



United Nations Educational,  
Scientific and Cultural Organization

Where have all the beaches gone? p. 12

Natural Sciences  
Quarterly Newsletter

Vol. 1, No. 1

October–December 2002

# A World of **SCIENCE**

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## EDITORIAL

### 'Our house is **burning**'

**A** *World of Science* is being launched as part of the new communication strategy of the Sector of Natural Sciences of UNESCO. The aim of this quarterly newsletter is to keep UNESCO's concerns in the public eye and at the centre of public debate by making information easily available and attractive reading. It is my hope that this will provide a new service for all those who follow with interest developments in UNESCO's science programmes.

Other innovations in communication include the UNESCO science portal<sup>1</sup> and more specific portals, such as those on water<sup>2</sup> and oceans<sup>3</sup>.

Besides being available on the web, *A World of Science* is being despatched to depository libraries around the world, to government ministries, to the 188 National Commissions for UNESCO and to UNESCO's partners in the intergovernmental and non-governmental communities.

This first issue of *A World of Science* is published in the wake of the World Summit on Sustainable Development held in Johannesburg, South Africa, from 26 August to 4 September.

'Our house is burning and we are looking the other way', French President Jacques Chirac chided in his address to the Summit. Chilling but fitting words. Indeed, in the ten years since the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro first adopted the conventions on climate change and biodiversity, the state of the planet has deteriorated dramatically: according to a recent BBC news report, in 1999 the human economy was absorbing 120% of the Earth's productive capacity. National delegations to the Summit had before them the arduous – but essential – task of erecting the three pillars of sustainable development (social, economic and environmental) in a 153-point Plan of Implementation.

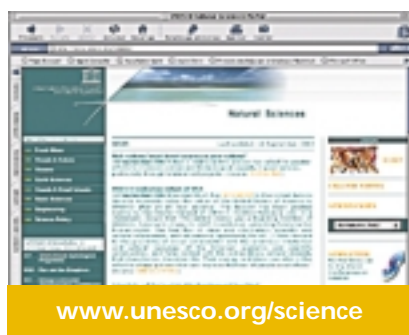
It is my belief that the Summit has succeeded in instilling a sense of urgency in the most complacent of minds. To those who contend that the Plan of Implementation lacks

1. [www.unesco.org/science](http://www.unesco.org/science)

2. [www.unesco.org/water](http://www.unesco.org/water)

3. [www. http://ioc.unesco.org/oceanportal/](http://ioc.unesco.org/oceanportal/)

teeth, I would draw their attention to a number of ambitious targets agreed upon by governments. Timetables have been fixed, for example, for reducing biodiversity loss and for halving the proportion of those deprived access to water and sanitation, focal areas for UNESCO's science programmes. The recommendation of a Decade of Education for Sustainable Development also has far-reaching repercussions for UNESCO. The lead story in this issue overviews UNESCO's contribution to the Summit and examines the implications of the outcome for UNESCO.



Only time will tell whether there has been a real, 'sustainable' awakening to the threats posed by growing poverty and galloping environmental degradation to our planet's future. Only time will tell whether the participants in the Summit heard the warning from one young orator that 'we don't have another planet to move to'.

As *A World of Science* goes to press, the USA has just announced its return to UNESCO after an absence of 18 years. I look forward to extending a warm welcome to our American partners and to seeing the enormous scientific resources of the USA – a country which alone contributes over one-third of the world's effort in research and development – play a full and active part in UNESCO's science programme.

Last but not least, my best wishes for World Science Day for Peace and Development – being celebrated for the first time on 10 November.

W. Erdelen  
Assistant Director-General  
for Natural Sciences

## UNESCO and Johannesburg

### Education for Sustainable Development Decade 'tremendous challenge for UNESCO'

**A**rguably the most spectacular outcome of the World Summit on Sustainable Development (Johannesburg, South Africa, 26 August – 4 September 2002) for UNESCO is the recommendation to the United Nations General Assembly that 'it consider adopting a Decade of Education for Sustainable Development starting in 2005' (para. 117d, Plan of Implementation). The decision comes as welcome news to UNESCO, which first tabled the idea at the final preparatory meeting for the Summit in Bali (Indonesia) last May.

*We are making great efforts to use satellite technologies and the Internet. Many people in Mongolia... would like the information and broadcasts emanating from the major developed countries to focus more on learning and education.*

President Bagabandi  
of Mongolia

The next step is for the recommendation to be presented to the United Nations General Assembly in 2003 for adoption. UNESCO is preparing to take a leadership role in the Decade, in close association with a full range of partners from the inter- and non-governmental communities. The Decade 'represents a tremendous challenge for UNESCO', comments Andras Szollosi-Nagy, Deputy Assistant Director-General for Science at UNESCO<sup>4</sup>.

As an early follow-up initiative to the Summit, UNESCO and the government of France are studying the feasibility of launching a virtual university on sustainable development at the University of Lyon in France.

### One billion promised access to sanitation by 2015

As expected, the global water crisis took priority at the Summit. Today, more than 1 billion people lack access to safe drinking water and more than 2.4 billion are without adequate sanitation. One of the most ambitious targets in the Plan of Implementation is that of halving the proportion of people without access to these basic requirements by 2015. Given the size of the challenge, UNESCO will most likely be maintaining 'water resources and supporting ecosystems' as the principal priority for natural sciences in 2004–2005.

The challenge is to improve water resources management and scientific understanding of the water cycle. The new UNESCO centres for water resource management and the UNESCO-IHE Institute for Water Education in Delft (Netherlands) provide a unique opportunity for UNESCO to demonstrate the practical significance of its science programmes in water resources.

UNESCO may also be asked by the World Water Forum in 2003 to expand its action. Preliminary results of the most extensive United Nations undertaking ever to assess the world's freshwater resources were presented to the Johannesburg Summit and will be published in the *World Water Report* due out in 2003. UNESCO is lead agency for the World Water Assessment Programme, which involves 24 United Nations agencies.

4. Contact: m-j.pigozzi@unesco.org

## Towards regular reporting on the marine environment

In the Plan of Implementation (para.34), the Intergovernmental Oceanographic Commission (IOC) received a clear confirmation of its current mandate to address the scientific uncertainties of climate and global change, and look more closely at new developments, especially in integrated coastal management. Through the IOC, UNESCO will be contributing towards establishing by 2004 a regular global reporting and assessment system on the state of the marine environment.

The IOC is a member of several Type 2 partnerships on oceans and coasts, including the 'African Process' (see p. 12).

One of the goals of the 2000 United Nations Millennium Declaration<sup>5</sup> is 'to integrate the principles of sustainable development into country policies and programmes and reverse the losses of environmental resources'. In the Plan of

**Constructing the new paradigm** [of sustainable development] **is not about coining new terms – it is about action.**

Kader Asmal,  
Minister of Education,  
South Africa

Implementation, governments commit themselves to achieving the Millennium goals and identify new targets. They undertake for example to restore fisheries to their maximum sustainable yields by 2015 and to establish a representative network of marine protected areas by 2012.

UNESCO will be participating actively in a Task Force on Water and Oceans established by the heads of all United Nations agencies under the chairmanship of the Secretary-General of the United Nations, to develop effective implementation plans to achieve the Millennium Goals.

## Reversing natural resources degradation

Governments undertake in the Plan of Implementation to reduce biodiversity loss by 2010 and to reverse the current trend towards natural resources degradation. Moreover, they commit themselves to improving developing countries' access to environmentally sound alternatives to ozone-depleting chemicals by the same date. They also invite the Global Environmental Facility to consider including the United Nations Convention to Combat Desertification (UNCCD) as a focal area for funding.

It could be said of UNESCO's Man and the Biosphere (MAB) programme that it was fostering sustainable development long before the term was coined. For 30 years,

5. [www.developmentgoals.org/](http://www.developmentgoals.org/)

## Summit innovates with 'Type 2' partnerships

The Summit produced three official documents: the Johannesburg Declaration on Sustainable Development and a Plan of Implementation (implemented by all governments and known as Type 1 outcomes) and, for the first time, the inclusion of partnership initiatives as an integral part of the Summit. These 'Type 2 partnerships' were agreed upon in Johannesburg only by those parties directly involved.

A number of Type 2 initiatives were made public in Johannesburg. For example, the USA announced it would be investing US\$970 million over the next three years in water and sanitation projects, while the European Union introduced the 'Water and Life' initiative engaging partners to meet goals for water and sanitation primarily in Africa and Central Asia. By the end of the Summit, countries had pledged to replenish the Global Environmental Facility with a total of US\$3 billion.

A range of agreements were concluded by nine major electricity companies from G7 countries and the United Nations to facilitate technical cooperation for sustainable energy projects in developing countries. The European Union announced a US\$700 million partnership initiative on energy and the USA that it would be investing up to US\$43 million in 2003. The South African energy utility Eskom announced a partnership to extend modern energy services to neighbouring countries.

Some 20 Type 2 initiatives concluded in Johannesburg involve UNESCO. For examples, see the boxes on IGOS and GRASP, as well as an account of UNESCO's role in the 'African Process' beginning on page 12.

## Summit produces 'collateral gains'

Independently of the formal Type 1 and Type 2 partnerships, there were distinct 'collateral gains' in Johannesburg. It was at the Summit that Russia pledged to ratify the Kyoto Protocol – foreseeing the reduction of greenhouse gas emissions to pre-1990 levels by 2012 –, a move which would enable the five-year agreement to enter into force. The Russian pledge was accompanied by Thailand's and China's announcements that they had ratified the Protocol and by Canada's pledge to submit the Protocol to Parliament for ratification before the end of the year.

Another 'collateral gain' was the pledge by individual countries in Johannesburg to increase official development assistance, which had fallen over the past decade from 0.33% of donor country GNP to 0.22% – far below the target of 0.7% agreed upon in Rio de Janeiro. This is all the more significant in that finance and trade issues represented much of the 25% of the Johannesburg documents still needing to be agreed upon when the Summit began on 26 August.

MAB has been promoting through its biosphere reserves – which today number 408 in 94 countries – the sustainable use and conservation of biological diversity, while striving to improve the relationship between people and their environment.

*No-one speaks out against biopiracy. Our resources are taken from us without any payment, in total disregard for the rights of local populations.*

Professor Catherine Odora-Hoppers, University of Pretoria, South Africa

The Plan of Implementation underscores the need to protect the rights of local and indigenous communities and to respect their traditional knowledge and resource management systems. Through the Local and Indigenous Knowledge Systems (LINKS) project,

UNESCO is striking partnerships between indigenous people and scientists to bring traditional knowledge and world views into the biodiversity conservation process<sup>6</sup>.

UNESCO would have liked to see the Summit place greater stress on respect for cultural diversity as an essential element of sustainable development but is nevertheless pleased that the level of awareness has been raised substantially.

#### When small rhymes with vulnerable

Those who were in Johannesburg will recall the poignant appeal for help from the state of Tuvalu (26 km<sup>2</sup>), a tiny group of atolls in the South Pacific with 12,000 inhabitants which is slowly sinking into the sea. According to a report published by the Intergovernmental Panel on Climate Change last year, sea level may rise 1 m over the next 50–100 years. The average altitude of Tuvalu is 1.5 m.

UNESCO is giving a voice to small island states through its Small Islands Voice project launched in 2002 (see p. 9).

*We must grasp the links between how different cultures shape the environment and vice versa.*

The Organization is pleased to see that the sustainable development of small island states was given importance in Johannesburg.

#### Preparing for disaster

Another theme stressed in Johannesburg of obvious relevance for UNESCO is the development and strengthening of activities to improve natural disaster preparedness and response. As Summit follow-up, UNESCO will be targeting both natural and man-made hazards in megacities and rural areas. In addition to emergency relief and recovery, it will be engaging further in disaster prevention with vulnerable countries as a focus. Through joint international observation and research, countries will be familiarized with new techniques in surface-based monitoring and encouraged to use and disseminate satellite data.

Koichiro Matsuura, Director-General of UNESCO

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## IGOS – or the new space race

The space race has entered a new phase. Today, it is fuelled by a far more critical goal than that of Cold War politics – the quest to understand the planet's life-support systems. There may be several global initiatives to observe the climate or the oceans but no single agency or organization can afford to implement one of these systems alone. This is where the Integrated Global Observing Strategy (IGOS) comes in.

An umbrella organization, IGOS is made up of 14 partners including UNESCO, the World Meteorological Organization (WMO) and the Committee on Earth Observation Satellites (CEOS), which represents 23 space agencies.

IGOS is weaving a global network to collect, compare and synthesize the data of the various satellites with land-based observations. The aim is to finalize the system within the next two years to prepare for the launch of a constellation of nine Global Precipitation Measurement satellites, which will be able to measure the rainfall at any spot on the globe every three hours.

IGOS is developing a similar strategy to study the impact of rising carbon dioxide emissions. Carbon dioxide is the most dangerous greenhouse gas because it can hang in the air for tens and even thousands of years, trapping heat in the atmosphere. To predict how atmospheric carbon dioxide levels and climate may change in the future, we must understand where and how it moves between the land, oceans and atmosphere in what is known as the global carbon cycle.

For further information on this Type 2 initiative, go to [www.igospartners.org](http://www.igospartners.org) or contact [r.missotten@unesco.org](mailto:r.missotten@unesco.org)

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Within an International Consortium on Landslides, UNESCO is launching a new International Programme on Landslides encompassing science, education and culture. Moreover, in the face of ever-increasing damage caused by flooding, the Council of UNESCO's International Hydrological Programme recently adopted a Resolution proposing the launch of a Joint UNESCO/WMO Programme on Floods.

#### Renewable energy target wasn't to be

The Secretary-General of the United Nations, Kofi Annan, and the government of Brazil were among proponents of raising the market share of renewable energies to 10%. Solar energy may represent only 0.1% of today's energy demand, but it is also one of the world's fastest-growing renewable energy sources. The photovoltaic solar market for example is expanding by 15% annually, according to GEF, thanks largely to the lower costs made possible by research.

<sup>6</sup> Contact: [d.nakashima@unesco.org](mailto:d.nakashima@unesco.org)

Although the hoped-for target is ultimately absent from the Plan of Implementation, governments do commit to increasing access to modern energy services to augment energy efficiency and to fostering the use of renewable energy. They also agree to phase out, where appropriate, energy subsidies.

Of great interest to UNESCO is the government commitment to supporting the NEPAD<sup>7</sup> objective of ensuring access to energy for at least 35% of the African population within 30 years. UNESCO launched the ten-year World Solar Programme in 1996 to help Africa in particular gain access to energy. The

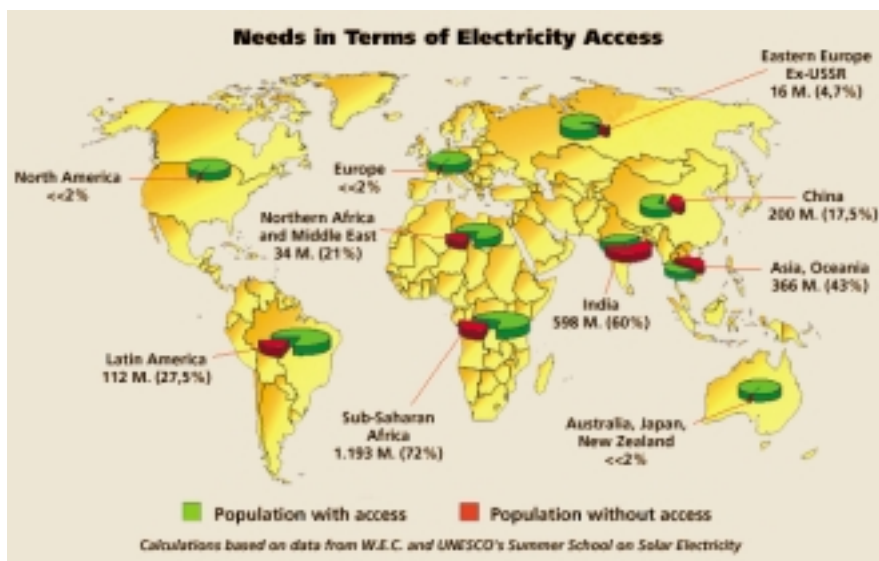
*It is inhuman that developing countries must spend about half their budgets on international financial obligations. The resources should be made available for education and social programmes to ease the extreme poverty which is a major cause of environmental damage in developing countries.*

President Noboa of Ecuador

Programme includes the Global Renewable Energy Education and Training Programme (GREET). GREET is particularly active in sub-Saharan Africa, where 15% of the urban population and 92% of the rural population lack electricity (UNESCO data)<sup>8</sup>.

\* \* \*

UNESCO is in the process of putting together its own transdisciplinary action plan, involving its programmes not only in natural sciences but also in the social sciences, education, culture and communication. Of particular interest to UNESCO are the areas emphasized in Johannesburg of education for sustainable development,



UNESCO calculations of the world's renewable energy outlook (UNESCO exhibition at the Johannesburg Summit)

freshwater and the oceans, ecosystem management, renewable energy and the ethical dimensions of sustainable development.

UNESCO looks forward to working with its inter-governmental and non-governmental partners to implement follow-up to the World Summit on Sustainable Development.

By Susan Schneegans

For further information, contact: [j.damlamian@unesco.org](mailto:j.damlamian@unesco.org)

7. *New Partnership for Africa's Development*: [www.nepad.org](http://www.nepad.org)  
8. Contact: [o.benchikh@unesco.org](mailto:o.benchikh@unesco.org)

## The Great Apes Survival Project (GRASP)

At current rates, the orang-utan may have disappeared from the world's forests within the next ten years. It is a voiceless victim of habitat destruction, including that caused by the fires which regularly ravage Borneo's forests, the orang-utan's primary habitat. And the orang-utan is not alone. Chimpanzees, gorillas and bonobos are also threatened with extinction. In Africa, poaching and armed conflict pose the greatest threat to their survival.

Faced with the urgency of saving *Homo sapiens sapiens'* closest relatives, UNESCO and the United Nations Environment Programme (UNEP) have launched the Great Apes Survival Project (GRASP) in partnership with a number of non-governmental organizations (NGOs) as a Type 2 initiative. Through GRASP, UNESCO is using its World Network of Biosphere Reserves and World Heritage Sites to help conserve the Great Ape habitats in Africa and Asia.

For further information on this Type 2 initiative, go to: [www.unep.org/grasp/](http://www.unep.org/grasp/) or contact: [s.mankoto@unesco.org](mailto:s.mankoto@unesco.org)



'Boris', a chimpanzee in Chester Zoo (UK) drawn by Professor Aterini. His mother was shot in the wild when he was a baby.

# Member States celebrate first World Science Day

Around the world, countries are preparing to celebrate the First World Science Day for Peace and Development on 10 November.

In Southern Africa, a meeting on science for peace and development is being organized in the District of Mophale's Hoek as part of Lesotho's celebrations.

On another continent, a UNESCO Club in India is organizing an essay competition and panel discussion with the participation of Jawaharlal Nehru University in New Delhi on the role of science in promoting peace and development.

And in Europe, the Hungarian Research Student Association is organizing an Internet conference on the 'Depth of Scientific Thinking and the Acceleration of the 21st Century'. The conference is the brainchild of the Association's Network of Excellence formed earlier this year across 18 countries to build mutual understanding and friendship, and exchange best practices in talent recruitment for scientific research.

*Science does not lay claim to any country, for knowledge is the heritage of humanity, the torch which lights the world.*

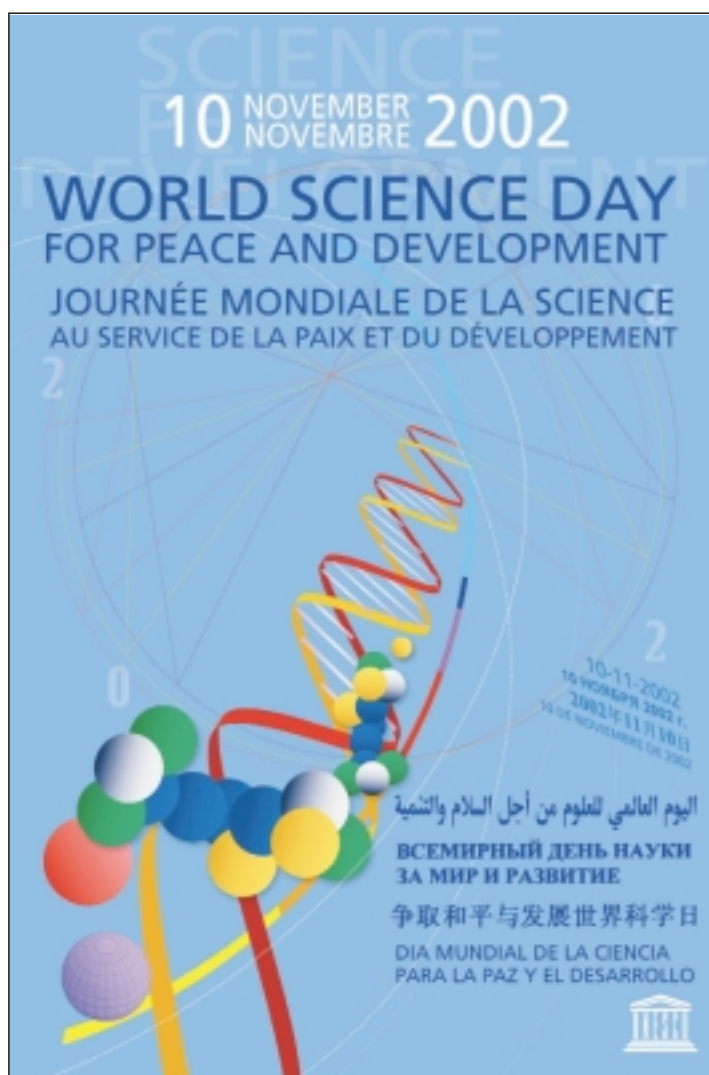
Louis Pasteur  
(1822-1895)

French scientist who contributed to the development of the first vaccines

Worldwide, countries have scheduled conferences in scientific institutions, public debates on science with the participation of policy-makers, special events in museums and science parks, activities for school children and press briefings.

The idea of a World Science Day was first proposed by countries attending the World Conference on Science organized by UNESCO and ICSU in Budapest (Hungary) in June 1999. Adopted by UNESCO three months later and established as 10 November of each year, the annual Day provides an opportunity to renew national and international commitment to the cause of science for peace and development and to promote responsible use of scientific knowledge in the service of society.

At UNESCO Headquarters in Paris, a roundtable is being organized on 12 November which will bring together scientific figures, Ministers of Science and Technology and National Commissions for UNESCO.



For further information on the examples given here:

- Meeting in Mophale's Hoek, Department of Education's Advisory Service: mohales@advisor.org.ls
- UNESCO Club competition: clubsjnu@mail.jnu.ac.in
- Hungarian Research Student Association: nilcsi@yahoo.co.uk or go to: <http://kutdiak.hu>

For information on other events around the world, go to: [www.unesco.org/science/pao/events/wsdpd.htm](http://www.unesco.org/science/pao/events/wsdpd.htm)

# Door opens for **SESAME**

UNESCO has given the green light to a science initiative that could help promote peaceful co-operation in the Middle East by constructing an international synchrotron radiation centre in Jordan. When the facility is completed, the International Centre for Synchrotron Light for Experimental Science and Applications in the Middle East (SESAME) will become the first regional centre for co-operation in basic research in the Middle East.

The project was born in 1997 when Germany decided to decommission its US\$60 million BESSY I synchrotron to make way for a newer facility, BESSY II. When Germany offered BESSY I to the Middle Eastern scientific community free of charge, a group of scientists based at the CERN particle physics centre in Geneva (Switzerland) approached UNESCO to broker the negotiations between governments.

There are about 45 synchrotron light sources in use in the world today but only a few are in developing countries. And none are in the Middle East or southern Mediterranean basin, putting scientists of the region at a severe disadvantage. In 2000, the government of Jordan offered to host the new centre, providing a 6,200 m<sup>2</sup> site near the Al-Baqa' Applied University in Allan, 30 km from Amman.

The machines operate by accelerating particles, usually electrons, in a circle at tremendous speed. The resulting 'synchrotron light' covers a broad range of the electromagnetic spectrum (from infrared to hard x-rays). Since it was first developed in the 1940s, it has become the best available source of x-rays, highly valuable for scientists in many fields, including modern biology where it is used to reveal the structure of proteins and other macromolecules.

A feasibility study for the project found that several hundred scientists in the Middle East are engaged in research activities that would benefit from a synchrotron radiation source. Many others live outside the region, using facilities in Europe, the USA and elsewhere. 'A synchrotron light source in the Middle East,' says UNESCO's Director-General, Mr Koïchiro Matsuura, 'would allow them to perform research at an international level of excellence close to their home country.' This could help reduce brain drain.

Koïchiro Matsuura emphasizes the significance of the project for the region, both scientifically and in promoting peaceful co-operation. 'In the belief that such projects can go a long way to enhancing scientific, technical and human capacities in the Middle East,' he says, 'and to ensuring that more people can participate in the emerging knowledge societies, I have worked very hard to move this project forward. Such projects should be seen as important tools for

communication, mutual enrichment and bridge-building between Israeli and Palestinian intellectual and academic communities.'

As UNESCO's Executive Board approved the proposal in May 2002, the Chairman of the Programme and External Relations Commission, Kenneth Wiltshire, enthused, 'This is a



*The Conti Harmoni vessel leaves Hamburg in mid-2002 for Jordan carrying the BESSY I component parts: 250 tonnes dispersed in 20 containers.*

quintessential UNESCO project, combining science and education in the fields of international cooperation for development and peace'.

To see the project through its early stages, SESAME set up an Interim Council. It currently consists of 13 members (Bahrain, Cyprus, Egypt, Greece, the Islamic Republic of Iran, Israel, Jordan, Morocco, Oman, Pakistan, Palestinian Authority, Turkey and the United Arab Emirates) with another 11 as observers (Armenia, France, Germany, Italy, Japan, Kuwait, Russian Federation, Sudan, Sweden, United Kingdom and USA). Now the project has been given the official go-ahead, UNESCO's Director-General has invited governments to make a formal commitment as members or observers.

Interim Members have each pledged US\$50,000 per year for three years, from January 2001, to cover preparatory activities and the shipping costs of BESSY I to Jordan. The US State Department and Department of Energy have given US\$200,000. Offers in kind have also been made. A further US\$6–\$8 million will be needed to upgrade the BESSY I machine, reinstall it in Jordan and set up the first beam-lines. (These are attachments that siphon light from the source to

study the material under investigation.) SESAME members will cover running costs, at present about US\$500,000 but due to rise to US\$3 million, plus staff costs when the machine is fully operational in a few years' time, depending on the number of beams members want.

In September 2001, the Council appointed Professor Dieter Einfeld Technical Director for the project. He suggested that SESAME could save development costs by using the same design as the ANKA facility at Karlsruhe in Germany that he helped to build. The government of Jordan has agreed to put up the US\$12 million for the new building, including the user laboratories, meeting rooms and machine shops.

Now, in response to a request from SESAME's steering committee for 6 million Euros to get the Centre up and running, the European Commission has set up its own feasibility study. Their main concern is that ministerial guarantees be found to fund long-term operation of the facility.

Meanwhile, the SESAME project has already served as a catalyst for South-North co-operation in the field of synchrotron radiation. Eight synchrotron facilities in Europe have provided training to over 30 scientists and engineers from the Middle East

who will be involved in building and operating the SESAME machine. Under a USA Cooperative Research Program, funded largely by the Department of Energy, another eight scientists from Middle East countries have received training at US synchrotron radiation laboratories.

On 19–28 October 2002, the Japan Society for the Promotion of Science and the High Energy Accelerator Research Organization (KEK) are organizing an Asian Science Seminar on Synchrotron Radiation Science at Al-Balqa' Applied University in Allan (Jordan) to show users the extraordinary potential for synchrotron science at SESAME and foster ties between scientists from Asia and the Middle East.

The first groundbreaking ceremony is to be organized at Al-Balqa' University in early 2003.

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*or go to:* www.sesame.org.jo/

## CUBES seals partnership between UNESCO and Columbia University

**UNESCO's Man and the Biosphere (MAB) Programme and Columbia University (USA) have chosen biodiversity and society as the theme of their first joint programme.**

CUBES, as it is known, was launched recently to assist local communities to adapt to rapid environmental and societal change, and share information with societies facing similar upheaval. Six biologically and culturally significant sites have been chosen for assistance: Tonle Sap (Cambodia), New York State (USA), Iquitos Floodplain (Peru), grasslands (Kenya and USA), Capetown (South Africa) and the Congo Basin (Democratic Republic of Congo).

CUBES was officially launched at United Nations headquarters in New York (USA) on 21 June, at a ceremony co-hosted by Jeffrey Sachs, new Director of the Earth Institute at Columbia University, and Peter Bridgewater, Secretary of UNESCO's Man and the Biosphere programme.

Speaking at the launch, Bridgewater described 'knowledge networking' as currently being one of the top priorities for UNESCO. 'CUBES is a unique venture, bringing together the research and outreach experience of one of the top

universities in the USA with the living worldwide network of Biosphere Reserves. These sites, constantly evolving, present opportunities for experimenting with sustainable living – something urgently needed in this year of the World Summit on Sustainable Development.'

CUBES is the outcome of the UNESCO/Columbia University International Conference on Biodiversity held in May 2001.

*For further information, go to:* www.unesco.org/mab  
*or write to:* mab@unesco.org

## Steep increase for women in science prize money

**The prize money for each of the five annual L'Oréal Awards for Women in Science supported by UNESCO is to rise from US\$20,000 to US\$100,000 in 2003.**

In addition, a new award category of condensed matter sciences has been added to the field of life sciences and the number of fellowships given annually to young female scientists rises from 10 to 15 in 2003 (the amount of each fellowship award progressing from US\$10,000 to US\$15,000).

Every year, L'Oréal and UNESCO invite some of the world's most prominent scientists to propose a candidate for the prize on the basis of outstanding research. For the next edition of the prize, the deadline for receipt by the Executive Secretariat of each sponsor's proposal is 31 May 2003.

As in the two previous years, the discipline chosen for 2003 is the life sciences. From 2004 onwards, the disciplines for which candidatures are solicited will probably alternate.

The next award ceremony for the prize and fellowships prize will be held at UNESCO Headquarters in Paris on 27 February 2003.

*For further information, contact:* Executive Secretary of the L'Oréal Awards, Renée Clair, *at:* [r.clair@unesco.org](mailto:r.clair@unesco.org) and Elisabeth Gavard *at:* [egavard@dgc.loreal.com](mailto:egavard@dgc.loreal.com); *or go to:* [www.loreal.com/loreal-women-in-science/](http://www.loreal.com/loreal-women-in-science/)

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## A strong voice for **small islands**

**An internet-based youth forum has been launched in September on a trial basis to encourage island school children of between 13 and 15 years of age from the Caribbean, Indian Ocean and Pacific to exchange views and information on sustainable development issues.**

Through the forum, children from the Cook Islands are discovering about whaling practices in the Caribbean, while students from the Seychelles are learning that, like other small islands, their economy is largely dependent on tourism.



Photo by C. Green, © UNESCO

*School children using computers at Nevis Library*

The youth forum is part of the Small Islands Voice initiative launched by UNESCO early this year to give often isolated islanders an opportunity to make themselves heard on environment and development issues, and to participate in finding solutions.

A second internet-based global forum – for the general public this time – is being launched on a trial basis in October.

A Small Islands Voice inter-regional workshop will be held in Koror (Palau) from 18 to 22 November 2002. The workshop will give Small Islands Voice co-ordinators, youth and NGO representatives from the start-up countries an opportunity to meet for the first time to exchange ideas on how to advance the initiative in their respective islands and regions.

These discussions and views expressed by islanders will enrich the ten-year review of the United Nations Programme of Action for the sustainable development of Small Island Developing States (Barbados+10) being undertaken in 2004.

Small Islands Voice was launched from three island states: St Kitts & Nevis in the Caribbean, Seychelles in the Indian Ocean and Palau in the Pacific. Other islands are now becoming involved, including the Cook Islands in the Pacific, as well as St Vincent & the Grenadines, San Andrés and the Bahamas in the Caribbean.

*For further information, go to:* [www.smallislandsvoice.org](http://www.smallislandsvoice.org)

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## **UNESCO Chair** launched in sciences

**Knowledge transfer is the key objective of a UNESCO Chair launched on 6 June by UNESCO, the French National Institute for Agronomic Research, the French Institute of Research for Development and the University of Provence (where the Chair will be located).**

The UNESCO Chair will conduct research and distance teaching in agricultural biotechnology and environmental sciences and foster sustainable development. Through transversal research, the aim is to ensure the protection and exploration of microbial genetic heritage in continental Asia, North Africa and Latin America. Research centres will be established in Marseille (France), Beijing (China), Rabat (Morocco) and Iztapalapa (Mexico).

The Chair will also provide students with distance learning at bachelor's level and training at doctoral level. This latest addition brings to 445 the number of UNESCO Chairs established around the world since the programme began in 1992.

*For further information, go to:* [www.unesco.org/education/index.shtml](http://www.unesco.org/education/index.shtml)

# Maciej Nalecz

## For an international basic sciences programme

A year after taking up his post, the Director of the Basic and Engineering Sciences Division, Maciej Nalecz, a molecular biologist, talks about plans for an international basic sciences programme

### There is talk of a new international programme in basic sciences. Why 'international'?

I am currently preparing a feasibility study for a possible new international programme in the basic sciences. This document is based on the results of an informal consultation we undertook this Spring with some major scientific bodies – including the International Council for Science (ICSU), Third World Academy of Sciences and International Centre for Theoretical Physics – and with scientific unions, a number of UNESCO National Commissions or Permanent Delegations and some eminent scientists from different regions.

The study does not offer a ready solution but rather invites UNESCO's Executive Board to launch an official round of consultations involving all 188 National Commissions for UNESCO and some 60 major scientific bodies, to discuss the possible need of a programme and its optimal future structure. I assume that the Executive Board, if it agrees with my proposal in October, will establish an appropriate working group to conduct the consultations and prepare a new, more concrete document for the next General Conference in October 2003.

### What might that structure be?

In general, there are two types of science programmes in UNESCO. For the first category, that of an intergovernmental programme, programmes are overseen by an intergovernmental governing body consisting of elected representatives of Member States. This is the case for the five existing intergovernmental programmes in the environmental sciences, the International Hydrological Programme (IHP), Intergovernmental Oceanographic Commission (IOC), Man and the Biosphere (MAB) Programme, International Geological Correlation Programme (IGCP) and the Management of Social Transformations (MOST) Programme.

The second category is the general regular programme. However, the main difference between the two lies in the way they are managed since, in fact, both belong to UNESCO's regular programme. This second category is administered by the Secretariat and not by a special intergovernmental body. Adjustments to this type of

programme can be made every two years and would be voted by UNESCO's General Conference.

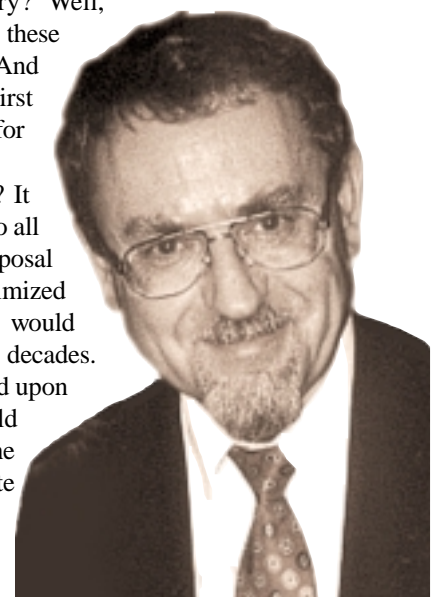
The current feasibility study does not favour one or another of the two approaches but rather discusses the pros and cons of each solution, lists various options for the future programme goals and activities and invites UNESCO's Member States and partners to express their preference. It would be premature to state what might be the final result but discussions should shed light on the need to strengthen the basic sciences in UNESCO.

As to the structure of a future programme, I would not be surprised if the final proposal dealt with something in-between the two types of programmes we currently have. That is why, in the title of my feasibility study, you find the word 'international', and not 'intergovernmental' or 'regular' programme. Just to leave room for future clarification.

### Why a major programme in the basic sciences and why now?

Because the basic sciences are losing appeal, even as their importance is growing. To some extent, this disaffection is the fault of scientists themselves. People have become disillusioned by all the broken promises they made. Do you remember the promise of a cure for cancer, the claim that malaria and tuberculosis would be eradicated by the end of the 20th century? Well, antibiotic-resistant strains of these diseases are coming back. And twenty years after it was first identified, there is still no cure for HIV/AIDS.

What about nuclear energy? It was described as the solution to all our energy problems. The disposal of radioactive waste was minimized as a minor problem scientists would be able to solve within a few decades. All the rich countries embarked upon ambitious programmes to build nuclear power plants. And the problem of radioactive waste



Maciej Nalecz

still plagues us today. Catastrophes like Chernobyl in the 1980s brought home to the average person the immense – and durable – power of destruction of nuclear energy. The loss of faith in national leaders and in the scientific community fed growing opposition to nuclear power and the rise of ‘green movements’. Mistrust for science grew.

There is an interesting public opinion survey by the Russian Centre for Science Research and Statistics. In 1996, it asked people which occupations enjoyed the highest respect. Barely 6% chose the category of scientists and only 2% engineers. These categories trailed such occupations as entrepreneurs, doctors, journalists, artists, teachers and farmers. Only the military shared such poor esteem. Of course, this public opinion survey also reflects the particular situation in Russia at the time but it is symptomatic of a loss in esteem for science everywhere.

This disaffection starts at school. In France, for example, the number of first-year science and engineering students diminished by 15% between 1995 and 2000. And only 25% of those graduating from secondary school with a science major in 2000 went on to enrol in a scientific field at university<sup>9</sup>. Some countries are trying to stimulate a vocation in science by coercive means. When the Republic of Korea raised the tertiary admission quota by 6,000 places in 1992, for example, it allocated two-thirds of the new places to the natural sciences and engineering degree programmes to try to redress the imbalance with social sciences and the humanities<sup>10</sup>.

### **So you blame scientists for the current predicament?**

Responsibility is shared. Governments themselves have come to think of basic science as a bad investment. They show more interest in applied science, forgetting that so-called new sciences are simply the application of existing sciences. I am thinking of biotechnology, which is nothing more than the application of molecular biology, my field of specialization. Governments should bear in mind that certain areas of research are of more interest to the developing countries than the developed world. Malarial research for example or that on dengue fever.

It's a vicious circle. When science is badly funded, it becomes less attractive to students and to the general public. Chemistry is today paying the highest price.

The media are also to blame for the current image of science. I don't mean specialized journals of course, like *Nature* and *Science*, but the popular press. Journalists are generally very sensitive to public opinion and tend to feed it what they feel it wants. Thus, they have come to focus more on the failures of science than on its successes. How many journals picked up on the recent discovery that bone marrow might be as useful a source of stem cells as human embryos, which cause so many ethical problems?

9. Data cited by Le Monde dated 18 October 2000

10. Data taken from UNESCO (1998) World Science Report. UNESCO Publishing

### **The BBC ran a story on that...**

UNESCO needs to collaborate more with responsible media like the BBC and CNN to explain the benefits – and shortfalls – of science. UNESCO's basic sciences programme could perhaps collaborate with the BBC and other partners to popularize science through television and radio. There is a strange trend towards ‘non-science’ today that needs to be combated. The number of intelligent people who take astrology seriously...

### **Today's disillusionment with science was highlighted by the World Conference on Science organized by UNESCO and ICSU in 1999. Would you agree that science should place society at the heart of its preoccupations?**

Of course. What people must not lose sight of is that basic science does serve society, even if it is a gamble and the results take time to reach the public. A basic research project may even come up with findings which the research team itself never envisaged.

Take the example of Paul Crutzen, Nobel laureate for Chemistry. He began his research by examining the effect of oxygen, carbon dioxide and nitrogen on geysers. Through his experiments, he discovered how to produce ozone. By lowering and increasing the pressure and temperature, he discovered that ozone was produced at -50°C. He surmised from this that there must be a lot of ozone in the stratosphere. This led to the discovery that the Earth is covered by an ozone layer which absorbs ultra-violet radiation and is diminished by pollution. Yet who would have thought when he began examining geysers that he would make such a breakthrough in understanding the Earth's atmosphere? Top-class research like this enriches everyone.

### **Going back to the international basic sciences programme, could you outline some possible orientations?**

Capacity-building is the leitmotiv of any UNESCO science programme. That will not change. What is important is that an international basic sciences programme identify new tools to stimulate co-operation and use existing tools effectively.

We must resign ourselves to the fact that we have neither the human nor the financial resources to be everywhere at once. We must prioritize. It is not an easy task but we have no option. Moreover, the programme must be implemented rapidly. That means using existing structures. In my view, the new programme should identify centres of excellence in different developing regions and focus on upgrading these and making them accessible to large numbers of students from the region.

I would advise focusing on post-doctoral students and researchers. For example, within North-South and

South–South co-operation, short-term visiting professorships would be an effective way of improving the skills of teaching staff.

By sending mature staff to universities in the North there would be a lesser risk of brain drain. There would also be a trickle-down factor to students. Some wealthy universities are already donating existing equipment on an ad hoc basis to a university in a developing country each time they upgrade. If this could be done in a more organized, systematic fashion, that would go a long way towards improving conditions for researchers.

There are a lot of academic partners we can call upon to improve capacity in the South. Look what the Massachusetts Institute of Technology (MIT) announced to UNESCO in July – that professors and lecturers had agreed to post on the Internet, free of charge for all the world's higher education institutions and students, the contents of some 2,000 courses. The material includes lectures, tests, assignments, textbooks, reading materials, bibliographies, simulations, experiments, demonstrations and study programmes. And the MIT is prepared to adapt the materials on the basis of input and feedback from students and teachers in the developing world. With UNESCO's networks and its unique role of promoting the basic sciences within the United Nations system, there is enormous potential for this new basic sciences programme. If Member States commit to it.

**Considering the warm reception SESAME has received, could there be growing recognition among Member States of the importance of basic science?**

I hope so. SESAME is an exciting project. Beyond capacity-building, the decision to establish the Centre has far-reaching implications for peace-building in the Middle East. It shows that science can foster peaceful interaction where political intervention fails. It also shows the value of a multilateral approach to international relations.

SESAME will serve as an international scientific and technological centre of excellence open to all qualified scientists from the Middle East and elsewhere. It will provide programmes in structural molecular biology, molecular environmental science, surface and interface science, micro-electromechanical devices, x-ray imaging, archaeological microanalysis, materials characterisation and medical applications.

This is the sort of project where UNESCO's brokering skills can be used to lessen tensions between neighbouring countries in the interests of the entire region.

Interview by  
Susan Schneegans

## Where have all the **beac**

**W**hen some of the 27 million international tourists visiting Africa go to relax by the ocean this summer, they could find the beach is no longer there. The coastline is receding by 1–2 m per year in parts of Côte d'Ivoire, Gambia and other African nations. The seafront of Grand-Bassam, the colonial capital of Côte d'Ivoire, is in danger of crumbling into the water. Meanwhile, sections of the Nigerian coastline are disappearing at an astonishing 20–30 m a year. Coastal degradation is a problem world-wide but 11 African countries (Côte d'Ivoire, Gambia, Ghana, Kenya, Mauritius, Mozambique, Nigeria, Senegal, Seychelles, South Africa and Tanzania) have now teamed up to do something about it.

Eleven hard-hitting national reports<sup>11</sup> were published as part of Africa's contribution to the World Summit on Sustainable Development. The reports wind up the fact-finding phase of a project implemented by UNESCO and UNEP that germinated back in 1998 in Maputo (Mozambique) when environment ministers from over 40 African countries met to address the problem of coastal deterioration at the Pan-African Conference on Sustainable Integrated Coastal Management (PACSICOM).

Essentially an African project implemented with support from United Nations agencies, all the national reports were researched and written by African experts from ministries, NGOs and universities. Each fact-finding team comprised expertise from three main disciplines – natural sciences, law, and socio-economics – in an effort to represent the different stakeholders involved in coastal management.

### The 'African process' and NEPAD

Ministers from the 11 countries concerned used the Johannesburg meeting to attract extra backers for a new phase of action-research, while inviting other African states to come on board. At Heads of State level, these 11 countries adopted a Programme of Interventions including a portfolio of 19 projects developed by five working groups, each working on five key themes defined by the national teams as priority areas for intervention: coastal erosion, management of key ecosystems and habitats, pollution, sustainable use of living resources and tourism.

The project has also been taken under the umbrella of the New Partnership for Africa's Development (NEPAD)<sup>12</sup>, the initiative put together by African leaders and endorsed by the G8 at their June meeting in Canada. The first cycle of the 'African process for the development and protection of the

11. [http://ioc.unesco.org/icam/ICAMin%20Africa\\_Documents.htm](http://ioc.unesco.org/icam/ICAMin%20Africa_Documents.htm)

12. [www.nepad.org](http://www.nepad.org)

# hes gone?

marine and coastal environment in sub-Saharan Africa', as this Type 2 initiative (see p. 3) is known, has been integrated into the Environment Component of the NEPAD Action Plan, under the administration of Senegal.

## Tourism primary cause of coastal erosion

Africa's 63,124 km of coastline is crucial to the economies of many of its states, especially through fishing and tourism. And some island states, like Seychelles and Mauritius in the Indian Ocean, are almost entirely dependent on their coastal resources for income. For a total area of 455 km<sup>2</sup>, the Seychelles has 491 km of coastline, with the entire population effectively living on the coast. A boom in tourism has brought rapid economic growth. The number of visitors swelled from 54,490 in 1971 to 130,046 in 2000, while Gross Domestic Product (GDP) per capita rose from US\$3,600 in 1975 to US\$7,192 in 1998. The new prosperity has however put pressure on the very coastal ecosystems that created it.

The Seychelles is an archipelago of 72 low-lying coral islands and 43 mountainous granite islands. But 90% of its 80,410 population live on just one of these islands, Mahe. With that island's rocky interior being unsuitable for development, the limited coastal zone attracts most of the construction, whether for homes, hotels or new roads. And this often has negative effects on coastal ecology. 'Tourism,' says the Seychelles report, 'is a primary cause of coastal erosion, mainly arising from attempts to improve the beach and swimming areas cosmetically, as well as the provision of marine facilities such as marinas and piers.' And, while the government has passed a wide range of laws to protect the environment, says the report, 'enforcement is often a major problem.'



*A series of beachfront bungalows in a tourist complex in Maputo (Mozambique) in 2001*

**Coastal erosion is one of the most devastating of environmental problems facing the country.**

*Gambia report*

## Hotel beachfronts washed away

The Gambia report tells a similar tale. 'The beachfronts of most of the hotels have been washed away,' while some of those that are left have invested over US\$300,000 in protection measures. Some 45% of the population and 60% of jobs are situated in the coastal zone, not to mention wildlife, including rare species like the green turtle which use the receding beaches as a nesting ground.

Coastal erosion is part of a natural process. Sandy beaches are naturally changing. When waves hit the beach at a certain angle, they drag the grains from one spot and deposit them further along, causing the beach to 'migrate' sideways. Under normal conditions, silt from rivers replenishes them. But any construction on the seafront, such as piers, marinas, landfill and buildings, interferes with this process. In Nigeria's Barrier Lagoon, moles (walls of the artificial harbour) stop the silt from replenishing the beaches. The lagoon's popular Victoria Island beach, for example, at the entrance to Lagos harbour, is now eroding at a rate of 20–30 m a year. Meanwhile, the silt is building up outside the harbour.



Photo by D. Trost, © UNESCO

*Sandmining activities in Maputo (Mozambique) in 2001*

These man-made causes, compounded by upstream damming of the Niger River and sand-mining, add to the vulnerability of the Lagos coast, which is already battered by strong tides and waves. If sea-level does rise by 0.5m–1m with global warming by the end of the century, as predicted by the International Panel on Climate Change, the barrier lagoon area of Lagos State alone would lose 284–584 km<sup>2</sup> of its coastline through erosion and flooding. This could cause an estimated US\$12 billion in loss of revenue from tourism, commerce and spending by residents in one district alone. Some low-lying settlements are already flooded regularly when storms coincide with high spring tides.

Meanwhile, uncontrolled sprawl of Africa's growing coastal megacities means that untreated sewage often ends up in the sea. Lagos has no central sewage treatment facilities, so waste from septic tanks is transported by truck to the coast and emptied directly into the sea. Much the same happens in other African cities, according to the reports.

Yet property development, landfill and pollution are not the only causes of coastal degradation. In many places, coral reefs and mangrove forest, which provide coasts with a natural protection, are being damaged or cleared. This exposes beaches to waves and wind. In the relatively well-preserved Seychelles, the main threat to coral is bleaching as a result of increased sea temperature through global warming. Even a 1°C increase in temperature can kill the tiny, pigmented organisms that live in symbiosis with the coral-building polyps. And their death ultimately kills the coral host that depends on them for nutrients synthesized by sunlight. In the granite islands of the Seychelles, according to that country's report, a 1997–1998 survey showed that only 10% of live coral remained in some areas.



Photo by D. Troost, © UNESCO

*Women carry logs on a beach in Maputo (Mozambique) in 2001*

### **Coral no match for dynamite**

In Tanzania, in the Indian Ocean, the coral is also threatened but mostly as a result of direct human activities. Coral reefs are home to hundreds of fish species which traditionally provide the main source of protein for local villagers. A combination of pressures has pushed the villagers to fish beyond their own subsistence needs – and to use destructive techniques, like dynamiting and poison, to boost their catch. In one two-month period in 1996, says the Tanzanian report, 441 dynamite blasts were recorded in one bay, while, 'in the Songo Songo Archipelago, 30 blasts were heard every three hours and, at Mpovi reef, 100 blasts were recorded during one six-hour period.' And, the report goes on, 'besides breaking the reef structure into rubble, each dynamite blast also kills all fish, plankton and most invertebrates within a 15–20 m radius.' Uncontrolled bottom trawling by foreign commercial fishing vessels also destroys the reef, effectively scouring the seabed. And

relatively poor countries like Tanzania do not have the resources to police their offshore resources.

None of the reports envisages a quick fix to these coastal problems. And, as Patricio Bernal, Executive Secretary of UNESCO's Intergovernmental Oceanographic Commission (IOC), says, the project recognizes the complexity of the issues. 'The pressure to attract investment for coastal tourist facilities that bring much-needed new jobs and revenue to developing countries, for example, often ends up with projects that do not meet minimum standards of coastal protection. Dramatic cases can be seen all round the world where huge tourist complexes, built immediately adjacent to the beaches, are surrounded after a few years by pebbles and rocks, as tourists run away from waves crashing on their hotel doorstep. This is frustrating, since the scientific and technical knowledge to prevent it are available and good practices have been clearly defined.'

### **Applying knowledge where it is most needed**

The 'African Process' is an effort to apply this knowledge where it is most needed. So far, the project has been partly sponsored by the United Nations Development Programme's Global Environment Facility and implemented by UNESCO's IOC, UNEP, the Advisory Committee on Protection of the Sea and UNEP's Global Programme of Action for the Protection of the Marine Environment from Land-Based Pollution.

The very structure of the 'African Process' looks for synergy between coastal states, setting up continental and sub-regional responses to shared problems. At present, national responses vary from legislation – with the inherent problems of enforcement – to public-awareness campaigns, eco-tourism, monitoring programmes, marine parks and public-private partnerships to finance utilities, like sewage treatment. Tanzania, for example, plans to assist fishermen to buy the gear and vessels required to move from inshore fishing to offshore fishing and to close coral reefs on a rotating basis. And, like others, the Tanzanian report recognizes that, while marine parks and conservation areas are helpful, sustainable economic activities also need to be developed.

UNESCO's Coastal Regions and Small Islands platform for intersectoral action has a lively and informative internet forum that links stakeholders all over the world. It also regularly publishes informative booklets for coastal communities and decision-makers<sup>13</sup>, including a book on *Coping with Beach Erosion* by Gillian Cambers<sup>14</sup>.

By Peter Coles  
UNESCO Bureau of Public Information  
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13. [www.unesco.org/csi/wise.htm](http://www.unesco.org/csi/wise.htm)

14. <http://upo.unesco.org>

# Protecting **Himalayan biodiversity**

UNESCO and the G.B. Pant Institute for Himalayan Environment and Development are encouraging local farmers to embark on large-scale cultivation of potential medicinal and aromatic plants (MAPs) to conserve biodiversity in the Himalayas and improve the local population's socio-economic conditions.

The expanding trade in medicinal plants has serious implications for the survival of several plant species, some of which are under serious threat of extinction. By restricting over-utilization of resources, regulating exports and encouraging cultivation programmes, it is hoped to facilitate conservation of biodiversity.

It is not the small number of cultivated species which are at risk but those growing in the wild, the source favoured by pharmaceutical industries. Large-scale over-exploitation has decimated many populations in their natural habitat, leaving little scope for natural regeneration. Fortunately, a considerable knowledge-base exists within the indigenous communities, who traditionally cultivate a variety of MAPs on a smaller scale for their domestic use, for the local market and for bartering purposes. All these MAPs are cultivated under the low-input system.

The Himalayas are a notorious global biodiversity 'hotspot' where ecological and evolutionary factors have favoured huge species diversity. There are over 1740 species of MAPs with various traditional and modern medicinal uses. Though the region occupies only 15% of the country's geographical area, about 30% of the endemic species in the Indian sub-continent are found in this region. For example, of the 99 species categorized as endangered species of the Indian Himalayas, 15 are medicinal plant species.

The Western Himalayas contain 50% of the plant drugs mentioned in the British Pharmacopoeia. They cater to 80%, 46% and 33% of the Ayurvedic, Unani and Allopathic systems of medicine respectively and contribute much to the economy of the rural and tribal populations. Of the 2500 plants growing wild on the Indian sub-continent which are known to be of medicinal value, only 300 species are currently used by about 8000 licensed drug manufacturing units in India.

Amidst growing global concern over the depletion of biodiversity through indiscriminate removal, UNESCO's New Delhi Office is supporting a study documenting best traditional practices and developing agro-techniques for potential medicinal and aromatic plants (MAPs) in the Nanda Devi

Biosphere Reserve.

The in-depth study is being undertaken by the G. B. Pant Institute of the Himalayan Environment & Development (Srinagar, Garhwal); the Institute is also disseminating to user groups a 'package of practice' using MAPs developed so far by farmers and traditional societies. In addition, UNESCO and the Institute are running a training course for user groups in the Virhi Valley of Chamoli District on 22–23 October 2002; the aim is to encourage potential farmers from the region to embark on large-scale MAPs cultivation. Participants will be able to share indigenous knowledge of agronomic practices and uses of different MAPs grown around the region, exchange germplasm among farming communities and interact with researchers, traders and policy makers.

According to a survey by the World Health Organization, about 25% of prescribed human medicines are derived from plants and over 80% of the population in the developing world still depends on the traditional or indigenous system of medicine alone. This has added to the growing popularity of herbal products as part of a new health programme in developed countries and, together with the commercial demand of the pharmaceutical industries and Dabur and Ayurvedic drug establishment companies, has led to a steady increase in the market for MAPs.

Large-scale cultivation should have the dual benefits of improving the socio-economic conditions of the local population and helping to conserve plant species in their natural habitat. The cultivation and use of MAPs having a high market value, there is a great potential for job creation within the local population, particularly in areas where the climate favours cultivation. Nor are commercial outlets lacking for large-scale cultivation, given the growing demand for natural product-based medicines, health products, pharmaceuticals, food supplements, cosmetics etc. on the national and international markets.

For further information, contact: [s.mehn@memo.unesco.org](mailto:s.mehn@memo.unesco.org) or go to <http://www.ukhap.nic.in/>



*Picrorhiza kurooa and Arnebia banthemii under cultivation in the Surraithota and Tolma buffer zone villages respectively of Nanda Devi Biosphere Reserve*

Courtesy of G.B. Pant Institute

## Diary

### 6–7 October

**Prize-giving ceremony, UNESCO essay contest on ‘Space and everyday life’**, Noordwijk (Netherlands), World Space Week: y.berenguer@unesco.org

### 19–28 October

**Asian Science Seminar on Synchrotron Radiation Science**, Al-Balqa’ Applied University in Allan (Jordan), future site of SESAME (see p. 7)

### 24–26 October

**Innovation and the Information Society in Island Biosphere Reserves**, Santa Cruz de la Palma, Canary Islands (Spain): [www.unesco.org/mab/calendar.htm](http://www.unesco.org/mab/calendar.htm)

### 26–29 October

**Sustainable Agro-environmental Systems**, 3<sup>rd</sup> international symposium, Cairo (Egypt): <http://unesco-cairo.org/>

### 29 October–1 November

**Global Mountain Summit**, Biskheh (Kyrgyzstan), organized by Government of Kyrgyzstan with UNESCO, FAO, UNEP, UNDP, UNU, Aga Khan Development Network, Swiss Agency for Development and Cooperation, etc.: [t.schaaf@unesco.org](mailto:t.schaaf@unesco.org), [www.mediantics.com/mountainsummit/](http://www.mediantics.com/mountainsummit/)

### 1–9 November

**First Conference of Indian Ocean Global Ocean Observing System**, 1<sup>st</sup> conference, Grand Bay (Mauritius): <http://moi.gov.mu> or <http://ioc/unesco.org>

### 4–9 November

**Swiss-Canadian-Cuban event on Natural Medicine and Ecology**. Ciénaga de Zapata Biosphere Reserve (Cuba): Dr Ulises Viart Mojeron, President, Organizing Committee, and Dr Leon F. Perez Perera, Vice President CITMA: [smatanz@infomed.sld.cu](mailto:smatanz@infomed.sld.cu)

### 10 November

**World Science Day for Peace and Development** (see p. 6)

### 11–16 November

**University Education in Integrated Approaches to Mountain Natural Resource Management**, UNESCO regional workshop, Shillong (India): [s.mehn@memo.unesco.org](mailto:s.mehn@memo.unesco.org)

### 15–16 November

**Science and Engineering in Ancient Indian Monuments**, seminar organized by UNESCO New Delhi Office: [r.jayakumar@unesco.org](mailto:r.jayakumar@unesco.org)

### 18–22 November

**Small Islands Voice**, inter-regional workshop (see p. 9)

### 19–21 November

**International Consortium on Landslides**, 1<sup>st</sup> meeting, room XIV, UNESCO, Paris (France): [www.unesco.org/science/earthsciences](http://www.unesco.org/science/earthsciences)

### 20–22 November

**From Conflict to Co-operation in International Water Resources Management: Challenges and Opportunities**, Delft (Netherlands), IHP-UNESCO and Green Cross International: [www.unesco.org/water/](http://www.unesco.org/water/)

### 2–6 December

**UNESCO Regional Instructional Workshop on Industrial Mathematics** run by Indian Institute of Technology, Bombay (India): [r.jayakumar@unesco.org](mailto:r.jayakumar@unesco.org)

### 5–7 December

**The Basis of Civilisation – Water Science?** Rome (Italy), organized by Italian National Committee for International Association of Hydrological Sciences and UNESCO-IHP: [www.cig.ensmp.fr/~iahs/conferences/2003Rome-civilisation.htm](http://www.cig.ensmp.fr/~iahs/conferences/2003Rome-civilisation.htm)

### 5–7 December

**Tourism and Conservation in Mountain Wetlands**, regional workshop, San Salvador de Jujuy (Argentina) : <http://www.unesco.org.uy/>

## New Releases

**Encyclopedia of Life Support Systems**: Co-published by UNESCO and EOLSS Publishers (Oxford, UK), 25 million words. Once complete, will count 70 million words (or 150 volumes). Reductions for individuals, free to universities in developing countries. Exists in English only. Contact [www.eolss.net](http://www.eolss.net) for subscription information.

**Oceans 2020: Science, Trends and the Challenge of Sustainability**: Published by Island Press for UNESCO-IOC, SCOR and SCOPE. Contact: [ioc@unesco.org](mailto:ioc@unesco.org)

**One planet, one ocean**: Published by UNESCO-IOC in preparation for the World Summit on Sustainable Development, a commitment by 129 states. Exists in English, French, Spanish, Chinese, Arabic and Russian. Contact: [ioc@unesco.org](mailto:ioc@unesco.org)

**Learning to combat desertification**: Teacher’s guide launched by UNESCO-MAB in collaboration with the Secretariat of UNCCD, now available online. In English: <http://unesdoc.unesco.org/images/0012/001258/125816e.pdf> (French: .../125816f.pdf; Spanish: .../125816s.pdf)

**An ecological assessment of Ulugan Bay (Palawan, Philippines)**: CSI Info 12 (English only), for a free copy, contact UNESCO Jakarta office at [Jakarta@unesco.org](mailto:Jakarta@unesco.org) or [csi@unesco.org](mailto:csi@unesco.org)

**UN Atlas of the Oceans (portal)**: Launched on World Environment Day (5 June) by UNESCO-IOC, FAO as lead agency, IMO, UNEP and WMO: [www.oceansatlas.org/index.jsp](http://www.oceansatlas.org/index.jsp)

For the complete list of new releases: [www.unesco.org/science/](http://www.unesco.org/science/); for sales publications: [www.upo.unesco.org](http://www.upo.unesco.org)

## Governing Bodies

**UNESCO’s Executive Board** is meeting at its 165th session from 1 to 17 October 2002. In Natural Sciences, a single agenda item (3.3.1) is being examined by the Board.

The Board’s Programme and External Relations (PX) Commission will be examining the Report by the Director-General on the results of the **feasibility study on the creation of an international basic sciences programme**.

For background to the feasibility study, see the **Interview** on p. 10 of the Director of the Division of Basic and Engineering Sciences.

The **report by the Director-General** to the Board on this item is referenced as document 165 EX/9 and may be consulted at: <http://www.unesco.org/exboard/documents.shtml>

A *World of Science* will be reporting on the **outcome of the Board’s debate** on this item in the January 2003 issue.