HIGH-LEVEL MINISTERIAL ROUND TABLE

“BASIC SCIENCES: THE SCIENCE LEVER FOR DEVELOPMENT”

UNESCO HEADQUARTERS, PARIS, 13-14 OCTOBER 2005

MINISTERS CALL FOR SUPPORT FOR THE BASIC SCIENCES
Layout of the Experimental Floor at SESAME (Synchrotron-light for Experimental Science and Applications in the Middle East) Centre Amman, Jordan

SESAME storage ring parameters

- Energy (GeV): 2.5
- Current (mA): 400
- Bending flux density (T): 1.455
- Circumference (m): 133.12
- Natural emittance (nm.rad): 26
- Max. length of straight sections (m): 4.44
- Beam cross section in the long straight section (μm): 830 x 21
- Available straight sections for insertion devices: 12
The drawing on the opposite and cover pages presents the layout of the experimental floor at the intergovernmental interdisciplinary SESAME centre established in Amman, Jordan, with the help of UNESCO. The centre provides much more than an advanced scientific facility. Synchrotron light centres in different parts of the world have shown that they bring substantial and practical benefits for the host region.

The SESAME centre offers promising opportunities for thousands of users from many disciplines, including biology, chemistry, geology, material science, medicine, the study of the behaviour of environmental pollutants, industrial applications and biotechnology, archaeology and culture.

Enterprises involved in research and development in the region acquire know-how provided by new synchrotron-based technologies, and enhance their competitiveness and scope.

The best scientists and technologists are motivated to stay in their region or return to it and young talent is attracted to science, which contributes to the development of a knowledge-based economy.

South-South and North-South scientific cooperation to meet societal needs fosters mutual understanding across borders between peoples of different traditions, creeds, race and political systems.
Foreword by the Director-General of UNESCO

Today more than ever, science is a vital source of educational, intellectual and cultural enrichment. Moreover, when we speak of knowledge societies and knowledge economies, we mean in fact that they are science-based: science leads to technological advances and economic benefits that offer unique opportunities to meet basic human needs, reduce poverty, protect the environment and improve the quality of life.

Held appropriately during the 2005 International Year of Physics, the Ministerial Round Table on “The Basic Sciences: The Science Lever for Development” was the first of its kind organized by UNESCO or, indeed, by any organization within the United Nations family. The participation, at Ministerial level, of delegations from 122 countries was a clear signal that Member States understand the critical significance of science and that they are committed to its development.
The promotion of science and the use of its fruits require sustained political commitment and long-term action, as was called for by the World Conference on Science (WCS) organized by UNESCO and ICSU in Budapest in 1999. Since then, the Member States, UNESCO and its partner organizations have undertaken considerable follow-up action, as UNESCO underlined in its Analytical Report 2002 to governments and international organizations. During the last three years, a number of important proposals by the scientific community have further inspired new, large-scale action in capacity-building in science.

The Ministerial Round Table provided a forum for the exchange of views and political debate between high-level governmental policy-makers on a number of crucial topics: how to harness the basic sciences in the service of society; which actions are necessary on the part of governments and the scientific community to build up adequate capacity in the basic sciences; and how to use the basic sciences for development and especially for achieving the Millennium Development Goals, which are the major targets of the global development agenda for the twenty-first century, as set out in the UN Millennium Declaration.

The Ministerial Round Table addressed these vital issues and especially the construction of adequate national capacity in the basic sciences, which has become a major prerequisite for putting science at the service of society. Efficient applied research, technology transfer, modern education, health care, industry and science-based agriculture all require a sound national basic science infrastructure and a commitment to strengthen basic sciences capacities through national efforts and international cooperation. Nevertheless, in many countries, including developed ones, there is a lack of support for the basic sciences. Furthermore, strategies of investment in favour of applied research that is focused exclusively on immediate short-term returns have an adverse long-term effect on national basic science and, eventually, on national development.

The in-depth discussions at the Round Table led participants to a consensus on a wide range of conclusions regarding the general mission of the basic sciences, education in science, capacity-building, types of cooperation to be developed and the role of UNESCO.
The participants formulated their common position in the Final Communiqué of the Ministerial Round Table, presented below. The Communiqué addresses its recommendations to governments, national scientific communities, international scientific organizations, the private sector and the public at large, and seeks to foster an enhanced reciprocal commitment between society and the basic sciences, and to provide all stakeholders in science with a reference document presenting views emanating from discussion at ministerial level.

Undoubtedly, we can all benefit from the collective international expertise provided by the Ministerial Round Table. For UNESCO, which is now starting to prepare its Medium-Term Strategy for 2008-2013, the recommendations contained in the Communiqué may help Member States elaborate proposals for this major reference document. The recommendations may also be useful for designing the next biennial programme and budget, which will set out the optimum strategy for developing the Organization’s activities to promote regional and international co-operation in the basic sciences, particularly through the International Basic Sciences Programme launched by Member States in 2004.

Professor Abdus Salam, Nobel Laureate in Physics and founding father of the International Centre for Theoretical Physics in Trieste, Italy, once said that “Scientific knowledge is a shared heritage of all mankind; East and West, South and North have all equally participated in its creation in the past, and, we hope, they will in the future. This joint endeavour in sciences is one of the unifying forces among the diverse people on this globe.” This profound thought reminds us that it is our responsibility to engage in far-sighted action in order to realize this hope and to remain loyal to one of the major historical achievements of humankind. The Ministerial Round Table is an important step in the right direction.

Koïchiro Matsuura

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Presentation on promising opportunities offered by SESAME by Khaled Toukan
Director of SESAME and Minister of Education, Higher Education and Scientific Research of Jordan

Delegates at the Ministerial Round Table
COMMUNIQUE

Preamble

We, the Ministers with responsibility for science participating or represented at the Round Table on “The Basic Sciences: Science Lever for Development” held on 13 and 14 October 2005 during the 33rd Session of the UNESCO General Conference, arrived at the following common positions:

General context

1. Basic sciences have a primary role in the pursuit of knowledge that leads to the improvement of the human condition, the pursuit of sustainable development and, in general, the advancement of civilization.

2. Addressing major challenges such as poverty, environmental degradation, climate change, existing and newly emerging diseases, natural disasters and energy needs, requires new knowledge provided by the basic sciences.

3. Basic scientific knowledge forms the stable foundation on which all current and future technologies stand. However, the emerging relationship between the basic and applied sciences and technology is complex and non-sequential.

4. Scientific knowledge must be a common heritage of humankind. Science is a vehicle for global cooperation; scientific research is an activity to be shared by all. The basic sciences know no borders, but should respect social and cultural contexts.

5. An ethical dimension to the practice of science is essential.

6. In the governmental decision-making process, scientific information, data and expertise in the area concerned should be duly taken into account.
Education in science

7. Effective pursuit of the basic sciences ultimately depends upon science education that inspires students at all levels – pre-primary, primary, secondary and tertiary – as well as in the informal and non-formal environments.

8. Greater emphasis should be given to science education as an integral part of capacity building, in particular quality assurance, the sharing of human resources (researchers and science educators), and more flexible, broad-based PhD programmes.

9. Innovative means should be developed in order to allow young people to appreciate the value, creativity, challenges and excitement of science, to become positive players, as concerned citizens, in the advancement of human development.

10. Science should be de-mystified and popularised at all levels.

11. There is a symbiotic relationship between scientific research and higher education that should be fostered.

12. Universities and research institutes are the pivotal institutions in securing the development of the basic sciences; they provide main human resources, serve as generators of ideas and concentrate much of the crucial infrastructure.

13. There is a need for well organized, non-formal education programmes for the popularization of science in the community; the public media and the universities can play an important role.

Capacity building

14. An essential way to achieve the development goals agreed by Member States in the Millennium Declaration is through the effective application of science and technology. The international community should give greater attention to capacity building in basic sciences as the platform for knowledge-based development.

15. ICT capacities should be enhanced as enablers of global inclusion and equality of participation in science and technology; hence ICTs should be used for bridging the digital divide, enabling distance learning, electronic access to scientific textbooks and
journals, creating new contents with added value, and providing the means for a quantum leap forward in socio-economic development.

16. Capacity building should be enhanced through the sharing of best practices.

17. International support for capacity building, education, teacher training, research and innovation in the basic sciences should be promoted.

18. Least developed countries, and countries in post-disaster and post-conflict situations, especially those in Africa, should be assisted through flexible mechanisms for S&T development.

19. Investment in research areas of the basic sciences should be driven by national and regional priorities.

20. Promotion of science requires the establishment of incentives, opportunities and the appropriate environment.

21. There is need for the creation of an enabling environment to alleviate brain drain, foster cooperation and the mobility of academic staff, and make better use of diasporic researchers.

22. Gender parity and equal opportunity in the basic sciences should be promoted, including equal participation in science decision-making at all levels, and through the involvement of new capacities and talents.

Cooperation

23. Member States should seek to benefit from regional, interregional (North-South, South-South) and global transdisciplinary cooperation in the basic sciences. The basic sciences themselves would be enriched by such cooperation on global problems and socially relevant issues.

24. Public-private partnerships, and cooperation with civil society, including NGOs, should be promoted and enhanced in support of education, science, innovation and research.
25. A pivotal role should be played by regional centres and networks of excellence in advancing the knowledge, understanding and application of science, within the framework of regional and subregional structures.

**Role of UNESCO**

26. In the light of the above, we call upon UNESCO to consider the following:

(a) to place greater emphasis on promoting the basic sciences and science education with a view to the attainment of a science culture as a precursor of a knowledge-based society worldwide, through various means available at UNESCO, and in particular the recently launched flagship International Basic Sciences Programme (IBSP).

(b) to develop and promote a clear programme of action for youth and for gender parity.

(c) to emphasize science education as an integral part of capacity-building by developing model curricula in science for secondary and undergraduate teaching suited to the emerging knowledge economy.

(d) to strengthen existing UNESCO Chairs and centres of excellence in the basic sciences in both developed and developing countries, to foster networking between them for the benefit of developing countries, and to promote in this context cooperation with regional structures such as NEPAD in Africa.

(e) to assist the upgrading of higher education in developing countries through feasibility studies to transform academic institutions/universities into academic/research institutes, and vice versa.

(f) to seek stronger synergies between the basic sciences and higher education through intersectoral programmes.

(g) to assist in the formulation, implementation and mainstreaming of foresight, prioritization and science and technology policies in developing countries, and the establishment of innovation systems, bearing in mind the importance of S&T policies to facilitate national economic growth and development.
John H. Marburger III
Chair of session 1 of the Ministerial Round Table
Director, Office of Science and Technology Policy, Executive Office of the President of the United States of America

Capturing keynote address by Atta-ur-Rahman
Federal Minister/Chairman of Higher Education Commission (HEC) of Pakistan
(h) to promote the mobility of teachers and researchers in science and technology, in particular from developing countries, and especially those from the diaspora.

(i) to promote the training of scientists from developing countries to help them to negotiate with donors and other development partners.

(j) to continue to promote an ethical dimension to the practice of science.

(k) to play a proactive role in promoting an equitable access to scientific information and literature for scientists and researchers, particularly from developing countries.

(l) to help to seek and foster partnership and coordination across the UN system, and with other international organizations.
PARTICIPATING COUNTRIES

Afghanistan          Guatemala          Palau
Algeria              Haiti              Paraguay
Andorra              Hungary            Peru
Angola               India              Philippines
Argentina            Indonesia           Poland
Australia            Iran               Portugal
Bahamas              Ireland            Romania
Bahrain              Israel             Russian Federation
Bangladesh           Italy              Rwanda
Belarus              Japan              Senegal
Bhutan               Jordan             Serbia and Montenegro
Botswana              Kazakhstan         Slovakia
Brazil               Kenya             Slovenia
Bulgaria             Korea, Republic of  South Africa
Burkina Faso         Kuwait            Sri Lanka
Burundi              Lao People’s       Sudan
Cambodia             Dem Republic       Swaziland
Cameroon             Latvia            Sweden
Canada               Lebanon            Syria
China                Lesotho            Tajikistan
Comoros              Liberia            Tanzania
Congo                Libyan Arab Jamahiriya Thailand
Congo, Democratic Republic of Lithuania
Côte d’Ivoire         Luxembourg         Timor-Leste
Croatia              Macedonia, Former    Togo
Cuba                 Yugoslav Republic of United Arab Emirates
                    Madagascar          United Kingdom of Great Britain and Northern Ireland
                    Malawi              United States of America
                    Malaysia            Uruguay
                    Mali               Uzbekistan
                    Marshall Islands   Venezuela
                    Mexico             Viet Nam
                    Moldova, Republic of Yemen
                    Morocco            Zambia
                    Mozambique         Zimbabwe
                    Namibia            Afghanistan
                    Netherlands        Algeria
                    New Zealand        Andorra
                    Niger              Angola
                    Nigeria            Argentina
                    Norway             Australia
                    Oman               Bahamas
                    Pakistan           Bahrain
                    Bangladesh         Belarus
                    Bhutan             Belgium
                    Botswana           Belgium
                    Brazil             Belgium
                    Bulgaria           Belgium
                    Burkina Faso       Belgium
                    Burundi            Belgium
                    Cambodia           Belgium
                    Cameroon           Belgium
                    Comoros            Belgium
                    Congo              Belgium
                    Congo, Democratic Republic of Belgium
                    Côte d’Ivoire       Belgium
                    Croatia            Belgium
                    Cuba               Belgium
                    Czech Republic     Belgium
                    Denmark            Belgium
                    Dominican Republic Belgium
                    Egypt              Belgium
                    Equatorial Guinea  Belgium
                    Eritrea            Belgium
                    Ethiopia           Belgium
                    Fiji               Belgium
                    Finland            Belgium
                    France             Belgium
                    Gabon              Belgium
                    Gambia             Belgium
                    Georgia            Belgium
                    Germany            Belgium
                    Ghana              Belgium
                    Greece             Belgium
                    Guatemala         Belgium
                    Haiti             Belgium
                    Hungary            Belgium
                    India              Belgium
                    Indonesia          Belgium
                    Iran               Belgium
                    Ireland            Belgium
                    Israel             Belgium
                    Italy              Belgium
                    Japan              Belgium
                    Jordan             Belgium
                    Kazakhstan         Belgium
                    Kenya              Belgium
                    Korea, Republic of  Belgium
                    Kuwait             Belgium
                    Lao People’s       Belgium
                    Dem Republic       Belgium
                    Latvia             Belgium
                    Lebanon            Belgium
                    Lesotho            Belgium
                    Liberia            Belgium
                    Libyan Arab Jamahiriya Belgium
                    Lithuania          Belgium
                    Luxembourg         Belgium
                    Macedonia, Former  Belgium
                    Yugoslav Republic of Belgium
                    Madagascar         Belgium
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                    Malaysia            Belgium
                    Mali               Belgium
                    Marshall Islands   Belgium
                    Mexico             Belgium
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                    Equatorial Guinea  Belgium
                    Eritrea            Belgium
                    Ethiopia           Belgium
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                    France             Belgium
                    Gabon              Belgium
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                    Georgia            Belgium
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                    Ghana              Belgium
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                    Haiti             Belgium
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                    Italy              Belgium
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                    Norway             Belgium
                    Oman               Belgium
                    Pakistan           Belgium