveness only if we promote and produce qualified human resources and a STEM workforce to the global challenges of water, climate change, energy and food security for future generations”, he added.

“The Muslims mindset needs to be shaken to harness the potential of our youth, as youth are the main powerhouse of the Muslim world,” he emphasised. He underscored that outcome based education must of concentrated so as to create impact of humanity and society. He urged the world nations to fix their directions towards development of constructive science for the well-being of whole mankind.

Delivering his keynote speech on “Digital Revolution, Development Revolution, Science Educaiton and Science Literacy,” Dato Lee Yee Cheong highlighted the significance and emerging role of digital technology in shaping the ongoing digital revolution around the globe, particularly in the developing world. He emphasised adopting the STEM subjects for children to ensure the human resources necessary for the digital revolution and to equip the world with a rational and discerning citizenry towards global peace, harmony and prosperity. He observed that the world today is passing through the 4th Industrial Revolution caused by a nexus of billions of people connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge; and technology breakthroughs. He underlined that One Belt and One Road (OBOR) is the visionary initiative of China that will transform economic and social and sustainable development along the belt and road. He also emphasised promotion of Inquiry Based Science Education (IBSE) in the region to prepare next generations to respond to the global challenges in the Future.

On this occasion, Prof. Dr. Manzoor Hussain Soomro shed light on the main objectives of holding international forum. He said the forum was an ideal space to generate the debate on science education in Pakistan, sharing of global experiences and the understanding of new paths for improvement of human life, sustainable economic growth and policy making by employing effective science education approach such as the IBSE at all levels. Quality higher education can lead to promote Science, Technology and Innovation and Sustainable Economic Development in the ECO region, he added.

In his welcome remarks earlier, Dr. Qasim Jan welcomed all the international guests, delegates and local participants. He revealed the role of Pakistan Academy of Sciences for promotion of science education in the national development of the country.

The forum included a series of panel discussions on a number of thematic areas of science education and explored the ideas around the challenges, implementation of effective science teaching and policy measures by expert panelists on science education around the globe. The forum deliberated in depth on the interaction of digital revolution, development revolution, inquiry based science education and STEM education from pre-school through primary, secondary and tertiary education to lifelong learning.

The forum adopted Islamabad Declaration with recommendations from experts. The recommendations included a call to all IAP member academies of sciences and their IBSE/ STEM partners to reiterate their commitment to IBSE/STEM education, and to lobby governments to establish more interactive science museums.

The recommendations also stressed the IAP SEP Global Council to actively support Climate Change Education. The industry, particularly the infrastructure and digital technology related enterprises, are urged to assist national academies of science and governments to enhance STEM education initiatives.

The Economic Cooperation Organization Science Foundation (ECOSF), Higher Education Commission (HEC) of Pakistan, the InterAcademy Partnership Science Education Program (IAP SEP) and Pakistan Academy of Sciences (PAS) have join together to organize an International Forum on Science Education to debate about what endeavors should be make in the advancement of science in response to the desire of society and to address the difficulties posted to human and social development.

The guest speaker for the forum was Dr. R. Indarjani Deputy Director for SEAMEO QITEP in Science, Indonesia, Prof. Dr. Mustafa Al Tayeb, President Future University, Sudan and Prof. Nisar Ahmad Siddiqui, Vice Chancellor Sukkur IBA University.

The main theme of the Forum is "Quality Science Education at Schools- Which is must for education and economic development of any country focusing on thematic and social aspect of the most important issues of science and technology. To achieve sustainable economic development the fact that an effective science education at school level is the bedrock and building block to produce quality higher education. There is need to invest more on the science education at all level especially at the school level.

For the improvement of science education, human life and sustainable economic growth effective science education approach such as the Inquiry Based Science Education (IBSE) should me employed. IBSE should be an approach to teaching and learning in general but especially the Science, Technology, Engineering and Mathematics (STEM) subjects at all levels particularly the schools. IBSE programme was first launched in the ECO region in June 2015.

Teaching technological literacy, critical thinking and problem solving through science education, gives students the skills and knowledge they need to succeed in school and beyond. It is about equipping youth, individuals, communities, groups, businesses and government to live and act sustainably; as well as giving them an understanding of the environmental, social and economic issues involved.

HEC emphasises role of science education in economic development

By APP Published: April 10, 2018

ISLAMABAD: Higher Education Commission Chairman Dr Mukhtar Ahmad on Monday underlined that an effective science education during early school years is a stepping stone to produce quality higher education, which is vital to achieving sustainable economic development in Pakistan. He stated this while addressing "The International Forum on Science Education which was held in conjunction with the 2018 meeting of InterAcademic Partnership on Science Education Programmes (IAP SEP)".

The forum was themed 'Quality Science Education at Schools- A Must for Quality Higher Education and Economic Development' was jointly organised in Islamabad by HEC, ECO Science Foundation, Pakistan Academy of Sciences and Alif Ailaan. Dr Ahmed, further said that science, technology and innovation are critical inputs for sustainable economic development and poverty alleviation. He emphasised the role of HEC in promoting Science Technology, Engineering and Mathematics (STEM) education in Pakistan.

He urged the participants and stakeholders to use this Forum as a platform to combine strengths to ensure and promote quality science education at school levels, which would be critical input to quality higher education in Pakistan. "We can compete with the global economy only if we promote and produce qualified human resource. A STEM workforce is required to counter the global challenges of water, climate change, energy and food security for future generations," he added.

The Chairman urged the Muslim countries to get united and work collectively to regain the prestige the Muslims used to enjoy in their golden era being leaders in science. "The Muslims mindset needs to be woken to the potential of our youth, as youth are the main powerhouse of the Muslim world," he emphasised.

He highlighted that outcome based education must be given more significance so as to create an impact on humanity and society. He urged the world nations to focus their directions towards the development of science for the evolution of our education system. Global Council InterAcademic Partnership on Science Education Programme, Chair, Dato Lee Yee Cheong was the keynote speaker

Delivering his keynote speech on "Digital Revolution, Development Revolution, Science Education and Science Literacy," Dato Lee Yee Cheong highlighted the significance and emerging role of digital technology in shaping the ongoing digital revolution around the globe, particularly in the developing

world.

He emphasised the importance of adopting the STEM subjects for children to ensure the human resources necessary for the digital revolution and to equip the world with a rational and perceptive population which would take the steps required to achieve global peace, harmony and prosperity. He also emphasised promotion of Inquiry Based Science Education (IBSE) in the region to prepare next generations to respond to the global challenges in the future. IBSE is an educational technique intended to inspire students by allowing them to design and conduct their own scientific investigations. Dr Manzoor Hussain Soomro said the forum was an ideal space to generate the debate on science education in Pakistan.

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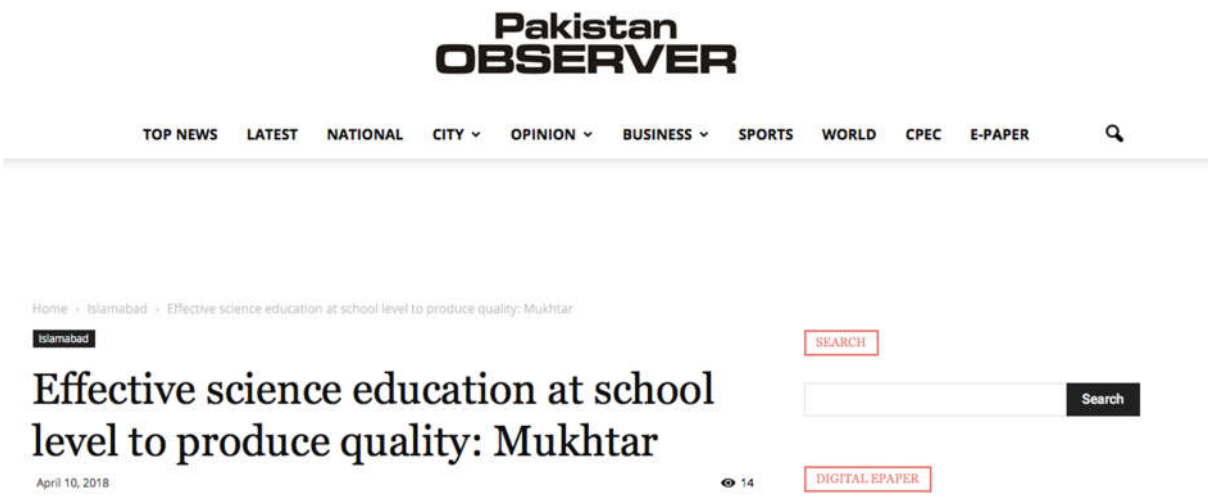

Chairman HEC, Dr Mukhtar Ahmad on Monday underlined that effective science education at school level is a building block to produce quality higher education, which is critical to achieve sustainable economic development in Pakistan. He stated this while addressing "The International Forum on Science Education which was held in conjunction with the 2018 meeting of InterAcademic Partnership on Science Education Programme (IAP SEP)".

The forum themed 'Quality Science Education at Schools- A Must for Quality Higher Education and Economic Development' was jointly organised here by Higher Education Commission(HEC), ECO Science Foundation, Pakistan Academy of Sciences and Alif Ailaan.
Dr Mukhtar Ahmed, Chairman, HEC, Dr Qasim Jan, President, Pakistan Academy of Sciences, Dr Manzoor Hussain Soomro, President, ECO Science Foundation, and around 200 speakers and participants from 12 countries of the world attended the forum. Dato Lee Yee Cheong, Chair, Global Council InterAcademic Partnership on Science Education Programme graced the forum as keynote speaker.
Dr Mukhtar Ahmed, further said that science, technology and innovation are critical inputs for sustainable economic development and poverty alleviation. He signified the role of HEC in promoting Science Technology, Engineering and Mathematics (STEM) education in Pakistan.
He urged the participants and stakeholders to use this Forum as a platform to synergise strengths to ensure and promote quality science education at school levels, which would be critical input to quality higher education in Pakistan. "We can achieve global competitiveness only if we promote and produce

qualified human resources and a STEM workforce to the global challenges of water, climate change, energy and food security for future generations", he added.
The Chairman urged the Muslim countries to get united and jointly work to regain the prestige the Muslims used to enjoy in their golden era being leaders in science.—APP

List of Participants

Sr. No.	Name & Designation	Orgnization	Country
1.	Akmal Khan	IIUI University	Pakistan
2.	Prof. Seyed Komail Tayebi	Univ. of Isfahan	Iran
3.	Prof. Dr.N.M. Butt	PINSAT, Preston University	Pakistan
4.	Prof. Manzoor H. Soomro	ECOSF	Pakistan
5.	Memoona Rauf Khan	CASE	Pakistan
6.	M. Shahid Iqbal	COMSATS	Pakistan
7.	Sajid Mehmood	IIUI University	Pakistan
8.	Jehanzab Khan	IBR UOP	Pakistan
9.	M. Amir Shahzad		Pakistan
10.	Dr. Arshad Ali	HEC	Pakistan
11.	Dr. Hafiz Inamullah	Univ of Punjab Lahoe	Pakistan
12.	Dr. PARVEEN Khan	Univ of Punjab Lahoe	Pakistan
13.	Irfan Mahmood	COMSATS	Pakistan
14.	Prof. Dr. Shamsul Qamer	COMSATS	Pakistan
15.	Ms. Tabanu Saleem	IIUI University	Pakistan
16.	Ms. Muatia zabe	COMSATS	Pakistan
17.	Farhad Jarral	Alif Ailaan	Pakistan
18.	Mian Afzaal Zahid	Durrani STEM'S Service	Pakistan
19.	Dr. Ishtiaq Ali	COMSATS	Pakistan
20.	Shazia Parveen	(ST) FGEIs(C/G)Ckl.R.w.p	Pakistan
21.	Zarrar Khuhro	DAWN News TV	Pakistan
22.	Dr. Fawad Kaiser	QEC,STMU	Pakistan
23.	Rana Athar Javed	IT Company	Pakistan
24.	Unaeza Ali	Sukkur IBA University	Pakistan
25.	Ali Ahmed	Durrani STEM`S@Service	Pakistan
26.	Major Sami Ullah	FGEIs(C/G)Dte, GHQ	Pakistan
27.	Mr. M. Habibzoi	Diplomat, Embassy of Afghanistan	Afghanistan
28.	Mr. Sameer	Diplomat, Embassy of Azerbaijan	Azerbaijan
29.	Andre deBussy	Cultural Counselor French Embassy	France
30.	Matthieu Gaulon	French Embassy	France
31.	Wajahat Hussain		Pakistan
32.	Syed Muhammad Khizar Ali		Pakistan
33.	Adeel Moid Butt		Pakistan
34.	Saman Majeed	ROBO Teacher	Pakistan
35.	Sayyed Paras Ali	Technology Times	Pakistan
36.	Imran Ghazali		Pakistan
37.	Dr. Faisal Khan	CECOS University	Pakistan
38.	Nehmat Uldin		Pakistan
39.	HM. Akhter Sociologist		Pakistan

40.	Uzma Rehman Khaatak	SBBWC	Pakistan
41.	Dr. Sajid Ali (AP)		Pakistan
42.	Zunaira Ali	Alif Ailaan	Pakistan
43.	Dr. Saima Tanveer	PASTIC-PSF	Pakistan
44.	Hassan Bin Rizwan	Sabak	Pakistan
45.	Ridhwan Khan	Dawood Foudation	Pakistan
46.	Amin Shah	IIUI University	Pakistan
47.	Muhammad Zahid Khan Abbasi	Secretary for Higher Education Govt. of AJ&K	Pakistan
48.	Dr. Shahnaz Perveen	Govt.Sadiq College (W) University of Bahawalpur	Pakistan
49.	Dr. M.Zaheer Asghar	UMT, Lahore	Pakistan
50.	Khalid Mehmood	UMT, Lahore	Pakistan
51.	Major(R) Shahzada	Mirpur Universty	Pakistan
52.	Dr. Samina Naseem		Pakistan
53.	Raiha Akram	Alif Ailaan	Pakistan
54.	Sultan Bashir		Pakistan
55.	Nimra Tariq	PAMS, Alif Ailaan	Pakistan
56.	Ayesha Haleem	IIUI University	Pakistan
57.	Dr. Ghufram Ahmed	CIIT	Pakistan
58.	Sobia Noman	Greenwich Company Roots Millenniom	Pakistan
59.	Umema Iftikhar	kind ston Primary Roots Millenniom	Pakistan
60.	Prof. Dr. Manzoor H. Shah		Pakistan
61.	Fatima M. Kasim	IIUI University	Pakistan
62.	Dr. Shazia Rehman Khan		Pakistan
63.	Abida Hamid	PAEC	Pakistan
64.	Dr. M. Anwer	Uni of Edu.Lahore	Pakistan
65.	Dr. Sughra Choudhry Khan	Aga khan Foundation	Pakistan
66.	Dr. M. Munir Kayani	IIUI University	Pakistan
67.	Dr. Uzair	University of Sarodha	Pakistan
68.	Ms. Hina Bloach	Technology Times	Pakistan
69.	Irfan Ullahh	NISTE	Pakistan
70.	Furqan Mahmood Butt	COMSATS	Pakistan
71.	Farida Khan	Pakturk int,School & college	Pakistan
72.	Dr. M. Qaiser Fatmi	COMSATS	Pakistan
73.	M. Shazar	Aman Foundation	Pakistan
74.	Prof. Dr. Sufiana Khatoon	NUMLUniversity	Pakistan
75.	Sadia Naz	IIUI University	Pakistan
76.	Rabia Kishwer	IIUI University	Pakistan
77.	Maryam Aftab	The Science School	Pakistan
78.	Fozia Aleem	The Science School	Pakistan
79.	Umar Saeed	DPL	Pakistan

80.	Dr. Fouzia Khan	Govt Of Sindh	Pakistan
81.	Prof. Dr. M. Faheem Malik	University of Gujrat	Pakistan
82.	Dr. M. Imran		Pakistan
83.	Dr. Ibtasam Thakur	Lahore College for Woman University	Pakistan
84.	Huma Khan		Pakistan
85.	Benazir Junejo	Govt. College Hyderabad	Pakistan
86.	Tayyaba Qurban	Group Development Pakistan	Pakistan
87.	Prof. Nelofar Halahai	AKU IED Karachi	Pakistan
88.	Madiha Rehman	AZCorp Entertainment	Pakistan
89.	Ali Usman	Sindh Education Foundation	Pakistan
90.	Moon Khan Nazir	IIUI University	Pakistan
91.	Abdul Rauf	Pakistan Science Club	Pakistan
92.	Khawaja Safeer Ahmad	IIUI University	Pakistan
93.	Shahzad Altaf Raja	IIUI University	Pakistan
94.	Shehr Sultan Majeed		Pakistan
95.	Amina Saleem		Pakistan
96.	Pater Shivani	Alif Ailaan	Pakistan
97.	Aslam Pirzada	Ideal Authonetic (Pvt)Ltd, Khi	Pakistan
98.	Prof. Dr. Qasim Jan	Pakistan Academy of Sciences	Pakistan
99.	Dr. Irfan Ahmed Baig	Pakistan Academy of Sciences	Pakistan
100.	Dr. Asad	IIUI University	Pakistan
101.	Ms. Sehrish Javed	IIUI University	Pakistan
102.	Ms. Fatima Batool	IIUI University	Pakistan
103.	Ms. Zobia Shabbir	IIUI University	Pakistan
104.	Ms. Qurat-ul.ain	IIUI University	Pakistan
105.	Shahida Mehmood		Pakistan
106.	Prof. Dr. Iftikhar Ahmed	Director PAEC Schools	Pakistan
107.	Syeda Rehana Batool	Pakistan Science Foundation	Pakistan
108.	Ms. Baela Raza Jamil	Idara Taleem o Agahi Lahore	Pakistan
109.	Saima Malik	Roots Millennium School ISB	Pakistan
110.	Sohaib Umar	IIUI University	Pakistan
111.	M. Shujaat Hussain	IIUI University	Pakistan
112.	M. Faizan	IIUI University	Pakistan
113.	Naveed Azam	IIUI University	Pakistan
114.	LI Yang	Chinese Academy of Sciences	China
115.	M. Nadil Ali		Pakistan
116.	Wajahat Ali	IIUI University	Pakistan
117.	Kaleem Ullah	IIUI University	Pakistan
118.	Syed Ghazanfer Abbas	IIUI University	Pakistan
119.	Sarfraz Siddiqu	IIUI University	Pakistan
120.	Shazia Jabeen		Pakistan

121.	Dr. Ishtiaq Hussain		Pakistan
122.	M. Irfan	PAEC	Pakistan
123.	Dr. Javed Iqbal	COMSATS	Pakistan
124.	Mehnaz Ali	IIUI University	Pakistan
125.	Ms Salbiah binti Mohd Som	Academy of Sciences Malaysia	Malaysia
126.	Ms Norzamani binti Abdol Hamid	Academy of Sciences Malaysia	Malaysia
127.	Datin Maharom Mahmood	Academy of Sciences Malaysia	Malaysia
128.	Brig (R) Dr. Younes	University of Peshawar	Pakistan
129.	Prof. Dr. Riasat Ali	Abdul Wali khan University	Pakistan
130.	Naheed Shahid	Roots Millenium School	Pakistan
131.	Ghazala Bahadur	IIUI University	Pakistan
132.	Shazia Sarfraz	PAEC Chashma	Pakistan
133.	Dr. Iftihar Ahmad Baig	The University of Lahore, Lahore	Pakistan
134.	Prof. Dr. Nabi Bux Jumani	Dean (Edu) IIUI University	Pakistan
135.	Dr. Ijaz Ali	COMSATS	Pakistan
136.	Dr. Aphiya Hathayatham	VP, National Science Museum	Thailand
137.	Dr. Zain Akhter		Pakistan
138.	Dr. Shamsa Aziz	IIUI University	Pakistan
139.	Abdul Saboor Dean	PMAS	Pakistan
140.	Raja Adil Abbass	HEC	Pakistan
141.	Syed Amjad Abbas Naqvi	HEC	Pakistan
142.	Hamid	Mab Mob(Media)	Pakistan
143.	Dr. Shaheen Khan	HEC	Pakistan
144.	Bashir Ahmad	FGEIs(C/G)	Pakistan
145.	Fateh Gul	FGEIs(C/G)	Pakistan
146.	Dr. Khalid Khurshid	BZU ,Multan	Pakistan
147.	Dr. Ali Rejali	Isfahan Mathematics House	Iran
148.	Bushra Latif (TGT)	FGEIs(C/G)	Pakistan
149.	Iftikhar Ali Shah Hiraina	HEC	Pakistan
150.	Nasira Habib	Khoj	Pakistan
151.	Habib Ullah	PAEC	Pakistan
152.	Dr. Shafqat Hussain	GCUP	Pakistan
153.	Engr. M. Salman	Durrani STEM`S@Service	Pakistan
154.	Huma Zia	Alif Ailaan	Pakistan
155.	A. Rahman Hbib	Afghanistan Embassy	Pakistan
156.	Bilal Ahmed	HEC	Pakistan
157.	Samir Goliyuv	Azerbaijan Embassy	Pakistan
158.	Ali Effendi	SPO education AICFCP	Pakistan
159.	Ehsan	Tajarbagah	Pakistan
160.	Muafia Jabeen	CIIT Lahore	Pakistan
161.	Rashid Manzoor		Pakistan
162.	Dr. Ibtasam Thakur	Diplomat	Malaysia

163.	Khalil Raza	ECOSF	Pakistan
164.	Ghulam Abbas Rahar	ECOSF	Pakistan
165.	Adnan Ali Abbasi	ECOSF	Pakistan
166.	Bilal Mehmood	ECOSF	Pakistan
167.	Syeda Hina Imam	ECOSF	Pakistan
168.	Maira Zaheer	ECOSF	Pakistan
169.	Anees-ur-Rehman	ECOSF	Pakistan
170.	Barkat Mehmood	ECOSF	Pakistan
171.	Zulqarnain Saeed Sajid	ECOSF	Pakistan
172.	Jameel Hadyat	ECOSF	Pakistan
173.	Rahat Juna	ECOSF	Pakistan
174.	Ghulam Hussain Soomro	PAMS Alif Ailaan	Pakistan
175.	Prof. Dr. Mukhtar Ahmed	Chairman HEC	Pakistan
176.	Prof. Nisar Ahmad Siddiqui	Sukkur IBA University	Pakistan
177.	Mr. Imtaiz Rastgar	Rastgar Group	Pakistan
178.	Dr. Athar Osama	Member (S&T), Planning Commission of Pakistan	Pakistan
179.	Dr. M. Sabieh Anwar	School of Sci. & Engg, LUMS	Pakistan
180.	Prof. Dr. M. Aslam Baig	Pakistan Academy of Sciences	Pakistan
181.	Mr. Janghir	HEC	Pakistan
182.	Dr. M. Akram Shaikh	PASTIC	Pakistan
183.	Saad Mahmood	CASE UNIVERSITY	Pakistan
184.	Mr. Hammad	Pak Academy of Sciences	Pakistan
185.	Dr Indarjani Soegiarto Soenarto	SAMEO QITEP in Science	Indonesia
186.	Dr. Chen Wei	Chinese Academy of Sciences	China
187.	Dr. Tasneem Anwar	Agha Khan University	Pakistan
188.	Prof. Ye Zhaoning		China
189.	Ms Nurhanani binti Zainuddin	Academy of Sciences Malaysia	Malaysia
190.	Dato Lee Yee Cheong	IAP SEP/AETDEW	Malaysia
191.	Dr. He Zhu	China Association of S&T (CAST)	China
192.	Prof. Mustafa El Tayeb	Future University Khartoum	Sudan
193.	Prof. Mooha Lee	Academy of Sciences of South Korea	South Korea
194.	Dr Jacqueline Alice Akinyi Olang	Network of Academies of Sciences of African Cooperation (NASAC)	Kenya
195.	Dr. Ghulam Raza Bhatti	Higher Education Commission	Pakistan
196.	Mr. Jahanzeb Manglani	Higher Education Commission	Pakistan
197.	Ms. Sadaf Tahir	Higher Education Commission	Pakistan
198.	Mr. Awais Ahmad	Higher Education Commission	Pakistan
199.	Mr. Tanveer Ahmad	Higher Education Commission	Pakistan
