

SCIENCE, A HUMAN RIGHT

WORLD SCIENCE DAY

FOR PEACE AND DEVELOPMENT



Pages: 8 Vol: IX Special Edition

November 10, 2018

www.TechnologyTimes.Pk

**10
NOV
2018**



Audrey Azoulay,
Director-General of UNESCO

This World Science Day for Peace and Development 2018, UNESCO urges everyone to exercise their human right to participate in and benefit from science.

This right is enshrined in the Universal Declaration of Human Rights, which celebrates its 70th anniversary this year, but it is only when we use this right to join and support scientific endeavours that we can transition to stronger science and reinforce scientific culture in our societies.

UNESCO also calls on governments, businesses, civil society and scientists to fully embrace the values of responsible and ethical science, by fully implementing the 2017 UNESCO Recommendation on Science and Scientific Researchers.

Together, we should strive for greater access to science education - particularly for girls - as well as support Open Science and innovative ways for advancing research.



Flavia Schlegel, Asst. Director-General
of UNESCO for the Natural Sciences

Everyone has a right to participate in and benefit from science, and science centres and museums play an important role in making science accessible to all. They share UNESCO's objectives of linking science more closely with society, sharing scientific knowledge and fostering the engagement of young people in science, technology and innovation. In the year that the world celebrates the 70th anniversary of the Universal Declaration of Human Rights, UNESCO puts the Human Rights at the heart of the World Science Day for Peace and Development and reaffirms its support to science centres, science museums and regional networks partnering with the Association for Science and Technology Centers.



Prof. Manzoor Hussain Soomro,
President ECO Science Foundation

The celebration of a World Science Day for Peace and Development underlines the importance and relevance of science in our daily lives. This year, the theme is "Science, a Human Right", which is in recognition of the 70th anniversary of the Universal Declaration of Human Rights by the United Nations. Everyone must have a right to participate in and benefit from science. Science has played a critical role in the development of this world, and scientific innovations and inventions have led to significant technological advancements, which have continuously improved our lives. There are numerous aspects of life upon which science has a tremendous beneficial impact including: food security, disease prevention, water security; climate change, energy and agriculture etc.

Today, we face enormous challenges and it will be extreme-

Continued on page 6

Linking science to CPEC



M. Abdul Aleem Baig

World Science Day for Peace and Development (WS-DPD) has been celebrated every year, when United Nations Educational, Scientific and Cultural Organization (UNESCO) declared 10th November as the day dedicated to science. This day is celebrated so as to emphasize the importance that science has in modern-day society and to have understanding of the function that science has in the promotion of peace and

sustainable development. The core motive of the Science Day is the promotion and understanding of science among the society and general public to make them realized why science is relevant to their daily lives and to engage them in debate on science related issues.

The global nature of science, the speed with which it is developing and spreading, and the extent it is critical to national priorities are leading more countries to look at the techno-economic mechanism of their science strategies. Science exchanges are an essential platform for countries looking to create better connections with the public of other nations, and to establish and strengthen relationships. With multiple socio-economic challenges faced by the world today, scientific interactions are valuable platforms for states and scientists to cooperate and

Continued on page 6

Science for society — via Science Diplomacy



Dr. I. E. Qureshi

It is a matter of debate whether scientific enquiry is an end in itself or whether it should be a means to an end. The discussion often leads to conflicting views about relative merits of 'pure' and 'applied' research. Historically, the systematic study of natural phenomenon based on observations and reasoning was indeed a curiosity driven activity. Fundamentally, the motive of any research in natural sciences is still the same - a need to solve the puzzles about matter and the forces that dictate its behaviour. However, it became

obvious as far back as Middle Ages that scientific knowledge is utilitarian in nature and that it could lead to great advantages in trade and warfare. After the industrial revolution of 18th century, there never has been a doubt that the science and the resulting technologies based on it have a strong influence over the lives and livelihoods of common people. Subsequent developments increasingly manifested a clear nexus between S&T capacity and socio-economic progress of a society. Europe, and later on North America, was able to gain unprecedented political and military influence over the rest of the world because of their leadership in S&T. Over the course of last one hundred years a clear and consistent pattern has emerged whereby any nation that embarks on a course of mastering modern technology becomes powerful and prosperous as evidenced by

the economic strengths of countries like Japan, Korea and China. So, why is it that countries like Pakistan don't realize the importance of using a well-tested formula for development? Could it be because of lack of interactivity between scientific community and decision makers? If so, then the remedy lies in Science Diplomacy.

The idea of using the services of wise men by kings and queens goes back to the times of Alexander the great. In modern parlance advisers with specialised knowledge are considered necessary for well-informed decisions to run the affairs of State and to conduct inter-state affairs. In 1999, the US National Research Council (NRC) published a report that emphasized the need to depute a senior scientist as advisor to the Secretary of State in view of the pervasive role of science

Continued on page 4



PAKISTAN'S ONLY NEWSPAPER ON SCIENCE AND TECHNOLOGY

Executive Editor A. M. Zaidi

Editor SAMZ Paras Ali

Incharge Editorial Section Hina Rasheed Baloch

Incharge Web Section Sayyed Shozib Abbas

Bureau Chief Karachi Syed Ali Raza

www.technologytimes.pk

E-mail: info@technologytimes.pk

Head OfficeSuite 5, G Floor, Khudadaad Heights
Margalla Avenue, E-11, Islamabad
Phone: +92 316 532 77 03**Bureau Office**C-89, Sherton Heights
Abul Hassan Isphahani Rd, Karachi
Phone: +92 333 57 55 926

Volume IX — Special Edition

No. 8444/2 (100) Press - 2009

Published by S. A. Mustafa Zaidi Paras Ali

for "Foundation for Comprehensive Social Development (FCSD)"

Ed. Tweet**Science Communication-
The missing genre**

QUALITY OF people's life is transformed in last hundred years because of scientific research. Science has great potential to do a lot more but it depends on how well scientific research is communicated to general masses. Science has revolutionized and transformed industry, and has fundamentally altered the quality of life. It does this by utilizing the best available logic and evidence to a range of important topics. At the same time, many people in Pakistan are learning and using scientific research; here it is important question which needs to be answer about whether, and to what extent government is supporting scientific research, and what impact that research is creating for a common Pakistani. These questions are noticeable in many ways — from complaints about how colleges and universities are funded to questions about the role that legislatures should play in directing government agencies' scientific agendas. It is for sure that if we need to communicate and to increase science's public value we must improve communication. For the purpose to improve in other parts of the world academic communities are continually improving science communication to implement courses including unambiguous training in communication of science and technology to general audience as a part of basic science curricula at the graduate and undergraduate level as well. On the other hand, in Pakistan there is huge lack of science communicator. If we give a close look to newspaper and talk show we will soon realize that there is a hole that should not to be there; and in media, it is not to be found. Whenever it comes to covering science and technology media as a whole, electronic format as well in print, be consistent that it will not fascinate the viewer or reader. But unfortunately, the situation is opposite that it is not in the best interest of media houses. Pakistan continues to produce outstanding journalist in every fields; so, why not in the Science and technology? It is because of that we have a very few number of trained scientists to communicate the value of what they do to researchers outside of their subfields or discipline. In universities of Pakistan science journalism is not treating as a subject and in outcome in industry there is no human resource in media organizations (electronic & print). To maximize the impact and significance of science communication there is need to develop a great understanding and deeper knowledge of how to more effectively serve the important topic to audience which they desire. As a starting point, there ought to be exchange of professionals between academia and industry so that they both come to know the demands of their communities. Scientific funding agencies and universities can incentivize such expertise because with every new day profound stories are continuing to produce which need to be popularize. Our thoughts and lives are inferior just because of not knowing about them; so ultimately resulting poor science popularization in Pakistan.



Muhammad Hamza

Role of science to achieve Global Goals

The Sustainable Development Goals are the sketch to get better and more secure future for all. They covers the global challenges we face, including those related to our daily life problems including poverty, hunger, health, education, global warming, gender equality, water, sanitation, energy, urbanization, environment and social justice.....

Role of science to achieve Global Goals

Science is the main pillar of economic growth and development and science is key in achievement of Sustainable Development Goals (SGDs), also known as global goals.

Sustainable Development Goals

The Sustainable Development Goals are the sketch to get better and more secure future for all. They covers the global challenges we face, including those related to our daily life problems including poverty, hunger, health, education, global warming, gender equality, water, sanitation, energy, urbanization, environment and social justice. The United Nations General Assembly named it "Transforming our World".

The Goals are interlinked with each other and in order to achieve anything, it is important that we achieve each Goal and target in time and achieving all 169 targets would signal accomplishing all 17 goals till 2030.

Impact of science on global goals

To Enjoy a reliable future of peace, dignity for all Science is very crucial for the race to reach 17 sustainable development goals by 2030.

"No one can ignore the vital role of science, technology and innovation" (STI) in "advancing the transformative impact" of the 2030 Agenda, said Marie Chatardová, President of the Economic and Social Council

While rapidly changing new technologies like artificial intelligence and machine learning have immense promise, that improving living standards and increasing productivity.

So, the policy sciences "map" the mechanisms through which these goals can be achieved.

How science can help make the sustainable development goals from distant dream to applicable reality

Policies and strategies are more likely to succeed if they are based on science.

So, policymakers and researchers will have to work together. And that means trade-offs.

For science related persons



Investments in science will be benefit for economic development and scientific progress as well as for building up and expanding scientific infrastructure

need to learn new skills about the researches in communities and how to connect policy makers to cope with the complex problems

If this integration takes place, the strategies to affect the SDGs will be informed by proves and will have results that improve people's daily life.

Scientists and policy or law-makers should work across all the sectors. So, for example, health scientists need to work with scientists in other areas, as well as with non-health policy-makers.

Health policymakers working in cities need to work with researchers and other policymakers in housing, transport, food and trade.

For this purpose, the UN Interagency Task Force for different policy sectors developed a Non-communicable disease toolkit.

This toolkit for non-communicable diseases, produced in partnership with the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) includes a facilitator guide, a volunteer manual and

five sections.

Labor ministers, for example, are advised that non-communicable diseases reduce the labor force, productivity and economic growth. They can see how preventing non-communicable diseases makes economic sense.

Conclusion

- Raise investments in science
- By initiating minimum target investments for science and technology and should work for new innovations in every field of science. Investments in science will be benefit for economic development and scientific progress as well as for building up and expanding scientific infrastructure.
- Promote an integrated scientific and the diversity of knowledge systems.
- Increase the scientific research and technological capabilities across industrial.

In this respect, international cooperation among National Academies of Sciences needs to be enhanced and governmental research firms, which play a crucial role in sustainability that need to be healthy.



Abdul Majid Qureshi

Moving forward with Science and Technology

It is important to demonstrate to the wider public why science is relevant to their daily lives and to engage them through debate and dialogue on related issues, helping to establish a relation between science and



Moving forward with Science and Technology

It is important to demonstrate to the wider public why science is relevant to their daily lives and to engage them through debate and dialogue on related issues, helping to establish a relation between science and society.

Moving forward with Science and Technology

Media engagement for building awareness among the masses is among the most daunting challenges of Science popularization in Pakistan. Some important resolutions require addressing the ailing S&T sectors of nations of the South for adopting a scientific culture, and benefitting from the outpour of knowledge economy could be as below.

Higher investments in science

The most profitable venture is investing in science. Countries that have invested heavily in Education and Science reaped benefits of fast economic growth, a fact which is now an open secret for the rest. Pakistan needs to push for bigger investments in riskier new areas for bigger returns. Some of the key areas have already been identified in the current S&T policy including nanotechnology, computation science and renewable energy. However, the gross spending on R&D (GERD) is an important marker which can help track how much is being invested in the future of science. It is shamefully low at the moment and needs generous review.

Priorities relevant areas of S&T

In order to capitalize on its meager financial commitments to the sector and its immense human resource, it is imperative for Pakistan to identify and achieve consensus over its priority areas that are most pertinent to its development and economic needs. While a focus on applied sciences and technology is required, this must not be at the cost of abandoning excellence in basic scientific research. After all innovation is strongly linked with knowledge creation capacity in basic sciences.

Aim for an innovation-based economy

Leaders of the global economies innovate and draw the fruit

of invention through intellectual property enforcement, and move on to innovate further. Countries that lack this capacity have to buy innovations from advanced countries and have to put them on the production line. Our focus must also be on innovating and generating patents in our priority areas. This makes the role of universities that are the true centres of innovation in Pakistan ever more important. A weak patent enforcement, offers the least reward for innovation, particularly in the area of ICTs, where Pakistan has immense potential to catch up with the rest of the world.

Encourage entrepreneurship in science

Gone are the days when science remained just in the lab or in theory books, today science is creating value that can be sold as products and solutions. Instead of trying to create jobs, the government should enable people to create jobs for themselves as well as others. Industries that once used to house, expensive R&D laboratories, now hunt for ideas in colleges and universities through various competitions.

Science Parks are places where industry comes close to the lab, or where the labs open up to the industry. Such initiatives of scientists doing R&D in the private sector, with labs affiliated with universities have still to take off in Pakistan. Moreover, a comprehensive tax rebate policy is required for promoting spin-offs or startup businesses emerging in incubation centres created by the HEC in various universities.

Expand science media for Science Communication

In order to educate the masses, and to present a softer image of the country to the world, science media certainly needs the patronage of the government. In a Seminar on Science Communication and Journalism, held in April 2015, the then Federal Secretary, Ministry of Information and Broadcasting, urged the media to allocate at least 5% of the media space to scientific news. This was a welcome step, for the scientific community, however it was not followed up by commitments from the Media regulatory authorities to urge electronic and print media to give time to science communication. Moreover,



encouraging dialogue through these media among the scientific community would help nurture confidence in scientists for solving real world problems.

Science at the center stage of Public Diplomacy

Pakistani politicians are faced with huge challenges in public diplomacy, despite being essentially required, issues like the Kalabagh dam, nuclear or coal-based power plants, routes of important road networks, water distribution among provinces and land reclamation, tend to get shrouded in political controversy. Science offers viable solutions in all these potential conflict scenarios, which may be acceptable for all, and so deserves to be put on the center stage in matters of public diplomacy. While office bearers can be trained in simple scientific advancements, a nexus between the scientific community and public policy officials can also be created by creating official forums for consultation on important development matters.

Use science for national integration

Science can attract human resource regardless of their background, provincial ethnicity, creed or caste, therefore has an important role to play in creating harmony within the country, through scientific exchanges. In Europe for instance, researchers design cross-boundary projects,

according to a European framework so as to promote harmony within their member countries.

Scientific resources and centers of excellence must also be diffused geographically on these lines rather than concentrating them in dense population centers. This will not only help in bridging differences but also enable wider understanding of human issues beyond geographic boundaries between provinces. In the long run such established bridges will cement national harmony, reduce resentments to the equitable access of these resources.

Patronize Science Diplomacy initiatives

The leadership role of Pakistan in Science advocacy came right from the time of Abdus Salam, and over the years, Pakistan has held the flag of promoting science-based diplomacy in OIC countries, ECO and SAARC regions, as well as countries of the South at large.

Due to its visionary scientific leadership, Pakistan drew several fold benefits from its early interventions, and knowledge sharing exercises, with both developed as well as developing countries. This enabled participation of its Scientists to get exposed to Big Science ventures like CERN and SESAME as well as address its security needs through the linkages developed over years.

The fact that Islamabad hosts secretariats of three international scientific diplomatic organizations, including COMSTECH (57 member states), ECO Science Foundation (10 member countries), and COMSATS (24 member states), is not only a matter of distinction for a developing country. A strong scientific community in the country will help keep Pakistan connected with the rest of the world.

In order to continue this leadership role, it is imperative for the government to increase support for these "Science Diplomacy" initiatives, which are silently working towards achieving our foreign policy objectives and promoting a peaceful and progressive image of Pakistan. While Pakistani Engineers and Scientists have remained prominently placed on 'Big Science' projects like CERN, it's time for us to enter into new Big Science Projects like the ITER, which offer unlimited clean energy, making it relevant to our problems with producing energy.

Promote partnership among scientific organizations

Despite having several organizations with distinct mandates, there is very little cooperation within the scientific community, governed by the Ministry of Science and Technology. Most organizations like PCRET are suffering from a lack of tech-

Continued on page 6

From page 1: Science for society — via Science Diplomacy



in foreign relations. In 2010 the American Association for the Advancement of Science (AAAS) and Royal Society of UK jointly codified an approach for embedding science in all aspects of state matters and dubbed it ‘Science Diplomacy’. Much of what goes under the rubric of Science Diplomacy is not new, but what is new is a clear understanding about the need to focus on scientific inputs in all level of decision making at national and international level. This is but natural, given that there is hardly an issue related to public welfare which does not require scientific and technological resources.

The classification of what constitutes ‘Science Diplomacy’ and how it works is no doubt a useful instrument for framing public policies.

Domains of Science Diplomacy

According to the prevalent understanding, ‘Science Diplomacy’ has the following three domains.

1. ‘Science in Diplomacy’: It recognises that the input from scientists is crucial for conducting foreign relations, and that is what was the basis of 1999 NRC report. There is a broad spectrum of trans-boundary issues with strong scientific underpinnings. It makes sense if there is an institutionalised mechanism for making expert scientific knowledge readily available to diplomats, who are responsible for safeguarding national interests at international forums. Therefore, a mechanism or arrangement that makes the services of scientists available to diplomats is indispensable, and that is what is classified as ‘Science in Diplomacy’.
2. ‘Diplomacy for Science’: This may be considered as a ‘quid pro quo’ i.e if scientists are expected to make their services available to diplomats, the diplomats too are expected to facilitate scientists in their international collaborations and participation in capacity building events by using resources of Foreign Office. Al-

ternatively, it may be viewed as a matter of self-interest for Foreign Office to enhance the expertise of that very group of people who are then engaged to provide technical advice. This too requires well-defined protocols and procedures, which should be put in place and scientific community made aware of these.

3. ‘Science for Diplomacy’: This is a classical approach whereby any specific field of common interest is harnessed to achieve foreign policy objectives. In that sense it is at par with nomenclatures such as ‘cricket diplomacy’ or ‘oil diplomacy’ etc. Any two countries or group of countries can always strengthen their relations by opening channels of people-to-people interactions whether through cultural exchanges, sports events, literary festivals or scientific

collaborations. Science is the best instrument in this regard because of its value-neutral nature, universality and common utility. It works even in circumstances when diplomatic relations are otherwise strained.

Sectors of Science Diplomacy

Science Diplomacy is most needed in sectors of global commons and shared threats. It is also required to realize the aspirations of peace and prosperity by all nations. Humanity is divided into countries and communities, but they all share the same atmosphere, oceans, and outer space. Availing the rights and fulfilling international obligations with respect to such global commons is not possible without participation of national experts. Any dependence on external advice can compromise vital national interests. Similarly, all

humanity faces common threats such as energy deficiency, food insecurity, water scarcity, disease burden and natural calamities. To be part of international efforts to avert these threats and mitigate their effects, it is inconceivable that decision makers do not rely on knowledge and wisdom of those who are adept in sciences of health, environment, energy and food. International peace and security depends on international treaties for averting war, limiting arms and prescribing rules of military operations. No nation can afford to put its strategic interests at stake by ignoring technical input from people of relevant competence.

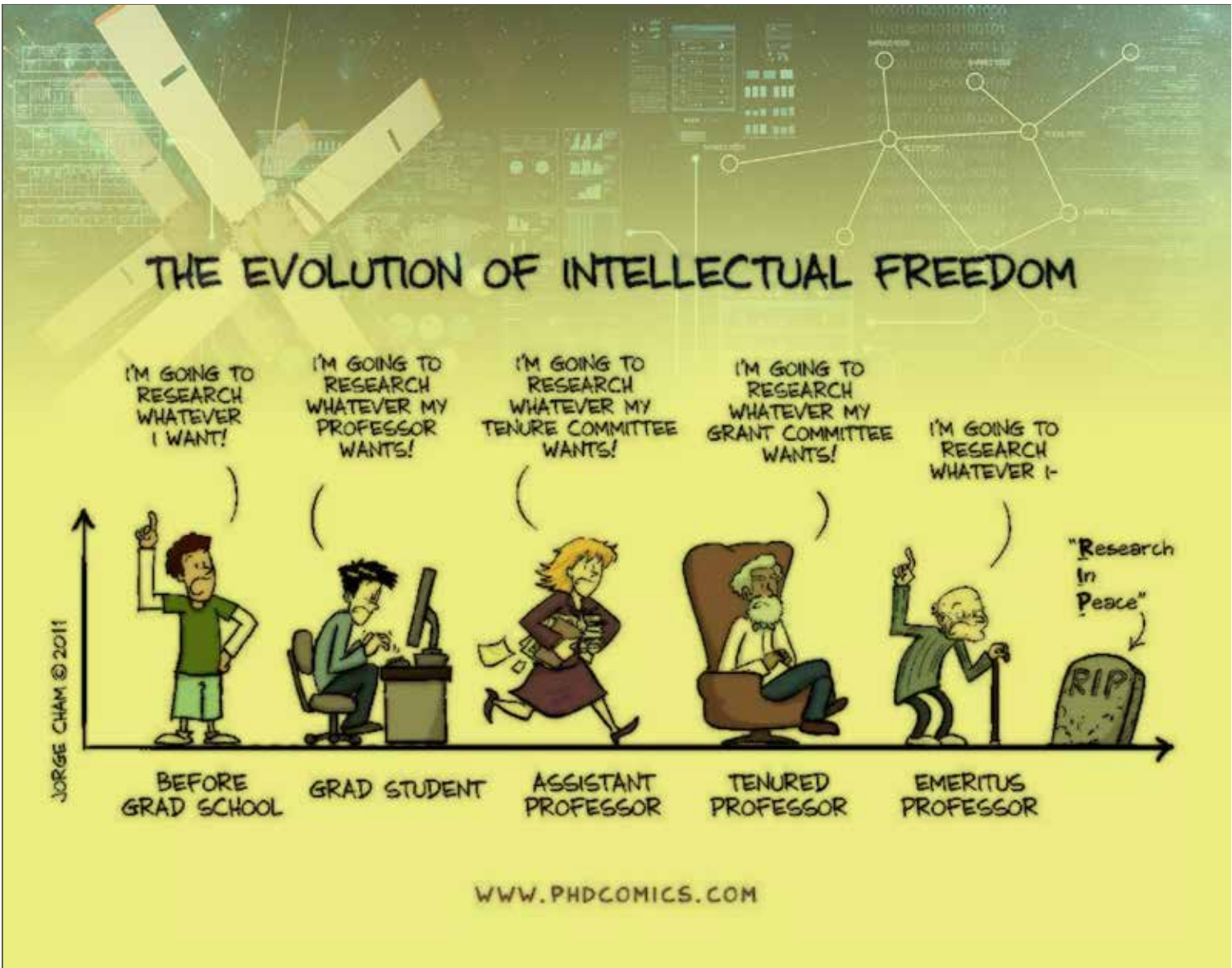
Examples of outstanding Science Diplomacy

As mentioned earlier, the terminology of Science Diplomacy was not explicitly ascribed to certain actions in the past, which are now better understood in terms of domains of Science Diplomacy. For example, the rendezvous of Apollo (USA) and Soyuz (former Soviet Union) spaceships in deep space opened a vista of hope for detente at the height of cold war in 1975. This was evidently a fine example of ‘Science for Diplomacy’. Then again, the US and Soviet scientists collaborated closely to work out the technical procedures that made it possible for two sides to sign Comprehensive (nuclear) Test Ban Treaty (CTBT) in 1996. That was a brilliant case of Science in Diplomacy. In European continent, after the devastation of WW-II, it was science that united warring countries at the platform of CERN (the European Nuclear Research Organization), founded in 1954. This move played the dual role of ‘Diplomacy for Science’ and ‘Science for Diploma-

cy’. Some countries have chosen specific disciplines of science to achieve objectives identified in ‘Science for Diplomacy’, such as Cuban ‘health diplomacy’ and Brazilian ‘agro diplomacy’. Both these countries use their strengths in respective areas to create political good will and trade opportunities. The ‘Diplomacy for Science’ in developing countries has led to creation of such organizations as AS-ICTP, COMSATS, ECO-SF, NM-AIST, ESCWA etc.

Pakistan scene

Pakistan, like many other developing countries, has mixed bag of successes and failures in capitalizing on science as bedrock of domestic and foreign policies. A number of examples can be quoted in this connection, however, what is obvious is that these actions or lack of actions were because of routine practices, rather than a paradigm shift in linking scientific and diplomatic communities. The codification of what Science Diplomacy is and how it can be put into practice is a good opportunity to transcend the ethos of business-as-usual. It is high time to embrace global trends in order to survive in a rapidly changing world. All state institutions must recognize the currents and undercurrents of technology-driven world-order and methodically integrate competent scientist, engineers, computer specialists and people of other technical skills in their work force. Senior scientists can provide invaluable advice in framing public policies, undertaking long-term planning and making informed decisions for public good. It is too risky to leave State craft solely in the hands of non-scientists.





Hina Baloch

Science, a human right

A human rights-based technique to science, technology and development pursues to place a concern for human rights. The human right to relish the benefits of scientific progress and its applications embraces the protection of cultural and scientific works, and urges putting science to work improving society. The Universal Declaration of



Science, a human right

A human rights-based technique to science, technology and development pursues to place a concern for human rights. The human right to relish the benefits of scientific progress and its applications embraces the protection of cultural and scientific works, and urges putting science to work improving society. The Universal Declaration of Human Rights acknowledges the right of everyone to “share in scientific development and its benefits” Universal Declaration of Human Rights (Article 27)

This Declaration was asserted by the United Nations General Assembly in Paris on December 10, 1948 as a common standard of attainments to all the people of the all nations. It starts out, for the first time, vital human rights to be universally guarded.

- The Article 27 utters that:
- (1) Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.
 - (2) Everyone has the right to the protection of the moral and

material interests resulting from any scientific, literary or artistic production of which he is the author.

For making science more closely with society, and to make accessible to all, many of analysts have a view that the elements of the right to enjoy the advances of scientific progress and its utilization are availability, accessibility, acceptability and quality but this article focuses on the component of accessibility because this element is the one which affirms that access to scientific information is a human right.

This indicates that the assets of scientific advancement should be shared publicly, free from limitations by social groups, corporate entities or states. More than that, a rights-based approach to science pursues to generate the situations for equitable contribution in the global science community and impartial access to scientific information and goods.

Human-rights based approach in other words recognizes that science is a socially organized, human activity and shaped by organizational arrangements and processes. It also inquires how governments and other stake-

holders can make and execute policies to guarantee security, health and livelihoods. It also includes people’s requirements and priorities in progress and environmental strategies; and to safeguard they partake in decision-making that affects their lives and resources.

It confirms everyone’s right to participate in and benefit from scientific advances, and also be safeguarded from scientific misuses.

Human rights-based approach in Science and technology also wants scientists to go beyond knowing how their work associates to human rights, and claims that they strive to secure and avow human rights through the knowledge they produce.

Science is a respect for human rights is two-way street that profoundly rely on each other. Let’s for example scientists are dependent on human rights in order to protect their own scientific freedom which in return let them promote welfare and human rights through their work.

On the other side, science and technology boost the development and even the fulfilment of human rights. It extends to information and communication



technologies (ICTs) as tools that possibly facilitate access to scientific knowledge. ICTs are rapidly influencing our lives in different ways but the use of ICT tools can also be repressed through censorship which leads to digital divide that bring new forms of exclusion. This demonstrates how human rights approaches can defend demands for impartial and effective use of technologies such as ICTs.

Science is a right to sustainability, functioning to protect the poor and vulnerable from the excesses of market-driven science and technology. Exclusive

of human rights approach to science, technology, and development, the uneven distribution of goods from services and natural resources to intangible resources such as human dignity and sovereignty. It would only grow intensified, resulting in further environmental degradation and, especially, worsened vulnerability.

Precisely human rights-based approaches should not be considered as merely ornamental moral lengths to policy or scientific and technological innovation. They can make the very heart of sustainable futures.

8 ways to communicate science better

Scientific research is moving faster than ever before. How do we make sure that the public understands the cutting edge science making its way into everyday lives?

Know your audience

Talk to each person

Tell a story

Paint a picture

Make it relevant

Analyse

Let the little things to

Be impartial

From page 1: Linking Science to CPEC

share knowledge, expertise and resources. In turn, this can promote techno-economic and social progress, and contribute to peace and sustainable development. Science can not only enable countries to overcome a negative image in parts of the world but also, take place in the long-established sense of the world, where delegations travel to each other's countries to share ideas on science, innovation and technology.

Historically, integration between regions has been a key element in enhancing scientific activities and the cooperation long been facilitated by the diverse means of research and development (R&D). In the South Asia, there is exceptional Chinese cooperation with Pakistan for the 21st Century Silk Road – the global Belt and Road Initiative (BRI). China and Pakistan as all-weather strategic partners and glorious friends always try to make strong relations through different geo-politics and strategic agreements. The China-Pakistan Economic Corridor (CPEC)

The strategic scientific partnership through CPEC may not only develop Pakistan's science infrastructure and research capabilities, but also techno-economic development of both the countries



is one of the imperative strategic partnerships to make stronger relations of both countries. Similarly, China has several science exchanges with Pakistan, with the key role in setting the stage for R&D, institutions and businesses to collaborate with each other. In the future scenario, the

strategic scientific partnership through CPEC may not only develop Pakistan's science infrastructure and research capabilities, but also techno-economic development of both the countries. By creating science knowledge and understanding through science may outfit both coun-

tries to find solutions to today's techno-economic challenges and to achieve sustainable development and greater societies. Linking science to CPEC, public understanding of science and the participation of citizen of the both countries in science should be a considerable factor for sustaina-

ble and peaceful development of CPEC. The CPEC could then not only serve as a game changer for China and Pakistan, but also the entire region.

Aleem Baig is a CAS-TWAS President's Fellow at University of Science and Technology of China.

From page 3: Moving forward with Science and Technology

nical manpower, others with a lack of initiative or resources. While some of these issues can be overcome through engaging in partnership, the organizations need a heavy dose of investment followed by accountability to get back into business. The organizations must resolve to initiate at least one new collaborative project every year where their expertise and capacity can be put to test.

Engage diaspora

Pakistan has been endowed with immense resources within

its geography, but its biggest asset is perhaps the diaspora that rests outside. In order to turn around their scientific sectors and economy, China in the 80's and 90's and India most recently effectively mobilized their diaspora.

The HEC in Pakistan also started a program to attract foreign professors, which was later shelved due to lack of resources. This program also came under immense criticism due to lack of review and accountability. Despite its shortcoming the program successfully invited

many world class professors to join Pakistani varsities in a time when these institutions were fast growing under the dynamic leadership of Prof. Atta-ur-Rahman. Although some very successful examples came from this foreign faculty program, it was sadly abandoned.

Conclusion

Pakistan spends around 3.5% of its GDP on Defense, while only 2.5% on Education, the spending on Research and Science & Technology is far less, yet it was these scientists in 2015,

who based on sound scientific data, were able to extend the Pakistani continental shelf claim, giving Pakistan sovereign rights over additional area of 50,000sq km beyond Pakistan's Exclusive Economic Zone. Thus increasing Pakistan's maritime area from 240,000 sq km to about 290,000 sq km. Something that could not have been accomplished through military means.

The direction we take today, while repositioning Pakistan in the new world order, will largely influence the lifestyle of our people in the coming decades. Sci-

ence and Technology have been fundamental in the growth and progress of all nations and we must use this day to appreciate that the link between Science, Policy and Society is one that holds the key to the bright future of our nation.

Abdul Majid Qureshi is an Islamabad based S&T Management Professional with an interest in Science for Socioeconomic Development. He is currently working as Assistant Manager at the Office of Research Innovation and Commercialization, COMSATS University Islamabad, and was formerly associated with COMSATS Secretariat. He tweets @amqureshi83.

From page 1: Message Prof. Manzoor Hussain Soomro, President ECO Science Foundation

ly difficult for us to improve our lives, feed our growing populations, protect our children and environment, if we do not create opportunities for all to benefit from science. Thus we must invest in our young scientists to find efficient, cheaper and smarter ways of manufacturing goods and commercialization to respond to the global challenges.

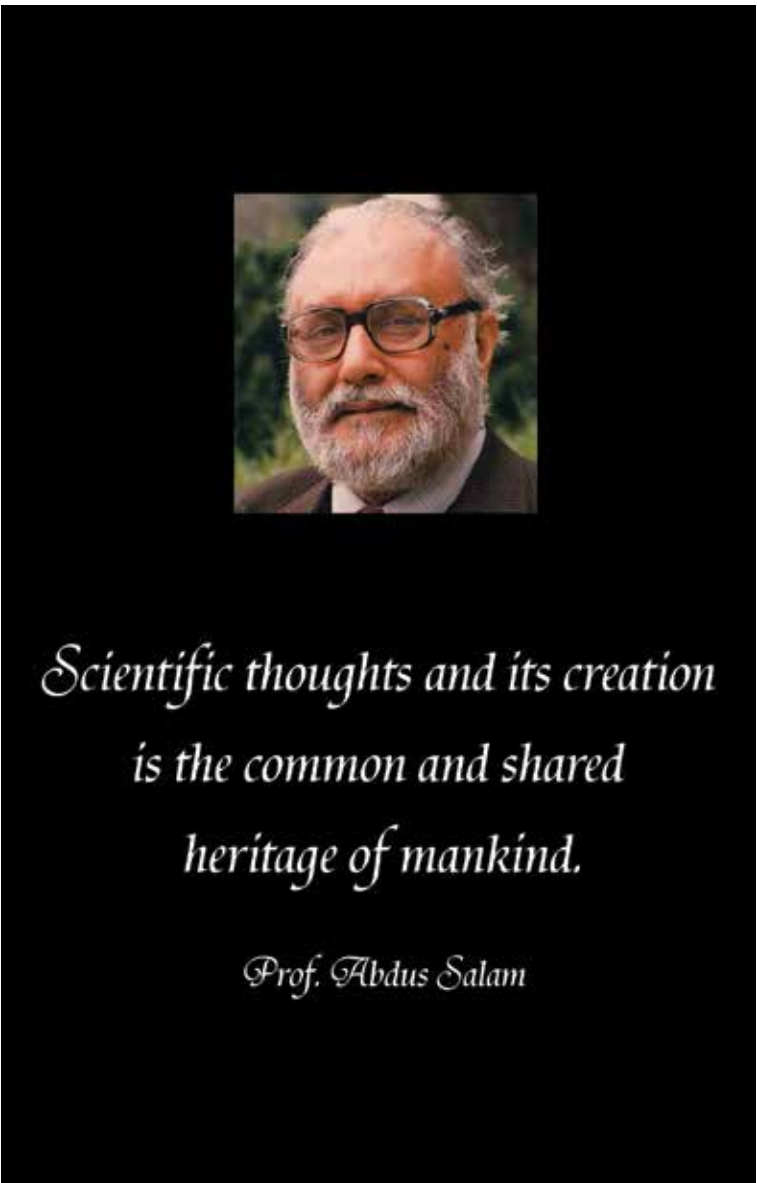
It is quite encouraging to see the rapid industrialization and economic boost achieved by the Four Asian Tigers (Japan, Singapore, South Korea and Taiwan). Despite their low natural endowments, these economies have achieved exceptionally high economic growth. The unprecedented high economic growth is

mainly linked to their supportive policies and investments in Science and Technology sectors, which have enabled them to establish competitive edge among the top world economies.

I count myself, as a President ECO Science Foundation, a strong proponent of Inquiry Based Science Education (IBSE) and inquiry based lifelong learning. Today's child is tomorrow's scientist, entrepreneurs and policy makers, thus we must provide them with the opportunity to discover and inculcate the concept of inquiry and questioning in them. While planning for the future in this constantly changing world, science literate people at large, especially scientists and

technologists will be at the core of most of the challenges in responding to our needs. Thus, understanding of science is a 'human right' and must be promoted across the board.

In the end, I believe that Pakistan's Science Community has all the potential to create economic and business opportunity to maintain prosperity of Pakistan in today's competitive global economy. Our future economic standing and development of our society solely depends on our ability to nurture Pakistan's future generation of scientists. Therefore, we have to inspire our youth to embark on a career in science if we are to meet the challenges of the future.





Ammara Khan

Science challenges, what don't we know

Science is all around us and the most important topic of study in the world. The fact we exist and the progression of reading this article is all about Science. Science plays a dynamic role in our day to day life with the advancement of technology. Let us elaborate more to understand what basically “Science Is”, the food we enjoy, water we



Science challenges, what don't we know

To promote advance knowledge of science from dream reality to applicability, developing countries should invest in quality education for youth, and continuous assistances for researchers and organizations.

Science is all around us and the most important topic of study in the world. The fact we exist and the progression of reading this article is all about Science. Science plays a dynamic role in our day to day life with the advancement of technology. Let us elaborate more to understand what basically “Science Is”, the food we enjoy, water we drink, clothes we wear, things we can see and those we can't, events that make us amaze and terrify us and much more these all terminologies based on a very simple and soothing one word “Science” now its easy to perceive that science is everywhere. Science is a massive term and a large number of questions and curiosity arose and the solution to those alarming questions is Science – an answer – knowledge we get when ask questions.

Moving towards the vital role of science all-inclusive and in Pakistan. Science plays a vibrant character in our health, safety, environment, economy and in government sectors. Developments in the domain of science profoundly varying the way people live communicate and accomplish, with intense effects on economic development.

To promote advance knowledge of science from dream reality to applicability, developing countries should invest in quality education for youth, and continuous assistances for researchers and organizations. Combining the S&T (Science and Technology) a nation can prosper from bottom to top as we all aware that S&T (Science and Technology) are key motorists to development, because technological and scientific revolutions fortify economic advances, improvements in health systems, education and infrastructure.

Science revolutionized vigorously and welcomes challenges to prevailing ideas and cherishes the budding of all of its people. Scientific ways of thinking and of re-evaluating help bolster the upcoming researchers. Keeping in mind all these there are many challenges to science in Pakistan which needs to be overwhelmed within the time. We are discuss-

ing here few Challenges to Science in Pakistan.

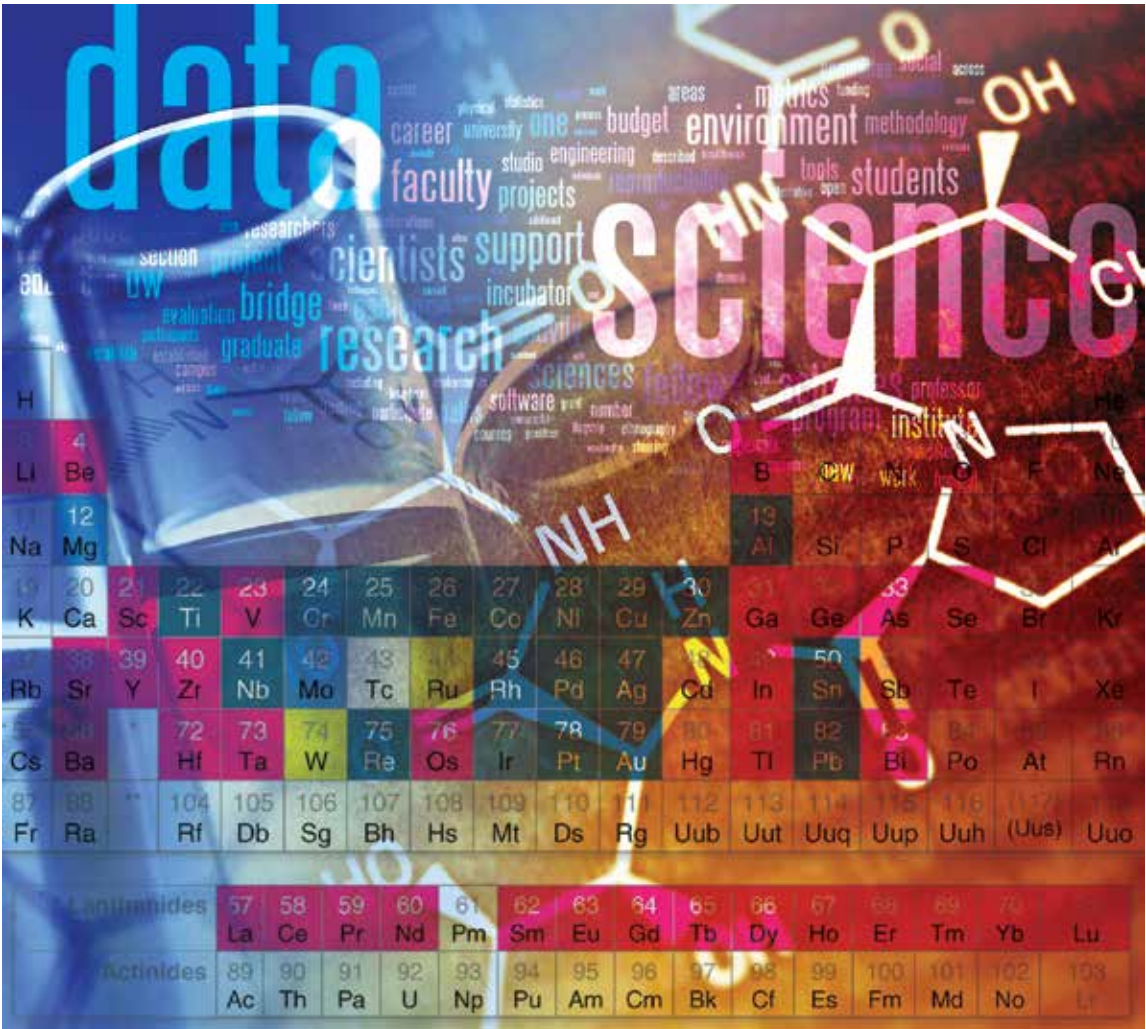
The major challenge to science in Pakistan is “Science Literacy”. First of all, we must know what exactly a literacy or does it mean to be scientifically literate? Science Literacy purported the basic and advanced understanding of science concepts and is important because an increase in science knowledge would benefit the society.

In Pakistan a large number of science education problem exists which ultimately scared the young talented youth to further explore the areas of science. The problems of admittance, quality, infrastructure and inequality of opportunity, remain pervasive. Our education system needs upgradation to emit the skilled scientific persons.

The education system consists of all the institutions that are involved in delivering formal education and their faculties, students, physical infrastructure, resources and rules. In broader terms the institutions that are involved in finance, management, operation or regulation (government ministries and regulating bodies, central testing organizations, textbook boards and accreditation boards) also comprise the education system. The rules and regulations the direct the individual and institutional interactions also come under the umbrella of education system and required cognized architecture to bolster the science literacy.

The other challenge to science is the lack of precise science communication a wide-ranging communication gap exists between the scientific and the non-scientific community. The ultimate result is miscommunication of science. Researchers are somewhat responsible for this because non-scientific community is not aware of the researchers new research work.

Consequently, the public is mainly dependent on the media rather than the scientific slushes. The academic research is also responsible for poor communication of research. In an endeavor to grab attention, sometimes researchers, universities, and even journals deceive the



Lack of precise science communication a wide-ranging communication gap exists between the scientific and the non-scientific community. The ultimate result is miscommunication of science. Researchers are somewhat responsible for this because non-scientific community is not aware of the researchers new research work

public by touting the results or promoting only positive results. However, the science community should take the responsibility of prominent an accurate depiction of science to the non-scientific community.

Apprehending the science literacy and communication gap between scientific and non-scientific communal another challenge to science is Infrastructure that encompasses far-flung the identification of research primacies followed by besieged funding. Numerous key issues can be

noted.

A pooled approach to research that addresses most or all of these issues will probably help to ensure a healthy infrastructure. Scientist and the upcoming researchers necessity is the funding of project. So the researchers openly reconnoiter the new immense areas of science to keep away all the directly or indirectly sectors from calamities.

Science an indispensable challenge to the sound development of scientific community, one which it is important to

continue addressing in the future based on chronological and educated perspectives, while also maintaining a deep awareness of the needs of the times.

Many other Challenges to science are not discussed here but they have equivalent significance to notify the problem and come up with the good solutions to strengthen the science in every aspects of life. Science aspirants must need to propel to stimulate innovation and kindle interest for endorsement of science and creativity.

Science: A common heritage of mankind

By Farhana Saleem

Human beings have over the millennia established themselves as the most intelligent species on the planet that has not only resulted in its survival and development but also is clearly manifested in the pace of its evolution and the intellectual growth. The wonders of S&T that seemed incredible as recently as a century ago now seem quite mundane and unremarkable. With each wonder of science becoming a norm, the frontiers of S&T expand further and further.

The space race of 1960s provided an unprecedented desire for technological supremacy among super power. However, the advances in space technology also broadened the technological horizons for the competing states benefitting the masses in all walks of life. For instance, NASA today is a source of a number of innovations that are benefitting citizens in daily lives.

The potential of S&T to solve socio-economic issues have long been recognized. Humanity is the primary beneficiary of S&T and scientific thought. Be it innovations in existing processes or methods or discovery, operationalization and mainstreaming of diseases eradicating substances, humanity's dependence on S&T is undeniable. Smallpox was eradicated by means of an individual's scientific thinking and experimentation and the concept of vaccination has since formed the backbone of healthcare. Polio vaccine and discovery of penicillin have improved humanity's survival chances exponentially in last century or so. Advances in transportation and telecommunications have reduced distances at a remarkable pace in last few decades.

Such examples, leave very little doubt in the remedial character of science for individuals and societies. The globe today presents a whole spectrum of level of national and regional development as well as the distribution of important scientific resources. The nations and regions that have built and harnessed their scientific resources and invested in science are reaping due benefits and are better equipped to deal with present and future challenges. Conversely, there are those who seem to be tangled in a vicious cycle of under-development due to their inability to either recognize or adopt S&T as panacea to many of their issues. This is why even at this modern day and age, advocacy of science still remains a major point of concern for those who want to create a world with equitable resource sharing among societies, especially those relating to S&T.

One such entity is the Commission on Science and Technology for Sustainable Development in the South (COMSATS) that has the mission to "help create a world where all nations are at peace with one another and capable of providing a good quality of life to their populations in a sustainable way, using modern scientific and technological resources." For over 24 years, COMSATS has remained committed to its cause and has been trying to build in member states the societies that are conscious of the role of science in alleviating poor socio-economic conditions and also to encourage sharing and pooling of resources in this connection. Collaborations, networking and synergies being established in the North and the South aide the organization's efforts towards a better world through S&T.

COMSATS' programs in member states, including Pakistan are

testimonials of its due diligence to its cause. Established in 1994, COMSATS now stands 27 member states and twenty-two network member strong. The organization's programmes have benefitted these resource challenged countries in a number of fields relevant to their national and social needs.

Major source of COMSATS' scientific and technological strength lies in its Network of International S&T Centres of Excellence that contribute in a number of ways in facilitating the organization's efforts for the socio-economic uplift of the member countries. The programmes are formulated respecting social, economic and environmental aspects hence remaining true to the principles of sustainable development. Special attention is given to build indigenous capacity and competence in the emerging sciences and technologies and necessary support is rendered to the technological revolutions in the areas of education, health, and energy.

The thematic areas selected in close consultation with the Member States and Centres of Excellence are: Information and Communication Technologies (ICTs); Internet Security; Natural Products Sciences; Agriculture, Food Security and Biotechnology; Climate Change and Environmental Protection; Nanotechnology; Materials Science; Mathematical Modeling; Construction Materials; Renewable Energies; Science Diplomacy; and S&T Policy and National Innovation Systems.

In Pakistan specifically, COMSATS' three remarkable initiatives have gained recognition for all the right reasons over the years. A major reason was the need based and humanitarian approach driving these initiatives. Realizing that there was

no Internet related infrastructure in Pakistan, the organization established COMSATS Internet Services (CIS) in 1996, which is currently providing services to 19 major cities of the country. With regional lead in ICTs, CIS is offering social service to the country by facilitating COMSATS' Telehealth (CTH) Programme that started in 2001. Subsequently, patients at the tele-health clinics established in Skardu and Zhob were provided specialist medical consultations in Dermatology, General Medicine and Gastroenterology, with the help of audio-visual and peripheral tools. Another project of CTH is currently providing outpatient facilities and capacity-building of health professionals through tele-health clinics located in Mansehra, Sawabi, Mardan, Multan, Quetta and Gawadar. More than 55000 online consultations have been carried out through telehealth system.

In 1998, after due assessment of human resource need in the country from the experience of then nascent CIS, COMSAT University Islamabad (CUI) was established as one of its kind institute, COMSATS Institute of Information Technology (CIIT). With phenomenal growth in a short span of time, the University stands tall as a public sector HEI with 7 campuses in Pakistan. The University offers merit, need-based educational funding as well as accommodates a number of foreign students from COMSATS member states and other countries on scholarships.

Bilateral and multilateral joint research under COMSATS International Thematic Research Groups (ITRGs) brings together scientists and experts belonging to various developing countries to conduct research in key areas of development with bearing on the well-being of masses. These

include: information and communication technologies; agriculture, food security and biotechnology; natural products sciences; renewable energy; mathematical modeling; and climate change and environmental protection. Apart from joint research projects, COMSATS' ITRG programme provides a platform for expert-exchange and sharing of laboratory resources among the member institutions. Moreover, opportunities of short-term trainings are provided to the group members in order to build their capacity in the target area and enable them to perform their research assignments more effectively.

COMSATS has been actively supporting the capacity building of the developing countries. More than 300 capacity building events have been organized in various member countries in the fields such as agriculture and food security, climate change, cyber security, repair and maintenance of scientific instruments, industrial research, health, ICTs, renewable energy, etc. Various policy dialogues have also been organized by the organization to promote to policy makers S&T as a tool for development, to facilitate of its adoption for benefit of all.

With horizons fast expanding towards North and firmly grounded in its devotion to development of the South, COMSATS sets an excellent example of extending the gains possible from S&T and R&D equitably throughout the globe. As it is rightly said that science is a common heritage of mankind – and so should be its gains.

Farhana Saleem is Senior Publications and Communication Officer at COMSATS Secretariat, Islamabad. With an academic background of Public Policy and Literature, she has a vast experience in S&T advocacy, writing, copy editing and journal editing.





COMSATS

- Believes in creating a world where all nations are at peace with one another and capable of providing a good quality of life to their populations in a sustainable way, using modern scientific and technological resources
- Recognizes that S&T divide is a major contributor towards development gap between the North and the South hence resulting in the abject state of the latter in a number of fields negatively affecting the masses' well-being
- Strives to achieve wider networking and stronger collaborations for homogeneous sharing of human and technical resources in S&T for the greater good with programmes and Network to match the cause

COMSATS Paving way for Sustainable Development through:

- Promotion of Science, Technology and Innovation as a means of fast-track socio-economic development
- Mobilization of scientific and technological resources and human resource development through South-South cooperation
- Capacity building of Member States through a Network of S&T Centres of Excellence

COMSATS' Centres of Excellence

22 Centres in 20 Countries



COMSATS Secretariat

Shahrah-e-Jamhuriat, G-5/2, Islamabad, Pakistan.

051-9214515-7 051-9216539 comsats@comsats.org www.comsats.org



 twitter.com/comsats_en www.facebook.com/COMSATSofficial/