ICSU
International Council for Science

A new way to visualize the world of science

ICSU's new logo offers a fresh expression of all the features that make us unique.

The intertwining arcs symbolize the flow of scientific data and information around the world, and highlight the need to have input from all countries in order to benefit all sectors of society. They also reflect the increasingly multidisciplinary approach required to address current issues.

Through its openness and the balance of green and blue arcs, the logo suggests earth, air and water—the basic elements that support life on our planet.

ICSU
International Council for Science

ICSU mission statement

In order to strengthen international science for the benefit of society, ICSU mobilizes the knowledge and resources of the international science community to:

- Identify and address major issues of importance to science and society.
- Facilitate interaction amongst scientists across all disciplines and from all countries.
- Promote the participation of all scientists–regardless of race, citizenship, language, political stance, or gender–in the international scientific endeavour.
- Provide independent, authoritative advice to stimulate constructive dialogue between the scientific community and governments, civil society, and the private sector.

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ICSU
International Council for Science

strengthening international science for the benefit of society

annual report 2002

ICSU executive board

officers

Jane Lubchenco	**President** [1]
Hiroyuki Yoshikawa	**Past-President** [1]
Goverdhan Mehta	**President-Elect** [2]
David A.D. Parry	**Vice-President, Scientific Planning and Review**
Peter D. Tyson	**Vice-President, External Relations**
Ana María Cetto	**Secretary-General**
Roger Elliott	**Treasurer**

ordinary members

Scientific Unions

Giovanni Berlucchi	**International Brain Research Organization (IBRO)**
Burton Richter	**International Union of Pure and Applied Physics (IUPAP)**
Robin Brett	**International Union of Geological Sciences (IUGS)**
Michel Denis	**International Union of Psychological Science (IUPsyS)**

National Members

Hernan Chaimovich	**Brazil**
Marie-Lise Chanin	**France**
Francis Gudyanga	**Zimbabwe**
Lucie Lapointe	**Canada**

[1] The ICSU presidency transferred from Prof. Yoshikawa to Prof. Lubchenco at the 27th General Assembly, September 2002.

[2] Prof. Mehta's term as President-Elect officially begins 18 months prior to the 28th General Assembly, which will be held in October 2005.

contents

message from the President

new challenges, increased expectations create new demands for S&T community

A food crisis in Zimbabwe generates debate on the safety of genetically modified food crops. Climate warming causes the collapse of the Antarctic's Larsen B ice shelf. Terrorist attacks, political uncertainties, and natural disasters bring safety and security issues to the fore.

The most dramatic events of 2002 demonstrate how society and science cross paths at critical junctures—moments in history that have a direct impact on individual well-being, on local, national, and regional development, and on international issues.

But consider that, in the same year, scientists mapped the genome sequence of rice, one of the world's most important food crops. Recognizing that policy decisions have helped reduce chlorofluorocarbon (CFC) emissions, scientists used new data to model the ozone layer over the Antarctic and now predict a speedier recovery of the region's stratosphere. Scientists also unveiled rescue robots that can find, treat, and help extract survivors in unstable environments.

Without question, we live in challenging times. As professionals, as parents, as individual persons, we grapple with increasingly complex decisions. And, as the collective need for sound information rises, so does the public demand for science to provide guidance.

At the International Council for Science (ICSU), we believe science spans the breadth of these needs. Science has the capacity to identify problems and help develop solutions. It carries the potential to spur economic growth through innovation. It actively seeks to disseminate information that can support decision making.

At the same time, we are keenly aware that the rapprochement of science and society exacts new demands, including the identification of common goals and shared responsibilities. In this context, I believe the real challenge to our community is to make science a driving force in the transition to a more sustainable and equitable world.

I sense that science is in the discovery phase of a new era—an era characterized by intense curiosity as new questions arise and new groups join forces to explore the future. Personally, I believe the most effective way forward lies in establishing a social contract between science and society. To increase the reach and relevance of international science, scientists have an obligation to direct their energies toward providing society with knowledge that will enable a transition to sustainability.

Knowing its rich history, I am excited by ICSU's renewed energy. In highlighting the achievements of 2002, we focus on the foundation we are creating for the future. I wish to acknowledge the visionary leadership of ICSU Past-President Professor Hiroyuki Yoshikawa who, by strengthening ties between science and other sectors of society, enabled ICSU to better understand and respond to critical issues.

In light of the challenges and expectations before us, I believe we can—and must—harness the full potential of science to help all sectors of society make choices that are informed, objective, and forward-looking. ICSU is taking important steps to ensure it can play a strategic role in that critical process.

Professor Jane Lubchenco
President

message from the Executive Director

broader engagement underpins science of the future

For more than 70 years, the International Council for Science (ICSU) has played a vital role in promoting and coordinating scientific research around the world, in upholding the principle of freedom in the conduct of science, and in encouraging capacity building. We have been very successful in these activities and many important issues of global interest have been addressed through ICSU initiatives.

But today, more than ever, ICSU is aware of the need for science to step beyond generating data and information. Science must synthesize new knowledge and make it relevant to real-world issues.

The enormity of this challenge is evident in the ongoing public debate on scientific subjects, such as genetic research, energy and the environment, and the rapid evolution of information and communication technologies.

Without exception, advances in these areas require highly specialized input from individual disciplines and the development and application of multidisciplinary approaches.

ICSU is uniquely positioned to take a leadership role in this age of engagement. The primary network for interaction amongst national scientific bodies and international scientific unions, ICSU truly embodies the broad spectrum of science. As witnessed at our 27th General Assembly (Rio de Janeiro; September 2002), we provide a forum for open dialogue on issues of local, regional, and international concern. More importantly, the breadth and depth of our membership give us the capacity to develop science that can be adopted and adapted in vastly different geographical, social, economic, political, and cultural contexts.

The changing role of science on the international scene was perhaps most evident during the World Summit on Sustainable Development (Johannesburg; August 2002). At the request of the United Nations, ICSU and the World Federation of Engineering Organizations coordinated input from the Scientific and Technological Community (one of the nine Major Groups identified in Agenda 21 [3]) to feed into the Summit agenda. With the help of additional partners, we also organized a large portion of the Forum on Science, Technology and Innovation for Sustainable Development during which many of the world's top scientists addressed the primary challenges facing the science community in the coming decades.

Today's ICSU is keenly attuned to the simple fact that science in isolation cannot meet the demands of society. To effectively apply new knowledge, we must engage many players including governments, local policy makers, business and industry, interest groups, and individuals.

I believe 2002 represents an important turning point in ICSU's evolution. This report highlights the first steps taken to prepare ourselves for a much more strategic role in the future. Our end goal is to transform ICSU into a coordinating body that truly can mobilize the knowledge and resources of the international science community. Like many others I have spoken with over the past months, I am excited by the prospects that now lie within our reach.

Professor Thomas Rosswall
Executive Director

[3] Agenda 21 is a plan for achieving sustainable development in the 21st century, adopted by the UN Conference on Environment and Development (June 1992).

targeted activities generate renewed momentum

In recent years, ICSU has directed most of its energy toward implementing the recommendations of the ICSU Assessment Panel, an independent review undertaken in 1996. Broadly, the review emphasized the need to develop a strategy that enhances ICSU's ability to act effectively on behalf of the international science community.

With the establishment of the Committee on Scientific Planning and Review (CSPR) in 1998, ICSU began to establish the mechanisms needed to support such strategy development. The 27th General Assembly (Rio de Janeiro; September 2002) provided an excellent venue for a broad presentation of the Council's progress to date. As delegates took part in various fora and in the business meetings, a strong sense of renewed energy emerged.

While the Council remains unique in its international and multidisciplinary membership, the growth of international science initiatives makes it increasingly clear that ICSU must identify its niche and focus on areas where its efforts will have the greatest impact. In 2002, the CSPR initiated activities in four key areas that will help define the future of ICSU: identifying emerging issues, initiating priority area assessments, enhancing the ICSU grants programme, and improving interactions with science in the developing world.

Having received strong support for addressing such fundamental issues, ICSU will forge ahead with the remaining tasks required for strategy development. The new ICSU strategy will be presented at the 28th General Assembly (China; October 2005).

ICSU annual report 2002

overview 2002

27th General Assembly marks progress, sets path for the future

Over the course of the 27th General Assembly (GA), ICSU clearly demonstrated elements of an ongoing transformation that is making the organization more responsive to Members and more relevant to international science.

The underlying theme of the 27th GA centred on developing a strategic plan that will focus members of the ICSU family toward shared goals. Delegates expressed satisfaction that ICSU is making significant progress toward addressing the issues outlined in the report from the ICSU Assessment Panel. While these two pages highlight the main activities of the GA, the full range of resolutions and recent achievements of the ICSU family are presented throughout this report.

New members expand global network

ICSU welcomed three new National Members and one new Scientific Union at its 27th General Assembly:

Macedonian Academy of Sciences and Arts

Academia Nacional de Ciencias de Peru

Academy of Sciences of the Republic of Tajikistan

International Society for Photogrammetry and Remote Sensing (ISPRS)

In addition, at the request of the National Council for Science and Technology (Consejo Nacional de Ciencia y Tecnología or CONACYT), national membership for Mexico was transferred to the Academia Mexicana de Ciencias.

In order to streamline approval of National Member applications and those for Associate Status, ICSU's Committee on Governance (CG) moved that its authority be transferred to the Executive Board. (Admission of new Scientific Unions will continue to be controlled by the General Assembly.) The CG also advised that an ad hoc committee be established to review the overall balance of scientific disciplines prior to admitting any additional bodies for Union membership. With Member approval, the Committee on Governance was then disbanded.

GA agenda encourages open dialogue

In the days leading up to the General Assembly, several meetings addressed Member concerns, including key scientific questions, policy issues, and the ongoing need to build scientific capacity in developing countries.

National and Union Members Fora

At the 27th GA, parallel meetings allowed National and Union Members to discuss strategic issues. This full-day session provided a platform for direct input in advance of GA decisions and for open discussion of common concerns. A joint session at the end of the day allowed both groups to share ideas on how to improve interactions at the national level. In light of the complex global issues that ICSU is increasingly called upon to address, Members also highlighted the need to develop stronger links amongst themselves and with social, medical, and agricultural sciences, and engineering.

Scientific fora lead to action on global issues

Science for sustainable development • Energy and sustainable societies • Strengthening science in developing countries • Ensuring global access to scientific data

With keynote speakers from around the world, these four topics generated lively discussion.

The sessions on science for sustainable development and energy elicited support amongst ICSU Members. Delegates ultimately gave ICSU a mandate to develop an agenda for the former and further consider the latter. At the same time, they emphasized that to truly address sustainable development issues, ICSU must engage all disciplines and all nations, and must support both increased specialization within particular fields and the development of cross-cutting initiatives. It was also agreed that ICSU should consider developing a strategy for energy research, as energy production, storage, and utilization are all strongly linked to sustainable development.

Additional information on the outcome of the forum on capacity building is provided on page 26.

Symposium on science in Brazil

The final session, a symposium on science in Brazil, provided an excellent example of the evolution of science in a developing country with a strong science base. In addition to highlighting strengths in areas such as physics and mathematics, the session underscored how science development—whether in universities, industry or elementary school classrooms—contributes significantly to overall welfare.

ICSU annual report 2002

overview 2002

laying the foundation for strategy development

identifying emerging issues

Recognizing the pace at which science advances in modern society, ICSU is fully aware that being relevant is a matter of anticipating the future. Thus, it has initiated an iterative process to pinpoint areas in which scientific developments could have significant impacts on technology, the economy, and society.

The CSPR began by examining available information. It commissioned a meta-analysis of national and regional foresight studies, which was carried out by the Science and Technology Policy Research (SPRU), University of Sussex. The SPRU Report [4], acknowledges the limitations of government foresight studies, yet outlines their ability to provide a broad perspective on priority areas, societal needs/demands, and information about future government investments.

The Report highlights convergence and divergence on the international scale. In particular, it notes that developing/transitional countries tend to focus on technological areas and developments needed to solve immediate problems and generate economic returns. Industrialized countries place more emphasis on materials science, information and communication technologies, and health sciences. Developing/transitional countries place less emphasis on basic sciences, but both groups acknowledge their importance to future developments.

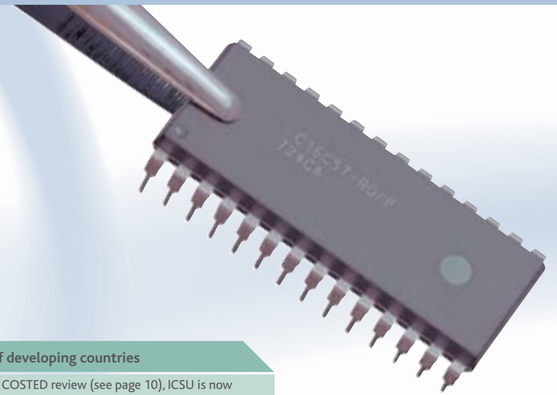
ICSU is now seeking input from its National and Union Members in further identifying emerging issues. In November 2002, the CSPR sent a questionnaire to all Members and Interdisciplinary Bodies. Ultimately, ICSU aims to use the information gathered to strike an appropriate balance between broad, societal priorities and those of the scientific community. A final report will be submitted to the Executive Board in early 2004, and will be the basis for the ICSU strategy.

Key findings of the SPRU Report

Within the framework of criteria established by the CSPR, the SPRU meta-analysis of national foresight studies elicited six key areas in regards to emerging issues for science and society:

- **Life sciences and biotechnology, including genetic modification of food/crops;**
- **Human health, particularly in relation to human genetics and functional genomics; production of antibiotics, enzymes, and 'gene machines'; biopharming;**
- **Environment and sustainable use of natural resources, encompassing areas such as biodiversity, water recycling, water efficiency technologies, and pest control methods;**
- **Energy, emphasizing the need for new/renewable clean energy sources;**
- **Information and communications technologies; and**
- **Materials science, including nanotechnology.**

[4] *Identification of Emerging Issues in Science and Society: An International Perspective on National Foresight Studies*. ICSU. 2002. ISBN 0-930357-54-X. (Available online at www.icsu.org)



in-depth assessment of priority areas

One of the biggest challenges facing any organization with a long history is determining whether its structure and operations meet the demands of the day. ICSU has a long history of establishing Interdisciplinary Bodies and policy/advisory committees that address key issues for international science. As identified by the 1996 Assessment Panel, one of its weaknesses has been failing to fully analyse how these groups evolve over time in order to assess distinctions, complementarities, and areas of overlap in light of new needs and priorities.

Over the next three years, ICSU will establish ad hoc expert panels to carry out Priority Area Assessments (PAAs) of three broad areas: environment and its relation to sustainable development; data and information; and capacity building. The PAA for environment is already well underway. Interdisciplinary Bodies and Scientific Unions involved in environmental science participated in an online reporting process designed to highlight past achievements and future directions while also demonstrating the true extent of their international and interdisciplinary scope. The final report is expected in late 2004. Terms of Reference for the remaining PAAs have now been approved by the CSPR; assessments will begin in 2003.

In the context of the PAAs, ICSU will also examine its various Interdisciplinary Bodies and other committees. In several instances, the Council recognizes the need to assess existing bodies in order to initiate a more strategic approach to important issues and to avoid overlap or replication of activities organized by other agencies. To increase flexibility, future ICSU initiatives will be planned by ad hoc committees that have specific mandates and sunset clauses.

These assessments will provide additional input to ICSU's strategy development.

Enhancing participation of developing countries

As one of the outcomes of the COSTED review (see page 10), ICSU is now establishing a Policy Committee on Developing Countries, in accordance with the Terms of Reference approved by the Executive Board. With the majority of its members coming from developing countries, this Committee will advise ICSU on how to strengthen links by:

- **fostering increased participation in ICSU programmes and activities;**
- **addressing generic scientific issues that are specific to developing countries;**
- **strengthening science and capacity building;**
- **providing vision and continuous advice to the Executive Board on ICSU's work relating to developing countries; and**
- **collaborating with ICSU Regional Offices (see page 10).**

priority setting and peer review enhance ICSU Grants Programme

Following the recommendations of the ICSU Assessment Panel, the ICSU Grants Programme seeks to support international and interdisciplinary issues that, because of their complex nature, are difficult to address through national or disciplinary channels. The Programme promotes forward-looking projects and, in many instances, awards are granted for areas of investigation that are not yet on the agenda for governments or other organizations. In essence, the Programme aims to be catalytic in launching new initiatives.

A significant portion of the funding for the ICSU Grants Programme derives from contributions by UNESCO and the US National Academy of Sciences. Although the overall budget is relatively small (US$850,000 for 2002), ICSU support often helps recipients attract additional funding from other sources.

Over the past two years, the CSPR has taken steps to improve the Programme by identifying priority areas and initiating a peer-review process for applications. While the grants remain available only to ICSU's Scientific Unions and Interdisciplinary Bodies (as lead applicants), the CSPR anticipates that Programme improvements will increase competition for funds.

Priority areas for the ICSU Grants Programme

Targeting the creation of new knowledge, **Emerging science and technology** focuses on advancing the frontiers of research, particularly in interdisciplinary areas and areas of potential importance to the global community.

Science and technology for sustainable development reflects ICSU's aim to be more proactive in generating knowledge and developing tools that specifically address issues such as environment, energy, mega-cities, and food security, at the local level.

Capacity building and science education applications must involve collaboration with developing country scientists and educational programmes related to teacher training and curriculum development.

Dissemination of information on science and technology supports efforts to facilitate information exchange and assess the impact of new information technologies. Proposals may also address the concerns of the scientific community in areas such as intellectual property rights.

The **Science/policy interface** category supports activities that enhance the science community's role in providing advice to the non-scientific world—particularly policy makers and industry. Proposals for review or assessment of scientific issues related to policy formation, including the identification of knowledge gaps, are also welcome.

overview 2002

regional offices to strengthen local science and global interaction

ICSU addressed the need to create a truly international science network in 1966 by establishing the Committee on Science and Technology in Developing Countries (COSTED). The Committee's mandate was to analyse the problems of developing countries and identify how science and technology could address them. COSTED activities grew to include science education and communication, survey, evaluation and utilization of natural resources, emerging technologies, and manpower training.

In 2001, the CSPR established an expert panel to evaluate COSTED. In its report, the Panel highlighted several achievements—such as mobilizing scientists through scientific networks and rallying experts around common issues—but also concluded that the structure did not sufficiently meet the diversity of regional needs.

At the 27th General Assembly, ICSU Members adopted the recommendations that COSTED be dissolved and that ICSU establish four Regional Offices for developing countries, to be located in Africa, the Arab Region, Asia, and Latin America and the Caribbean. The goal of this fundamental change is two-fold. Firstly, it should enhance participation of developing country scientists and regional scientific organizations in ICSU programmes and activities. Secondly, it will allow ICSU to play a more active role in strengthening science within the context of regional priorities and building capacity through South-South and North-South collaboration.

During 2003-2004, ICSU will convene four workshops to engage National Members in defining priorities for their respective regions. ICSU is also inviting Members to propose host organizations for the Regional Offices, which will be expected to provide visibility, as well as administrative and other support. Core funding for the Regional Offices will be provided by ICSU.

Anticipated activities of ICSU Regional Offices

One of the most important aims of this initiative is to improve interaction amongst members of the ICSU family within a specific geographic area, particularly in developing countries. In this way, ICSU hopes to both strengthen regional scientific networks and help bring developing country science into the international arena. Several activities to support these objectives have already been identified:

- **collecting information on regional strategies, priority needs, and scientific expertise, thus helping ICSU and its Members align strategic plans to regional priorities;**
- **initiating regional activities;**
- **ensuring efficient information transfer between members of the ICSU family and the scientific community;**
- **establishing a database of regional experts and identifying scientists who can contribute to ICSU committees and activities; and**
- **working with the Third World Academy of Sciences and regional offices of UNESCO.**

ICSU contributes to a world of science

developing the science agenda

Because of its unique capacity to bring together national, interdisciplinary science organizations and international, disciplinary scientific unions, ICSU plays an important role in developing the global science agenda. The Council has a long history of undertaking major international initiatives, either alone or in partnership with other organizations, and of providing seed funding for projects initiated by its Interdisciplinary Bodies and Scientific Unions.

Increasingly, ICSU encourages collaborative projects that engage participants from a range of disciplines and from around the world. This approach underpins the Council's commitment to pursue international science projects that enhance overall well-being for every sector of society.

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science at the World Summit on Sustainable Development

The three grand challenges facing the international community at the dawn of the 21st century are freedom from want, freedom from fear, and the freedom of future generations to sustain their lives on this planet.

Kofi Annan, UN Secretary-General

Millennium Report to the General Assembly

Without question, the World Summit on Sustainable Development (WSSD) was one of the most important events of 2002 for the ICSU family. At the invitation of Nitin Desai, Secretary-General for the WSSD, ICSU and the World Federation of Engineering Organizations (WFEO) became organizing partners for the Summit's Dialogue Segments and represented the Scientific and Technological Community, one of the Major Groups defined by Agenda 21[5]. In turn, ICSU and WFEO invited the Third World Academy of Sciences (TWAS), the InterAcademy Panel on International Issues (IAP), and the International Social Science Council (ISSC) to participate in the effort to raise the profile of science and technology at this important event.

In pre-Summit preparations, through active participation in Summit side events, and by delivering strong messages in official Summit proceedings, the S&T community demonstrated its commitment to contributing to a more sustainable and equitable world. These activities represent the S&T community's first direct inputs in shaping the agenda of a world summit. While the WSSD was criticized for its lack of political success, a number of key advances in the areas of science and technology warrant recognition.

In the decade spanning the UN Conference on Environment and Development (the Earth Summit, Rio de Janeiro; 1992) and the WSSD, governments around the world have come to recognize the vital role of the Major Groups. In addition, the Major Groups have taken the initiative to collaborate on addressing important issues. These factors underpin the major outcomes of the WSSD—the Johannesburg Declaration on Sustainable Development and the Implementation Plan of the World Summit on Sustainable Development.

Thanks to the foresight of former Executive Director Larry Kohler, ICSU secured a substantial grant in support of the S&T community input to the WSSD process from the David and Lucile Packard Foundation. The Council was also able to obtain additional funding from the United Nations Foundation and the Rockefeller Foundation.

[5] Agenda 21 is a plan for achieving sustainable development in the 21st century, adopted by the UN Conference on Environment and Development (June 1992).

ICSU contributes to a world of science

S&T input to pre-Summit planning

In carrying out its mandate as the intergovernmental Preparatory Committee for the WSSD, the UN Commission on Sustainable Development (CSD) sought direct input from Major Groups during the preparatory meetings (PrepComs II and IV).

ICSU and its partners submitted two reports on behalf of the S&T community to these PrepComs, both of which were recognized as official UN documents. The first focused on lessons learned during implementation of Agenda 21 and highlighted a number of successes that have been realized through the unprecedented international collaboration and strengthened collaboration between natural and social sciences. The results have been central for the policy process and for increasing participation of developing country scientists. At the same time, the report outlines various shortcomings such as a lack of involvement of the health sciences and only partial involvement of the engineering and technology communities. In addition, the focus was primarily on environmental issues with little emphasis on social and economic factors. Finally, the private sector was only marginally involved.

The second report highlighted commitments as follow-up to the WSSD. The S&T community stressed that good governance needs good science, yet recognized that science alone is not sufficient for achieving sustainable development. In order to move forward, the North-South scientific divide must be addressed, research must integrate the social, economic and environmental pillars of sustainable development, and research agendas must be developed in collaboration with other stakeholders and tailored to the local context. Similarly, linkages between global change research and local research for sustainability should be integrated in a regional context.

ICSU Series on Science for Sustainable Development

Under the direction of ICSU, the S&T partnership for the WSSD also produced a set of reports that provoked pre-Summit dialogue and highlighted specific aspects of the Forum on Science, Technology and Innovation for Sustainable Development.

1. Report of the Scientific and Technological Community to the World Summit on Sustainable Development
2. Energy and Transportation
3. Resilience and Sustainable Development
4. Science, Traditional Knowledge, and Sustainable Development
5. Science Education and Capacity Building for Sustainable Development
6. Biotechnology and Sustainable Agriculture
7. Global Environmental Change and Food Provision: A New Role for Science
8. Making Science for Sustainable Development More Policy Relevant: New Tools for Analysis
9. Science and Technology for Sustainable Development: Consensus Report and Background Document, Mexico City Synthesis Conference
10. Biodiversity Science and Sustainable Development
11. Science and Technology at the World Summit on Sustainable Development

ICSU annual report 2002

ICSU contributes to a world of science

science speaks up at the Summit

The S&T community accepts its responsibility to address issues of sustainable development in a holistic and integrated manner through education, training, research and technological innovation. Scientists and engineers will address the need for knowledge by civil society, the private sector and governments in order to help develop solutions and options for sustainable development. We will focus on enhanced dialogue with decision makers at all levels, from local to global, so that relevant issues can be addressed in a timely manner. In order to ensure policy relevance, we will implement research that integrates the three pillars of sustainable development.

Prof. Hiroyuki Yoshikawa, ICSU President

Statement on behalf of the S&T Community WSSD Multi-stakeholder Event

The preceding quotation is just one example of statements made by the Scientific and Technological community delegation at the Summit itself. The WSSD programme provided opportunities for all Major Groups to participate in all parts of the official Summit.

The initial segment of the Summit consisted of half-day plenary sessions devoted to the five priority areas proposed by UN Secretary-General Kofi Annan: water and sanitation, energy, health and the environment, agricultural productivity, and biodiversity and ecosystem management (the so-called WEHAB areas). An additional session focused on 'cross-cutting' issues, including science and technology, education, and capacity building. The S&T community was able to designate one panelist in each plenary session.

The S&T community also had excellent opportunities to be heard at the Plenary Sessions for Policy Statements and during the Round Tables for Heads of State/Government, the theme of which was "Making it Happen". In the Plenary Sessions, formal statements addressed two inter-related S&T issues: Capacity Building for Sustainable Development (Prof. M.H.A. Hassan, Executive Director, TWAS) and Appropriate and Environmentally Sound Technology for Sustainable Development (Prof. J. Medem Sanjuán, President, WFEO).

During the Summit's Multi-stakeholder Event, ICSU President Prof. H. Yoshikawa delivered the formal statement from the S&T Delegation, stressing that good governance needs good science but that current institutional structures do not adequately support the link between the S&T community and decision makers. He also identified the need for a mechanism to ensure that the UN Commission on Sustainable Development (CSD) can draw upon independent scientific expertise and advice.

Attendance at the Round Tables was tightly controlled, allowing for only one high-level representative of each Major Group, with no assurance of being given the floor. The S&T community delegation was the only Major Group to speak at all four Round Table sessions, with statements delivered by Professors M.H.A. Hassan (TWAS), Y.C. Lee (WFEO), T. Rosswall (ICSU) and H. Yoshikawa (ICSU).

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The official Scientific and Technological Community Delegation to the WSSD (left to right):

Dr. Leah Goldfarb (ICSU), Mr. Leszek Bialy (ICSU), Prof. Yves Quéré (IAP); Prof. José Medem Sanjuán (WFEO); Dato Yee-Cheong Lee (WFEO); Prof. Hiroyuki Yoshikawa (ICSU); Prof. Thomas Rosswall (ICSU); Dr. Gisbert Glaser (ICSU); Prof. Mohamed H.A. Hassan (TWAS); and Mr. Diego Malpede (TWAS). Additional Delegation members included: Prof. C.N.R Rao (TWAS), Prof. F. Sherwood Rowland (IAP), Prof. Oran R. Young (ISSC), Prof. Lebo Lehutso-Phooko (ISSC), Prof. Masaki Taniguchi (AIST), and Dr. Daniel Schaffer (TWAS).

The Ubuntu Declaration

On 4 September 2002, eleven of the world's foremost global educational and scientific organizations released a formal declaration in support of sustainable development. The Ubuntu Declaration identifies four overarching goals:

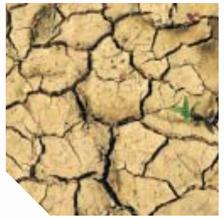
- **Curriculum development**
- **North-South networking**
- **Strategic educational planning and policy making; and**
- **Capacity building in scientific research and learning.**

These goals underlie the essence of the Declaration: that greater global emphasis on education is essential for reaching sustainable development goals and that a sustainable development focus must be integrated into curricula at every level. The Declaration creates a major alliance to promote science and technology courses and teaching worldwide; signatories will continue to solicit other partners. Initial partners were:

United Nations University • United Nations Educational, Scientific, and Cultural Organization (UNESCO) • African Academy of Science • ICSU • International Association of Universities • Copernicus-Campus • Global Higher Education for Sustainability Partnership • Science Council of Asia • Third World Academy of Sciences • University Leaders for a Sustainable Future • World Federation of Engineering Organizations

ICSU contributes to a world of science

WSSD Forum on Science, Technology and Innovation for Sustainable Development



ICSU pays tribute to Mr. Nitin Desai, Secretary-General for the WSSD, for his foresight in conceiving the Forum on Science, Technology and Innovation as an official parallel event to the Summit and to the Ministry of Culture, Arts, Science and Technology of the Government of South Africa for organizing it. ICSU served as scientific advisor during preparations for the Forum. This open meeting allowed the global S&T community to discuss and address a broad range of issues related to sustainable development.

ICSU, in collaboration with TWAS and WFEO, coordinated the largest and broadest element of the Forum programme—a series of panel sessions that addressed many of the priority areas where science and technology can make a real contribution towards sustainable development. The agenda thus reflected the priorities officially put forward by the S&T community during PrepComs II and IV.

The presentations and discussions provided an opportunity to share knowledge, exchange ideas, and develop proposals for action in the domain of S&T for sustainable development following the WSSD. Overall, the sessions were well received with attendance ranging from 100 to 300 participants, most of whom represented the S&T community and other Major Groups including NGOs, indigenous peoples, and business and industry. Participation by official government delegates was weaker than hoped, but satisfactory given the sheer magnitude of the Summit.

Panel Sessions

In cooperation with other partners, ICSU, WFEO and TWAS organized panel sessions on key topics related to sustainable development.

1. Harnessing Science for Sustainable Development
2. Engineering and Technology Innovations for Sustainable Development
3. Capacity Building in Science and Technology
4. Linking Traditional and Scientific Knowledge for Sustainable Development
5. Emerging Diseases and Their Effect on Sustainable Development
6. Food Security in Africa: The Role of Research
7. The Role of Global Observing Systems for Sustainable Development
8. Decoupling Economic Growth and Environmental Impact
9. High-level Panel Discussion on the Role of S&T for Sustainable Development in Africa

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the way forward

It is clear that societies will not naturally move forward toward a path of sustainable development. Rather, such a change of direction requires the involvement of all sectors of society.

Prof. Thomas Rosswall, Executive Director, ICSU

Preface, Series on Science for Sustainable Development No. 11

Despite criticism of it, the WSSD produced tangible outcomes, including the adoption by governments of two political documents (Type I outcomes), which had been under negotiation since the fourth and final meeting of the intergovernmental Preparatory Committee (Bali, Indonesia): The Johannesburg Declaration on Sustainable Development and the Plan of Implementation of the World Summit on Sustainable Development. This second document represents a major step as it makes specific reference to the role of science and technology in identifying and understanding inter-related environmental and development issues. It also recognizes that science and technology have the potential to generate possible solutions and contribute to their implementation.

In addition, the WSSD led to many voluntary, international partnership initiatives—so-called Type II outcomes. In fact, approximately 250 such initiatives were included in an official List of International Partnerships for Sustainable Development, which remains open-ended. The S&T community submitted a project on Science and Technology for Sustainable Development.

These outcomes provide a solid foundation for the creation of a new contract between science and society to ensure that the great potential of science and technology is fully exploited. The agenda for such a bold new undertaking must be developed in partnership with other stakeholders in a truly participatory manner. This will necessitate a new approach to defining research questions, implementing research programmes and communicating the results.

International Consortium considers 'Next Steps'

In May 2002, ICSU, the International Initiative on Science and Technology for Sustainability (ISTS) and the Third World Academy of Sciences (TWAS) jointly organized a Synthesis Workshop on Science and Technology for Sustainable Development (Mexico City). The Workshop articulated the importance and urgency of scientific contribution to sustainable development, as well as a shared vision for implementing strategies and activities beyond the WSSD.

Co-sponsors of the Mexico City Workshop met again, in November 2002, to discuss possible ways to move forward following the WSSD. The partners agreed to work together within a Consortium and to establish an ad hoc Advisory Group for Science and Technology for Sustainable Development. The Advisory Group will be asked to develop activities in three main areas: research, capacity building, and linking research and development to an action agenda. The goal is to harness science and technology to provide for basic human needs and to improve health, prosperity, and well-being, while also protecting and restoring the Earth's life support systems.

scientific achievements

The links between environment and health. Global change. Worldwide issues associated with food and water. The relationship between science and information technology. Or, perhaps something as simple as improving access to data by creating digital copies of paper hydrology records.

The range of areas in which ICSU support enables scientific investigation reflects the need to foster both interdisciplinary research and increased specialization in particular fields. While the interdisciplinary and international scope of many ICSU-supported activities naturally bolsters knowledge sharing and skills acquisition, ICSU also promotes initiatives designed to build scientific capacity, particularly in developing countries.

The following pages highlight scientific achievements realized, at least in part, through ICSU Grants awarded for 2002 and also demonstrate the ICSU community's involvement in other initiatives.

Small grants awarded for 2002

TITLE	RECIPIENT
Radio frequency interface	Scientific Committee on Frequency Allocation for Radio Astronomy and Space Science (IUCAF)
INTERMAGNET: Real-time global digital magnetic observatory network	International Union of Geodesy and Geophysics (IUGG)
International perspectives on students and goals for K-12 mathematics education	International Mathematical Union (IMU)
Rescue of Russian hydrologic and geomagnetic data	World Data Centres (WDC)
Collection, compilation, analysis and distribution of data †	Federation of Astronomical and Geophysical Data Analysis Services (FAGS)
Launch of Data Science Journal	Committee on Data for Science and Technology (CODATA)

† FAGS received a grant of $45,000 to support several small initiatives within this area.

Interdisciplinary Bodies

ICSU's Interdisciplinary Bodies focus on specific areas of international research that are of interest to all or many ICSU Members. Initially established by ICSU General Assemblies, these bodies are designed to become self-sufficient and independent in terms of day-to-day operations and financing. Their roles vary depending on the area of science and on the related needs of the international science community, but usually combine operational and policy/advisory functions. Most Interdisciplinary Bodies have their own Secretariat.

A full list of Interdisciplinary Bodies can be found on page 36.

environment and health

While ICSU's membership comprises primarily natural sciences, various Interdisciplinary Bodies and Scientific Unions are increasingly interested in the health implications—for human and other life forms—of environmental issues. In order to adequately address these issues, ICSU recognizes the need to establish stronger links to the international medical sciences community.

Environmental implications of endocrine-active substances - $100,000

Scientific Committee on Problems of the Environment (SCOPE) [6] • International Union of Pure and Applied Chemistry (IUPAC)

A wide range of natural and synthetic compounds are known to exert adverse effects by interfering with the chemical signalling system regulated by hormones. PCBs, dioxins, steroidal hormones, and phyto-estrogens are a just a few of the endocrine-active substances (EASs) found in the environment, which can be linked to increased incidence of cancer in hormone-sensitive tissues (e.g. breast, prostate) in humans and to alterations in normal larval-to-adult metamorphosis in fish. Given the growing impacts of EASs, this joint SCOPE/IUPAC initiative identified present and future research needs and addressed a key question: when will scientific knowledge have the capacity to inform effective policy decisions?

Metals, health and the environment - $45,000

International Union of Geological Sciences (IUGS) • Austria

Individuals living near the Bengal Delta (Bangladesh and India) are at risk for arsenic poisoning from contaminated water. In southwest China, respiratory problems can be traced to metal emissions from coal combustion. Examples of how metals in the environment impact health and the environment are found throughout the world.

Through a series of medical geology seminars in Russia, Brazil, Japan, Lithuania, Australia, Chile and Argentina, IUGS sought to raise awareness of the need for interdisciplinary action to address health issues that arise from the percutaneous absorption, ingestion, or inhalation of metals and other elements found in rocks, soils, gases, and water. Topics included environmental toxicology and pathology, geochemistry, geo-environmental epidemiology, extent, as well as patterns and consequences of exposure. In addition to extending the medical geology network, the seminars produced much-needed educational materials.

[6] Italic text indicates the lead applicant on the Grant proposal; others are supporting applicants.

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global change

Global change is not restricted to climate change and greenhouse gas emissions, nor can it be understood in terms of a simple cause-effect paradigm. Recent studies of the Earth's land surface, oceans, coasts and atmosphere, of the biological diversity, the water cycle and biogeochemical cycles make it clear that human activity is generating change that extends well beyond natural variability—in some cases, alarmingly so—and at rates that continue to accelerate.

A number of ICSU Interdisciplinary Bodies and Scientific Unions are now working together to examine how our planet is changing—and how those changes will impact human and other life forms—through an integrated and multidisciplinary approach.

Rapid assessment of emerging environmental issues - $80,000

Scientific Committee on Problems of the Environment (SCOPE) • International Geosphere-Biosphere Programme (IGBP)

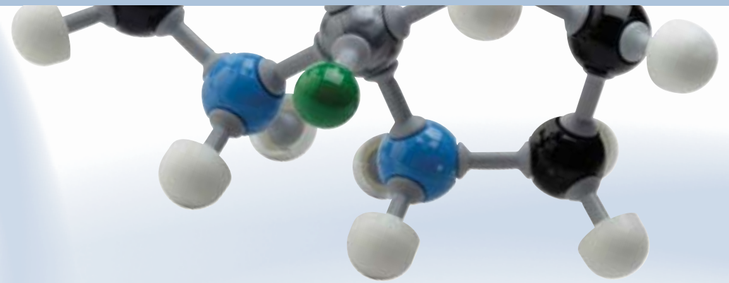
Questions related to environmental impacts on human societies and ecosystems—whether positive or negative—require early assessment and rapid information dissemination. SCOPE is meeting this need through the development of Rapid Assessment Projects (RAPs). The projects are designed to identify new research that addresses gaps and uncertainties in scientific knowledge and to develop appropriate policies and management practices. Modelled after the Dalhem conferences, the aim is to proceed from identifying a topic to publishing an assessment volume within 18 months.

Following early successes on issues related to element interactions, stabilizing atmospheric CO_2 (see page 22), and forest management, the value of RAPs is gaining broad recognition. In partnership with ICSU's global change programmes and various UN agencies, SCOPE is now organizing additional projects in areas such as assessment of sustainability indicators, biodiversity change and human health, nitrogen cycling, Asian monsoons, and emerging ecosystems.

Integrated marine biogeochemistry and ecosystem research - $50,000

Scientific Committee on Oceanic Research (SCOR) • International Geosphere-Biosphere Programme (IGBP)

Ocean biogeochemistry and ecosystems were the focus of an Open Science Conference co-sponsored by SCOR and IGBP (Paris; January 2003), which drew 370 participants from 36 countries. The conference gathered input as the basis for a science plan/implementation strategy on how global change and human activities affect marine food-web dynamics, elemental cycling, and their interactions, as well as how ocean changes may feed back to other parts of the Earth system. The science plan/implementation strategy for the Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) project will provide the scientific and societal justification for new large-scale ocean research and observations that will build on and be complementary to related SCOR and IGBP activities.



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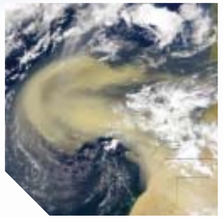

Surface Ocean – Lower Atmosphere Study (SOLAS) - $40,000

Scientific Committee on Oceanic Research (SCOR) • International Geosphere-Biosphere Programme (IGBP) • World Climate Research Programme (WCRP)

Understanding and quantifying how ocean-atmosphere interactions affect climate and global change is important to many areas of research. SOLAS contributes to worldwide global change research efforts by studying physical, chemical and biological processes that affect interactions between the ocean and atmosphere. Many countries have SOLAS planning efforts underway, and some have already conducted field research. In June 2002, 19 national SOLAS representatives met in Amsterdam to discuss how national activities will contribute to international SOLAS implementation. Discussions at the meeting provided important information for the SOLAS Implementation Strategy, which is currently under peer review.

Extreme weather events and impacts - $40,000

International Geographical Union (IGU)

Each year, extreme weather events lead to loss of human lives and great material damage. Intensified greenhouse gas effects, some of which can be attributed to human activities, are expected to increase the occurrence and severity of extreme weather events in the 21st century.

IGU has initiated an effort to isolate human impacts on weather patterns, in part by mapping changes in land-use/land-cover with correspondent changes in the atmosphere. The study focuses on spatial attributes of extreme events at various scales (local to global). Much of the research centres on deltas and low-lying tropical areas, where vulnerability to natural disasters is severe.

In addition to research activities and workshops, the end goal is to produce a book (2004) on how to construct effective physical and social measures (preventative, adaptive, and enhancement) for life support systems.

Integrative biology and complexity in natural systems - $30,000

International Union of Biological Sciences (IUBS) • France

Understanding the complexity of natural systems continues to be one of biology's biggest challenges. Moreover, it is essential to conservation and management of biological diversity and to sustainable development.

In contrast to traditional biological research, the integrative approach crosses all levels of biological organization—from molecules to the biosphere—and all taxa. It includes perspectives from diverse subfields of biology, and from other disciplines, as appropriate to the problem under study. This meeting highlighted the need for new tools for new paradigms and vice versa. For instance, participants discussed conceptual tools to support modelling and scaling at various hierarchical levels, as well as ways to address temporal dimensions of complexity in natural systems. They also considered new knowledge derived from epidemiology and host-parasite and predator-prey relationships as exemplars of integrative approaches.

IUBS produced a synthesis volume of the symposium that recommends several new approaches to analysis of the complexity of natural systems.

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Earth System Science Partnership

Established in 2001, the Earth System Science Partnership [7] (ESSP) recognizes the planet as a complex and sensitive system regulated by physical, chemical and biological processes—and influenced, as never before, by human factors.

ESSP supports the integrated study of the Earth System: its structure and functioning; changes occurring to the System; and the implications of change for global sustainability. For example:

- **The Global Environmental Change and Food Systems (GECAFS)** project develops strategies to address food provision concerns and analyses the environmental and socio-economic consequences of adaptation.
- **The Global Carbon Project (GCP)** investigates both the natural and human dimensions of the carbon cycle to develop policy-relevant knowledge for managing the cycle.
- **The Global Water System Project (GWSP)** will examine how humans are changing the global water cycle, the implications for water resources, and the feedbacks to the Earth System.

These ESSP Joint Projects are highlighted as examples of the type of science ICSU is eager to support.

The quest for food security

In 2002, GECAFS focused on the development of research agendas in two regional 'hotspots': the Indo-Gangetic Plain (IGP) and the Caribbean. The IGP food system is threatened by, and contributes to, global environmental change; primary concerns are water management and diversification. In the Caribbean, food security depends on imports. The region's top revenue-producing activities—exports of bananas and sugar, and tourism—are all highly vulnerable to anticipated changes in the frequency and severity of extreme weather events. Both situations highlight the need for improved understanding of vulnerability in relation to food systems.

Toward CO_2 stabilization

The need to stabilize atmospheric carbon dioxide (CO_2) is attracting global attention, with particular emphasis on a better understanding of CO_2 sinks and sources. The Rapid Assessment Project on the Carbon Cycle (RAPCC), jointly initiated by the Scientific Committee for Problems of the Environment (SCOPE) and the GCP, synthesizes current knowledge of biogeochemical, economic, engineering, and economic aspects of the carbon cycle and provides a platform for the next generation of research. The synthesis involved experts from diverse disciplines, who discussed key issues ranging from the trajectories and capacities of unmanaged fluxes and their implications for other ecosystem processes, to the technical feasibility, safety, and costs of managed fluxes, and the social factors that influence economic cost and cultural acceptance.

Millennium Ecosystem Assessment

ICSU formalized its sponsorship of the Millennium Ecosystem Assessment (MA) in 2002. This important initiative is collating international scientific information concerning ecosystem change—its impacts for human well-being and options for response. The goal is to meet the information needs of decision makers, civil society, the private sector, and the public.

The MA will provide necessary data to the Convention on Biological Diversity, the Convention to Combat Desertification, and the Wetlands Convention. Its work is vitally important to many ICSU bodies, a number of whom are contributing to its development. The final assessment is scheduled for release in 2005.

[7] **ESSP** is a joint initiative of four global change programmes: **DIVERSITAS** – an integrated programme of biodiversity science • **IGBP** – International Geosphere-Biosphere Programme • **IHDP** – International Human Dimensions Programme on Global Environmental Change • **WCRP** – World Climate Research Programme

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food and water

One widely used definition of food security—that every individual has access to enough food (including water) for maintaining a healthy and active life—is deceptively simple. In reality, the issue comprises cultural, social, economic, and ecological dimensions, and therefore presents a complex and difficult challenge. ICSU has organized activities and participated in broad initiatives to generate new knowledge about water and food security, including their relation to poverty.

Scientific Committee on Water Research (SCOWAR)

Established in 1993, ICSU's Scientific Committee on Water Research (SCOWAR) has published several papers and statements, collaborated with international groups to address specific water-related issues, and coordinated important symposia and working groups. The Committee also developed an approach for predicting the ecological consequences of land-use change on water systems (the SEAPER Project).

Such activities reinforce the broad challenges associated with water and society, including resource scarcity, human health, and ecological consequences of change. It has also become clear that issues of governance, investment, risk, poverty, cooperation, decision making, awareness, and capacity building present very significant barriers to progress.

SCOWAR thus recommended that ICSU create a new committee with a clear mandate to integrate water-related scientific issues throughout the ICSU family, thereby facilitating interdisciplinary cooperation and partnerships with external bodies. The General Assembly agreed to disband SCOWAR. Its recommendations are now being considered within the context of the ICSU's Priority Area Assessments (see page 8).

Committee on Sciences for Food Security

In January 2002, the Committee on Sciences for Food Security (CSFS) convened a scoping workshop for ICSU Members to define new scientific approaches and generate concrete project proposals. Recognizing that food security is related to improved livelihood and to human security, participants emphasized the need to expand the research agenda. New investigation is required to understand how sustainable production, availability, and consumption relate to biodiversity, gender issues, and human behaviour.

The CSFS thus recommended that any new ICSU activity in this area include representation from natural, social, and economic sciences, as well as from National Academies in food-deficient countries. The Committee subsequently stepped aside to allow ICSU to consider this issue within the context of the Priority Area Assessments (see page 8), as well as in future activities related to science and technology for sustainable development (see page 17).

Environmental impact of GM crops - $48,000

International Union of Soil Sciences (IUSS) • International Union of Microbiological Societies (IUMS) • Committee on Science for Food Security (CSFS)

Understanding how genetically modified organisms (GMOs) impact soil microbiology and nutrient dynamics is important to environmental safety and to public perceptions of genetically modified foods. Two joint activities—a literature review of existing data and an international workshop—established the actual state of knowledge and identified gaps for future research (e.g. effects of transgenic plants on soil micro-organisms, horizontal gene transfer mechanisms, and stability turnover of DNA and element fluxes in soil).

Results of this initiative will be reported in a special issue of ***Plant and Soil*** on "The Impact of GMOs: Soil Microbiology and Nutrient Dynamics" (end of 2003), which will be the first publication in the field of GMOs and soils. It will serve as a basis for the definition of future research targets, while also improving communication amongst scientists and between the science community and policy and decision makers.

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data and information

As virtually all international science depends on the production, use and integration of data and information [8], ICSU is keenly interested in all aspects of this issue. Today's environment raises new constraints. Increasingly, information is recognized as a valuable resource: both private sector institutions and government agencies carefully guard their information or seek to recoup a portion of the cost of conducting science by selling the results. In addition, while all nations acknowledge the need for international monitoring systems, there is no consensus on how to standardize collection, analysis and dissemination of data. Intellectual property rights—and the lack of coherent, international legislation regarding them—also hinder open sharing of data and information.

Most distressing is how such factors increase the digital divide. Prohibitive pricing, onerous restrictions on usage, or incompatible technologies make it particularly difficult for developing country scientists to access data.

ICSU is addressing such issues in a number of ways. In particular, the Committee on Data for Science and Technology (CODATA) and the Committee on the Dissemination of Scientific Information (CDSI) are currently working with several partners to ensure due attention is garnered amongst all interested and affected parties.

EU Directive on Databases

One of the most important policy issues currently being monitored by CODATA and the CDSI is the Directive on Databases, enacted by the European Union in 1996. The Directive gives database producers the right to prohibit use of more than an 'insubstantial portion' of their databases for 15 years, and to renew that protection every time the database is significantly updated. Effectively, active databases can be protected in perpetuity. The Directive's definition of a database is so broad, it can interpreted as including virtually any kind of organized information.

ICSU and several of its committees jointly established an ad hoc Group on Data and Information (1996). In 2002, this Group responded to a review of the Directive, reiterating ICSU's position that a 'fair use' exemption should be applied to the use of data for scientific research in general and that such an exemption should be mandatory for Member States.

[8] Acknowledging an inherent continuum, ICSU distinguishes between data and information as follows: Data is 'raw' or relatively unprocessed material derived from observations or experiments; Information is data that has been processed and analysed.

ICSU annual report 2002

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Data archiving and access

In May 2002, the Inter-Union Bioinformatics Group [9] (IUBG) released a report regarding data archiving and universal accessibility. The report focuses on the obligations of data generators, the right to fair use of data, standardization issues, and the need for education in biomolecular informatics. The accompanying recommendations outline appropriate actions to be taken by key stakeholders.

- international scientific unions need to identify key archival databases and take an active role in standardization;
- publishers should demand that authors deposit their primary data in a key archival database;
- funding agencies should insist on such deposition and actively support primary data repositories; and
- legislators should ensure that intellectual property right laws allow for the fair use of data for scientific and educational purposes.

Dissemination of biodiversity data to Pacific Island Nations - $90,000

Pacific Science Association (PSA) • USA

The PSA organized several projects to address the fact that scientists and natural resource managers across the Pacific Islands lack access to relevant scientific literature. The initiative developed Pacific-wide species checklists for all fishes, amphibians, reptiles, and mammals (11,287 species), and for two-thirds of vascular plants. This information is widely available in databases at the Bishop Museum, which is linked to the Pacific Basin Information Node (PBIN) and the Pacific Biodiversity Information Forum (PBIF). The PBI is a new initiative of the

PSA's Biodiversity Task Force, which was created to collate parallel efforts into a Pacific-wide biodiversity information system.

PERI builds information infrastructure

An initiative of the International Network for the Availability of Scientific Publications (INASP), the Programme for the Enhancement of Research Information (PERI) supports capacity building in developing and transitional countries by strengthening production of, access to, and dissemination of, information and knowledge. Following a pilot programme in 2001, PERI now has the capacity to provide 120 eligible countries (based on GDP and the Human Development Index) with online access to more than 10,000 journals. Support through training workshops is also provided.

PERI also expanded its African Journals OnLine (AJOL) initiative. AJOL now includes more than 170 journals from 21 African countries, and the initiative is being developed in other regions of the world. The programme also provides training and other support for editors and publishers.

Science at the World Summit on the Information Society

To raise the profile of scientific issues in the information age, ICSU is taking an active role in preparations for the World Summit on the Information Society (WSIS), which will be held in December 2003 (Geneva) and October 2005 (Tunis). In partnership with the International Federation of Information Processing (IFIP), ICSU and its specialist committees participated in the first WSIS preparatory meeting (Geneva; July 2002) by convening a workshop on the role of science in the information society. ICSU is collaborating with other international organizations to ensure that science has a strong voice in the Summit process.

[9] International Union for Pure and Applied Biophysics (IUPAB); International Union of Biochemistry and Molecular Biology (IUBMB); International Union of Crystallography (IUCr); International Union of Pure and Applied Chemistry (IUPAC); Committee on Data for Science and Technology (CODATA)

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capacity building

It is increasingly clear that capacity building must be directed toward both individuals and institutions, encompassing initiatives as diverse as training technicians and informing policy. Improving interaction between scientists (including young scientists) and educators remains a core element, but more effort is required to engage teachers' associations and education policy makers.

Ultimately, the goal of capacity building is to improve research capacity in all disciplines, including engineering and social science. Nations must actively recruit young people to replace retiring scientists, and train those individuals to work in universities, in industry, and in civil society. While many developing countries find it financially challenging to maintain comprehensive programmes, the long-term socio-economic impacts of not developing scientific capacity are serious.

Established in 1993, ICSU's Committee on Capacity Building in Science (CCBS) has focused its efforts on promoting science education (beginning at the primary level) and public understanding of science, as well as reducing the isolation of scientists. In light of the challenges described above, ICSU recognizes the need for a more strategic programme. As the CCBS completes its current mandate and ICSU carries out a Priority Area Assessment on capacity building, consideration will be given to the most appropriate mechanisms to support capacity building in the future.

International conference on science and mathematics education

Organized by the CCBS, this conference held during ICSU's 27th General Assembly focused on educating teachers. Presentations by leading experts and a poster session highlighting more than 30 innovative science education programmes from around the world provided a means of sharing programme experiences. But the real highlights were a 'hands-on' workshop to demonstrate approaches to quality, inquiry-based learning and break-out sessions during which delegates developed Action Plans for specific regions and for the ICSU family as a whole.

This conference built upon previous events hosted by CCBS in Budapest, Hungary (June 1999), Beijing, China (November 2000), and Kuala Lumpur, Malaysia (October 2001). At all three events, delegates emphasized the importance of connecting the science and education communities.

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Latin American Network for Biophysics - $49,600

International Union for Pure and Applied Biophysics (IUPAB) • Argentina • Brazil • Uruguay

Leading up to the 14th International Biophysics Congress (the first such Congress in the Southern Hemisphere), IUPAB collaborated with regional partners to build Latin American biophysics capacity in key areas such as structural biology, nuclear magnetic resonance, genomics, proteomics, and data exchange. Primarily targeting young scientists, the initiative focused on creating opportunities for scientist-to-scientist interaction through courses, workshops, and short research visits. Participants were then expected to disseminate expertise and interact with related disciplines (e.g. biochemistry, molecular biology, and physical sciences) in their own regions.

These new networks, together with advanced information and communication technologies, will help Latin American biophysicists gain access to large laboratories and state-of-the-art equipment, which tend to be sparsely dispersed in the continent. IUPAB plans to replicate this initiative in other regions and strengthen its impact through the participation of other ICSU Unions.

Women in physics - $45,000

International Union of Pure and Applied Physics (IUPAP) • International Astronomical Union (IAU) • International Mathematical Union (IMU) • International Union of Crystallography (IUCr) • International Union of Pure and Applied Chemistry (IUPAC) • China: CAST • Japan • USA

This event, attended by 300 participants from 60 countries, sought to understand the severe, worldwide under-representation of women in physics and develop strategies to increase participation in academia, laboratories, and industry. Attendees formulated and approved a set of resolutions directed toward schools, research institutes, industry, scientific societies, national governments, granting agencies, and the IUPAP. They also identified constructive activities that could be undertaken at the local or national level. IUPAP unanimously approved an abbreviated form of the resolutions at its General Assembly. The resolutions and follow-up activities can be found at the conference website: www.if.ufrgs.br/%7Ebarbosa/women.html

New directions in the teaching and learning of science

International Union of Pure and Applied Chemistry (IUPAC) • International Union of Biochemistry and Molecular Biology (IUBMB) • International Union of Biological Sciences (IUBS) • International Mathematical Union (IMU) • International Union of Pure and Applied Physics (IUPAP)

With the support of ICSU and UNESCO, these Unions met to exchange ideas on problems, practices, and solutions in science education. Two of the primary challenges identified include: a) preparing for the multitude of interests students display, and b) the tendency to compartmentalize information. By focusing on skills, information, and a 'toolkit' of key principles—none of which are discipline specific—educators can foster multidisciplinary awareness. Similarly, a project-oriented, 'research paradigm of teaching' encourages individuals to think like working scientists.

The symposium highlighted the need to foster a 'scientific culture'. Courses should offer enough data and rationalization to allow students to critique science and judge its effects on society. Exploring topics such as genetically modified foods can integrate ecological, biological, economical, ethical and legal components of science and culture.

Participants agreed that science education should: a) build self-confidence in making judgments; b) foster a desire to explore and discover; c) engender an ability to criticize and exercise creativity; and d) instil an urge to communicate.

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looking to the future

ICSU's Interdisciplinary Bodies and Scientific Unions continue to demonstrate innovative approaches to key scientific questions. The following table highlights grant awards for 2003, the outcomes of which will be described in ICSU's next annual report.

Grants Awarded in 2002 for 2003

PROJECT	LEAD APPLICANT	SUPPORTING APPLICANTS	AWARD
Category I (> $50,000)			
Implementation strategy for DIVERSITAS [10]	DIVERSITAS	IGBP, IHDP	100,000
Integrated study of the Asian monsoon system [10]	IGBP	IHDP, WCRP, DIVERSITAS, START	96,000
Comprehensive information on natural gas hydrates	CODATA	IUPAC, IUGG, Russia, Japan	100,000
South African vulnerability initiative [10]	IHDP	IGBP, IGU	90,000
South African savannahs system [10]	SCOPE	United Kingdom, IGBP	80,000
		Total	**$466,000**
Category II (< $50,000)			
Polygenic models for Pleistocene paleosols [10]	IUSS	IGU, INQUA	47,000
Past hydrological events [10]	INQUA	IGU, IAHS	45,000
Biodiversity in soil and sediments and ecosystem functioning [10]	SCOPE	The Netherlands, DIVERSITAS	35,000
International perspective on K-12 education in mathematics [10]	IMU	CCBS	10,000
Promoting open access and the public domain in digital data	CODATA	ICSTI	45,000
Building integrated Earth system science on the land-atmosphere interface	IGBP	WCRP	39,000
Rescue of old analogue magnetograms by conversion to digital images [10]	IUGG	WDC	35,000
Assessing impacts of biodiversity changes	DIVERSITAS	IGBP, IHDP, SCOPE	40,800
Capacity-building workshop: X-ray astronomy – Physics of the magnetosphere [10]	COSPAR	IAU, URSI, China	50,000
		Total	**$346,800**
		Grand total	**$812,800**

[10] Indicates contributions from UNESCO.

reaching out

the importance of partnerships

In order to achieve its goal of building stronger links between science and society, ICSU must foster strategic alliances with many other organizations, both governmental and non-governmental. Increasingly, the Council is interacting with partners such as the International Social Science Council and the World Federation of Engineering Organizations (see Science at the World Summit on Sustainable Development; page 12). In the past year, ICSU further strengthened its collaboration with two major partners, UNESCO and TWAS.

United Nations Educational, Cultural and Scientific Organization (UNESCO)

UNESCO's status as the specialized agency responsible for science within the UN system makes it a natural and important partner for ICSU. For example, the UNESCO grant to the ICSU Grants Programme helps fund projects of interest to both organizations.

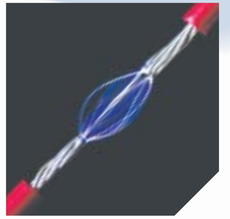
In 2002, ICSU contributed to an important analytical report (prepared by UNESCO) designed to assess follow-up to the highly successful World Conference on Science (WCS), which was itself organized by UNESCO and ICSU (Budapest; 1999). Conclusions of the WCS are also guiding the development of ICSU's strategy for the future, which will aim to transform words into action.

ICSU and several Scientific Unions are also contributing to a UNESCO review to assess the possibility of launching an International Basic Sciences Programme. To quote a well-used phrase, there is no applied science if there is no science to apply. For this reason, ICSU is committed to promoting the development of the basic sciences as a cornerstone for applications.

These are just two examples of ICSU collaboration with the Natural Science Sector of UNESCO. During a meeting in late 2002, ICSU President Jane Lubchenco and UNESCO Director-General Koïchiro Matsuura agreed that while such natural science collaborations should remain the focal point, interactions with other UNESCO sectors would also be very valuable. ICSU is currently working with the Communication and Information Sector in preparation for the World Summit on the Information Society (WSIS) and with the Education Sector on the Forum on Higher Education Research and Knowledge.

Third World Academy of Sciences (TWAS)

Recognizing the need to increase efforts to engage the scientific community in developing countries, ICSU and TWAS signed a Memorandum



of Understanding in 2002, which effectively consolidates the historic collaboration of these two bodies. TWAS was a key partner in organizing the science activities at the World Summit on Sustainable Development (see page 12), and provided major input to the report on Capacity Building for Sustainable Development (see page 13) and is a co-signatory of the Ubuntu Declaration (see page 15). Together with ICSU and the International Initiative on S&T for Sustainablility (ISTS), TWAS is also one of the founding members of the Consortium on Science and Technology for Sustainable Development.

For a number of years, ICSU, TWAS and UNESCO jointly offered two capacity building initiatives: the Fellowship Programme in Basic Sciences and the Lectureship/Professorship Programme in Science and Sustainable Development. ICSU anticipates its relationship with TWAS will become even more important in the years to come. Having had an ex officio seat on the previous Committee on Science and Technology in Developing Countries (COSTED), TWAS is already providing valuable input in the planning process for establishing ICSU Regional Offices (see page 10).

new perspectives on underlying principles

universality of science

Building on the tenets of the UN Universal Declaration of Human Rights (1948), ICSU's principle of the Universality of Science maintains that all scientists have the right to participate in the global scientific endeavour—regardless of race, citizenship, language, political stance, or gender. This includes freedom of association with other scientists, freedom to pursue science and publish the results, freedom to communicate and disseminate scientific information, and freedom to send and receive scientific materials.

The mandate of ICSU's Standing Committee on Freedom in the Conduct of Science (SCFCS) covers four areas: 1) travel restrictions; 2) human rights/imprisonment of scientists; 3) boycotts of scientists or institutions; and 4) access to data. For the most part, its efforts have focused on the first. The Committee has voiced its disapproval when governments blocked travel (e.g. Eastern Block exit permits or the anti-Apartheid ban against South Africa) or quietly interacted on behalf of individual scientists facing persecution.

But today's threats arise from other sources as well. They are as likely to emanate from institutions or individuals seeking political expression as from governments concerned with national security or internationally approved boycotts. The potential for misuse of scientific information is perhaps greater than ever and political conflicts stimulate a growing desire to intervene in protest of human rights abuses. Such an environment can lead to constraints on scientific activity and to attacks on the rights of scientists.

With these concerns pressing to the fore, the SCFCS continues to monitor access to data and information. However, it also recognizes that the complex and technical nature of this issue is better addressed by other ICSU bodies (see Data and Information: page 24).

New threats stimulate broad-scale review

In the wake of terrorist threats and political uncertainty, the SCFCS has recently been called upon to take action against visa restrictions, censorship, and calls for academic boycotts.

In September 2002, ICSU and the SCFCS issued a statement condemning a call for boycotts against Israeli scientists. ICSU strongly asserts that scientific boycotts are contrary to the principle of Universality of Science and rarely influence the politics of a government in the desired sense. Regarding visa restrictions, ICSU Past-President Prof. Yoshikawa wrote a letter to US Secretary of State Colin Powell outlining how tightened security measures would infringe on scientific freedom.

Given the current situation, the SCFCS is undertaking a full review of the principle of the Universality of Science. Seeking input from ICSU members, the Committee will draft new guidelines that provide a more effective means of counteracting modern threats to freedom. In addition, special efforts will be made to raise awareness of the principle.

ethics of science

In relation to the ethics of science, ICSU has concerned itself with two issues: a) ethical aspects of scientific practice and b) ethical responsibility of science and scientists in the broader social context. To consider these topics more formally, ICSU established the Scientific Committee on Responsibility and Ethics in Science (SCRES) in 1996.

The Committee conducted a meta-analysis of national codes of practice for scientists [11], which was presented at the 27th General Assembly. In addition, SCRES and the SCFCS held a joint meeting to identify new areas that require careful consideration, including the Internet and quality of information; the multiple, often conflicting, roles of scientists; and developing guidelines to help decision makers deal with science more effectively.

Without question, the new social context raises new issues for ethics in science. Finance and commercialization are having a major impact on the 'purity' of science. The shift from physical to biological sciences and increased cross-disciplinary research require new ethical approaches. Also, there is increased recognition that while governments have the right to regulate the practice of science (e.g. in relation to human cloning), science should not be held hostage to politics.

It is clear that ethics must be considered in the global context and that the move toward 'science and society' requires interaction with many more stakeholders. Having reached the end of its initial mandate, SCRES recommended that ICSU establish an ad hoc committee to carry out a review of ethics and science to better define ICSU's role and responsibilities in this area.

China hosts seminar on ethics in science and technology

Many countries are demonstrating keen interest in ethics and in the role of scientists in society. Over the past year, SCRES activities had perhaps their greatest impact in China, where a member of the Committee collaborated with the China Committee for ICSU to organize a national seminar (Beijing; July 2002).

With a particular focus on the impacts of science on society, participants produced a Statement that reflects the social responsibility of scientists. Recognizing that new fields of research and advanced technologies raise new ethical issues, the Statement calls upon all scientists to ensure that scientific results are properly employed for the benefit of society and to minimize negative impacts caused by misuse of results.

[11] The Rights and Responsibilities of Science and Society: Defining the future role of ICSU.

secretariat

secretariat expansion increases interaction and visibility

In order to address gaps identified by the report of the ICSU Assessment Panel (1996), ICSU created two new permanent functions within the Secretariat: Information Technology/Webmaster and Science Communication Officer. At the same time, the Council responded to the immediate needs of carrying out strategy development initiatives and facilitating ICSU involvement in international activities by hiring specialists on short-term contracts.

Information Technology/Webmaster

Mustapha Mokrane, MSc

In-house information technology (IT) expertise is bringing ICSU into the modern age. In addition to creating and maintaining an up-to-date IT infrastructure, Mustapha is steadily improving the architecture and operation of the ICSU website. The site is enhancing communication within the ICSU community and has become an effective tool for gathering information for activities such as the Priority Area Assessment on the Environment and its Relation to Sustainable Development. It will be fully re-launched in late 2003. Mustapha acquired his IT skills while pursuing graduate studies in developmental biology and bioinformatics; he plans to complete his PhD in this field in the near future.

Science Communication Officer

Marilyn Smith, MA (Journalism)

ICSU realized immediate results from its decision to hire a communication officer. Thanks to the excellent preparations carried out by consultants, the 27th General Assembly received daily coverage in Brazil's largest newspaper

(*Folha de Sao Paulo*) and good follow-up exposure in various science magazines. Drawing on expertise in journalism and interpersonal/organizational communications, Marilyn is establishing processes and procedures that will enhance both internal and external communications. The new ICSU logo and fresh approach to the annual report reflect ICSU's commitment to elevating the quantity and quality of its interactions with all stakeholders.

Science Officer for the Environment and Sustainable Development

Leah Goldfarb, PhD

Having joined ICSU in April 2002, Leah is responsible for the environment portfolio. She played a key role in ICSU activities associated with the World Summit on Sustainable Development and participated as a delegate of the S&T community. In addition to acting as the point of contact for ICSU's global environmental change programmes, Leah is coordinating the Priority Area Assessment on the Environment and its Relation to Sustainable Development. Leah trained as an atmospheric chemist at the University of Colorado, where she held a NASA Global Change Fellowship.

secretariat

secretariat staff - 2002

Executive

Thomas Rosswall	Executive Director
Carthage Smith	Deputy Executive Director
Tish Bahmani Fard	Assistant Executive Director

Environment and Sustainable Development

Leah Goldfarb	Science Officer
Gisbert Glaser	Senior Advisor

Scientific Planning and Review

Sachiko Ishizaka	Science Officer

Communication and Information Technology

Nathalie Bonneu	Database and Website
Mustapha Mokrane	IT Network / Webmaster
Marilyn Smith	Science Communication Officer

Administrative Staff

Maureen Brennan	Membership
Eric Leparmentier	General Services
Elisabeth Merle	Environment and Sustainable Development
Natacha de Marchi	Accountant
Rohini Rao	Scientific Planning and Review

Special Assistants

Leszek Bialy	World Summit on Sustainable Development
Katie Hamilton	World Summit on Sustainable Development

financial summary

The General Assembly approves draft budgetary outlines for each ensuing triennium upon proposals received from the Executive Board, which is charged with finalizing the annual budgets. The Executive Board is also responsible for the examination and approval of the audited accounts of ICSU.

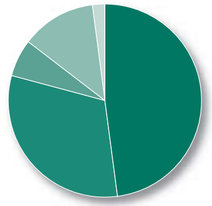
Statement of income and expenditure

International Council for Science (ICSU)
For the period 1 January 2002 to 31 December 2002

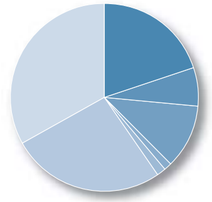
INCOME	€ EUROS	EXPENDITURE	€ EUROS
Membership dues		Policy committees	137,352
- National and Union Members	1,949,509	Joint Initiatives	551,253
- Scientific Associates	14,631	Grant programme	791,661
Membership dues for WCRP	239,472	New initiatives	859,164
Grants from		Governance meetings	163,981
- UNESCO	353,150	Policy and administrative support	1,296,307
- US National Academy of Sciences	412,681	Investment charges	3,859
- US National Science Foundation	234,088	**Total expenditure**	**3,803,577**
- Packard Foundation	498,951		
- Other foundations	65,585		
Other income	47,689		
Investment income	160,977		
Total income	**3,976,732**		
		EXCESS OF INCOME OVER EXPENDITURE	173,155

financial summary

Assets



Liabilities



Balance sheet

International Council for Science (ICSU)
For the period 1 January 2002 to 31 December 2002

ASSETS	€ EUROS
Bank and cash balances	2,306,656
Marketable securities	1,594,935
UNESCO subvention	353,150
Sundry debtors and prepayments	649,238
Fixed assets	108,237
Total assets	**5,012,216**
LIABILITIES	**€ EUROS**
Interdisciplinary Bodies	938,422
Other activities	385,928
Sundry creditors and accruals	599,542
New initiatives fund	60,540
Provision expenses	75,675
General fund	1,215,004
Mandatory reserve	1,563,950
Total liabilities	**4,839,061**
NET RESULT	**173,155**

about ICSU...

Founded in 1931, the International Council for Science (ICSU) is a non-governmental organization representing a global membership that includes both national scientific bodies (101 members) and international scientific unions (27 members).

Through this international network, ICSU coordinates interdisciplinary research to address major issues of relevance to both science and society. In addition, the Council actively defends freedom in the conduct of science, promotes equitable access to scientific data and information, and facilitates science education and capacity building.

national members

ICSU's National Members provide input, from a national, multidisciplinary perspective, on priority areas for future ICSU activities. They also play an important role in facilitating links with national governments and science agencies. The majority of ICSU National Members are scientific academies, although some are national funding agencies or other nationally representative science bodies. The following list includes full Members, Associates *, and Observers **.

Argentina
Armenia
Australia
Austria
Azerbaijan
Bangladesh *
Belarus
Belgium
Bolivia
Brazil
Bulgaria
Burkina Faso *
Cameroon *
Canada
Caribbean *
Chile
China: CAST
China: Taipei
Colombia
Costa Rica
Côte d'Ivoire *
Croatia
Cuba
Czech Republic
Denmark
Egypt
Estonia
Finland
France
Georgia *
Germany
Ghana
Greece
Guatemala *
Hungary
India
Indonesia **
Iran **
Iraq
Ireland
Israel
Italy
Jamaica **
Japan
Jordan *
Kazakhstan *
Kenya **
Korea (DPR) **
Korea, Rep. of
Latvia
Lebanon
Lithuania
Macedonia
Madagascar *
Malaysia
Mexico
Moldova **
Monaco
Mongolia **
Morocco
Mozambique *
Nepal
Netherlands
New Zealand
Nigeria **
Norway
Pakistan **
Panama **
Peru
Philippines **
Poland
Portugal
Romania
Russia
Saudi Arabia
Senegal *
Seychelles *
Singapore
Slovak Republic
South Africa
Spain
Sri Lanka
Sudan **
Swaziland **
Sweden
Switzerland
Tajikistan
Thailand
Togo **
Tunisia *
Turkey
Uganda *
Ukraine **
United Kingdom
USA
Uruguay **
Uzebekistan **
Vatican City State
Venezuela
Vietnam **
Zimbabwe

interdisciplinary bodies

The role of Interdisciplinary Bodies is described on page 18. Several † are jointly sponsored by ICSU and other international organizations.

Advisory Committee on Genetic Experimentation and Biotechnology (ACOGEB) [12]
Committee on Data for Science and Technology (CODATA)
Committee on Disaster Reduction (CDR)
Committee on Sciences for Food Security (CSFS) [12]
Committee on Space Research (COSPAR)
DIVERSITAS: An International Programme of Biodiversity Science
Federation of Astronomical and Geophysical Data Analysis Services (FAGS)
Global Climate Observing System (GCOS)†
Global Ocean Observing System (GOOS)†
Global Terrestrial Observing System (GTOS)†
International Geosphere-Biosphere Programme (IGBP)
International Human Dimensions Programme on Global Environmental Change (IHDP)†
Panel on World Data Centres (WDC)
Scientific Committee on Antarctic Research (SCAR)
Scientific Committee on Frequency Allocation for Radio Astronomy and Space Science (IUCAF)
Scientific Committee on Oceanic Research (SCOR)
Scientific Committee on Problems of the Environment (SCOPE)
Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)
Scientific Committee on the Lithosphere (SCL)
Scientific Committee on Water Research (SCOWAR) [12]
World Climate Research Programme (WCRP)†

[12] As per recommendations outlined in this report, three Interdisciplinary Bodies were disbanded in 2002.

scientific union members

ICSU relies on its Union Members to provide scientific expertise and input, from an international, disciplinary perspective, on scientific priority areas for future ICSU activities. They play a crucial role as representatives of the wide scientific community.

International Union of Anthropological and Ethnological Sciences (IUAES)
International Astronomical Union (IAU)
International Union of Biochemistry and Molecular Biology (IUBMB)
International Union of Biological Sciences (IUBS)
International Union for Pure and Applied Biophysics (IUPAB)
International Brain Research Organization (IBRO)
International Union of Pure and Applied Chemistry (IUPAC)
International Union of Crystallography (IUCr)
International Union of Food Science and Technology (IUFoST)
International Union of Geodesy and Geophysics (IUGG)
International Geographical Union (IGU)
International Union of Geological Sciences (IUGS)
International Union of the History and Philosophy of Science (IUHPS)
International Union of Immunological Societies (IUIS)
International Mathematical Union (IMU)
International Union of Theoretical and Applied Mechanics (IUTAM)
International Union of Microbiological Societies (IUMS)
International Union of Nutritional Sciences (IUNS)
International Union of Pharmacology (IUPHAR)
International Society for Photogrammetry and Remote Sensing (ISPRS)
International Union for Physical and Engineering Sciences in Medicine (IUPESM)
International Union of Pure and Applied Physics (IUPAP)
International Union of Physiological Sciences (IUPS)
International Union of Psychological Science (IUPsyS)
Union Radio-Scientifique Internationale (URSI)
International Union of Soil Science (IUSS)
International Union of Toxicology (IUTOX)

scientific associates

Either international or regional scientific organizations, ICSU's Scientific Associates bring their own particular perspectives to relevant ICSU discussions and activities. For example, the Third World Academy of Sciences is a key partner in defining ICSU's strategy for developing countries.

Academia de Ciencias de America Latina (ACAL)
International Institute for Applied Systems Analysis (IIASA)
Federation of Asian Scientific Academies and Societies (FASAS)
International Cartographic Association (ICA)
International Cell Research Organization (ICRO)
International Federation of Societies for Microscopy (IFSM)
International Society of Endocrinology (ISE)
Engineering Committee on Oceanic Resources (ECOR)
International Union of Forestry Research Organizations (IUFRO)
International Foundation for Science (IFS)
International Association of Hydraulic Engineering and Research (IAHR)
International Federation for Information Processing (IFIP)
International Council for Laboratory Animal Science (ICLAS)
International Federation of Library Associations and Institutions (IFLA)
Pacific Science Association (PSA)
International Union for Quaternary Research (INQUA)
International Radiation Protection Association (IRPA)
International Federation of Science Editors (IFSE)
International Council for Scientific and Technical Information (ICSTI)
International Federation of Surveyors (FIG)
Third World Academy of Science (TWAS)
International Union for Vacuum Science, Technique and Applications (IUVSTA)
International Water Association (IWA)

acronyms

AIST	National Institute of Advanced Industrial Science and Technology (Japan)
CCBS	Committee on Capacity Building in Science
CG	Committee on Governance
CODATA	Committee on Data for Science and Technology
COSPAR	Committee on Space Research
COSTED	Committee on Science and Technology in Developing Countries
CSD	UN Commission on Sustainable Development
CSPR	Committee on Scientific Planning and Review
DIVERSITAS	an international programme of biodiversity science
ESSP	Earth System Science Partnership
GA	General Assembly
GDP	Gross Domestic Product
IAHS	International Association of Hydrological Sciences
IAP	InterAcademy Panel on International Issues
IAU	International Astronomical Union
ICSTI	International Council for Scientific and Technical Information
IGBP	International Geosphere-Biosphere Programme
IGU	International Geographical Union
IHDP	International Human Dimensions Programme on Global Environmental Change
IMU	International Mathematical Union
INQUA	International Union for Quaternary Research
ISSC	International Social Science Council
ISTS	International Initiative on Science and Technology for Sustainability
IUGG	International Union of Geodesy and Geophysics
IUPAC	International Union of Pure and Applied Chemistry
MA	Millennium Ecosystem Assessment
NGO	Non-governmental Organization
PAA	Priority Area Assessment
PrepCom	UN Preparatory Committee
S&T	Science and Technology
SCFCS	Standing Committee on Freedom in the Conduct of Science
SCOPE	Scientific Committee on Problems of the Environment
SCRES	Scientific Committee on Responsibility and Ethics in Science
SPRU	Science and Technology Policy Research (University of Sussex)
START	Global Change SysTem for Analysis, Research and Training
TWAS	Third World Academy of Sciences
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
URSI	Union Radio-Scientifique Internationale
WCRP	World Climate Research Programme
WDC	World Data Centres
WFEO	World Federation of Engineering Organizations
WSIS	World Summit on the Information Society
WSSD	World Summit on Sustainable Development