

## TECHNICAL SUMMARY

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Honorable Chief Guest, H.E. Mr. Awad Mohamed Hasan, Ambassador of the Republic of Sudan,  
Mrs. Zam Abdul Karim, Deputy Director, Science and Technology, Ministry of Science, Technology and Environment, Malaysia,  
Mr. Rugumire-Makuza, Emmanuel, Makerere University, Center of Basic Research, Kampala, Uganda,  
Excellencies, Ladies and Gentlemen

I welcome you at the concluding ceremony of the *Meeting on Science & Technology Capacity-Building for Sustainable Development*. First of all, I must thank Excellency Mr. Awad Mohamed Hasan for sparing precious time from his busy schedule for this event. My sincere thanks to the learned speakers of this Meeting, who have effectively deliberated on their respective topics and have certainly done justice to the theme of this event. I am also grateful for the participation of our foreign delegates, especially Mrs. Zam Abdul Karim and Mr. Emmanuel Rugumire-Makuza, whose presence has added to the momentousness of our meeting.

Dear participants, you have actively participated during the five technical sessions and I am sure that you must have gained a lot from our learned speakers. With 5 technical sessions, addressing various strategic sectors of the society and economy, the following key aspects were discussed and defined during the course of the meeting:

- Current issues and challenges for S&T Capacity-Building in developing countries.
- Prospective benefits, in terms of sustainable development for developing nations through S&T Capacity-Building.
- Means and methods for developing indigenous capacities relevant to the developing world.
- Practical solutions for specific challenges confronted by developing countries in pursuit of S&T Capacity-Building.

- Potential role of identified stakeholders for a structural transition of the economy, through S&T Capacity-Building in a sustained fashion.

The meeting commenced on 19<sup>th</sup> February, 2003, with 3 special papers, which were chaired by Dr. N.M. Butt, who is presently Scientist Emeritus at PINSTECH, Pakistan Atomic Energy Commission. Initially our distinguished speaker from Malaysia, Mr. Azlishah Azizan, Vice President, OICNetworks, spoke on the topic of S&T Capacity-Building in Education. He stressed that it is essential to adopt innovative ways of education, utilizing the freeing capability of ICT, and equally important is the need to find imaginative methods of funding education. All stakeholders involved must synergize for achieving capacity-building and all efforts in developing the education sector must be financially viable and self sustainable.

Mr. Mazmi Kamal, Vice President, OICNetworks Malaysia, spoke on the subject of S&T Capacity-Building and Trade. He said that constraints hindering trade include: lack of promotion, lack of intra-OICnetwork countries cooperation and lack of awareness of ICT solutions to trade-constraints. The solution, he stressed, is the "Hi-Tech" and "Hi-Touch" approach, the details of which he dwelt upon during his presentation.

My joint paper with Mr. Tajammul Hussain dealt with the Optimal Use of Donor-Agency Support for Capacity-Building. We feel that need-assessment is essential for the donor, before embarking upon any development program. It was stressed that a participatory approach towards assistance must be encouraged and the resultant support must be utilized to provide a stable policy-structure, in close collaboration with the private sector.

After these special papers, ladies and gentlemen, the first technical session of this meeting, that of Industry and Engineering, commenced. Dr. Javed Arshad Mirza, Chairman, Dr. A.Q. Khan Research Laboratories, chaired the session. Our first speaker for the day was Dr. Shahzad Alam, Principal Engineer

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& Head Metallurgy Section, PCSIR Laboratories, Lahore, who was presenting the paper of Dr. Anwar-ul-Haq, Chairman PCSIR. Dr. Alam spoke on the subject of *Emerging Directions of R&D Commercialization in Pakistan* and emphasized the need to endorse and encourage participative investment in the industrial sector. He was keen on pointing out that R&D needs to be commercialized, with conscious efforts directed at integrating the business sector and the R&D sector.

Mr. Zahid Aziz, Chief, Experts Advisory Cell, Ministry of Industries & Production, Government of Pakistan, dwelt upon the topic of *Science and Technology Capacity-Building for Sustainable Development in the Engineering & Industrial Sectors*. He identified economic, social and environmental development as the key- dimensions of true S&T capacity-building in the engineering and industry sector. He said that the private sector needs to be vitalized, so that it can play an effective role in this connection, and systematic and enthusiastic efforts geared towards the exchange of ideas, communication of information and development of industrial standards must be urgently made.

Causes of Industrial Failure & its Implications in NWFP was the topic of our next guest-speaker, Engineer Muhammad Tariq, who is Director at PCSIR Labs., Peshawar. He emphasized the need to devise a long-term comprehensive strategy for the province that would cohere with the state-policy and specifically focus on building the infrastructure for transport and connectivity. He said that incentives must focus on facilitating sustainability of the industrial sector, rather than on breeding a cycle of dependency.

Mr. Javed Akhtar Paracha, Coordinator at the Engineering Development Board, spoke about the Growth-Strategy for the Engineering Industry to achieve rapid industrialization and economic growth. He maintained that technical manpower needs to be increased, so that capacity is built to produce well-qualified and skilled human resources. He said that the market needs to be enhanced through partnership-building and vitalizing exports from the industry and engineering sector. For building capacities for sustainable development, he stressed, it is most important to strengthen the Institutional and Regulatory Framework by establishing support-

centers and enhancing the performance of the regulatory authorities.

Dr. Shahzad Alam, Principal Engineer & Head Metallurgy Section, PCSIR Laboratories, Lahore, was the final speaker of this technical session, who shed light on the topic of *Prospects of Utilizing Advanced Technologies for Sustainable Development in the Developing Countries*. He maintained that, in order to achieve sustainable development, it is necessary to increase value-addition in the industry and engineering sector combined with a strategy to enhance import-substitution. He listed some useful advanced technologies in this regard, such as, Surface Modification, Laser and Plasma Techniques, Powder Metallurgy and Nano Technology.

The second day of the Meeting started with the second technical session viz Human Resource Development, and Prof. A.H. Nayyer of Quaid-e-Azam University, chaired that segment. Experts, from various fields of science, academia and industry, shared their meaningful thoughts on the topic.

Prof. Dr. Pervez Hoodhboy, Professor, Department of Physics, Quaid-e-Azam University, opened the session and spoke on the topic of *How to turn Pakistan's Universities around*. He first took stock of the situation of higher education and pointed out the deteriorating standard of education, both in terms of quantity and quality. He advocated a current transition of emphasis from traditional research to developing teaching-laboratories, which would include faculty-development training programmes for universities & college teachers to enhance their competencies.

Dr. Iqbal Choudhary from HEJ Research Institute of Chemistry, Karachi University, followed by talking on the subject of HR Development in Science & Technology. He emphasized that the real crisis with science in Pakistan is not only the lack of resources, but also that of diminishing leadership. He placed the state of society and of science in Pakistan in the context of the global situation and stressed the need for generating good human resources. Specifically, he laid emphasis on a good working-environment, meaningful projects, a sense of fulfillment and last but not the least, international networking.

Dr. Shahzad A. Mufti, Advisor Bio-Sciences at COMSATS Institute of Information Technology (CIIT), was the next to share his views on Capacity-Building in Bio-Medical Research in Pakistan. Speaking on the subject, he took stock of the health-scenario in the country and factually depicted its bleak picture. He said that there is hardly any research in bio-medicine, the reason being the absence of research-culture, lack of well-trained manpower and lack of interaction between basic scientists and clinicians. He urged the need for capacity-building through firm commitment, trained manpower and a sound infrastructure.

Ms. Nelofer Arshad, Deputy Chief (Science), Pakistan Council for Science and Technology (PCST), spoke on the subject of *S&T Institutional Building for Sustainable Development*. The highlight of her presentation was the assessment carried out by Pakistan Council for Science and Technology of the existing capacity of various institutions of higher learning. Setting out seven criteria of assessment, she also presented the results, which highlighted the poor state of affairs, and the requisite remedial action proposed by PCST.

Dr. Khalid Farooq Akbar, Associate Professor, Government College, Sahiwal, was the final speaker of the session. He talked about the Role of Universities in S&T Capacity-Building for Sustainable Development and stressed the need to create awareness for capacity-building through the involvement of stakeholders in policy-making. He also emphasized the promotion of cooperation between universities and the society.

The 3rd technical session focused on building capacities in the Geology and Energy sectors. Dr. Hasan Gauhar, Director General, Geological Survey of Pakistan (GSP), presided over this technical session. Dr. Izhar-ul-Haque, Member Science, PCSIR, Lahore, was the first speaker to present and read a paper under the title *Development Goals of Mineral Utilization in Pakistan*. Dr. Haque emphasized the need for curtailing the national expenditure on the import of minerals and mineral-related commodities. He recommended devising short, medium, and long-term plans for sustainable utilization of mineral resources of Pakistan. He, in his comprehensive talk, said that once appropriate developmental goals for

mineral utilization are put in place, they can cater for import-substitution and save handsome foreign exchange. He recommended installing value-addition processes to optimize the mineral resources of the country; carrying out geo-chemical sampling for feasibility studies, process-mineralogy for mineral beneficiation, in the short and medium term, and highlighted the need for R&D and exploration for potential minerals, in the long term.

The second paper in the Geology and Energy Session was presented by Dr. Majid-ul-Hassan, Director, Pakistan Council for Renewable Energy Technologies (PCRET), on the topic of *Capacity-Building through Sustained Promotion and Dissemination of Biogas Technology (BT)*. Dr. Hassan advocated the use of Biogas technology as the most economic and viable solution to meet the shortage in national energy-supply, especially in suburban and rural areas. The crux of his presentation was that reliance on biogas-technology is the need of the hour in a country like Pakistan, faced with multifaceted challenges, such as, population explosion, environmental degradation, and rising energy-demands, whereas biogas technology is both inexpensive and environment-friendly. He suggested taking a holistic approach in managing the available natural resources for harnessing capacities and thus promoting and disseminating biogas-technology in Pakistan.

Dr. Arif Allauddin, Managing Director of ENERCON, deliberated on the concept of Sustainable Energy in his paper, presented on the topic of Energy & Environment. Dr. Allauddin discussed at length various aspects of energy, mainly touching upon issues like, energy with reference to local, national and global needs; energy production and consumption as major source of pollution, and its external cost on environment and human health; energy-politics and energy-equity. The bottom-line and conclusion of his talk was directed towards Energy Conservation, as the only immediate strategy, means and technology to both harness energy-resources and safeguard environment that may lead to sustainable development, which is the core objective of capacity building.

At the end, Dr. Hasan Gauhar delivered his talk on the subject of *Energy Options for Pakistan in a Geological Perspective*. He, in a very simple and comprehensible manner, explained that energy has

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many facets, and geology unifies energy in the perspective that energy has geological essence. He emphasized maintaining an optimistic approach to development, and recommended the re-evaluation and readdressing of our energy-policies that should be based on scientific research and development rather than on anything else. Dr. Gauhar made particular reference to reassessing our hydrocarbon resources, as in his view, the growth pattern of energy shows a tilt towards the use of coal as a major source for energy in Pakistan.

The technical session on Information Technology opened the third and final day of this meeting. Dr. S.T.K. Naim, Chairperson, Pakistan Council for Science and Technology, chaired the session. Before the commencement of the technical session on IT, Mrs. Zam Abdul Karim, the official from Ministry of Science, Technology and Environment made a presentation on behalf of the delegates from the Ministry of Science, Technology and Environment (MoSTE), Malaysia. She spoke on the topic of Science and Technology Capacity-Building in Malaysia. Mrs. Karim emphasized that Malaysia realizes that this is the era of a knowledge-based economy and the country is consequently making efforts to promote an enabling environment for technology-promotion. Mrs. Karim also laid stress on MOSTE's role in accelerating the rate of commercialization of R&D findings and highlighted the techniques involved. She deliberated on the Malaysian 5-year plan for S&T development and highlighted the key-role of R&D in the capacity-building of Malaysia as a whole.

Mr. Hasan Rizvi, Head Education, Communication and Knowledge Management Group, IUCN-Pakistan, spoke on the topic of ICTs for Development – The Pakistani Paradox and How to Resolve it. He said that despite advances in investment of ICT infrastructure, the government's efforts have failed to initiate an effective process, which could make a significant impact in the lives of an overwhelming majority of its citizens, especially those living in the rural areas. The need of the hour is to formulate a blue print, he said, which would build capacity and use the powers of ICTs for development and poverty-alleviation in the country.

The next speaker to present a paper on the subject of Information Technology was Ahsan Mumtaz, Project

Manager, Pakistan Software Export Board, who dwelt on the topic titled *Domestic IT and Business Correlation – Need of the Hour*. He pointed out during his presentation that the need of the hour is to understand and develop long-term ties among domestic software-companies and the business sector. The post 9/11 world has hit Pakistan's software scene very hard and it is, therefore, imperative to explore alternative options for business-sustainability. He also enlisted specific measures to ensure IT capacity-building in the local market and stressed the need for a strong cohesion between the business sector and the IT industry on the domestic front.

Dr. Naeem Ahmad, Program Officer, Sustainable Livelihoods Unit, United Nations Development Program (UNDP) was the final speaker of Technical Session 4. He spoke on the subject of Capacity Constraints on E-commerce in Pakistan. He was of the view that the National IT Policy and Plan of Action (August 2000) was the driving force strengthening the IT sector in Pakistan. He said that the number of businesses using e-commerce is negligible and that a cumulative effect of HR capacity- constraints, old business-processes, a high proportion of informal economy, lack of trust in the electronic payment culture and inefficiency of legal systems to enforce contracts are the reasons behind this. E-commerce capacity-constraints can be overcome through ensuring the value of their resources, both for the businesses and the customers.

Mr. Rugumire-Makuza Emmanuel, from the Makerere University, Center of Basic Research, Uganda, talked on the topic of Local Research Capacity Development in Uganda: Challenges and Prospects. Mr. Makuza said that time and context-focused S&T is essential to confront the challenges of sustainability across the developing world. In this reference, he called for concentrated efforts in *Research Capacity Development*, the foundation of any science and technology. He also focused on the importance of higher education for development and stressed the need for funds for higher research especially for long-term plans, which translate into long-term solutions for confronted problems.

The last technical session of the meeting was on the theme of 'Agriculture' and Dr. Badaruddin Soomro, Chairman Pakistan Agriculture Research Council,

chaired that segment. Dr. Anwar Nasim, Advisor Science, COMSTECH, opened the session and spoke on '*Agriculture Biotechnology: Current & Future Challenges for the Muslim World*'. Dr. Nasim stated that the newly developed techniques for the manipulation of genetic material provide opportunities to cope with challenges posed by food-security and other aspects of agricultural productivity. Therefore, building capacity in these techniques, he said, translates into agricultural capacity-building. He stressed that the area to receive most attention in this context is Biosaline agriculture.

Dr. Muhammad Afzal, Chief Scientific Officer, Pakistan Agriculture Research Council (PARC), was the next speaker and his presentation was on '*Capacity-Building for Sustainable Agricultural Development*'. Stressing the fact that the agriculture sector is the largest employer in Pakistan, he emphasized the generation of improved production-technology and capacity of the farmers that can only be possible if it is based on science. Believing in the reality that the capacity of the National Agriculture Research System (NARS) to tackle the issues is, however, limited, he suggested that the capacity-building of scientists and training of extension-staff should form an essential element of agricultural development in the country.

Dr. S. Nasir Hussain Shah, Scientific Secretary, Pakistan Council for Science & Technology (PCST), shared his views on "Rationalization of the National Agriculture Research System". Reflecting on the current situation of the agriculture sector and the state and issues of National Agriculture Research System, he mentioned that, due to lack of purposeful and coherent efforts and somewhat weak S&T management practices, the effectiveness of the research system has deteriorated. To improve the

situation, he stressed the need to define mission & priorities, establish Agriculture Research Programmes and transform NARS into a knowledge-based enterprise.

Dr. Hamid Ahmad, Chairman, Pakistan Society of Food Scientists and Technologists (PSFST), Lahore Chapter, was the final speaker of the session and he presented a paper on the topic titled '*Need for Capacity-Building on Health and Safety Parameters of Genetically Modified Foods for Pakistan*'. He shed light on the developments and practical applications of food products in the field of Genetically Modified (GM) Foods, which are leaving the food laws, rules, regulations and standards much behind. For overall sustainable development of S&T, he advised, Pakistan needs to work for speedy development of its capacity-building infrastructure for S&T, in general, and biotechnology/genetically modified foods, in particular, to develop, monitor and test such foods. He also stated that it is crucial to devise and promulgate laws and rules for all types of commercial trading in genetically modified food, food-products and seeds.

To conclude, ladies and gentlemen, I must say that this meeting was a fruitful endeavor, which not only served as an awareness campaign for the need to build capacities in all spheres for development and growth, but also served as a platform for the healthy exchange of expert ideas and resultant pragmatic solutions to most of the defined and discussed predicaments. I thank the COMSATS Team for having arranged this successful meeting, and especially Ms. Zainab Hussain Siddiqui for her commitment and hardwork that she dedicated for this event. Thank you, learned speakers, dear participants and distinguished guests, for being part of this important event. May Allah bless you.