United Nations Educational,
Scientific and Cultural Organization Executive Board ex

**Hundred and sixty-second Session**

162 EX/9
PARIS, 13 August 2001
Original: English

Item **3.3.1** of the provisional agenda

# REPORT BY THE DIRECTOR-GENERAL ON PROGRESS ACHIEVED IN THE FOLLOW-UP TO THE WORLD CONFERENCE ON SCIENCE (BUDAPEST, 1999)

**SUMMARY**

The Executive Board, at its 160th Session, examined the *Report by the Director-General on the reorientation of UNESCO's programmes in the sciences to take account of the conclusions of the World Conference on Science*. Through 160 EX/Decision 3.3.2, the Board formulated specific recommendations addressed to Member States and to the Director-General aimed at heightening follow-up to the Conference. In pursuance of paragraph (i) of that decision, the present document reports back to the 162nd Session on progress achieved in follow-up.

Decision required: paragraph 55.

## INTRODUCTION

1. Information on the initial phase of follow-up to the World Conference on Science (WCS) was conveyed to the Executive Board at its 160th session through the *Report by the Director-General on the reorientation of UNESCO's programmes in the sciences to take account of the conclusions of the World Conference on Science* (*Budapest, 1999*) (160 EX/11).

2. In its decision on the *Report* (160 EX/Decision 3.3.2), the Board urged vigorous follow-up to the WCS within the Approved Programme and Budget for 2000-2001, and the inclusion within the proposals for the Draft Medium-Term Strategy for 2002-2007 (31 C/4) and the Draft Programme and Budget for 2002-2003 (31 C/5) of programme activities of a medium- and long-term nature that were being developed as a part of that follow-up. The decision also provided specific recommendations to give further momentum to WCS follow-up and invited the Director-General to report back to the Board at its 162nd session on progress achieved. Hence the present document, which continues a tradition of regular reporting on the WCS process, aims at informing the Board on the principal developments in follow-up to the WCS.

## HEIGHTENING THE MOMENTUM OF NATIONAL FOLLOW-UP

3. In line with a commitment from and to science identified at the WCS, follow-up to the Conference seeks to ensure that full benefit be derived from the service science can offer in meeting the needs and aspirations of society. Recognizing the central position of Member States themselves in the follow-up process, the Executive Board adopted paragraphs 5(a) and 5(b) of 160 EX/Decision 3.3.2 urging them to continue their efforts to promote the principles set out by the Conference in the *Declaration on Science and the Use of Scientific Knowledge* (*Declaration*) and to implement the recommendations contained in the *Science Agenda - Framework for Action* (*Science Agenda*) adopted by the WCS.

4. The comprehensive character of these two documents means that Member States can, and should, contribute to their implementation through a wide range of activities placed in the context of national priorities. In its current first phase, follow-up to the WCS is on the way to a fully-fledged operation that requires sustained effort over the medium term in the natural and social sciences. An exhaustive review of all national activities goes beyond the framework of the present document. It is, however, expedient to overview activities that Member States have seen fit to highlight in messages sent to the Secretariat that demonstrate national experiences and the momentum being acquired by the follow-up process.

5. At the WCS itself, national delegations had already referred to some of these activities that are already underway or have been implemented since the 160th session of the Executive Board. We cite but a few below.

(a) Inclusion of integrated studies on women in science in the Argentinian Multiannual National Plan, as recommended by the WCS regional forum on Women, Science and Technology (Bariloche, Argentina).

(b) Implementation of the new "Science Blossoms" Programme of the Israeli Ministry of Science, with respect to urban neighbourhoods, youth and youth in rural areas (Israel).

(c) Development of a national innovation system appropriate for a small developed nation, and full participation of indigenous people and women in the scientific and technological enterprise, as well as preservation of the country's wealth of biological diversity (New Zealand).

(d) Launching of a new National Plan for Research, Development and Innovation for 2000–2003, with increased resources for research, development and innovation (Spain).

(e) A significant increase in the allocation for science and technology during the ninth Five Year Plan, and a radical improvement in education and science and technology in the country within the Vision 2010 Programme (Pakistan).

(f) Adoption in 2000 of Bills on the Funding and Organization of Research and on Gene Technology (Slovenia).

(g) Introduction of the new government policy prescribing that every new primary school constructed has a science laboratory (Uganda).

(h) The establishment of a National Science and Technology Council Science and Technology Business Centre, and a considerable increase in government funding for science and technology (Zambia).

6. These initiatives were, in fact, put in motion in coincidence with discussions at the WCS. After the Conference, many National Commissions set about promoting awareness among decision-makers, the scientific community and the public at large on the recommendations of the WCS, and identifying consolidated national follow-up efforts. To this end, a number of Member States made practical information available on appropriate websites:

Australia: http://www.dfat.gov.au/intorgs/unesco

Canada: http://www.unesco.ca/english/wcseng2.htm

France: http://www.org/comnat/france/comites_spel_sciences.htm

Germany: http://www.unesco.de/c_english/recent_highlights.htm

Italy: http://www.esteri.it/eng/archives/arch_events/unesco/icsu.htm

Korea, Rep. of http://www.unesco.or.kr/eng/science_n/d_1.html

New Zealand: http://www.unesco.co.nz/science

Romania: http://www.wsp.ro/cnrweben/science1.htm

7. During the period under review, a wide range of actions have been undertaken by Member States for targeting, streamlining and carrying out their follow-up activities.

8. In February 2000, a meeting of German experts was convened in Bonn by the German Commission for UNESCO to identify concrete ways to implement proposals for fostering international cooperation in science following the WCS and the World Conference on Higher Education (WCHE, Paris 1998). A highlight of the meeting was paragraph 65 of the *Science*

*Agenda* approved by the WCS. The experts discussed the potential of intergovernmental and international programmes of UNESCO and the International Council for Science (ICSU) for counteracting the trend towards knowledge monopolies being brought about by the protection of intellectual property rights.

9. In November 2000, Hungary, the WCS host country, set up a far-reaching national agenda for action outlined in its document *Science and Technology Policy 2000*. Priorities include doubling national spending on research and development (R&D) and its increase up to 1.5% of gross domestic product. Another key objective is complementing this significant increase in Government investment in science and technology with a heightening of the private sector's share of R&D, from 37.7% to 50%. The strategy of action identified by the Hungarian Government took into consideration the recommendations of the WCS, the priorities of the European Union's Research, Technology, Development and Demonstration Programme and guidelines of the OECD.

10. In March 2000, the Finnish National Commission for UNESCO, the Ministry of Education and the Academy of Finland held the seminar on "Cooperation with developing countries – development needs and challenges in Finland". Later in the year, the Ministry of Education sent a letter to senior members of the science community, highlighting the importance of follow-up to WCS and measures to be taken at the national level. The Academy of Finland, which is the most important science funding organization in the country, is now closely involved in the follow-up process, as are its Research Council for Biosciences and the Environment (RCBE) and the Research Council for Natural Sciences and Engineering (RCNSE). The RCBE has launched an extensive three-year programme on Sustainable Use of Natural Resources (SUNARE 2001-2004). A RCNSE workshop was held in June 2001 to promote a programme on proactive information technologies, comprising computer science and technology, psychology, law and health sciences.

11. In 2000, the Government of Pakistan, which accords high priority to the development of the information technology sector, adopted a National Information Technology Policy and Action Plan. Within this policy framework a report to UNDP was prepared in December 2000 at the request of the Government. The Report contains a *Feasibility Study for the Pakistan Virtual Information Technology University (VITU) and the South Institute of Information Technology (SIIT).* These institutions are designed to bring to the country and the region a unique opportunity for quality education in information technology, and nurture the talent of the whole population rather than a mostly urban elite. The total cost of the project amounts to US $21 million, and through it VITU/SIIT would attain self-sufficiency within four years and generate considerable returns in the years that follow. It is estimated that, in five years, with an initial enrolment of 2,000 students, the information technology programmes would be accessible to some 96,000 students.

12. An increased effort in research and technological development is envisaged in the Five Year Plan 2000-2004 elaborated by the Government of Morocco. This Plan recognizes science and technology as an essential national priority for the attainment of sustainable development. Investment in research has increased from 0.3% of GDP in 1998 to 0.4% in 2000. A fixed goal is to attain the level of 1% by the year 2010. Action to be taken highlights reinforcement of the Morocco Wide Area Network (MARWAN - a national interuniversity informatics network for education, training and research) and the establishment of national centres/institutes of excellence in such areas as water, energy, aromatic and medicinal plants, and Saharan research.

13. In response to the ongoing analysis of the needs of Polish science, a new initiative to create a Consortium of leading institutions in the life sciences was launched in January 2001 by ten national institutions in cooperation with the International Institute of Molecular and Cell Biology, established earlier in the framework of UNESCO's science programme.

14. As a part of Ghana's follow-up to the WCS, the country is hoping to host a Regional Centre for Humid Tropics Hydrology and Water Resources Management, due to become operational next year. The Centre will be responsible for enhancing implementation of multidisciplinary water resources management strategies in West Africa and integrating efforts between scientists and policy-makers.

15. In March 2001, the Government of Japan completed the preparation of, and took a decision on, the *Science and Technology Basic Plan* for the beginning of the 21st Century, which incorporated Japanese follow-up to the WCS. The plan embraces three strategic issues, namely basic concept, basic policy and the mission of the Council for Science and Technology Policy, which was entrusted to oversee the implementation of the plan.

16. In April 2001, the Kuwait Institute for Scientific Research (KISR), established as the Government arm for applied scientific research and technology transfer, prepared a report entitled *Kuwait input on the* Science Agenda *of the World Conference on Science*. The Report outlines 21 principal lines of action being taken in line with national priorities and the *Science Agenda*. In this framework, for example, in early 2001, the country passed a law on the protection of all forms of intellectual property rights so as to enhance the previous law which had exclusively concerned copyright and the protection of trade marks.

17. On the initiative of the Canadian Commission for UNESCO, an extensive report *Science in Canada – Giving Meaning to the 1999 World Conference on Science* was prepared and published in April 2001 as an overview of programmes and initiatives that address areas where Canada is particularly active and which help fulfil commitments made in Budapest. The report constitutes an important starting point and basis for follow-up action in the country.

18. In the area of science popularization and communication there has been a marked effort by Member States. So, for instance, the Pakistan Science Foundation is developing a project on the establishment, through public and private funding, of 15 science centres/museums throughout the country. The first of such centres is being established in Faisalabad. In 2000, the German Research Council (*DFG*) established the Communicator Prize conceived to award scholars for their accomplishments in conveying complex scientific topics and related social and ethical issues to the public. The Federation of Finnish Learned Societies conducted, in January 2001, a Science Day focusing on science education, the use of research findings in decision-making and science ethics: all themes intrinsic to the *Science Agenda.*

19. As sought in paragraph 6(c) of 160 EX/Decision 3.3.2, national action to follow up the WCS was reinforced through the Participation Programme and extrabudgetary funding. In the framework of the Participation Programme, Member States gave particular emphasis to the implementation of paragraphs 17 and 90 of the *Science Agenda* seeking to ensure the full participation of women and girls in all aspects of science and technology.

20. The Italo-Australian round table on Women and Science supported under the Participation Programme (Turin, February 2000) was a step towards the creation of an International Network of Women Scientists (IPAZIA). This initiative of the Italian National Commission and the International Forum of Mediterranean Women was complemented by

courses on Women, Sciences and Development, financed by the Italian Ministry of Foreign Affairs and launched in September 2000. They are envisaged for Anglophone and Francophone women scientists of 11 southern Mediterranean countries. On 26-29 May 2001 a preparatory meeting for the 12th International Conference of Canadian Women Engineers and Scientists (Ottawa, July 2002), convened by the National Commission with Participation Programme support, concentrated on the development of an international federation of women scientists and engineers.

21. Other activities promoting women in science that have been given priority in the framework of Participation Programme include:

(a) two seminars for *Careers in Science and Technology for Women* (New Providence, Bahamas, January, November 2001);

(b) subregional workshop on *Science and technology education for women and girls* (Teheran, Islamic Republic of Iran, 18-23 June 2001);

(c) interregional comparative study *Women in science; status and perspectives* (Tunis, Tunisia, December 2001).

22. Support was also provided under the Participation Programme to activities within other lines of action highlighted in the *Science Agenda*, such as science education and the raising of public awareness of science (Argentina: project on up-dating the teaching of science through the publication of periodicals; Australia*:* regional workshop "Science and community: bridging the gap"); science/industry cooperation (Belarus: project on the elaboration of a national programme of cooperation; China: conference in Xi'an, Georgia: project on university/industry cooperation for societal development in the Caucasus); the relationship between science and traditional knowledge (New Zealand: Pacific regional workshop "Contribution of traditional knowledge and approaches to scientific understanding"); and continuing consultation on action to be taken within WCS follow-up (Bulgaria: conference on prospects of science in South-eastern Europe, Sofia; Uruguay: regional meeting on the WCS follow-up, Montevideo).

23. By virtue of extrabudgetary support, a wide spectrum of activities is proving conducive to the implementation of recommendations of the WCS. In the context of those relating to the use of science in meeting basic human needs, a "Sahel project" was launched in 2000 with a view to supporting local development at the village level by means of improving access to fresh water, the use of solar energy and the rational use of natural resources. The project is being implemented in Mali, Niger and Burkina Faso, in cooperation with UNICEF, UNDP and other donors. Likewise, a project on the "Economic and ecological restructuring of land and water use in the region of Khorezm" in Uzbekistan earned generous funding support from Germany, and will be implemented in cooperation with the University of Bonn.

24. Paragraph 13 of the *Science Agenda* appealed for the furthering of international cooperation on issues of universal concern through professional organizations of scientists such as international academies, scientific unions and learned societies. In this context, the idea was born in Budapest for an Arab Academy of Sciences (AAS) as an important new initiative promoting science and cooperation in the region. Since that time the project has been advancing well and has passed through its preparatory phase. The AAS was officially launched at UNESCO Headquarters in May 2001 as a part of an extrabudgetary project. Beirut has been chosen to host the headquarters of the Academy. A significant effort, concomitant to follow-up to the WCS, is being made through five extrabudgetary projects in Brazil. The

projects, which enjoy generous support from the Government, cover such areas as environmental education, biosphere reserves, management of water resources, and the building up of a science information system for decision-making. In the pipeline there are also projects on a strategy for science and technology and innovation in Brazil and support for a National Council of Scientific and Technological Development. Needless to say, the Organization would be willing to assist other Member States in the identification and execution of extrabudgetary projects that may need to be carried out.

## ADDRESSING WCS RECOMMENDATIONS THROUGH REGIONAL ACTION

25. The follow-up strategy of the Organization is to promote action in response to the WCS across the entire science programme including the social and human sciences, as well as pertinent parts of programmes in education, communication and culture. Such action, oriented as outlined in document 30 C/5 Approved and document 160 EX/11, implies concerted effort on the part of Field Offices and Headquarters. The role of Field Offices was particularly emphasized in paragraph (d) of 160 EX/Decision 3.3.2, which underlined the need to promote, within the programmes of the Field Offices, the elaboration and execution of regional and subregional programmes of action.

26. In pursuance of this, there have been thorough consultations on the matter with the Field Offices. As could be seen from the reports elaborated by the Field Offices in May-June 2001, programmes of action were identified in the regions as a practical embodiment of regional strategies formulated in 30 C/5 Approved and they are now being carried out. The developments in various regions can be summarized as follows:

27. In **Africa**, national capacities in basic and engineering sciences have been promoted through fellowships and travel grants awarded to senior African scientists to carry out research and training in the framework of the African Network of Scientific and Technological Institutions (ANSTI); improvement of African university courses in mathematics, physics and chemistry, and the orientation of regional life sciences towards poverty alleviating biotechnological approaches focused on the specific/endemic organisms in the Afro Tropical environment (http://unesco-nairobi.unon.org/xindex.html). A UNISPAR guidebook on the transfer of research results to industry is being compiled for use by researchers. As regards environment and sustainable development, the International Conference “Role of Geology in Poverty Reduction in the 21st Century” was held in Nairobi (Kenya, November 2000), as was a regional conference on earthquake disaster preparedness in Kampala (Uganda, December 2000). UNESCO Nairobi is actively working on projects to establish two Biosphere Reserves within the AfroMAB network, in cooperation with FAO and UNDP.

28. When concerting activity on WCS follow-up in the **Arab region**, UNESCO Cairo responded to the recommendations of 160th session of the Executive Board by preparing a comprehensive regional follow-up report. Several recently held meetings have contributed to promoting follow-up programmes of action in the region. To cite but a few: the “Workshop on Product Development Management in the Arab Region” held in the framework of the Arab Regional Network for Science and Technology Management (STEMARN) in Manama, Bahrain, October 2000; the “International Conference on Wadi Hydrology”, Sharm El Sheikh, Egypt, November 2000; the “11th Arab Chemical Conference”, Aden, Yemen, November 2000; and the “Workshop on Project/Resources Capacity Management in Contract R&D”, Kuwait, March 2001. In the ecological sciences, a project document “Management of Sand Encroachment on the Nile” was prepared during 2000. Directors of Biosphere Reserves in the

Arab countries received training at the "Workshop on Ecosystem Approach in Biosphere Reserve Management" (Sharm El Sheikh, November 2000). In line with WCS recommendations on science popularization, the Field Office launched a project "Upgrading Awareness on Science, Environment and Health". In April 2001 in Cairo, young journalists from Arab countries were exposed to the experience of prominent editors, scientists and journalists at the Second training workshop "Tools and Methodologies of Simplified Scientific Writing". Extrabudgetary projects and those under the Participation Programme have served to strengthen national and regional capacities in science through promoting information and communication technologies in science education. In 2001, this programme was expanded to include the pre-university level.

29. In **Asia and the Pacific**, contributions to the WCS follow-up are being made by several Field Offices. UNESCO Jakarta, in cooperation with the ASEAN Secretariat, developed a project proposal for an ASEAN Virtual University in Science and Technology. The project document has now been submitted for examination by the ASEAN member countries. In pursuance of the recommendation by the Board of the Science and Technology Policy Network (STEPAN) regarding the needs of the LDCs, a survey mission was undertaken to assist the Lao PDR in establishing its national science and technology policy. In the framework of MAB, an initiative on "Asia-Pacific Cooperation for the Sustainable Use of Renewable Natural Resources in Biosphere Reserves and Similar Managed Areas" (ASPACO) was launched as a major regional WCS follow-up action with the support of the Government of Japan. The first ASPACO meeting was held in February 2001 in Bali, Indonesia. In science education, further impetus was given to cooperation with ASPEN through the organization, in the Philippines, Sri Lanka and Malaysia in 2001, of three Active Learning Workshops for promoting innovations in physics teaching relevant to the Asian context. A pilot research project on a centre on natural dyes in the Himalayan region of India was initiated under WCS follow-up, by UNESCO New Delhi in cooperation with the Government of India and the Himalayan Environmental Studies and Conservation Organization (HESCO). Action of UNESCO Beijing focused on the training of DPR Korean scientists in physics, water sciences and marine biotechnology in Chinese institutions. A noteworthy effort in the region relates to science popularization. In 2001, an intensive training course targeting science writers from Pacific media institutions was held in Canberra (Australia, February), as was the Science Communication Workshop in Apia (Samoa, August). In the framework of the MAB Young Scientists Awards Programme, an initiative on MAB Certificate for Young Researchers and Environmental Managers was launched in Indonesia to increase awareness and participation of young people in the sustainable use of biological diversity, natural resources and environmental conservation. In cooperation with COSTED, a "Science Communication Network for the Small States in the Global Society" is being developed by UNESCO New Delhi with the participation of Bangladesh, Bhutan, Maldives, Nepal and Sri Lanka using expertise available in India.

30. There are two groups of activities relating to follow-up to WCS in **Latin America and the Caribbean**. One aims specifically at giving an appropriate diffusion and/or follow-up to the Conference; the other refers to those activities which, across the regional science programme, bring a contribution of important dimensions to WCS follow-up. A number of activities preceded the 160th session of the Executive Board; for example the seminar-workshop organized by universities of the Montevideo Group Association (Porto Alegre, Brazil, December 1999). The opening presentation made at the Seminar entitled "Budapest World Conference on Science: Vision of Latin America" was widely distributed by e-mail, and has now been prepared by the Federal University of Allegro for publication in 2001.

31. In response to the call by the WCS for enhanced regional cooperation, the Academies of Sciences in the Caribbean decided to federate. To this end, the Caribbean Scientific Union was launched in Cartegena (Colombia) in November 2000. Specific highlights of current action in the region embrace such projects as Development of the Technical and Financial Cooperation Guide for Science and Technology Projects in Latin America (February 2001); and the holding of the Mercosur Science, Technology and Innovation Meeting (October/November 2001) with the participation of governments, universities, the private sector and leading S&T cooperation agencies such as CYTED, IDRC, OAS, OEI and UNIDO. In general terms, the WCS recommendations are being addressed through various programme activities in basic, engineering and environmental sciences. Recent examples are: development of Networks for R&D postgraduate programmes in Science in Central America (Red-Ciencia) and the Caribbean (Cariscience) (April 2001); International Symposium on Manu and other experiences on research and management of Neotropical forests (Peru, June 2001); and the Seminar on Anthropogenic changes in the Amazonian estuary: a comparative analysis at the regional and international levels (Brazil, December 2001). The Latin American follow-up strategy involves the implementation of the Santo Domingo Declaration issued at the Latin American and the Caribbean Regional Consultation Meeting for the WCS held in the Dominican Republic in March 1999.

32. As recommended in paragraph 6(c) of 160 EX/Decision 3.3.2, the UNESCO Office in Venice is promoting cooperation among countries of **Europe** and also with developing countries. In this context, the action of the Office is based on a set of activities that were envisaged within follow-up to the WCS for countries in transition, for the entire region and at the interregional level. The following recent events highlight the Office programme of action. In October 2000, an International Congress on “Science and Education” was held in Minsk, Belarus, gathering participants from European countries, USA, Brazil, China, India and Iran; the proceedings were published in June 2001. New modalities of Euro-Mediterranean cooperation in science and technology were addressed at the Euro-Med Forum in Capri (Italy) in December 2000. The recommendations of the Forum have been forwarded to the European Commission. An important International Conference of Experts on the Reconstruction of Scientific Cooperation in South-East Europe took place in Venice, Italy, in March 2001, paving the way for an informal meeting of Ministers of Science of South-East European countries at UNESCO Headquarters on the occasion of the 31st session of the General Conference. Last but not least is the International Conference on “Science for Peace and Development: Regional Scientific Cooperation of the Successor States of the Socialist Federal Republic of Yugoslavia in the Context of European Integration” (Maribor, Slovenia, October 2001).

## MEETING STRATEGIC PRIORITIES IN WCS FOLLOW-UP

33. At its 160th Session, the Executive Board sought reinforcement of WCS follow-up with regard to strategic priorities such as environmental protection, the ethics of science, and science training through UNESCO´s intergovernmental scientific programmes, the International Bioethics Committee (IBC), the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) and the intergovernmental scientific centres in Trieste respectively (160 EX/Decision 3.3.2, para. 6(b)).

34. Resolutions XIV-2, 4-8, 10, 11 of the Intergovernmental Council of the Intergovernmental Hydrological Programme (IHP) respond to these expectations, envisaging the reinforcement of IHP through a number of important initiatives now underway and contributing to the implementation of *Agenda 21* and the recommendations in paragraphs 29

and 30 of the *Science Agenda*. These initiatives embrace the development of the Hydrology for Environment, Life and Policy (HELP) Programme and the Joint International Isotopes in Hydrology Programme (JIIHP), as well as the establishment of institutions such as the UNESCO/IHE Institute for Water Education in Delft; an International Groundwater Resources Assessment Centre (IGRAC); a Water Centre in Chile for Arid and Semiarid Regions of Latin America and the Caribbean; a Regional Centre in Egypt for Water Studies of Arid and Semi-arid Zones and a Regional Centre for Urban Water Management in the Islamic Republic of Iran.

35. The recommendations and outputs of the WCS infused the discussions of the International Coordinating Council of the Man and Biosphere (MAB) programme at its 16th session in November 2000. Initiatives for taking the outcome of the WCS into account have principally focused on the implementation of paragraphs 29-34, 84, 86 of the *Science Agenda* through the World Network of Biosphere Reserves, supported by collaborative work with a range of regional and international organizations in such fields as the conservation of biological diversity, traditional ecological knowledge, and South-South cooperation on environmentally sustainable economic development in the humid tropics. A new global initiative on biological diversity education, training and public awareness is taking shape as a joint initiative of the Convention on Biological Diversity and UNESCO. The last of several meetings on this initiative was held in Bergen in November 2000. Later, the International Conference on Biodiversity and Society, organized by UNESCO and Columbia University (New York, May 2001) built on pilot projects being carried out in Biosphere Reserves and leading to development of viable strategies for the long-term stewardship of the Earth. Revamping and upgrading of the MABNet has been accompanied by a ten-fold increase in monthly “visitor hits” over a recent 15-month period.

36. The International Geological Correlation Programme (IGCP) brings its principal contribution to the implementation of paragraphs 29-34 of the *Science Agenda* that imply action in the Earth sciences, Earth system management and natural disaster reduction, with emphasis on capacity building in risk assessment, early warning of natural disasters and mitigation of their effects. Within its terms of reference, the IGCP is also contributing to fundamental and problem-oriented research, and promoting science education and public awareness. In many areas of the world, crustal movements and deformations pose a threat to life, property, societies and industry, but they also provide precious information on the geophysical phenomena in the Earth’s interior. As part of national input to the WCS follow-up, Finland hosted the IAG International Symposium on Recent Crustal Movements (Helsinki, August 2001). Both scientists and society stand to gain a great deal from a better understanding of the Earth. Since November 2000, over 30 training courses, workshops, meetings and conferences have been conducted to provide the geoscientific underpinning for wise management of the Earth’s environment and reducing the vulnerability of humankind to natural disasters. Three regional extrabudgetary projects on disaster/risk reduction are being implemented in the Arab region, Central America and the Eastern Mediterranean region.

37. As strongly recommended in paragraphs 31 and 32 of the *Science Agenda*, interdisciplinary research involving both the natural and the social sciences must be vigorously enhanced by all major actors concerned in order to address the human dimension of global environmental change, including health impacts, and to improve the understanding of sustainability as conditioned by natural systems. Interdisciplinary projects should also deal with links between modern scientific knowledge and traditional knowledge in the framework

of investigation of the relationship between culture, environment and development. As pointed out in the Joint Statement by Chairpersons of the five UNESCO intergovernmental scientific programmes to the 30th session of the General Conference, these recommendations constitute the basis for joint action of these programmes to bring about an important contribution to the follow-up to WCS utilizing the Organization's programme in the social sciences. The draft 31 C/5 foresees three cross-cutting projects to be implemented with the participation of the Sector of Social and Human Sciences, namely on: enhancing disaster prevention and preparedness in selected poor communities at risk through the development and dissemination of wise disaster reduction practices; the strategy for a sustainable tourism development in the Sahara; and the promotion via NICT (New Information and Communication Technologies) of earthen construction systems and traditional know-how for sustainable housing. Among other projects with a major social science component, the following may be mentioned: the pilot project on telecentres for indigenous knowledge development that was launched in January 2000 and the establishment of UNESCO Chairs on traditional and local knowledge in the University of Papua New Guinea and the University of Kinshasa (Democratic Republic of Congo). In the meantime, a special issue of UNESCO Sources was devoted to indigenous knowledge (No. 125, July-August 2000) and Issue No. 168 of the International Social Sciences Journal addressed the theme "Science and its Cultures". In the framework of the Project on *Urban Development and Freshwater Resources: Small historical Coastal Cities*, operational activities were launched in the cities of Essaouira, Mahdia and Omisalj.

38. The activity of COMEST, ICB and the Intergovernmental Bioethics Committee (IGCB) has direct bearing on the implementation of paragraphs 71-77 of the *Science Agenda.* In response to concerns expressed by the WCS, UNESCO carried out, in the framework of COMEST, a series of integrated multidisciplinary and multicultural analyses on the ethics of energy, fresh water, outer space and the information society. To this end, four pertinent subcommissions of COMEST were established. Their work has so far resulted in reports and publications, such as *The Ethics of Freshwater Use; The Ethics of Space Policy*; and *The Ethics of Energy: Framework for Action* (in press). COMEST also helped in the creation of an international network, the Research and Ethical Network Embracing Water (RENEW), aimed to promote best ethical practice in all aspects of freshwater use. With the aim of promoting public awareness of science and ethical issues involved, COMEST has contributed to promoting a dialogue between the scientific community, decision-makers, youth and civil society at large. An international survey was carried out electronically by the American Association for the Advancement of Science (AAAS) in cooperation with COMEST (Washington, December 2000) with a view to identifying key ethical issues scientists are likely to encounter as the world enters the twenty-first century. A Ministerial Round Table on Bioethics will take place during the forthcoming session of the General Conference.

39. Scientific training is one of the key components of capacity building in science and its use. The Abdus Salam International Centre for Theoretical Physics (ICTP) and other international institutions in Trieste continue to make considerable input to the international effort to train specialists, particularly from developing countries and countries in transition. The ICTP and the International School for Advanced Studies (SISSA) in Trieste are launching a two-year Master's Degree Programme on Modelling and Simulation of Complex Realities. It should be recalled that Forum I of the WCS highlighted the need for new scientific approaches for understanding the complexity phenomenon. In this context, the Programme will explore the growing number of ways in which methods of applied mathematics and statistical physics are being used to address real-world problems related to complexity and uncertainty. Course work will be followed by internships in governmental agencies and

industrial firms to expose students to problem-solving. This year, a promising follow-up initiative in scientific training was undertaken by Israel, which launched a post-doctoral fellowship programme under the auspices of UNESCO. Fourteen candidates from Africa, Asia and countries in transition will spend 12 months at one of seven top Israeli universities.

40. Another noticeable event in capacity building will be the establishment of the International Centre for Synchrotron Light for Experimental Science and Applications in the Middle East (SESAME) being set up under the auspices of UNESCO. The German Government has generously donated to the SESAME Centre a synchrotron, Bessy I, an instrument for applied and basic research in physics, material science, chemistry, biology, medicine, environmental science and archaeology. Eleven governments are participating as members of the SESAME project. The groundbreaking ceremony for the construction of the Centre took place in Jordan in August 2001.

41. At the WCS, the promotion of science education was recognized as one of the principal strategic actions in follow-up to the Conference (paras. 41-49 of the *Science Agenda*). In this context, the Education and Science Sectors are in the process of elaborating an Intersectoral Science and Technology Education Project envisaged for the forthcoming biennia (in para. 69 of draft document 31 C/4 and para. 01213 of draft document 31 C/5). Concurrently, efforts are being made to consolidate and reinforce UNESCO activities in science education within a holistic approach embracing primary, secondary and tertiary education. The current action encompasses major conferences such as the International Conference on Science and Technology and Mathematics Education for Human Development (Goa, India, February 2001); the European Conference for Chemistry Teachers (Vienna, Austria, April 2001), and practical activities such as dissemination of the new UNESCO Resource Kit on Science and Technology Education, training courses on “Microscience Experiments and DIDAC” in the Caribbean region in Trinidad, Jamaica and Guyana in December 2001, and the Evaluation Workshop on “Science Education Projects in Chad” (April 2001). The follow-up processes of both the WCS and WCHE were brought together in the convening, at Headquarters on 28-29 June 2001, of an Expert Meeting on strengthening research capacities and management in universities. This event marked the first phase in the creation of a UNESCO Research Management Forum, in partnership with the Swedish International Cooperation Development Agency (SIDA).

42. In recognizing the vital importance of sharing scientific information and knowledge, the WCS pointed out that the use of new information and communication technologies for this purpose should be promoted, in particular through electronic publishing and the establishment of virtual research and teaching environments or digital libraries (paras. 20 and 35 of the *Science Agenda*). In this regard, some relevant initiatives are being taken by the Organization. UNESCO and ICSU organized the Second International Conference on “Electronic Publishing in Science” (Paris, February 2001). The Conference, convened in the face of pressing economic, legal and ethical concerns, brought together representatives of all links in the information chain to examine such issues as the impact on science of new legislation governing copyright and data bases, economic models for the electronic publishing of scientific journals, widening access to the electronic literature, referencing and retrieval of scientific articles, as well as ethical and privacy issues. Project proposals are under preparation by the Sector of Communication and Information, in cooperation with the Education and Science Sectors, to develop a virtual Mediterranean campus established within the EUMEDIS programme of the European Commission, and to launch pilot projects on virtual laboratories and campuses within cross-cutting activity in Africa, the Arab States and

the Asia-Pacific region. The creation of a South-east European Network for Education and Research is also under consideration.

43. Efforts being made to promote the participation of women in science and technology go beyond those already mentioned in the context of the Participation Programme (paras. 20-21). It is noteworthy for instance that the Science Council of Japan (SCJ), at its 132nd General Assembly, adopted a proposal on "Concrete Measures for the Improvement of a Working Environment for Women Scientists and a Statement on Encouragement of Gender Equal Participation at SCJ". The proposal, made to government and universities, aims at raising the ratio of women in Japanese universities and research institutions and enhancing childcare support systems and support from the research-aid fund. An important action-oriented declaration was issued by the African Conference on "Scientific Education for Girls" (Lusaka, Zambia, June 2001) with reference to the inspiration provided by the *Science Agenda.* Participants at the Lusaka Conference committed themselves to working towards the international development target of eliminating, by 2005, gender disparities in primary and secondary education in general, and in mathematics, science and technology education in particular.

44. Following the establishment of the International Forum of Young Scientists at the WCS, further action was taken to promote the role of young scientists. The European Forum of Young Scientists (Gdansk, Poland, October 2000) convened by UNESCO alongside the Council of Europe/European Science Foundation/UNESCO Conference on "Science and Technology in Europe: Prospects for the 21st Century" (itself a significant WCS follow-up event) was a novel mechanism to involve young scientists in the identification of policy priorities for Europe. The Chair of the Committee on Science and Technology of the Parliamentary Assembly of the Council of Europe, in response to a report of the Forum, undertook to submit a resolution to the Parliamentary Assembly calling for greater support for young researchers in countries in transition. Desirous to know the views of young scientists, a department of the Ministry of Science Technology in Sri Lanka established a Young Scientists Forum. Over 300 scientists from around the world met at the Second International Conference on "Young Scientists' Contribution to Industry, Science, Technology and Vocational Education for Sustainable Development: Problems and New Solutions" (Moscow, Russian Federation, November 2000). The rich discussion at the Conference and its outcome is inspiring participants from developing countries to host similar conferences.

## DEVELOPING PARTNERSHIPS

45. Follow-up to the WCS is being executed by many partners, each retaining responsibility for its own action (*Science Agenda*, para. 92). In this context, the Conference requested UNESCO, in cooperation with ICSU, to act as a clearinghouse for the exchange of information on follow-up action and the promotion of concrete initiatives for international scientific cooperation, together with relevant international organizations and donors.

46. The Organization is keeping Member States and a wide range of international, regional, intergovernmental and non-governmental partners abreast of developments in the WCS process through various means of communication. Since the 162nd Session of the Executive Board, the flow of information on WCS follow-up has in particular been further developed through the *WCS Newsletter* (http://www.unesco.org/science/wcs/newsletter), which is proving to be a useful source of information on follow-up activities carried out or planned, and a means for continuous dialogue between Member States, Field Offices and Headquarters.

This electronic journal offers all partners an opportunity to communicate information to any targeted audience and to seek feedback from interested partners. A new chapter is being introduced into the journal to establish an international platform for the exchange of views on principal issues raised by the WCS, and action to be taken to promote science and its service to society.

47. Member States and some 200 international organizations and donor agencies are being regularly consulted by correspondence on their accomplishments, plans and proposals as regards WCS follow-up. The last round of consultation took place in April 2001. In November 2000, some major partner organizations held an informal consultation meeting on coordination and consolidation of their actions. UNESCO hosted this event at Headquarters, bringing together representatives of ICSU, ISSC, OECD, UNU, the World Bank, WHO and WMO. The areas for coordinated action embrace, *inter alia*, the interface of the social and natural sciences in addressing issues of human life; promotion of science policy in industrialized and developing countries; science for alleviating poverty, the generation of knowledge and its use in health-related areas and ethics of biomedical research; as well as global complex systems. In addition to the above-mentioned partners, a number of organizations have already made known their commitment vis-à-vis the follow-up to the WCS and maintain working relations with UNESCO in this regard. This group of organizations so far includes specialized UN agencies and intergovernmental organizations such as FAO, GEF, IAEA, ILO, UNIDO, WIPO, the African Development Bank, ISESCO, the *Centro Latino-Americano de Fisica (*CLAF), the European Commission and the European Space Agency, and non-governmental organizations such as the Community of Mediterranean Universities, the Conflict Early Warning System Programme, the Council for International Organizations of Medical Sciences, the European Academy of Arts, Sciences and Humanities, the European Science Foundation, the International Cell Research Organization, the International Council for Engineering and Technology, the International Court of the Environment Foundation, the International Network of Engineers and Scientists for Global Responsibility, the International Sociological Association, the International Union Against Cancer, the International Union for Vacuum Science Technique and Applications, the Third World Academy of Sciences (TWAS), the World Association of Industrial and Technological Research Organizations, and the World Federation of Scientific Workers.

48. It should be recalled that the international scientific unions and national members of the ICSU family are themselves involved in follow-up. In pursuance of their traditional close partnership, UNESCO, ICSU and TWAS have elaborated memoranda orienting their cooperation towards follow-up to the WCS. The Second Framework Agreement between UNESCO and ICSU, once approved in principle by the Executive Board at its 162nd Session, will establish a new general framework for cooperation between two organizations for the six-year period covered by the Medium-Term Strategy 2002-2007. The Agreement will concentrate on activities designed to respond to WCS appeals and recommendations embodied in the *Declaration* and the *Science Agenda*.

49. Members of the Executive Board will recall that the Executive Director of ICSU informed the Board about ICSU follow-up action at its 160th session. In the context of the recommendation by the Executive Board (para. 6(h), 160 EX/Decision 3.3.2), the variety of measures referred to above are conducive to coordination between UNESCO, ICSU and other partners, and responsive to the recommendation in paragraph 6(g) of 160 EX/Decision 3.3.2.

**FURTHER STEPS TO BE TAKEN**

50. At its 160th session, the Executive Board recommended the preparation of two feasibility studies: one on the creation of an international programme in the basic sciences, and the other on the possible celebration of a World Science Day for Peace and Development (paras. 6(h) and (j), 160 EX/Decision 3.3.2). The latter study is being considered separately by the Board at the 162nd session. The first study being currently undertaken entails thorough consultation with UNESCO's partners in the basic sciences such as ICSU, its scientific unions and national members, and the Third World Academy of Sciences. The results of this study will be presented to the Board at a forthcoming session.

51. According to 30 C/Resolution 21 of the General Conference, the Organization, in cooperation with ICSU, is to prepare an *Analytical report to governments and international partners on the impact of WCS, the execution of follow-up and further action to be taken* (*Report*). After consultation held with Member States, international and regional organizations, as well as Field Offices, the preparation of the *Report* has entered its final phase.

52. The *Report* will analyse the progress achieved in follow-up to the WCS within the strategic priorities identified and introduced in the three chapters of the *Science Agenda*. Such an approach oriented towards evaluation of major lines of action is conducive to the pragmatic evaluation of advances, drawbacks and, more importantly, actions to be taken. The time span covered by the Report will be just half the five-year period that could be considered a reasonable span for measuring the tangible fruits of follow-up. However, the decision taken by the WCS to analyse the process at this stage does provide an opportunity for introducing any corrective measures needed and giving further stimulus to action.

53. Upon completion of the *Report* and its circulation to Member States and international organizations early next year, it is planned to organize a series of meetings to present the *Report* in the regions. The purpose of these events will be to review the regional responses to the WCS and to better adapt them to findings stemming from discussions on the *Report* and on the implementation of documents 31 C/4 and 31 C/5, which will have been approved by that time by the General Conference. In this way the second phase of the quinquennial period of follow-up would be launched. At the end of this period a meeting of partners in follow-up could be envisaged so as to evaluate the results achieved and identify major efforts to be undertaken during the course of the remaining biennia of the Medium-Term Strategy for 2002-2007.

54. As for the elaboration of the proposals for the Draft Medium-Term Strategy for 2002-2007 and the Draft Programme and Budget for 2002-2003, they have been prepared and circulated to Member States. The response to the expectations of the WCS and recommendations made by the Executive Board at its 160th session contained in these documents combines a strategic orientation of the entire programme in science and allied areas, and a particular focus on selected actions in line with principal priorities identified at the WCS. As pointed out in the chapter on Sciences of draft document 31 C/4 (para. 81), UNESCO will address contemporary challenges in an integrated framework responding to the new social contract between science and society for the twenty-first century, as defined by the results of the WCS. The Organization will support and promote scientific cooperation at all levels drawing on its unique symbiosis of natural and social sciences to adapt science to societal needs. Eight of twelve strategic priorities proposed in draft document 31 C/4 (para. 47) respond to the recommendations of the WCS as regards education, management of

the environment and social change, information technologies, as well as enhancing capacities to participate in the emerging knowledge societies. Two cross-cutting themes identified in draft document 31 C/4 have important bearings on science's contribution to the eradication of poverty, and the promotion and use of information technologies. Its strategic objective 4 challenges the Organization to promote principles and ethical norms to guide scientific and technological development and social transformation. In the framework of its strategic objective 5, UNESCO's five intergovernmental and international programmes will be a privileged tool to better understand and manage the environment and social change and address major challenges to sustainable development. In this context, water resources and supporting ecosystems will be of the highest priority for the Organization's activity between 2002 and 2007 because they have become a central issue for providing a scientific basis for environmental security. Draft document 31 C/5 embodies the above-mentioned strategies in terms of principal actions within Major Programmes I, II and III. Although their overview goes beyond the present report, it is worth mentioning that an appropriate discussion on this document at the 31st Session of the General Conference will open the door for innovative and large-scale action developed in the framework of the follow-up to the WCS.

**DRAFT DECISION**

55. In the light of this report, the Executive Board may wish to consider the following decision:

The Executive Board,

1. Referring to 160 EX/Decision 3.3.2 on the report by the Director-General on the reorientation of UNESCO's programmes in sciences to take account of the conclusions of the World Conference on science,

2. Having examined the report of the Director-General on progress achieved in follow-up to the World Conference on Science (Budapest, 1999); (162 EX/9),

3. Recognizing that the World Conference on Science and the first phase of its follow-up inspired a wide range of national, regional and international activities that have provided the basis for the development of reinforced WCS follow-up action to promote a commitment from and to science for the benefit of society during the forthcoming sexennial period,

4. Recalling 161 EX/Decisions 4.1 and 4.2 pertaining to the Draft Medium Strategy for 2002-2007 and the Draft Programme and Budget for 2002-2003; and *expressing* its satisfaction that documents 31 C/4 and 31 C/5 provide for specific follow-up to WCS,

5. Noting that, two years and a half after the WCS, an Analytical Report to governments and international partners on the impact of WCS, the execution of its follow-up and further action to be taken will be prepared by UNESCO in cooperation with ICSU,

6. Recalling that the Organization accepted the WCS proposal in paragraph 92 of the *Science Agenda* to act in cooperation with ICSU as a clearing house for intergovernmental and non-governmental partners in WCS follow-up, developing, *inter alia*, initiatives for international scientific cooperation with relevant United Nations organizations and bilateral donors, in particular on a regional basis,

7. Urges Member States to:

(a) further reinforce their efforts to promote the implementation of the principles and recommendations highlighted by WCS through activities across national priority programmes in the natural and social sciences, science education and the use of scientific knowledge;

(b) conceive by the end of year 2002, an outline of their national medium-term action embracing principal efforts to be undertaken in response to the expectations of the WCS;

(c) consider participating in the elaboration and execution of regional and interregional follow-up programmes;

(d) continue to regularly inform the Director-General of principal activities, proposals and plans that contribute to the attainment of the goals proclaimed at the WCS;

8. Invites the Director-General to:

(a) implement the provisions pertaining to WCS follow-up in the Draft Programme and Budget for 2002-2003 and Draft Medium-Term Strategy 2002-2007, once approved by the General Conference;

(b) promote consultation on the working programme of medium-term follow-up action in the regions following deliberations at the 31st session of the General Conference and presentation of the forthcoming *Analytical Report* at regional meetings;

(c) inform the Executive Board, at its 165th Session, of the results of the feasibility study – including financial implications – on the creation of an international programme on the basic sciences;

(d) report to the Executive Board, at its 166th session, on the medium-term programmes of follow-up action stemming from regional consultations, as well as recent progress achieved in follow-up in the light of the preparation of a Budapest+5 meeting of partners.