

# Strategic Plan 2006-2011



Final Draft for  
General Assembly,  
October 2005

Strengthening international science  
for the benefit of society



**ICSU**

International Council for Science

# About ICSU

Founded in 1931, the International Council for Science (ICSU; the name was changed from the International Council of Scientific Unions in 1998, but the acronym has been maintained) is a non-governmental organization representing a global membership that includes both National Scientific Bodies (103 Members, October 2005) and International Scientific Unions (27 Members, October 2005). Through this international network, ICSU plans and coordinates interdisciplinary research to address major issues of relevance to both science and society. To this end, a number of Interdisciplinary Bodies have been established to address major interdisciplinary and international activities relevant to the mandate of ICSU. In addition, the Council actively advocates for freedom in the conduct of science, promotes equitable access to scientific data and information, and facilitates science education and capacity building.

The Council acts as a focus for the exchange of ideas, the communication of scientific information and the development of scientific standards. The ICSU community<sup>1</sup> organizes scientific conferences, congresses and symposia all around the world – in excess of 600 per year – and also produce a wide range of newsletters, handbooks, learned journals and proceedings. ICSU also helps create international and regional networks of scientists with similar interests and maintains close working relationships with a number of intergovernmental and non-governmental organizations.

Because of its broad contact with thousands of scientists worldwide, ICSU is increasingly called upon to speak on behalf of the global scientific community and to act as an advisor in matters ranging from the environment to scientific ethics.

One of the strengths of ICSU is its governance structure, which has developed over time to ensure transparency and accountability, with a minimum of bureaucracy. The ICSU Secretariat is based in Paris, where a small professional team (12 people in 2005), ensures its day to day planning and operations, under the guidance of an Executive Board. The Board is made up of 14 scientists, representing different countries and disciplines, elected by the General Assembly of all Members, which is convened every three years. A small number of standing Policy Committees assist the Executive Board in its work. ICSU's activities depend to a large extent on the voluntary contributions of scientists from around the world who are brought together in these Policy Committees or in various *ad hoc* expert groups

## **Footnote:**

*1 The ICSU community encompasses the ICSU National and Union Members, ICSU Associates, Interdisciplinary Bodies and Joint Initiatives. The National and Union Members as well as the Associates are listed at the back of the document and the Interdisciplinary Bodies and Joint Initiatives in Box 1.*

# **Strengthening International Science for the Benefit of Society**

A Strategic Plan for the  
International Council for Science  
2006-2011

# Foreword

An external assessment of ICSU, commissioned by its members, was completed in 1996 (ICSU, 1996). This assessment provided critical guidance that significantly altered the way ICSU operates. It advised that the Council has to plan ahead more, define longer-term priorities, and re-direct or disband activities that are of lesser priority or ineffective. In short, it concluded that ICSU needs to identify and build on its strengths in developing a clearly articulated strategy.

A key outcome of the external assessment was the establishment of a new Committee on Scientific Planning and Review (CSPR). Following approval of its preliminary plans by the ICSU General Assembly in 2002, this committee has taken the lead in developing the ICSU strategy: conducting a broad foresight consultation and managing three ambitious independent assessments of specific scientific areas. These priority area assessments considered both existing activities and future needs. The CSPR efforts have been complemented by several other strategic reviews and planning activities carried out directly under the aegis of the Executive Board. A critical aspect of this overall planning exercise has been close consultation with the entire ICSU membership.

The present document is the culmination of these extensive consultation and planning activities. It focuses on presenting the strategic framework in which ICSU will operate. This is defined firstly by the ICSU mission and then by specific goals relating to particular priority themes. Finally, actions are specified within this framework. These actions are what is currently envisaged over the next six years but this strategic plan should be considered as a 'living' document and other actions will necessarily evolve out of these initial activities and new priorities will arise and need to be considered accordingly.

Many leading scientists from all over the world have generously and freely contributed to the development of this plan and it cannot possibly do full justice to the wealth of knowledge and ideas that were provided. ICSU remains indebted and the best response that we can give is to ensure that the strategy itself is implemented to the best of our ability and the benefit of both science and society.

### **STRATEGIC PLANNING ACTIVITIES 2002-2005**

- Report of the CSPR Panel for Review of the Committee on Science and Technology in Developing Countries (ICSU 2002a)
- Identification of Key Emerging Issues in Science and Society: an International Perspective on National Foresight Studies (ICSU 2002b)
- Foresight Analysis: Report of the CSPR (ICSU 2004a)
- CSPR Priority Area Assessments
  - Environment and its Relation to Sustainable Development (ICSU 2003a)
  - Scientific Data and Information (ICSU 2004c)
  - Capacity Building in Science (ICSU 2005b)
- Science and Society: Rights and Responsibilities – a Strategic Review (ICSU 2005a)
- Universality of Science in a Changing World (position statement; ICSU 2004g)
- Harnessing Science, Technology and Innovation for Sustainable Development (ICSU-ISTS-TWAS 2005)
- Energy and Sustainable Societies (ICSU 2004b)
- A Framework for the International Polar Year 2007-2008 (ICSU 2004d)
- The Value of Basic Research (position statement; ICSU 2004f)
- Review of Membership and Structure (ICSU, 2005c)

Each of these activities has resulted in its own published report or position statement. All reports are available at [www.icsu.org](http://www.icsu.org) and include many important and detailed recommendations that are not reproduced *per se* in the current overall strategic plan.

# List of Contents

Foreword	4
List of Contents	6
Executive Summary	9
Summary of Major Strategic Activities, 2006-2011	15

## Part I: A Strong Foundation in a Changing World .. 17

1. The Evolving Context for International Science	18
1.1 The practice of international science	18
1.2 The societal context	19
2. ICSU Past and Present	21
2.1 International research collaboration	21
2.1.1 The International Geophysical Year (IGY, 1957-1958)	21
2.1.2 The International Biological Programme (1964-1974)	23
2.1.3 The global change programmes (1980 – present)	23
2.2 An international voice for science in a policy context	23
2.3 Universality of Science	24
2.4 From international to national and <i>vice versa</i>	24

## Part II: Building for the Future ..... 27

3. Future Vision and the Role for ICSU	28
3.1 Vision	28
3.2 Mission	28
4. Addressing Major Issues: Planning and Coordinating Research	29
4.1 Environment	29
4.1.1 The International Polar Year (IPY, 2007-2008)	31
4.1.2 Natural and human-induced hazards	31
4.2 Sustainable development	32
4.2.1 Sustainable Energy	33
4.3 Human health	34
4.4 Exploring new horizons	35
5. Facilitating Interaction amongst Scientists	36
5.1 Reaching out to all countries	36
5.2 Building scientific capacity	38
5.3 Bringing disciplines together	39
5.3.1 Consultation, foresight and planning	39
5.3.2 Seeding new initiatives	39

6.	Promoting Participation and Universality	41
6.1	Universality of Science	41
6.2	A universal public domain for data and information	42
7.	Stimulating Dialogue and Shared Understanding	44
7.1	Science and policy	44
7.1.1	Sustainable development: Good governance needs good science.	44
7.1.2	The Information Society	46
7.2	Science and society	46
<b>Part III: Strengthening the Structures</b>		<b>49</b>
8.	Delivering the Strategy: Structure and Funding	50
8.1	Members	50
8.1.1	National Members	50
8.1.2	International Scientific Unions	51
8.2	Interdisciplinary Bodies	52
8.3	Governance and the Secretariat	53
8.4	Strategic partners	54
8.4.1	The UN system and Intergovernmental Organizations	54
8.4.2	International non-governmental science and technology organizations	56
8.5	More flexible implementation mechanisms and quality assurance	58
8.6	Funding	59
	References	61
	ICSU Membership	62
	ICSU Committee on Scientific Planning and Review, 2003-2005	64
	ICSU Secretariat	64
	ICSU Executive Board	65
	List of Acronyms	66



# Executive Summary

# Executive Summary



## ICSU, SCIENCE AND SOCIETY

*“Since its establishment in 1931 the Council has strived to ensure that the best scientific knowledge is made available to policy makers.”*

ICSU’s mission is to strengthen international science for the benefit of society. Its broad membership includes 27 International Scientific Unions, representing different scientific disciplines, and over a hundred National Scientific Organizations, representing multiple disciplines within individual countries. Hundreds of thousands of scientists, be they anthropologists working with local communities in Senegal or chemists working on the latest applications of nanotechnology in California, are affiliated with ICSU via their professional organizations. Because of this, ICSU is uniquely able to bring together the intellectual resources of the international scientific community to explore complex issues at the interface between different disciplines.

Since its establishment in 1931 the Council has strived to ensure that the best scientific knowledge is made available to policy makers and has taken the lead in exploring areas such as global environmental change which are critically important to society as a whole. This has often necessitated the establishment of Interdisciplinary Bodies, which provide a focus for scientists to work together internationally in key priority areas. Many of these bodies are co-sponsored by various UN agencies and non-governmental partners. In addition to planning and coordinating research, they help ICSU to provide independent scientific input to various inter-governmental fora.

The Principle of the Universality of Science has been embedded in the statutes of ICSU from its very early days. All Members agree to adhere to this Principle and it provides a model of equity and non-discrimination across the international science community. Open communication and exchange have been critical for the progress of science and the Principle is as pertinent today as at any time during the past.

In developing an ICSU strategy for the next six years it has been important to build on the organization’s established structure and values. At the same time, it is recognized that both science and society are changing rapidly. The landscape for international science is very different today from that which existed even a decade ago. ICSU needs to situate itself within this continuously evolving landscape in order to define its future priorities.

### THE ICSU VISION

The long-term ICSU vision is for a world where science is used for the benefit of all, excellence in science is valued and scientific knowledge is effectively linked to policy-making. In such a world, universal and equitable access to high quality scientific data and information is a reality and all countries have the scientific capacity to use these and to contribute to generating the new knowledge that is necessary to establish their own development pathways in a sustainable manner.

Science and its products are changing the world that we live in. As the industrial societies of an earlier era evolve into today’s high-tech. knowledge societies, science and technology are primary drivers of innovation, social welfare,

*“The ICSU strategy for 2006-2012 brings together scientific advances and societal needs and identifies priority areas where ICSU is uniquely equipped to make a significant contribution.”*

increased productivity and wealth creation. From the sequencing of the human genome, through to the quest for the elusive Higgs boson, science is opening up previously unimagined possibilities. At the same time, some advances, particularly in the life sciences, are raising fundamental questions about the very nature of life itself with significant implications for the values and beliefs that are held by large sectors of society. A degree of uncertainty and risk is inherent in the scientific research and development process and new cooperative understandings between science and society are now required to ensure that scientific discovery is valued and that scientific knowledge is used for the maximum benefit of society.

At the UN Millennium Development Summit in 2000, Heads of State from all over the world gave a new commitment to working together to build a more equitable, healthy and prosperous international community. Eight specific Millennium Development Goals were defined and science has an important role to play in addressing each of these. In 2002, at the request of the UN, ICSU played a prominent role in the World Summit on Sustainable Development. The Summit emphasized the concerted international efforts required to overcome inequalities between countries and ensure the future of the planet as a whole. It was recognized that all sectors of society need to work more closely together and that scientific knowledge has a critical role to play in providing solutions to the challenges ahead.

The ICSU strategy for 2006-2011 brings together scientific advances and societal needs and identifies priority areas where ICSU is uniquely equipped to make a significant contribution. It is science led but embedded in a larger vision where excellence in science is linked to policy-making and socio-economic development in all countries across the world. The plan can be distilled down to a number of goals and specific actions. These goals lay down the overall framework in which ICSU will work over the coming years. The specific actions include re-structuring and re-focusing of existing activities as well as the development of several major new initiatives. It is an ambitious plan but this ambition is commensurate with the importance of international, interdisciplinary science for the progress of society in the 21st Century.

## INTERNATIONAL RESEARCH COLLABORATION

*“ICSU has an important role to play in monitoring developments in emerging scientific areas.”*

### GOALS

**ENVIRONMENT** – to ensure a more coordinated and inclusive approach to research on the environment such that the necessary high-quality scientific evidence is made available to policy-makers; and, to develop new international programmes in key areas.

**SUSTAINABLE DEVELOPMENT** – to build innovative new approaches for harnessing science for sustainable development, whilst continuing to promote research on specific sectoral issues, such as energy.

**HUMAN HEALTH** – to ensure that health considerations are duly taken into account in the planning and execution of future activities by building on the relevant strengths of Scientific Unions and Interdisciplinary Bodies.

**NEW SCIENTIFIC HORIZONS** – to monitor emerging international research issues of importance to science and society and to develop mechanisms to ensure that these can be addressed in a timely manner by the relevant members of the ICSU community.

**INTERDISCIPLINARITY** – to ensure that the necessary disciplinary perspectives are considered in developing and implementing ICSU’s overall strategy and that effective mechanisms are in place to facilitate the cross-fertilization of ideas from different scientific perspectives.

*“Several major new environment initiatives will be launched over the next 6 years.”*

The International Geophysical Year in 1957-1958, sponsored jointly by ICSU and the World Meteorological Organization, was an unprecedented initiative involving thousands of scientists across more than 60 countries that heralded a new era in collaborative earth sciences research. It provided major new scientific insights, influenced inter-governmental policies and provided a prototype for subsequent international research planning and coordination efforts by ICSU.

Some thirty years after the Geophysical Year, ICSU played a central role in the establishment of the World Climate Research Programme, the first of four major international research programmes addressing various aspects of global environmental change. As these programmes have developed, ICSU has become actively involved in strengthening the critical links between research, environmental monitoring, integrated scientific assessments and policy making. The Council has worked closely with various UN agencies to establish coordinated global observation systems and is actively involved in the planning for a new Global Earth Observation System of Systems. The ICSU research programmes provide much of the scientific underpinning for assessments, such as those conducted by the Intergovernmental Panel on Climate Change and the Millennium Ecosystem Assessment.

ICSU today has a rich heritage in environmental research and a number of established Interdisciplinary Bodies, which provide the foundation for new initiatives over the next six years. As part of the strategic planning process, all of the existing Interdisciplinary Bodies have been assessed in the context of future needs and priorities. This has led to a number of specific recommendations on restructuring, including the closure, or devolution of responsibility, of several bodies and more detailed scientific reviews for others. This process of restructuring has already started, with much of the impetus coming from the bodies themselves, and it will continue to be implemented by ICSU over the next few years.

In addition to this refocusing of existing activities, several major new environmental initiatives will be launched over the next six years. Principal amongst these are the International Polar Year, 2007-2008 and a new programme on Natural and Human-induced Hazards. Both of these programmes will build on ICSU's historical interests and activities in these areas but will, from the outset, incorporate environmental, social and economic sciences in a more integrated approach. This theme of expanded interdisciplinarity also underpins the planning of research activities for Sustainable Development, including a new International Science Panel on Renewable Energy. Following up on the commitments given at the World Summit on Sustainable Development, ICSU will continue its efforts to work with other key sectors of society to define a research agenda to produce the new knowledge that is required to inform sustainable development practices and policies.

*“Human health is inextricably linked to the health of the planet and environmental change.”*

Human health is inextricably linked to the health of the planet and environmental change. An integrated approach to natural disasters or sustainable development more broadly, is difficult to envisage without inclusion of human health issues. Thus, in many ways it is a natural progression for ICSU to expand into the area of international health – an area in which many of its Member Unions are already active. An increased focus on health over the coming years will necessitate new partnerships with the clinical research community.

An important question for ICSU in developing its strategy was how far it should expand beyond its historical strengths in environmental research and develop international, interdisciplinary activities in other areas? For example, the life sciences, from molecular biology through to systems biology, are perhaps the most rapidly expanding field of science. It is predicted that nanosciences and nanotechnology will transform the world around us over the next decades. Many International Scientific Unions are already active in each of these areas, albeit largely from their own disciplinary perspective. ICSU itself has an important role to play in monitoring developments in emerging scientific areas and in

encouraging its Members to work together to develop novel international, interdisciplinary activities that will complement existing research. A particular focus is on enabling scientists from all countries to participate in emerging scientific areas.

## SCIENCE FOR POLICY

*“ICSU is now involved in selected follow-up activities to ensure that scientific knowledge is integrated into policy initiatives for Sustainable Development.”*

### GOALS

**SCIENCE AND POLICY** - to ensure that science is integrated into policy development at the international and national level and that relevant policies take into account both scientific knowledge and the needs of science.

**SCIENCE AND SOCIETY** - to improve mutual understanding between science and other sectors of society, with a particular focus on ICSU’s scientific priorities.

As follow up to the World Summit on Sustainable Development, ICSU is now involved in selected follow-up activities to ensure that scientific knowledge is integrated into policy initiatives for sustainable development. This includes a formal role in the UN Commission on Sustainable Development, which convenes annually and brings together governments and other key stakeholders from society. The Commission provides an important forum for developing the multi-stakeholder dialogue that is required to define the research priorities and needs for sustainable development.

In developing all its new initiatives, there will be a need for ICSU to ensure political support at the international level. This will involve close cooperation with the relevant parts of the UN system and other intergovernmental organizations. Success will also depend on the mobilization of National Members to engage policy makers and research funding agencies in their own countries.

The interface between science and society is a major concern to policy-makers and scientists alike. As well as producing enormous benefits, scientific knowledge can, knowingly or unknowingly, be used to reinforce inequalities in society or to cause serious harm to people or the environment. The relationship between science and society will centrally influence the directions and practices of science in the years ahead. In the context of re-structuring its existing activities and developing new initiatives, ICSU is committed to ensuring improved dialogue and mutual understanding between science and society.

## THE UNIVERSALITY OF SCIENCE

### GOALS

**UNIVERSALITY PRINCIPLE** - to raise awareness and promote responsibility for the Principle of Universality of Science within and beyond the ICSU community.

**DATA AND INFORMATION** – to facilitate a coordinated global approach to scientific data and information that ensures equitable access to quality data and information for research, education and informed decision-making.

**REACHING OUT TO ALL COUNTRIES** - to ensure the full participation of scientists from developing and transition countries in international science, including both the planning and implementation of the ICSU strategy and activities of the ICSU community.

**ON SCIENTIFIC CAPACITY** – to ensure that capacity building, which is integral to all aspects of ICSU’s mission, is given the necessary attention in all the activities of the ICSU community and in relevant policy fora.

*“The essential elements of the Principle of the Universality of Science are non-discrimination and equity.”*

The essential elements of the Principle of the Universality of Science, as defined in ICSU's statute 5, are non-discrimination and equity. Changes in international relations, including the globalization of trade, the use of new information and communication technologies and fears over international terrorism are posing new challenges to universality. The ICSU Committee on the Freedom in the Conduct of Science will be restructured in 2006 and given an expanded remit. It will have a critical role in working more closely with ICSU Members to safeguard the Principle of Universality.

Access to data and information is critical to the whole scientific enterprise. In particular, it is a rate-limiting step for scientific development in many poorer countries. It is also an area where concerns about national security and an increased tendency towards commercialization are leading to the introduction of tighter restrictions. Over the next six years, ICSU will engage its Members and key partners in the development of an international framework for the production, management and dissemination/access of scientific data and information. This will entail both the transition of existing structures and mechanisms and the coordinated introduction of new developments and approaches. The Council will also implement mechanisms to ensure that science is represented in international policy discussions that might have an impact on access to data and information (and other scientific goods) for research and education purposes.

*“Regional Offices will ensure that the ICSU strategy and activities are responsive to the needs of developing countries.”*

The most significant structural change that will take place within ICSU over the next few years is the establishment of Regional Offices. These will facilitate the increased participation of scientists from developing countries in the activities of ICSU and its Members. They will also ensure that the ICSU strategy and activities are responsive to the needs of developing countries. The first Regional Office was established in 2005 and is based in Pretoria, South Africa. Negotiations with potential hosts countries in the Arab Region, Asia and the Pacific, and Latin America and the Caribbean are expected to come to fruition in 2006. Renewed efforts will also be made to reach out to other countries whose scientific structures have been affected by political change or conflict, including the Commonwealth of Independent States.

## CONCLUSION

The needs and opportunities for international interdisciplinary science are greater at the turn of the 21st century than at any previous period in history. Strengthening international science for the benefit of society is not just a desirable aim but an increasingly urgent necessity. ICSU has an exciting six years ahead. New partnerships and new funding will be needed, but the mobilization of the intellectual resources of scientists from all over the world that has characterized the development of this strategic plan will undoubtedly be the critical factor in ensuring its implementation.

# Summary of Major Strategic Activities, 2006-2011

## PLANNING AND COORDINATING RESEARCH

ACTIVITY	STATUS, JULY 2005	ACTIONS, 2006-11
Global Environmental Change (GEC)	Priority Area Assessment (2003). Review of IHDP (2005)	Performance reviews of three remaining GEC programmes
International Polar Year, 2007-2008	A Framework for the IPY published	Programme implementation
Natural and human-induced hazards	Started scoping in 2005	Develop potential new programme
Millennium Assessment follow-up	Assessment completed in 2005	Develop new research and methodologies.
Energy	Started planning in 2005	Establish an International Science Panel
Human Health	Planning by Unions and Interdisciplinary Bodies	Develop potential new programme
New scientific horizons	Foresight survey completed 2004	Facilitate joint activities by Members and conduct second Foresight exercise

## SCIENCE FOR POLICY ACTIVITIES

ACTIVITY	STATUS, JULY 2005	ACTIONS, 2006-11
Global Earth Observation Systems	Earth Observation Summit process 2003-2005	Advise on implementation of new Global Earth Observation System of Systems
Sustainable Development	World Summit on Sustainable Development (WSSD) held in 2002	Contribute to selected WSSD follow up activities, re. science for policy
Commission on Sustainable Development (CSD)	ICSU has formal role in providing input to CSD	Develop multi-stakeholder science agenda. Provide scientific input on specific topics, including energy and climate change (2006-2007)
Millennium Ecosystem Assessment	Assessment completed in 2005	Facilitate interaction among sub-global assessments. Strengthen science in international conventions

## STRENGTHENING THE UNIVERSALITY OF SCIENCE

ACTIVITY	STATUS, JULY 2005	ACTIONS, 2006-11
Universality Principle	Review completed 2005	Establish new Universality of Science Committee
Data and Information	Priority Area Assessment complete 2004	Restructure ICSU activities and develop coordinated international Framework
Intellectual property and copyright	Limited previous activity	Develop mechanisms for effective interaction with WIPO and WTO
Science and Society	Strategic Review completed 2005	Ensure that all new initiatives consider science and society issues
Regional Offices	Africa Office established 2005	Establish 3 further Offices
CIS countries	Exploratory meeting in Ukraine (May 2005)	Strengthen links to national science communities
Capacity Building	Priority Area Assessment completed 2005	Integrate into new initiatives and build up Regional Office-Union / Interdisciplinary Body links

## STRUCTURE AND MEMBERSHIP

ACTIVITY	STATUS, JULY 2005	ACTIONS, 2006-11
Grants programme	Peer-reviewed, prioritized programme since 2002	Seek additional funding
Unions meetings	Meet at General Assembly in 2005	Further meetings in 2007, 2008 (G.A.) and 2010
National Member meetings	Meet together at General Assemblies	Organize periodic regional meetings of National Members
Membership	Initial review completed in 2005	Expand representation and ensure better communication
Corporate Communication	Communication officer post frozen in 2004	Recruit new Communication Officer
Partners	Well-established relations with several key partners	Strengthen strategic partnerships and develop new partnerships on a 'case by case' basis
Funding	Core funding barely adequate	Review dues structure and attract additional 'external' funding.

Part I

# A Strong Foundation in a Changing World

# The Evolving Context for International Science



ICSU is first and foremost a scientific organization, whose unique strengths are its independence and broad coverage of scientific disciplines and nations. Strengthening science for society means being aware of the emerging developments in science and the potential of science to address societal needs. It also means being able to identify these needs as they already exist or newly arise and formulate them into scientific questions. Changes in the practice of international science and developments within society need to be considered together in defining future priorities for ICSU.

## 1.1 THE PRACTICE OF INTERNATIONAL SCIENCE

*“The end of the 20th century has been a golden period for science with unprecedented progress in many areas.”*

The end of the 20th century has been a golden period for science with unprecedented progress in many areas. Aside from the wealth of new scientific knowledge, what are the major trends that are influencing the practice of science as a whole? What does the world of international science look like now compared to a couple of decades ago?

The large majority of financial support for science continues to be at the national level. The USA, Japan and Europe continue to dominate in terms of national investment and performance. Whilst several countries such as Brazil, China and India are making rapid progress, others such as some of the former Soviet Republics are struggling to maintain previous strengths. There remain a large number of poorer countries, where investment in science is negligible. These inequalities are reinforced by a net outflow of trained scientists from poorer to richer countries.

Regional initiatives, particularly the development of a transnational European Research Area, are having a significant effect on the competitive landscape for science. The New Partnership for African Development (NEPAD) may provide the impetus for a similar, and much hoped for, cooperative effort in that region. Strong regional alliances are also developing in Latin America and the Asian Pacific. Whilst such regional actions are frequently dictated by economic interests, they are having a considerable impact on the funding and structuring of science.

Despite the predominance of national funding and strong competition among countries, science now, more than ever before, is an international endeavour. The exchange of scientific information and sharing of ideas across borders have been essential to the progress of science. However, the increasing ease of international exchange coupled with the recognition that many scientific problems, from climate change to AIDS, are inherently international in nature, also has led to a new global approach to research in many areas. Global research problems are invariably complex and require the collaboration of many disciplines as well as many countries. ICSU is uniquely positioned to challenge, prompt and organize the scientific community to address such issues and has, for example, been at the vanguard of global research on the environment.

Perhaps the most significant factor in shaping the practice of science over the past couple of decades has been the rapid development of information and communication technologies. Massive increases in computing capacity, coupled to the internet and the World Wide Web, have revolutionized science. There is more scientific data and information openly available than ever before. It is possible in principle, if not yet in practice, for any scientist anywhere in the world

to access the most up-to-date scientific data and information at his or her desktop. Secondary analyses of data, and the combining of data from multiple sources, are opening up exciting new scientific horizons. Scientific publication practices are changing rapidly. However, as technology develops, so also does the need for that technology. There is a growing digital divide in science between those who do have access to digital information and data and those who do not; between poorer countries or institutions and their richer counterparts.

Scientific progress is leading to rapid innovation and development, with the result that the distinction between basic and applied research is less clear today than it was a couple of decades ago. As the industrial and commercial value of scientific applications has become more apparent, there is increasing pressure on funding agencies and individual scientists to justify their research in socio-economic terms. There is an increased emphasis on inter-disciplinary research both in response to scientific developments and the need to address complex problems. Traditional experimental approaches are being complemented, or even supplanted, by a more holistic systems approach to problem-solving in many areas of science. Complex system science is developing in many areas and this requires a new approach to both the teaching of science and the conduct of research.

At the outset of the 21st century the possibilities for science to benefit society are greater than ever before and these present many new challenges to the international science community and to ICSU.

## 1.2 THE SOCIETAL CONTEXT

*“Science is embedded in society.”*

Science is embedded in society. Scientific knowledge and its application can lead to huge societal transformations; witness the discovery of electricity and penicillin or the development of the World Wide Web. At the same time, society itself has an enormous influence on science. Whether as a direct effect on funding decisions or policies on human stem-cell research or as an indirect effect of urbanization or globalization, the agenda for science and perspectives of scientists are to a large extent determined by society.

Globalization of trade and the relative ease of international travel and information exchange have, in many ways, made the world a smaller place with shared needs and concerns. Whilst local contexts and problems are still very important and require local solutions, there is a rapidly developing global information society. There is increased awareness that what happens in one country or region cannot be considered in isolation but may have important implications for other countries. More than ever before, there is a need to establish international dialogue and consensus in many areas of scientific development, from genetically modified organisms and the conduct of clinical trials to the mitigation of natural hazards and global environmental change.

The developed world is moving from an era of industrial growth, based mainly on heavy engineering, to a new era of so called ‘knowledge-based economies’, with a premium on scientific knowledge and high technology developments in areas such as biotechnology, computing and nanotechnology. For many poorer countries the increasing emphasis on knowledge as an asset presents both an opportunity and a threat; these countries are often struggling to compete with richer neighbours but have unique knowledge resources of their own and with the right policies and investment strategies, there is an opportunity for them to make rapid progress in terms of development.

The socio-economic divide between rich and poorer countries has become a major concern for global society as a whole. The UN Millennium Summit in 2000 defined a set of specific targets<sup>2</sup> in the form of eight Millennium Development

### *Footnote:*

<sup>2</sup> See <http://www.un.org/millenniumgoals/>

Goals and science has much to offer in helping nations to meet these targets. The World Summit on Sustainable Development (2002) emphasised the concerted international efforts required to overcome inequalities between countries and ensure the future of planet Earth. Science itself has an enormous responsibility for providing solutions that integrate the environmental, economic and social aspects that are inherent in sustainable development.

Whilst science is universal, the global political situation and current concerns about terrorism are having a direct impact on scientific practice. Restrictions on visas, increased controls on the release of scientific information and proposed embargoes on collaboration with certain countries present very real threats to the Universality of Science. There is also an active and aggressive anti-science movement in many countries. Sometimes this is focused on specific scientific practices, such as the use of animals in experiments or genetic manipulation. Elsewhere, it is manifest as a more general rejection of scientific knowledge resulting, for example, from fundamentalist religious beliefs. Universal access to, and acceptance of, scientific knowledge is an essential element in overcoming the inequities and distrust between populations.

In many countries, there is growing concern as to some of the uses of science. Science as a profession is still held in high esteem but individual scientists are increasingly expected to be accountable for the products of their work. They are being called upon to explain their research publicly and citizens want a greater say in the development of research agendas. The 'politicization' of academic research is also a new phenomenon in many countries. This is not without benefits but can require a reassessment of the balance between academic freedom and responsiveness to immediate policy needs. As more and more scientific information becomes available, e.g. via the World Wide Web, the public interpretation of this and the portrayal of science in the media are demanding increasing attention from the scientific community. The public communication of science is an increasingly important aspect of science as a whole.

---

# ICSU Past and Present



ICSU is one of the oldest international non-governmental organizations in the world. It arose out of the evolution of two earlier bodies known as the International Association of Academies (1899-1914) and the International Research Council (1919-1931). When ICSU itself was established in 1931, its membership consisted of forty National Scientific Members and eight International Scientific Unions. Despite the difference in numbers, members wanted to highlight the principle of all parties being equal partners and thus chose to call themselves the International Council of Scientific Unions. ICSU, as the Council came to be known, continued to grow and evolve, adding many new members in both categories. In 1998, Members agreed that the Council's broader composition and activities would be better reflected by modifying the name to the International Council for Science, while its history and strong identity should be recognized by retaining the existing acronym, ICSU.

The original *raison d'être* for ICSU, continuing on from its predecessors, was to provide a forum for scientists from different countries and disciplines to address issues of common concern. Over the years, ICSU began to address specific global issues through the development of Interdisciplinary Bodies and developed partnerships with other organizations, in particular various United Nations organizations. These partnerships have proved invaluable not only in ensuring additional support for specific activities but also in providing a crucial link between scientific research and policy-making. However, for many individual scientists, ICSU remains best known for the critical role it has played in relation to policy for international science, in particular in relation to the Universality of Science.

## 2.1 INTERNATIONAL RESEARCH COLLABORATION

*“The ability of ICSU to provide authoritative agenda setting through the planning of global research programmes is one of its greatest strengths.”*

Over time, ICSU has established a number of Interdisciplinary Bodies to address international and interdisciplinary scientific priorities (Box 1). Several of these bodies have played a central role in planning and coordinating major research programmes or areas of research. The ability of ICSU to provide authoritative agenda setting through the planning of global research programmes is one of its greatest strengths. In addition to the initial planning, ICSU also frequently takes upon itself to provide continuing coordination of programmes in order to ensure that the research is conducted efficiently and effectively. Longer-term programmes are subject to regular reviews to ensure their quality and continuing relevance. As well as planning and coordinating research, Interdisciplinary Bodies, provide a focus for synthesis of results and the communication of these to policy-makers.

### 2.1.1 The International Geophysical Year (IGY, 1957-1958)

The International Geophysical Year of 1957-1958, sponsored jointly by ICSU and the World Meteorological Organization, brought together 67 nations and over 60,000 individual scientists in a concerted effort to understand the earth as planet. The scientific accomplishments of IGY were numerous and included the discovery of the Van Allen Radiation Belts encircling the Earth, the first estimates of the size of Antarctica's ice mass, and confirmation of the theory of continental drift. It also directly stimulated at least one major geopolitical advance, the Antarctic Treaty System. Taking place at the height of the Cold War, the IGY demonstrated that even in tense political and economic times, scientists from around the world could work together for the betterment of society. Many of the structures and bodies that were developed by ICSU and its partners as a result of

the IGY continue to play an important role in serving the scientific community to this day<sup>3</sup>.

#### **BOX 1. ICSU INTERDISCIPLINARY BODIES AND JOINT INITIATIVES (JULY 2005)**

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. Several of these are designated as Joint Initiatives, when they include other sponsors than ICSU (see parenthesis below). 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.

##### **ASSESSMENT BODIES**

- Millennium Ecosystem Assessment (MA; with many other institutional sponsors; terminated in 2005)
- Scientific Committee on Problems of the Environment (SCOPE)

##### **THEMATIC BODIES**

- Committee on Space Research (COSPAR)
- Scientific Committee on Antarctic Research (SCAR)
- Scientific Committee on the Lithosphere (SCL)
- Scientific Committee on Oceanic Research (SCOR)
- Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)

##### **GLOBAL ENVIRONMENTAL CHANGE PROGRAMMES**

- DIVERSITAS: an International Programme of Biodiversity Science (with UNESCO, IUBS, IUMS, and SCOPE)
- International Geosphere-Biosphere Programme (IGBP)
- International Human Dimensions Programme on Global Environmental Change (IHDP, with ISSC)
- World Climate Research Programme (WCRP, with IOC of UNESCO and WMO)

##### **MONITORING/OBSERVATION BODIES**

- Global Climate Observing System (GCOS, with WMO, IOC, FAO, and UNEP)
- Global Ocean Observing System (GOOS, with WMO, UNEP and IOC)
- Global Terrestrial Observing System (GTOS, with FAO, UNEP, UNESCO and WMO)
- Integrated Global Observing Strategy Partnership (IGOS-P with many other institutional partners including space agencies)

##### **DATA AND INFORMATION BODIES**

- Committee on Data for Science and Technology (CODATA)
- Federation of Astronomical and Geophysical Data Analysis Services (FAGS)
- International Network for the Availability of Scientific Publications (INASP)
- Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)
- Panel on World Data Centres (WDC)

##### **Footnote:**

*3 The Committee on Space Research (1958), the Scientific Committee on Antarctic Research (1958), the Scientific Committee on Oceanic Research (1957) and the Scientific Committee on Solar-Terrestrial Physics (1966) all arose out of the need for international scientific coordination in relation to IGY. Countries were also invited to establish and fund data centres to ensure that the archive systems set up during IGY would have long operational lives (Panel on World Data Centres established in 1968).*

*“These programmes provide much of the scientific underpinning of the assessments conducted by bodies, such as the Intergovernmental Panel on Climate change.”*

### 2.1.2 The International Biological Programme (1964-1974)

The biologists watched IGY with interest and set about developing the International Biological Programme. The overarching theme of this programme was “the Biological Basis of Productivity and Human Welfare”, encompassing a worldwide study of biological production on land and in the oceans, and the use of new as well as existing natural resources. It also included studies of human adaptability to changing conditions and can be seen as a forerunner to the current global environmental change programmes. During the last years of the decadal International Biological Programme, the work inspired the planning for the intergovernmental Man and the Biosphere programme of UNESCO, which was launched in 1972.

### 2.1.3 The Global Change Programmes (1980 – present)

In 1979 ICSU co-sponsored the first World Climate Conference, which led to the establishment in 1980 of the World Climate Research Programme in partnership with the World Meteorological Organization, and the Intergovernmental Oceanographic Commission of UNESCO. At around the same time, and based on the early studies of its Scientific Committee on Problems of the Environment in the 1970s and early 1980s, ICSU initiated the planning of the International Geosphere-Biosphere Programme, which was launched in 1986. These early forerunners were supplemented by the establishment of DIVERSITAS, an International Programme of Biodiversity Science<sup>4</sup>, in 1991 and the International Human Dimensions Programme on Global Environmental Change<sup>5</sup>, launched in 1996. These four Global Environmental Change research programmes are increasingly working together under the banner of the Earth System Science Partnership to promote international and interdisciplinary research in cross-cutting focal areas (carbon, food, water, and human health). These programmes, together with the global observing systems, provide much of the scientific underpinning of the integrated assessments conducted by bodies, such as the Intergovernmental Panel on Climate Change.

## 2.2 AN INTERNATIONAL VOICE FOR SCIENCE IN A POLICY CONTEXT

*“ICSU has a long-standing relationship with the United Nations system.”*

ICSU has a long-standing relationship with the United Nations system, not only in the implementation of scientific programmes, but also in the context of international policy.

The ICSU Scientific Committee on Problems of the Environment was established in 1969 to carry out integrated assessments of scientific knowledge on ‘hot’ topics. Its first report was commissioned by the UN Conference on the Human Environment (1972) and it continues to provide independent scientific advice to various intergovernmental agencies to this day. In preparation for the UN Conference on Environment and Development (1992), ICSU organized its own conference on an ‘Agenda for Science and Development into the 21st Century’. As a result of the 1992 Conference, ICSU was invited by the UN to coordinate the input of the science community in the follow-up work through the UN Commission on Sustainable Development. In this capacity, ICSU, together with the World Federation of Engineering Organizations, was asked to contribute to the World Summit on Sustainable Development (2002). This included the publication by ICSU of a series of scientific reports on Science for Sustainable Development and the organization of a science forum at the summit. More recently still, ICSU has played an active role in ensuring that the voice of science

#### Footnotes:

4 DIVERSITAS: An International Programme of Biodiversity Science was initially established in 1991 by the International Union of Biological Sciences, the Scientific Committee on Problems of the Environment, and UNESCO.

5 The International Human Dimensions programme on Global Environmental Change was established in 1996 by ICSU and the International Social Sciences Council.

was present at the World Summit on the Information Society (Geneva, 2003; Tunis, 2005).

The UN organization that most clearly has a mandate for science is UNESCO, which has been a close partner of ICSU since its creation in 1946. Indeed, hearsay would have it that key ICSU personalities were instrumental in ensuring the inclusion of the 'S' in UNESCO. It was therefore only logical that, when the UN organization decided to bring policy-makers and scientists together for the World Conference on Science in 1999, ICSU should be asked to co-organize the event. This acted as an important stimulus for many related recent events, focussing on science policy and/or science for society in the international context. ICSU continues to be an active contributor to both UN and other international fora, where these can contribute to the Council's overall mission and the universality of science.

### 2.3 UNIVERSALITY OF SCIENCE

*“One of the founding principles of ICSU, which is embodied in its statutes, is the Principle of the Universality of Science.”*

One of the founding principles of ICSU, which is embodied in its statutes, is the Principle of the Universality of Science. This Principle dictates that the practice of science should be equitable and without discrimination. All ICSU members are united by these ideals. A special Standing Committee on the Free Circulation of Scientists was established in 1963 to help ensure Universality. This Committee played a key role in enabling scientific exchange between East and West during the Cold War period and many individual scientists are grateful for its work in resolving visa problems for attendance at international meetings. The Cold War is now over, but visa problems and embargoes continue to present a major challenge to the practice of science.

However, the universality of science is broader than visa issues and also encompasses other critical factors, such as the under-representation of women and the full inclusion of developing countries in international science. These issues are less easily addressed by a single standing committee but are integral to all of ICSU's activities both at the operational and policy level.

### 2.4 FROM INTERNATIONAL TO NATIONAL AND VICE VERSA

*“A major challenge has been to establish effective links with national systems for research, funding and policy-making.”*

ICSU is not a funding agency or a governmental policy-making body. From the outset a major challenge has been to establish effective links with national systems for research, funding and policy-making. Whilst ICSU itself rarely gets directly involved in national discussions, both the National Members of ICSU and the national committees of the Scientific Unions and Interdisciplinary Bodies, provide critical access to national systems.

The importance of this linkage can be illustrated by taking the example of the Global Environmental Change programmes. The Assessment Panel on Environment and its Relation to Sustainable Development (ICSU, 2003a) estimated that only 0.5% of the total amount spent on global change research (ca. US\$ 2bn per year directly related to the four ICSU sponsored programmes) is used for the international planning and coordination activities. The Panel advised that this needs to be increased to 1%, which is still a very small fraction of the total funding. Most of the research funding in this area originates from national funding agencies and competitive grants schemes. Individual scientists seek funds to conduct the necessary research within the framework of ICSU research programmes. Despite their clearly acknowledged importance, many national and regional bodies are reticent about providing the necessary support for the global planning and coordination activities.

It is essential to link scientific research of the global environmental change programmes to monitoring, assessments and policy making. All are equally important for the sustainable management of planet Earth. National delegations taking part in, for example, the meetings of the Intergovernmental Panel on Climate Change and the Framework Convention on Climate Change need access to scientific information. National Committees of the global change programmes or ICSU National Members need to involve such delegations in a dialogue regarding the scientific underpinning of the assessments. This dialogue is necessary for the development of international policies as part of multilateral environmental agreements. The appropriate structures are often in place at the international level but need considerable strengthening in a national context.

There are many other examples that could be cited, but learning from the past and looking to the future, the critical message for ICSU is that, in order to be effective, it must continue to nurture a mutually beneficial relationship with its own national representatives and to reach out more effectively to national and regional bodies. In planning new research initiatives, it is important that mechanisms be developed to foster a dialogue between the international planning and the national funding and policy-making. The International Group of Funding Agencies for Global Change Research (IGFA)<sup>6</sup> is currently the only forum at the international level where such a dialogue exists. All of ICSU's international activities, both in the past and in the future, should be properly considered as a stimulus and/or a complement to what happens at the national level.

---

**Footnote:**

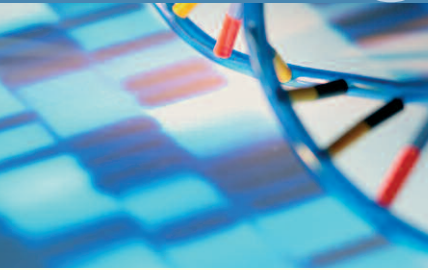
*6 The International Group of Funding Agencies is a group of representatives from national research funding bodies that was established to serve as an international platform to discuss funding for research on global environmental change.*



Part II

## Building for the future

## Future Vision and the Role for ICSU



When the ICSU Committee on Scientific Planning and Review (CSPR) was established in 1998, one of its first tasks was to work with the ICSU community to articulate a future vision and mission for the Council.

### 3.1 VISION

The long-term ICSU vision is for a world where science is used for the benefit of all, excellence in science is valued and scientific knowledge is effectively linked to policy-making. In such a world, universal and equitable access to high quality scientific data and information is a reality and all countries have the scientific capacity to use these and to contribute to generating the new knowledge that is necessary to establish their own development pathways in a sustainable manner. ICSU has a major role to play in leading the global science community, implementing new scientific initiatives and engaging with policy-makers and other sectors of society to help realize this vision.

### 3.2 MISSION

ICSU's mission is to strengthen international science for the benefit of society. To achieve this, the Council 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.

In delivering this mission ICSU is heavily dependent on its extensive network of Members and Interdisciplinary Bodies. The Scientific Unions provide an international disciplinary perspective. National Members provide an interdisciplinary perspective from individual countries. Interdisciplinary Bodies focus on specific areas of international science. The combination of knowledge from these three groupings provides a very powerful tool for delivering ICSU's mission.

The present strategic plan is organized around the four core themes of ICSU's mission (sections 4-7, ahead).

# 4

## Addressing Major Issues: Planning and Coordinating Research



ICSU's past successes in developing scientific programmes have depended on the timely identification of emerging scientific issues that require a multidisciplinary and international approach. This first stage of issue identification has generally been done opportunistically and has been very much dependent on the foresight of a small number of individuals. Opportunism and individual leadership are at the root of many scientific breakthroughs and need to be incorporated into any process of planning for the future. The challenge for ICSU is to develop a strategy based on the best current estimate of future priorities and to ensure that effective mechanisms are in place to identify and accommodate new opportunities as they arise. ICSU cannot expand indefinitely and, as needs and priorities change, it is also important to have mechanisms in place that ensure closure of lower priority or less effective activities.

### 4.1 ENVIRONMENT

*“Greater efforts have to be made to increase the involvement of the social, health and engineering sciences in investigating human influence on environmental change.”*

Over the past decade, the scientific evidence - much of it coming out of ICSU's own research programmes - that deleterious environmental change is occurring, has become irrefutable. The Earth's environment is changing on all scales from local (e.g. air, soil and water pollution) to regional (e.g. acid deposition and land degradation) and global (e.g. climate change and loss of biodiversity). These changes are to a large measure due to human activities and their negative effects are disproportionately felt in poorer countries.

ICSU has an extensive environment portfolio, which was subject to review as part of the Priority Area Assessment of the Environment and its Relation to Sustainable Development (ICSU 2003a). This forward-looking assessment highlighted the need to strengthen links between environmental research, monitoring/Earth observation, integrated assessments and provision of information for decision-making. ICSU is a major global player in each of these areas but needs to assume responsibility for ensuring better integration of the four components in the coming years. The Panel concluded that greater efforts have to be made to increase the involvement the social, health and engineering sciences in investigating human influences on environmental change and assessing the implications of such change for society.

**GOAL:** to ensure a more coordinated and inclusive approach to research on the environment such that the necessary high-quality scientific evidence is made available to policy-makers; and, to develop new international programmes in key areas.

#### **SPECIFIC ACTIONS:**

Several changes to existing ICSU structures will be implemented based on decisions by the 28th General Assembly (2005) to ensure a more streamlined<sup>7</sup> and coordinated approach to research on the environment:

#### *Footnote:*

<sup>7</sup> *On the basis of the Priority Area Assessment, it is recommended to the General Assembly (October, 2005) that the Advisory Committee on the Environment and the Committee on Disaster Reduction be disbanded and, furthermore, that the Federation of Astronomical and Geophysical Data Services and the Scientific Committee on the Lithosphere be devolved to the relevant Scientific Unions.*

- Research collaboration within the ICSU community and with other organizations on questions related to the environment will be strengthened to more fully include the social, health and engineering sciences.
- ICSU will conduct individual reviews of its global environmental change research programmes. Special attention will be given to the development of the Earth System Science Partnership, which brings together the four programmes to address issues that are integral to sustainable development. The links between this Partnership and other ICSU Interdisciplinary Bodies and Members will be considered as part of these reviews.

In addition to the planning and coordination of international research, ICSU is also a sponsor of the three global observing systems (Global Climate Observing System, Global Ocean Observing System and Global Terrestrial Observing System). In 2003-2005, ICSU has been closely involved in the planning for the development of a coordinated Global Earth Observation System of Systems.

## **BOX 2. THE INTERNATIONAL POLAR YEAR (IPY) – A CASE IN ACTION**

### **DESCRIPTION:**

IPY will be an intensive burst of internationally coordinated, interdisciplinary research and observations focused on the Earth's polar regions. It aims to provide major new scientific insights that could not be achieved by one nation or discipline working in isolation.

### **PLANNING PROCESS:**

ICSU brought together a selected group of international scientists that met on four occasions to develop an IPY Framework document that was approved by the Executive Board and published in 2004. The broad consultation process to produce this Framework included a number of workshops and 'open meetings'. It also led to the establishment of over 30, self-supporting, national committees that provide critical links to national scientific communities, science funding agencies and policy communities.

### **IMPLEMENTATION AND OVERSIGHT:**

In parallel to the scientific planning, ICSU engaged discussions with the various international bodies with an interest in polar research. In 2005 a Joint Committee was established with the World Meteorological Organization to oversee the implementation of the scientific Framework. This committee will have both a strategic and peer-review role, in considering individual project proposals for inclusion in IPY. An International Programme Office, with its own Executive Director and dedicated staff, has also been established at the British Antarctic Survey in order to support the Joint Committee.

### **RESOURCES:**

ICSU spent EUR 60,000 on the initial planning (2003-2004) and it is projected that the Council will spend EUR 25,000 annually until 2009 for Joint Committee meetings. ICSU staff support was substantive during the planning phase and continues to be significant.

The International Project Office has secured EUR 225,000 p.a. for six years from the UK Natural Environment Research Council.

IPY research projects and logistical activities (e.g. coordinated satellite observations and polar missions) will be funded by national and regional research funding agencies and it is expected that the total funding will be many millions of euros. Several countries have allocated large amounts of new funding for polar research during the IPY period.

*IPY illustrates how an initial small investment (financial plus professional staff support) from ICSU combined with its unique access to international interdisciplinary scientific expertise can lead to the rapid development of a major international scientific programme*

*“ICSU will plan and coordinate IPY 2007-2008 in cooperation with the World Meteorological Organization..”*

*“An ad hoc Scoping Group will be established to explore the development of a new international research programme on natural and human-induced hazards.”*

This has included taking the lead in identifying needs and exploring mechanisms for the collection global socio-economic data (ICSU 2004e), which are essential to the international research programmes.

- ICSU will play a major role in the scientific underpinning of the Global Earth Observation System of Systems (GEOSS).

In addition, two major new research programmes will be developed as described below.

#### 4.1.1 The International Polar Year (IPY, 2007-2008)

The polar regions are a unique barometer of environmental change and provide important insights into the health of the planet as a whole. The International Polar Year will be bipolar in focus, multidisciplinary in scope and truly international in participation. It will provide a uniquely comprehensive ‘snapshot’ of measurements for comparison with previous and future records to inform our knowledge of changing planetary processes. A key objective will be the expansion of opportunities afforded by new information technologies to achieve previously unprecedented participation in polar science.

The ICSU Executive Board responded to overwhelming interest from scientists and polar and global research bodies by establishing an international planning group for IPY in February 2003. The scientific Framework (ICSU,2004d), which was developed in broad consultation with the scientific community, was approved by the Board in November 2004. A Joint Committee has been established jointly with the World Meteorological Organization to oversee the implementation of this plan and coordination of activities.

##### SPECIFIC ACTION:

- ICSU will plan and coordinate IPY 2007-2008 in cooperation with the World Meteorological Organization.

#### 4.1.2 Natural and human-induced hazards

Every year natural hazards, such as floods, earthquakes and tsunamis, are responsible for thousands of deaths and extensive damage to livelihoods and property. This is compounded by the increase in human-induced hazards, from pollution through to landslides triggered by deforestation. Whilst the prevalence of hazards varies from one region to another, it is invariably the poorest countries that are least well equipped to cope with their impacts and which suffer most. Like the hazards themselves, scientific research on hazards crosses national borders and is inherently international in nature. However a major challenge for the scientific community is to develop a truly global and interdisciplinary approach to the understanding, assessment and prediction, and mitigation of hazards. A key recommendation of the strategic planning exercise (ICSU, 2003a and 2004a), was that ICSU should develop a new international programme in this important area. At the political level, the UN World Conference on Disaster Reduction<sup>8</sup> (Kobe, 2005) provides a timely platform on which such a research agenda can be built.

Geohazards is a theme that is of considerable scientific interest to several Scientific Unions and was the major focus of the ICSU Committee on Disaster Reduction. Based on previous work of this Committee, a broad cross-disciplinary initiative on natural and human-induced hazards will be developed. The planning will build on existing strengths within the ICSU membership and Interdisciplinary Bodies, in particular the geohazards activity of the five Geo-Unions<sup>9</sup> and the

##### Footnotes:

<sup>8</sup> ICSU released a position statement in conjunction with the Kobe Conference (ICSU, 2005e). The UN International Strategy on Disaster Reduction (ISDR), on which ICSU is represented, is responsible for the follow-up to the Conference.

geohazards theme of the International Global Observing Strategy Partnership. It will also incorporate research on the social, ecological and economic aspects of disasters.

**SPECIFIC ACTIONS:**

- An *ad hoc* Scoping Group will be established to explore the development of a new international research programme on natural and human-induced hazards.
- ICSU will work with the International Strategy on Disaster Reduction and other international organizations to ensure that existing and new scientific knowledge is used to develop improved hazard-mitigation strategies and policies.

## 4.2 SUSTAINABLE DEVELOPMENT

*“Sustainable development is one of the most daunting challenges that humanity has ever faced.”*

Sustainable development is one of the most daunting challenges that humanity has ever faced. At all scales, from local to global, scientific and technological knowledge can help provide guidance and new solutions to the economic, social and environmental economic problems that make current development paths unsustainable.

Of the three pillars of sustainable development (environmental, social, economic), the environment is the one that has been most closely associated with ICSU to date. However, the four major global environmental change programmes are broadening their agendas and approaches to integrate economic, health and social sciences and have launched projects on carbon, water, food and human health, issues which underpin sustainable development. Additional complementary efforts focused primarily on local-scale analyses are also necessary to enhance the real impact of science on development practices.

At the UN World Summit on Sustainable Development (2002), the Science and Technology Community, with ICSU responsible for the input from the science community, pledged to make science more policy-relevant through place-based research that integrates the three pillars of sustainable development and involves active participation of governments and civil society (ICSU 2002c). As part of the follow-up to this commitment, an independent *ad hoc* Advisory Group<sup>10</sup> was established to advise ICSU and other international organizations on the scientific research priorities for sustainable development. The general issues identified by this group as priorities for research and development efforts were:

- Resilience and vulnerability of social-ecological systems;
- Sustainable production and consumption
- Governance and institutions for sustainability
- The role of behaviour, culture and values in sustainable development

Addressing these themes effectively requires building new bridges among the natural, social, and engineering sciences. Integrating this broad array of perspectives and methodologies presents a significant challenge for the future. Meanwhile, a continuing focus on sectoral sustainable development issues, such as energy, water and health, is also necessary.

ICSU has also been an institutional partner in the Millennium Ecosystem

**Footnotes:**

<sup>9</sup> IUGG, IUGS, IGU, IUSS and ISPRS in the context of their broader joint initiative – the Year of Planet Earth.

<sup>10</sup> The *ad hoc* Advisory Group was established to make recommendations to a consortium of partners consisting of ICSU, TWAS and the Initiative on Science and Technology for Sustainability. It produced a report, *Harnessing Science and Technology and Innovation for Sustainability (ICSU-ISTS-TWAS, 2005)*

Assessment, an international four-year project that was designed to provide decision-makers with the latest scientific knowledge about ecosystem change and human well-being<sup>11</sup>. This major international project helped build local capacities and networks for conducting integrated assessments in a local to regional scale context. Proposals are now being developed for a new set of activities that build upon this valuable local capacity and that further develop the type of place-based participatory research that is needed to inform sustainable development policies and practices.

**GOAL:** to build innovative new approaches for harnessing science for sustainable development, whilst continuing to promote research on specific sectoral issues, such as energy.

**SPECIFIC ACTIONS:**

- ICSU will explore, with partners, the creation of an ongoing mechanism for convening interdisciplinary, multi-stakeholder dialogues aimed at identifying the new scientific knowledge and technical capabilities that are most needed for meeting the challenges of sustainable development.
- ICSU will also work with partners to develop a follow-up mechanism based on the Millennium Ecosystem Assessment to address additional research needs, to stimulate further sub-global assessments and promote methodological developments to link spatial and temporal scales.

#### 4.2.1 Sustainable Energy

Meeting the world's energy needs without considerable negative environmental impacts, is one of the major challenges to sustainable development. Access to reliable and affordable energy is an essential prerequisite for combating poverty, but at present, more than a third of the world's population lacks access to even the most basic energy supplies and services. At the same time, the prodigious use of fossil fuels in industrialized and rapidly developing countries is responsible for an array of environmental and public health threats, ranging from indoor and large-scale air pollution to global scale climate change. Alternatives, such as nuclear and hydro power, are available in some countries but these are not without their own inherent dangers and environmental effects. Vested economic interests and public attitudes to energy sources mean that necessary national and international policies on energy are difficult to agree.

*“Existing and new scientific knowledge and technologies must be a vital component of any long-term strategy to meet the world's energy needs.”*

It is widely accepted that the further development of existing and new scientific knowledge and technologies must be a vital component of any long-term strategy to meet the world's energy needs. A recent report from an *ad hoc* ICSU Working Group (ICSU, 2004b) identified specific interdisciplinary areas where further research is required. A number of international bodies have conducted energy assessments. Several ICSU Unions have produced reports from their own disciplinary perspective and the Inter-Academy Council is planning a comprehensive assessment of needs and opportunities related to sustainable energy systems.

In 2001, ICSU partnered with the World Conservation Union to provide input to the UN Commission on Sustainable Development (see ahead 7.1.1) when it considered energy and transport (ICSU, 2002d). The Commission will again be focussing on energy in 2006-2007, with ICSU again being invited to provide input. As part of the follow-up to the World Summit on Sustainable Development, ICSU and the World Conservation Union contributed to the International Summit for Renewable Energies that was held in Bonn, Germany (2004). One outcome from Bonn was a call for the establishment of an International Science Panel on Renewable Energy, as a mechanism to promote R&D on renewable energy technologies. The German government has provided funding to explore this idea

**Footnotes:**

<sup>11</sup> For final reports of Millennium Ecosystem Assessment see [www.millenniumassessment.org](http://www.millenniumassessment.org)

further and ICSU has been approached to oversee this effort.

**SPECIFIC ACTIONS:**

- An *ad hoc* planning group will develop a plan for an International Science Panel on Renewable Energy
- ICSU will continue to work with international bodies, such as the Commission on Sustainable Development, to identify scientific needs in relation to energy and ensure that the best scientific information is available to policy makers;

## 4.3 HUMAN HEALTH

The protection of human health is a central concern of modern society and a major focus of scientific research. The types of health threats faced by different societies around the world vary widely, depending upon a country's wealth, food availability, level of education, public health infrastructure, access to medicines and other factors. For instance, infectious diseases and malnutrition are major threats in many developing countries, while cardiovascular disease and cancer are dominant concerns in wealthier nations. Pollution (of air, water and food), impacts of smoking, alcoholism and traffic accidents are world-wide health concerns and the AIDS pandemic and recent outbreaks of other infectious diseases have illustrated the global nature of many emerging health threats. Over the past century, science has led to enormous advances in public health, including the eradication of several major diseases and increased life expectancy in parts of the world. Yet there remain a wide array of human health problems that are potentially preventable or treatable with better scientific understanding and application of the necessary resources.

*“There is a wealth of expertise within the ICSU community on various aspects of health research.”*

To date, ICSU has not been a major player in international health research and with some justification in that there are many other national and international bodies that focus on health research. At the same time, there is a growing awareness that human health is inextricably linked to the health of our planet and environmental change (areas in which ICSU has undoubted strengths). Similarly, it is difficult to envisage an integrated scientific approach to sustainable development that does not include human health issues. There is a wealth of expertise within the ICSU community on various aspects of health research, which needs to be more fully incorporated into ICSU's existing activities. There is also a need for new partnerships with the clinical research community.

**GOAL:** to ensure that health considerations are duly taken into account in the planning and execution of future activities by building on the relevant strengths of Scientific Unions and Interdisciplinary Bodies.

**SPECIFIC ACTIONS:**

- ICSU will establish an *ad hoc* group to more clearly define how it might contribute to science for human health, taking into account the ongoing development of two new research initiatives:
  - Science for Health and Well-being and Society is an ambitious initiative, bringing together the perspectives of many ICSU Unions in an integrated approach to human health;
  - Global Environmental Change and Human Health is a new project that is being planned as part of the Earth Systems Science Partnership.
- New partnerships will be developed, as necessary, with the World Health Organization and other bodies to ensure that any ICSU initiatives are needs-based and policy-relevant.

## 4.4 EXPLORING NEW HORIZONS

*“Interchange between different disciplines and countries is critical.”*

As science develops and opens up new opportunities and challenges, the interchange between different disciplines and countries is critical for defining those areas where early international planning and coordination is necessary. For many emerging areas, international collaboration occurs almost spontaneously. For other topics, some of which may eventually be of greater importance for science and society, additional mechanisms and/or incentives are necessary.

A number of important emerging scientific areas have been identified in the various strategic assessment and consultation exercises that have informed this Strategic Plan. Many of these are appropriate for new international and interdisciplinary initiatives from the ICSU community. Specific topics<sup>12</sup>, not mentioned elsewhere in this strategic plan, include:

- Cognitive neurosciences
- Complex systems science
- Human security and environmental refugees
- Molecular biosciences
- Nanosciences and Nanotechnology
- Transgenic crops and their implications for the environment<sup>13</sup>

ICSU does not have the resources to initiate major strategic initiatives addressing each of these topics. However, one mechanism by which ICSU can facilitate the development of these areas is by providing seed funding through its grants programme. Further to this, preliminary discussions with the European Science Foundation (ESF) have indicated that it would be interested in co-sponsoring a series of international conferences to explore some of these topics.

**GOAL:** to monitor emerging international research priorities of importance to science and society and to develop mechanisms to ensure that these can be addressed in a timely manner by the relevant members of the ICSU community.

### **SPECIFIC ACTIONS:**

- ICSU member organizations will be encouraged to work together to develop activities in the areas listed above with direct support from ICSU where feasible, e.g. via the provision of seed funding.
- ICSU will further explore the development of a series of international ESF-ICSU conferences on key areas of interest to science and society. ICSU members and Regional Offices should have an important role to play in any such events.

---

### **Footnotes:**

<sup>12</sup> See “Foresight Analysis: report of the CSPR” (ICSU 2004a) for more specific details of scientific priorities under each of the listed topics.

<sup>13</sup> In 2003, ICSU published a well-received report, “New Genetics, Food and Agriculture: Scientific Discoveries – Societal Dilemmas” (ICSU 2003b), that analysed many authoritative national and international statements in this contentious area. See [www.icsu.org](http://www.icsu.org).

## Facilitating Interaction amongst Scientists



ICSU was created in order to bring together scientists from different countries and disciplines to discuss and exchange information and ideas. The geographical breadth of ICSU activities has changed over the years. The majority of science is still conducted in a small number of affluent nations, all of whom are well-represented in ICSU activities, but increasingly a major emphasis for ICSU has been the development of scientific capacity in developing countries and the inclusion of these scientists in international research initiatives on an equitable basis. At the disciplinary level, the role of ICSU in bringing different scientific perspectives and approaches together to address complex problems is perhaps even more important today than it has ever been. Many of the most exciting developments in science are occurring at the interfaces between disciplines.

### 5.1 REACHING OUT TO ALL COUNTRIES

*“The latest developments in science are not readily available to scientists in many countries.”*

For a myriad of reasons, most of which eventually relate to a lack of financial resources, the latest developments in science are not readily available to scientists in many countries. The poorer developing countries are in many ways those most in need of scientific knowledge to provide solutions to their socio-economic challenges. At the same time, investment in science is frequently a low priority for these countries and they have relatively weak scientific infrastructures. Under these conditions, the ability of indigenous scientists to link to international activities and to influence international research agendas can be severely compromised. This in turn creates a major problem for the global community as research is skewed towards a fraction of the world and its problems, whilst significant gaps in knowledge, e.g. in relation to biodiversity or disease epidemics, remain unaddressed.

Following a review of past initiatives to promote science and technology in developing countries (ICSU 2002a), the General Assembly recommended that four ICSU Regional Offices to be established in Africa, the Arab Region, Asia and the Pacific, and Latin America and the Caribbean. This marks a fundamental change in ICSU structure, the aim of which is two-fold. Firstly, it should enhance participation of scientists and regional organizations from developing countries in the programmes and activities of the ICSU community. Secondly it will allow ICSU to play a more active role in strengthening science within the context of regional priorities, particularly in countries where science is less well developed. In 2004, it was agreed to establish the first Regional Office in South Africa (see box 3). At the time of writing, consultations are actively underway with other regions, with several potential host countries having being identified.

In addition to the four Regional Offices, special efforts will be necessary over the next six years to increase the involvement of countries from the former ‘Eastern Block’, including the Commonwealth of Independent States and West Balkan countries. These countries have a solid scientific research base but they are facing major problems in finding the necessary resources to support their scientific institutions. ICSU has a potentially important contribution to make by ensuring the participation of scientists and their representative institutions from these countries in international activities.

The 2002 review of past activities in developing countries also recommended the creation of a new Policy Committee for Developing Countries. This Committee will have an important role to play in providing vision and advice to the Executive

Board on the advancement of science and the contribution of science to society in developing countries.

### **BOX 3. REGIONAL OFFICE FOR AFRICA - ICSU IN ACTION**

#### **DESCRIPTION:**

The first ICSU Regional Office was formally opened in Pretoria, South Africa in 2005. It will help ensure that the needs and priorities of African science are fully considered in the implementation of ICSU's strategy. It will also provide a mechanism for African scientists to be closely involved in the activities of ICSU and its Members. Through collaboration with the international community and regional networks, the Office will contribute to capacity building for African Science.

#### **PLANNING PROCESS:**

Following definition of the general terms of reference, an open call for proposals to host the Office was sent to all Members in the region. Potential locations were considered at a consultation meeting to which all African Members were invited (Pretoria, 2004), when it was agreed that South Africa was the preferred host. This was endorsed by the ICSU Executive Board. An agreement to establish the Regional Office for a period of ten years was signed by National Research Foundation (NRF) and ICSU during the First Regional Meeting for Africa held in Zimbabwe in 2004. This Regional Meeting involved representatives of a large number of countries in Sub-Saharan Africa as well as Scientific Unions and Interdisciplinary Bodies. The report from this meeting (ICSU 2005d) provides the basis for deciding priorities for the work of the Regional Office.

#### **IMPLEMENTATION AND OVERSIGHT:**

Following an open call for applications, Professor Sospeter Muhongo from Tanzania was appointed as Director of the Office. An ICSU Regional Scientific Committee was established, under the Chairmanship of Professor Gabriel Ogunmola from Nigeria, in order to help and advise the Director. The appointment of the Director and committee membership are under the control of the ICSU Executive Board and the effectiveness of the Office will be reviewed after 5 years, half-way through the current agreement.

#### **RESOURCES**

ICSU provided support (EUR 50,000 total in 2004), for the initial consultation and planning including some support for the regional meeting, which was co-funded by National Members from Zimbabwe and South Africa. ICSU will continue to provide a small financial contribution to the Regional Office (EUR 35,000 p.a.) and assist in securing additional funds. Substantive ICSU staff input was necessary during the regional consultations and negotiations and a small amount of continuing staff support will be necessary.

The large majority of 'core' support for the Office, including the staffing (Director and five scientific and support staff) and operational activities will be provided by a generous agreement with NRF/Government of South Africa. This amounts to EUR 550,000 p.a. and the accommodation is also being provided freely by NRF.

*The establishment of the Regional Office for Africa illustrates how an initial small investment (financial plus professional staff support) from ICSU, strong support from a host country and commitment from other Members can lead to the development of a substantive mechanism for strengthening the role of Africa in international science for the benefit society.*

**GOAL:** to ensure the full participation of scientists from developing and transition countries in international science, including both the planning and implementation of the ICSU strategy and activities of the ICSU community.

#### SPECIFIC ACTIONS:

- ICSU will establish three further Regional Offices in the Arab Region, Asia and the Pacific, and Latin America and the Caribbean. The four ICSU Regional Offices will become fully operational and develop their own regional strategies and activities.
- In discussion with existing and potential National Members in the Commonwealth of Independent States and West Balkan countries, ICSU will develop appropriate actions to ensure their active involvement.
- The new Policy Committee for Developing Countries will work with the regional structures and activities to provide strategic vision and advice to ICSU from the perspective of developing countries

## 5.2 BUILDING SCIENTIFIC CAPACITY

*“ICSU has a unique role to play in building scientific capacity in the context of its international programmes.”*

Capacity building in science encompasses the efforts that are required to establish and maintain a critical mass of qualified scientists with the supporting infrastructure, including facilities and working conditions, that enable them to conduct research, education, training and advisory work. Capacity building is a challenge in all countries, although there are particular issues in many developing countries, where limited financial resources and an absence of universal education systems, amplify the problems.

In 2004, the InterAcademy Council produced a widely-acclaimed report, “Inventing a better future: A strategy for building worldwide capacities in science and technology” (IAC 2004a). This report provided the basis for ICSU to conduct its own Priority Area Assessment (ICSU, 2005b) to help define where it could uniquely contribute. Almost all ICSU Members and many Interdisciplinary Bodies are involved in capacity building activities and the potential added value of the new ICSU Regional Offices to these activities is considerable. Capacity building is a cross-cutting issue for all ICSU’s international science activities and will be integrated into the development of all new initiatives, from the International Polar Year through to Sustainable Development.

Science education is a critical aspect of capacity building. ICSU itself has been very active in promoting enquiry-based science education at the early primary education level. Many Members have science education activities, ranging from the production of education materials to the development and implementation of education programmes. In partnership with the InterAcademy Panel, ICSU has developed an electronic ‘clearing house’ for the exchange of information on these activities<sup>14</sup>

**GOAL:** to ensure that capacity building, which is integral to all aspects of ICSU’s mission, is given the necessary attention in all the activities of the ICSU community and in relevant policy fora.

#### SPECIFIC ACTIONS:

- ICSU has a unique role to play in building scientific capacity in the context of its international programmes and will continue to build on successful initiatives<sup>15</sup> to ensure the participation of young scientists in these programmes.
- The interface between the Regional Offices, Scientific Unions and ICSU Interdisciplinary Bodies will be exploited to strengthen scientific capacity in a way that is sensitive to different regional needs.

#### Footnotes:

<sup>14</sup> See [http://www.icsu.org/8\\_teachscience/icsu-iap/](http://www.icsu.org/8_teachscience/icsu-iap/)

<sup>15</sup> The Global Change System for Analysis, Research and Training (START) was highlighted by the Priority Area Assessment Panel as a very successful model of capacity building in the context of research on global environmental change

- An *ad hoc* group will be established to define ICSU's future role in relation to science education.

## 5.3 BRINGING DISCIPLINES TOGETHER

*“The increased emphasis on interdisciplinarity is one of the most significant changes in science over the past decade.”*

One of the most significant changes that has taken place in science over the past decade has been the increased emphasis on interdisciplinarity. It is at the borders between disciplines that many of the most exciting scientific advances are taking place. At the same time, the major challenges that society is facing, from global change and sustainable development through to emerging disease epidemics, can only be fully addressed by a combining approaches and knowledge from different scientific disciplines.

**GOAL:** To ensure that the necessary disciplinary perspectives are considered in developing and implementing ICSU's overall strategy and that effective mechanisms are in place to facilitate the cross-fertilization of ideas from different scientific perspectives.

### 5.3.1 Consultation, foresight and planning

In 2002, ICSU published a meta-analysis of national governmental science foresight exercises – “Identification of Key Emerging Issues in Science and Society: an International Perspective on National Foresight Studies”<sup>16</sup>. This report described a number of key emerging issues in science and technology that are likely to have significant socio-economic implications in many countries. The report was used as the background for a broader consultation in 2003-2004 with the whole ICSU community to identify new and emerging issues, where ICSU might have an important role to play (ICSU, 2004a).

The overall outcome was the identification of 15 broad themes where actions by ICSU would be justified. Actions relating to the various themes are described in the current strategic plan as appropriate. However, the exercise itself and the final report attracted considerable attention and positive feed-back. Because of its inherently international and non-governmental nature, this exercise provided a complementary but distinct perspective to related nationally driven activities.

#### SPECIFIC ACTION:

- As part of its ongoing strategic planning, ICSU will carry out a further Foresight Analysis in preparation for the development of the 2nd six-year strategic plan, including analysis of possible regional differences in priorities as a means of ensuring that the international agenda takes account of regional needs.

### 5.3.2 Seeding new initiatives

ICSU is not a research funding agency but historically has had a small amount of discretionary funding which, since 2001, has been distributed via a competitive strategic grants programme<sup>17</sup>. This programme is designed to provide seed funding for new international interdisciplinary initiatives that bring together a minimum of two ICSU Member organizations/Interdisciplinary Bodies. Priority areas are defined by the Committee on Scientific Planning and Review in consultation with UNESCO, which has co-sponsored the programme, but the actual activities are not prescribed. This allows considerable flexibility for scientific innovation and the exploration of novel ideas and approaches. The programme not

#### Footnotes:

<sup>16</sup> This report was commissioned by the CSPR from the Science and Technology Policy Research Unit, University of Sussex, UK, and was based on an analysis of foresight exercises conducted by governments, national academies, other public bodies and international organizations in over 20 industrialised, transition and developing countries (ICSU 2002b).

<sup>17</sup> Details of the specific projects that are funded in the grants programme are included in the ICSU annual reports and are available at [www.icsu.org](http://www.icsu.org).

only provides support for multidisciplinary activities that are very worthwhile in their own right, but it is also a vital mechanism for implementing and developing ICSU's overall strategy, including, for example, some of the emerging areas listed under 4.4. However, the maintenance of the grants programme is dependent on contributions from external funding agencies<sup>18</sup>. In order to be viable in the future, the ICSU grants programme needs a significant injection of additional funding.

In early 2001, a special *ad hoc* meeting of Scientific Union representatives was convened to discuss future strategy and in particular capacity building. This scientific meeting of Unions was repeated prior to the General Assembly in September 2002 and subsequently in 2004. These latter meetings included satellite meetings of various groupings of Unions, who came together to discuss scientific issues of common interest – geo-hazards, health, the food-chain. These meetings have proven to be a very valuable forum for bringing different disciplines together, to exchange scientific ideas, and develop joint initiatives.

**SPECIFIC ACTIONS:**

- Extensive efforts will be made to attract additional funding to ensure the continuation of the grants programme.
  - Depending on the available funding, CSPR will further develop the strategic grants programme in line with the priorities set out in this strategic plan and those of any co-funding organisations.
  - Meetings of Scientific Unions will be convened by ICSU between General Assemblies in 2007 and 2010, with the aim of identifying emerging scientific priorities and stimulating the development of new inter-union initiatives.
- 

**Footnote:**

*18 During 2001-2005 the grants programme was co-funded by ICSU, UNESCO and the USA but financial constraints reduced the programme in the latter two years and the long-term future commitment from the partners is uncertain.*

# Promoting Participation and Universality



## 6.1 UNIVERSALITY OF SCIENCE

*“The essential elements of the Principle of the Universality of Science are non-discrimination and equity.”*

Progress in science is made through the world-wide exchange of ideas, information, data, materials, and understanding of the work of others. Science is a cooperative exercise that thrives on open international interaction and exchange. It transcends national boundaries. In this sense, science is universal and when this universality is infringed, either intentionally or as an inadvertent side-effect of other policy decisions, it can have serious consequences for science and for society more broadly.

The essential elements of the Principle of the Universality of Science, as defined in ICSU's Statute 5, are non-discrimination and equity. In accordance with this Principle, all scientists should have the possibility to participate, without discrimination and on an equitable basis in legitimate scientific activities, whether they be conducted in a national, trans-national or international context. ICSU has long promoted this Principle, in particular by defending the rights of scientists to freely associate in international scientific meetings.

### ICSU STATUTE 5: THE UNIVERSALITY OF SCIENCE

The Principle of the Universality of Science is fundamental to scientific progress. This Principle embodies freedom of movement, association, expression and communication for scientists as well as equitable access to data, information and research materials. In pursuing its objectives in respect of the rights and responsibilities of scientists, the International Council for Science (ICSU) actively upholds this Principle, and, in so doing, opposes any discrimination on the basis of such factors as ethnic origin, religion, citizenship, language, political stance, gender, sex or age. ICSU shall not accept disruption of its own activities by statements or actions that intentionally or otherwise prevent the application of this Principle.

The ICSU Committee on the Freedom in the Conduct of Science has served as the 'guardian' of Statute 5, ensuring that when the Principle is breached appropriate action is taken. Most of its work has been out of the public eye, but many individual scientists across the world are grateful to this Committee for ensuring that their visa problems have been resolved so that they could attend international meetings. This committee played a particularly important role during the 'Cold War' in ensuring the scientific exchange between East and West. However, with a changing international political picture, the widening gap between rich and poor countries, and concerns about international terrorism and national security, the challenges to Universality are different today to those of the past (ICSU, 2004g).

In the light of these changes, the role and responsibilities of ICSU in relation to Universality were considered as part of a broader independent strategic review (ICSU 2005a), which concluded that the challenges to Universality were now such that the existing ICSU policy committee should adopt a broader remit, extending beyond individual case-work and visa issues for ICSU's own international meetings. ICSU Member organizations should also take on a greater role in awareness raising and safeguarding the Principle of Universality.

**GOAL:** To raise awareness and promote responsibility for the Principle of the Universality of Science within and beyond the ICSU community

**SPECIFIC ACTION:**

- The Standing Committee on Freedom in the Conduct of Science will be restructured to take on a broader remit. In addition to continuing with its traditional case work in relation to the free association of scientists, it will be charged with working with ICSU Members to identify, discuss and advise on broader issues affecting Universality.

## 6.2 A UNIVERSAL PUBLIC DOMAIN FOR DATA AND INFORMATION

*“There is a need for a coordinated global approach aimed at providing universal and equitable access to quality data and information.”*

The flow of scientific data and information is one of the most critical factors in promoting the participation of scientists in international research and in ensuring the universality of science. As well as being of importance to science itself, publicly available scientific data are increasingly important for decision-making by governments and many sectors of society, from clinical practitioners to farmers.

The nature and use of scientific data and information, the conditions under which scientific data and information are produced, distributed, and managed, and the role of scientists and other actors in these processes have been changing rapidly in recent years. It is in this evolving context that the Priority Area Assessment on Scientific Data and Information (ICSU 2004c) puts forward over 50 recommendations on future needs and priorities. It highlights the importance of professional data and information management and the need to build capacity in this area in all countries; the importance of coordination within the ICSU community and beyond, and the need to modernize or replace existing structures. There is a need for a coordinated global approach aimed at providing universal and equitable access to quality data and information. Such an approach will require considerable national and international investment but the potential returns in the longer-term are enormous.

**GOAL:** To facilitate a coordinated global approach to scientific data and information that ensures equitable access to quality data and information for research, education and informed decision-making.

**SPECIFIC ACTIONS:**

- ICSU will play an active role in developing an international framework for the production, management and dissemination/access of scientific data and information. An *ad hoc* Strategic Data and Information Committee will be established, for three years in the first instance, to oversee the development of this framework.
- As part of the planning of an international framework, ICSU will convene a Scientific Data and Information Forum (SciDIF) involving key stakeholders: ICSU National and Union Members, Interdisciplinary Bodies, science funding bodies and other data providers and users.
- ICSU will re-focus its own existing data and information structures as follows:
  - i. The International Council for Scientific and Technical Information, a Scientific Associate of ICSU, will be encouraged to work more closely with the ICSU community on issues relating to science publishing, which is a rapidly evolving field<sup>19</sup>;
  - ii. The International Network for Access to Scientific Publications will work

**Footnote:**

<sup>19</sup> On the basis of the Priority Area Assessment, it is recommended to the 28th ICSU General Assembly that Committee for the Dissemination of Scientific Information be disbanded and that ICSTI take on some of this policy committee's former advisory role.

closely with the ICSU Regional Offices and members to extend its services in developing countries;

iii. The Committee on Data for Science and Technology will be encouraged to develop a long-term strategy, giving special attention to the needs of developing countries;

iv. The World Data Centre system will be reformed taking account of user needs, including those of existing and new ICSU programmes. This will form part of development of the broader strategic framework for data and information.

---

# Stimulating Dialogue and Shared Understanding



Strengthening science for the benefit of society can only be achieved if scientific knowledge is used not only to stimulate innovation and the development of new technologies but also to inform decision-making. This puts an onus on the scientific community to communicate with policy-makers at the local, national and international level. More widely, as we move towards a global knowledge economy, the interests and concerns of society in relation to the uses of science are expanding. Scientists and their representative organizations, such as ICSU, have to accept increasing responsibility and develop new mechanisms to share their understanding with many different stakeholders in society.

As the body that is uniquely representative of the international science community, ICSU is in many instances regarded as the voice of international science and renewed efforts have to be made to ensure that this voice is heard where it is most needed.

## 7.1 SCIENCE AND POLICY

*“Good science is necessary for good decision-making and policy development at the local, national and international level”.*

“Good science is necessary for good decision-making and policy development at the local, national and international level.” This is one of the key messages that ICSU communicated to the UN World Summit on Sustainable Development (Johannesburg, 2002) and the World Summit on the Information Society (Geneva, 2003). ICSU is committed to building on this conviction and ensuring that the voice of the international science community is heard at important international fora.

ICSU and its Interdisciplinary Bodies have played an important role in providing scientific input to international conventions pertinent to environmental protection and sustainable development, such as the UN Convention on Biological Diversity. The strengthening of these conventions will be important to achieve the Millennium Development Goals and implementation of the Johannesburg and Geneva action plans. ICSU continues to have a key role to play in this context, including, for example, reinforcing the Convention to Combat Desertification with new scientific knowledge from the Millennium Ecosystem Assessment.

**GOAL:** To ensure that science is integrated into policy development at the international and national level and that relevant policies take account both of scientific knowledge and the needs of science.

### 7.1.1 Sustainable development: Good governance needs good science.

Following on from the World Summit on Sustainable Development (WSSD, Johannesburg, 2002), ICSU, together with the World Federation of Engineering Organizations, continues to represent the science and technology community in the annual meetings of the UN Commission on Sustainable Development. The Commission provides an important forum for interaction with the other, so called, ‘Major Groups’ of civil society (Business and Industry, Labour Unions, Local Authorities, Farmers, Women, Youth, Indigenous Peoples and NGOs) as well as with relevant UN bodies and government delegations. It provides an interface both between science and society and science and policy. As such, the Commission meetings provide a potential basis for the multi-stakeholder dialogue that is necessary to develop a relevant research agenda for sustainable development.

*“ICSU will participate in efforts by international bodies to strengthen science for sustainable development.”*

In 2004, the OECD Science Ministers issued an important statement on science for sustainable development calling for, among other things, a follow-up meeting to address how science for sustainable development can be further promoted. In 2005, the International Group of Funding Agencies for Global Change Research and ICSU organized a workshop with the development research community to address how global change research can contribute to addressing the Millennium Development Goals. ICSU is now working with these various partners to prepare for substantive scientific input to the follow-up process outlined in the Johannesburg Plan of Implementation and a possible follow-up Summit in 2007.

**SPECIFIC ACTIONS:**

- ICSU will continue to participate in the meetings of the UN Commission on Sustainable Development to ensure that science is fully integrated into policy development in relation to sustainable development.
- ICSU will participate in efforts by OECD and other international bodies to strengthen science for sustainable development and will assist in the preparation of science input to a possible WSSD+5.
- ICSU will provide scientific input to relevant international assessments, conventions and legal tools pertinent to sustainable development

**BOX 4. SCIENCE AND POLICY FOR SUSTAINABLE DEVELOPMENT:  
ICSU IN ACTION**

**DESCRIPTION:**

ICSU represented the international science community at the World Summit for Sustainable Development (Johannesburg, 2002), including the organization of a Science Forum. The Council continues to represent science at the annual meetings of the Commission on Sustainable Development, which bring together Governments, industry and civil society. These meetings provide a potential forum for developing a needs-based research agenda for sustainable development

**PLANNING PROCESS:**

In preparation for the Summit and subsequent CSD meetings, ICSU prepares expert papers, which are submitted as part of the formal process. An additional series of 11 scientific reports was prepared for the Summit itself and various side-events addressing specific scientific issues are organised for CSD meetings.

**IMPLEMENTATION AND OVERSIGHT:**

In consultation with relevant Members and Interdisciplinary Bodies, a science delegation is organised by ICSU and its partners. This is composed of international experts on the topics to be discussed (e.g. the CSD themes in 2006 include climate change and energy). The delegates attend and contribute to the CSD dialogues, which take place in New York over a two-week period. The preparation of input and selection of delegates is organised by the Secretariat with oversight from the Executive Board

**RESOURCES**

Significant funding was obtained from several Foundations (Packard, \$500,000; Rockefeller, \$30,000; UN Foundation, \$35,000) to support activities, including the recruitment of additional short-term staff, related to the World Summit in 2002-2003. The subsequent input to CSD meetings has been supported using 'core' ICSU funds. The recruitment of a part-time Senior Scientific Advisor has been critical to these activities, which also involve significant input from other ICSU staff

*These Sustainable Development activities demonstrate how ICSU can attract substantial external funding and make a significant impact on critical international policy discussions.*

*“One of the major concerns is the need to develop national and international policies on intellectual property rights that strengthen rather than weaken science.”*

## 7.1.2 The Information Society

ICSU actively participated in the first phase of the UN World Summit on the Information Society (WSIS, Geneva, 2003). This included the development of an agenda for action – ‘Science in the Information Society’<sup>20</sup> that lays out the priority issues that need to be addressed at the policy and operational level in order that science can optimally contribute to the rapidly developing global information society. In particular this agenda sets out the key actions necessary to overcome the ‘digital knowledge divide’. These actions, including the need to strengthen the public domain for science and provide universal and equitable access to scientific data, were incorporated into the formal documents that have been adopted by governments. A follow-up to the Geneva (2003) Summit is held in Tunis in 2005 and, with ICSU support several Interdisciplinary Bodies and Member organizations<sup>21</sup> have been closely involved in taking forward issues identified in the Geneva action plan in preparation for Tunis.

At the time of writing this strategic plan it is uncertain what the impact of the Tunis Summit is likely to be and what governmental follow-up process will be implemented. A continuing formal role for ICSU is unlikely. However, whatever happens, it is certain that many of the key issues that have been raised in the summit process regarding the role of science in the information society will continue to be discussed in international policy fora to which ICSU can contribute. In this context, one of the major concerns relating to scientific data and information is the need to develop national and international policies on intellectual property rights that strengthen rather than weaken science. Such policies were hotly debated in the summit process but, whilst the importance of a strong public domain for science and education was acknowledged, it was not clear how this might impact on international organizations, such as the World Intellectual Property Organization (WIPO) and the World Trade Organization, that have responsibility for intellectual property issues.

### SPECIFIC ACTIONS:

- In taking forward the development of an integrated global framework for scientific data and information, ICSU will participate in key international policy fora.
- ICSU will explore, with its members, how appropriate mechanisms can be implemented to ensure that science is fully represented in international organizations, such as WIPO, that might have an impact on access to data and information (and other ‘scientific goods’) for scientific purposes.

## 7.2 SCIENCE AND SOCIETY

*“The globalization of both science and society reinforces the need for greater cross-cultural understanding and tolerance.”*

Both the practice of science and the interaction of science with society have changed very significantly in the past two decades (ICSU, 2005a). Scientific evidence has become essential to policy making in many areas, from agricultural practices to carbon emissions. There is also a greater emphasis on economic growth through innovation and commercialization, which is directly affecting many public research institutions. Accelerated innovation and technology development has been accompanied by increased public awareness of technological risk and scientific uncertainty.

These changes have raised the importance of, and also produced new opportunities to, increase public engagement with science. The globalization of

### Footnotes:

<sup>20</sup> This agenda for action is based on a series of five documents that were published by ICSU (ICSU 2003c) on the following themes: “Universal access to scientific knowledge”; “Decision making and governance”; “Policy issues for scientific information”; “Improving Education and Understanding” and “Optimizing Knowledge.”

<sup>21</sup> CODATA, INASP, IUPsyS and several national academies including the USA and France.

both science and society reinforces the needs for greater cross-cultural understanding and tolerance. Because of its international and interdisciplinary membership, ICSU is uniquely positioned to promote the dialogue that is necessary within the scientific community and by working with partners in the public and private sector it can extend this dialogue into society at large.

**GOAL:** to improve mutual understanding between science and other sectors of society, with a particular focus on ICSU's scientific priorities.

**SPECIFIC ACTIONS:**

- Building on existing expertise within its membership, ICSU will develop a strategy for improving communication with the public on international scientific priority issues.
  - The strategic review Science and Society: Rights and Responsibilities (ICSU, 2005a) identified a number of ethical and other issues, such as scientific uncertainty and risk, that are influencing the interface between science and society. These issues will be addressed, as far as possible, in the context of new strategic initiatives (as detailed elsewhere in this plan).
-



Part 3

## Strengthening the Structures

# Delivering the Strategy: Structure and Funding



In order to implement the strategy outlined in this document, including the development of several major new initiatives, ICSU must build on its major strength, the National and Scientific Union Members. There will need to be a continuing evolution in ICSU's structures and mechanisms and additional funding must be secured.

## 8.1 MEMBERS

*“The legitimacy of ICSU depends on its broad disciplinary and international membership.”*

ICSU is a membership organization. The legitimacy of ICSU depends on its broad disciplinary and international membership. The ability of ICSU to plan and implement scientific initiatives depends on individual scientists, who come from Member organizations and the institutional and financial support of these same organizations. It goes without saying that the full support and active participation of the ICSU Members will be the single most critical factor in implementing ICSU's strategy.

At the same time, as science develops into new interdisciplinary areas and ICSU tries to reach out to countries that are still largely excluded from international science, the limitations of the current membership structure become apparent. The membership can be criticized both in terms of disciplinary expertise and geographical coverage.

**GOAL:** To ensure that ICSU has an active worldwide membership, with well-developed links to national science and policy communities and the necessary disciplinary expertise to strengthen international science for the benefit of society.

### 8.1.1 National Members

To be credible as an international voice for science, ICSU must ensure that it can reach out to a broader national membership base. The membership in Africa, for example, is still relatively weak (Figure 1). The developing countries must have a stronger voice in formulating the international science agenda and scientists from the developing world must play a more active role in ICSU activities, including its research programmes.

*“ICSU must ensure that it can reach out to a broader national membership base.”*

It is also important to ensure that national scientific communities are represented by the most appropriate organizations. ICSU has a rich diversity of National Members: science academies, research funding agencies, research institutes, and, in a small number of cases, government ministries. Even within a single category, such as science academies, there is considerable heterogeneity in terms of both functions and disciplinary representation. This diversity is an expression of the different national systems for science and, as these systems change, there may occasionally be a need for existing ICSU Members to consider whether they are still the most appropriate body to adhere to ICSU. From the ICSU perspective, what is required is active Members, who are representative of, and can provide links to, their national scientific communities. This includes being able to link to activities of the Scientific Unions and Interdisciplinary Bodies at the national level. National Members also have a key role to play in ensuring the link between science and policy.

A particular challenge for ICSU is ensuring that its activities are linked to research funding agencies at the national level. Where the adhering Member is such an

agency, then this should be a lesser problem. However, this is the exception rather than the rule. In order for ICSU to implement its programme activities it needs to influence national research strategies and mobilize national funding. This has been achieved to some extent in the context of the global environmental change programmes, for which a special International Group of Funding Agencies for Global Change Research has been established. However, ICSU needs to work with its membership to ensure more consistent links with national and regional research funding bodies

**SPECIFIC ACTIONS:**

- ICSU will intensify the dialogue with National Members in order to build on their competencies in developing new programme and policy activities.
- ICSU will work with its Regional Offices to significantly expand the number of National Members from developing countries.
- As a complement to the development of Regional Offices, periodic meetings of ICSU National Members will be organised on a regional basis.
- National Members will be encouraged to review and strengthen, as necessary, their mechanisms for inter-acting with ICSU and its Scientific Unions and Interdisciplinary Bodies
- ICSU will explore mechanisms to develop a dialogue with national funding agencies as an integral part of its development of international research programmes.

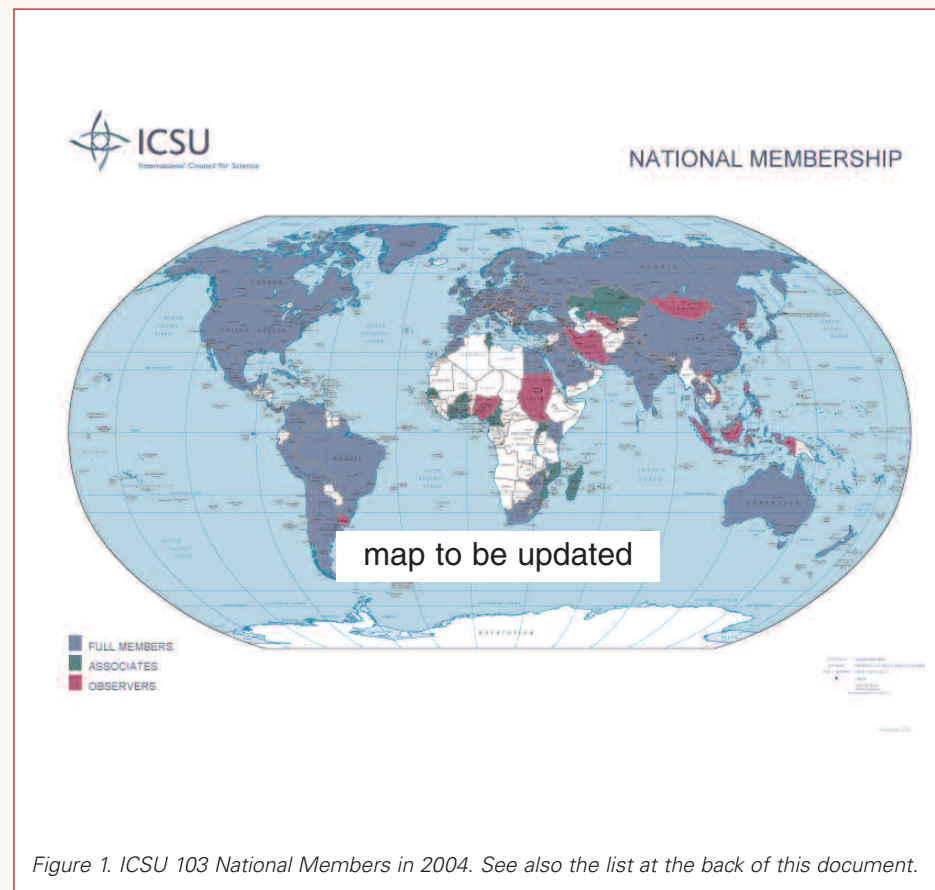


Figure 1. ICSU 103 National Members in 2004. See also the list at the back of this document.

**8.1.2 International Scientific Unions**

The Scientific Unions provide the disciplinary backbone to ICSU. They play a central role in bringing together scientists from all parts of the world to consider issues of particular interest to individual disciplines. Unions organise regular Scientific Conferences, which attract thousands of scientists, and

*“ICSU will build on the capacities of the Scientific Unions in the implementation of the strategic plan.”*

establish commissions and working groups to address topical issues. Many Unions have their own capacity building programmes and make special efforts to involve young scientists. In-put from the Unions has been invaluable in all the assessment and review exercises that provide the basis for this strategic plan. Continuing in-put, support and advice from the Unions and their international scientific networks will be critical in the implementation of this plan.

Unions have increasingly taken initiatives to collaborate amongst themselves in areas of common interest. For example, fifty years after the International Geophysical Year, the Year of Planet Earth (2008) is a major new initiative being jointly organised and sponsored by five unions. This initiative can provide important input to the plans for a potential new interdisciplinary ICSU programme on Natural and Human-Induced Hazards (see 4.1.2). Likewise, a large number of Unions have started to develop an initiative on Science for Health and Human Wellbeing, which will be linked to the plans for a new interdisciplinary ICSU programme on Human Health (4.3).

The ICSU Union membership has historically been focussed on the natural sciences, although there are also several Unions that provide a bridge with social, health and technological sciences. To fully implement the new initiatives described in this strategic plan will necessitate increased input from these ‘link’ disciplines<sup>22</sup> as well as the inclusion of disciplinary perspectives not covered by current Union Members. This is also important, with regards to the legitimacy of ICSU to speak on behalf of the global science community in international fora. Although strategic partnerships with, for example, the International Social Science Council and various international engineering organizations may partly fulfil these needs, additional Union membership may also be necessary. Should there be an increase in the number of Scientific Unions, it may also be necessary to consider a formal clustering of Unions<sup>23</sup>.

A recurrent theme in the assessment and review process has been the need for improved communication and coordination between the activities of the Interdisciplinary Bodies and the Scientific Unions. It is important that the wealth of expertise that exists within the Scientific Unions is utilized to the fullest extent, and, *vice versa*, the programmes of the Interdisciplinary Bodies have much to offer to the Unions.

#### **SPECIFIC ACTIONS:**

- ICSU will build on the capacities of the Scientific Unions in the implementation of the strategic plan.
- Mechanisms will be developed to facilitate collaboration with those disciplines not currently represented in ICSU, in the context of the current strategic plan.
- The Scientific Unions will be encouraged to develop mechanisms for increased collaboration with Interdisciplinary Bodies.

---

#### **Footnote:**

*22 Link disciplines that integrate some elements of both natural and social sciences and which are represented in ICSU include geography and psychology. The history and philosophy of science and anthropology and ethnology are also represented by ICSU Unions.*

*23 An ad hoc working group carried out a preliminary review of some of the issues relating to the Union membership of ICSU in 2004. This considered a clustering mechanism to generate four groupings of ICSU members: Physical and Chemical Sciences; Earth and Space Sciences; Biological Sciences and Social Sciences. In the first instance it is proposed that such groupings should be established to ensure appropriate disciplinary representation on the ICSU Executive Board (ICSU, 2005c).*

## 8.2 INTERDISCIPLINARY BODIES

*“The Interdisciplinary Bodies of ICSU bring together different scientific disciplines to address scientific issues of international relevance.”*

By definition the Interdisciplinary Bodies of ICSU bring together different scientific disciplines to address scientific issues of international relevance. Many of them have also reached out beyond the traditional ICSU constituency to embrace other disciplines. For example, the International Human Dimensions Programme is co-sponsored by the International Social Sciences Council (ISSC) and has fully involved the social sciences. This has been important not only in the delivery of its own programme but has also had a major influence on the other Global Environmental Change programmes. Interdisciplinary Bodies not only provide a forum for disciplines to come together to plan and coordinate research and research tools, they also, in many instances, provide a link between science and policy.

Over time, the portfolio of ICSU Interdisciplinary Bodies has changed in response to changing priorities. The various reviews and assessments that have been conducted to feed into the current strategic plan have included a number of recommendations on the restructuring of existing bodies as detailed in the previous sections of this plan. Several Bodies have also been recommended for dissolution or devolution to relevant ICSU Unions (see 8.4 ahead). However the majority of the current Bodies were assessed as having an important continuing contribution to make in the future. In order to increase their effectiveness it was also highlighted in many specific instances that closer cooperation and better communication between the Interdisciplinary Bodies and ICSU Members is necessary.

**GOAL:** to maintain an evolving portfolio of Interdisciplinary Bodies that effectively address priorities of major importance to science and society, interact with the ICSU Membership and contribute to new strategic initiatives.

### **SPECIFIC ACTIONS:**

- As part of its ongoing strategic planning role, the Committee on Scientific Planning and Review will continue to monitor and review the performance and relevance of existing Interdisciplinary Bodies.
- Interdisciplinary Bodies will be encouraged to strengthen their ties with Union and National Members and, in taking forward the various new strategic initiatives, emphasis will be put on coordination with existing Interdisciplinary Bodies as necessary.

## 8.3 GOVERNANCE AND THE SECRETARIAT

*“There will need to be a continuing evolution of the ICSU Secretariat.”*

The external assessment of ICSU in 1996 recommended a number of changes to the Council's governance structure, which have subsequently been implemented. These principally included the establishment of a Committee on Scientific Planning and Review; disbandment of the General Committee and an expanded membership for the Executive Board. These changes at the level of governance have been complemented by equally significant changes at the Secretariat. The number of scientifically qualified staff has increased dramatically over the past few years. In 2005, 50% of the permanent staff had postgraduate scientific training. This new expertise has been married to experienced administrative support and the combination of both has been crucial to the strategic planning and will be even more important in the implementation of this strategy.

With its new governance structure and more comprehensive Secretariat support staff, ICSU is better equipped than ever to strengthen international science for the benefit of society. However, in order to fully implement the ambitious strategy laid out in this document, there will need to be a continuing evolution of the ICSU Secretariat and some additional skills will be required. In the period 2002-2005, a number of short-term scientific posts (either funded by ICSU or via secondments from Member Organizations) have been created on a project basis and this has worked very successfully. It provides a flexible mechanism for introducing new ideas and perspectives as well as increasing the productive

capacity of the Secretariat.

In line with the changes in ICSU as an organization, the overall corporate image was revisited in 2003. The most visible manifestation of this was a new logo. More importantly, as part of this process, all regular ICSU publications were reviewed and either replaced or modernised, for example the previous ICSU Annual Report (~600pp) has been replaced by a more accessible Annual Report (~30pp). The Council has published a number of widely disseminated reports since 2002 in preparation for the World Summit on Sustainable Development, the World Summit on the Information Society, and as part of the strategic planning exercise. Considerable effort has also gone into enhancing electronic communications, including the launching of a new website and tri-monthly e-newsletter, Insight. A central role in these activities was played by the Communications Officer, a position that had not previously existed within the ICSU Secretariat. Regrettably, this post had to be put into abeyance in 2004 because of financial exigencies.

ICSU's communication strategy needs to be further developed. In particular, greater efforts must be made to engage scientists and policy-makers outside of the ICSU community. This will require establishing strong links with communication professionals within ICSU's own member organizations and directly with science journalists.

**GOAL:** To continue to develop the professional Secretariat that is necessary for ICSU to function as a strategic science organization.

**SPECIFIC ACTIONS:**

- Additional scientific management expertise will be recruited to the Secretariat on a project basis. This will require either additional funding and/or secondments from ICSU Members or partners.
- A Communication Officer will be recruited to further develop and ensure the implementation of a communication strategy in line with ICSU's overall scientific strategy.

## 8.4 STRATEGIC PARTNERS

*“ICSU has established a number of key strategic partnerships that have been important for both research and policy activities.”*

Over time, ICSU has established a number of key strategic partnerships that have been important for both research and policy activities. Such partnerships will be important in taking forward ICSU's strategy.

**GOAL:** To further develop active strategic partnerships with appropriate international governmental and non-governmental partners that will bring distinct added value to ICSU activities and help deliver its overall mission.

### 8.4.1 The UN system and Intergovernmental Organizations

At the international science policy level, ICSU's most valuable partners are the various United Nations agencies that have a remit for science. The governmental nature of the UN provides an important complement to ICSU as an independent non-governmental organization. In this context, the principal partner for ICSU is UNESCO, which has been working closely with ICSU since its creation in 1946.

UNESCO and ICSU co-organized the World Conference on Science in 1999, which brought together scientists and government ministers, and a follow-up symposium in 2005. The Organization was also a key partner for ICSU in several activities relating to the UN World Summits on Sustainable Development and the Information Society. UNESCO is an important co-sponsor of the World Climate Research Programme<sup>24</sup> and DIVERSITAS, an International Programme of

**Footnote:**

<sup>24</sup> WCRP is co-sponsored by ICSU, the International Oceanographic Commission of UNESCO and the World Meteorological Organisation.

*“The strengthening of links with international intergovernmental structures will be important in implementing the ICSU strategy.”*

Biodiversity Science<sup>25</sup>. The International Union of Geological Sciences co-sponsors the International Geoscience Programme of UNESCO and, looking to the future, the Scientific Unions are likely to be key partners in the International Basic Sciences Programme that is being developed by UNESCO. In addition to these specific activities, ICSU receives valuable UNESCO funding, which is used to seed new initiatives, via the strategic grants programme. This financial contribution is governed by a six-year Framework agreement that will be considered for renewal in 2007.

UNESCO has five main sectors – Science (Natural and Social), Communications and Information, Education, and Culture. Historically, ICSU’s main relations have been with the Natural Sciences Sector but over the past three years, the partnerships with the other sectors have been strengthened. Social sciences, education and communication and information are all integral to ICSU’s strategy and UNESCO as a whole will be as important a partner for ICSU in the future as it has been in the past.

Whilst UNESCO continues to be ICSU’s principal partner in the UN system, there are several other UN bodies that also have strong links with ICSU. For example, the World Meteorological Organization hosts the Secretariat for the World Climate Research Programme and co-sponsors the International Polar Year: 2007-2008. Several UN agencies<sup>26</sup> collaborate with ICSU as sponsors of the three Global Observing Systems and this same partnership will be important in defining the science agenda for the planned Global Earth Observing System of Systems (GEOSS).

Because of ICSU’s strong environment portfolio, the United Nations Environment Programme (UNEP) is also an important partner. The ICSU Scientific Committee on Problems of the Environment has worked with UNEP for many years, but there is every reason for ICSU itself to seek more specific collaborative ties with UNEP. ICSU has participated in several recent meetings to explore how the scientific basis of UNEP can be strengthened. Closer collaboration would be an important complement to ICSU’s work with the UN Commission for Sustainable Development (see 7.1.1).

Science and higher education policy is another important area for future collaboration between ICSU and intergovernmental science organizations. For example, the UNESCO Forum on Higher Education, Research, and Knowledge, in which ICSU is a formal partner, is increasing its focus on research systems. UNESCO, and other organizations such as OECD, have valuable expertise in data gathering and statistical analysis, which could be used to monitor the stocks and flows of scientists and provide a more rigorous basis for addressing the ‘brain drain’, which is a critical issue for international science<sup>27</sup>.

Of course the UN is not the only forum where Governments come together to discuss issues of relevance to science and society. For example, the OECD is collocated in Paris and whilst its Members are representative mainly of the richer Nations, it has increasing interactions with developing countries and an interest in global issues such as sustainable development. ICSU has established links with both the OECD Global Science Forum and its Committee for Scientific and Technological Policy. The strengthening of these and other links with international intergovernmental structures will be important in implementing the ICSU strategy.

**Footnotes:**

25 *DIVERSITAS* is co-sponsored by five organizations: ICSU, IUBS, SCOPE, UNESCO and IUMS.

26 ICSU together with WMO, UNESCO, FAO and UNEP co-sponsor the climate, ocean and terrestrial observing systems

27 *The need for better quantification of the problem of ‘brain drain’ is discussed in the Priority Area Assessment on Capacity Building in Science (ICSU, 2005b).*

#### SPECIFIC ACTIONS:

- This strategic plan will form the basis for renegotiating the Framework agreement with UNESCO in 2007.
- Whilst the Natural Sciences Sector will continue to be ICSU's main partner within UNESCO, relations with other sectors will be strengthened still further. Science education, science and society and the 'public domain for science' are key topics where closer collaboration should be developed.
- ICSU will strengthen its links to UNESCO in areas of science policy, including active participation in the Forum on Higher Education, Research and Knowledge.
- Through the Regional Offices of ICSU and UNESCO, collaborative partnerships that are of particular relevance to the ICSU National Members in the regions, will be developed.
- ICSU will seek strengthened involvement with the United Nations Environment Programme, in particular through the UNEP Science Initiative.
- UNESCO, UNEP, WMO and FAO will continue to be key partners in order to link research, monitoring, assessment and policy.
- New partnerships will be developed on a 'case by case' basis with the most appropriate UN agencies and other intergovernmental bodies. This will provide critical links to the international, intergovernmental, policy-making system. It should also in some instances result in additional financial support.

#### 8.4.2 International non-governmental science and technology organizations

Over the years ICSU has worked in collaboration with numerous organizations and these partnerships have been critical in almost all major activities. There are also a small number of non-governmental science organizations with whom ICSU has developed more regular interactions at an institutional level.

ICSU has a formal Memorandum of Understanding with the Academy of Sciences for the Developing World (TWAS), which was founded in 1983 and has over 700 individual scientific members, mainly from developing countries. The Academy is active in capacity building for science and has a number of support programmes for individual scientists and institutions, including a Visiting Scientists Programme<sup>28</sup>, which is co-sponsored by ICSU. The Academy has also been an important partner in recent activities relating to science for sustainable development. In parallel to the establishment of ICSU Regional Offices, the Academy is developing regional foci and there is clear potential for working closely together at this level in the future.

The InterAcademy Panel on International Issues (IAP) is a network of over 90 national science academies that was launched in 1993. There is considerable overlap with the membership of ICSU and a sharing of common interests. The Panel produces position statements on key scientific topics and has a programme for strengthening academies in developing countries, which is very relevant to ICSU. The Panel is also developing new actions in specific areas, such as water and scientific information, in which ICSU has major programmes.

The InterAcademy Council was created in 2000 as a Foundation whose rotating Board membership represents 15 national science academies. It has an independent Secretariat and conducts in-depth study reports on key topics for

#### Footnote:

<sup>28</sup> Following a review in 2001, the Visiting Scientists programme replaced two previous programmes – for short-term Fellowships and visiting Professorships. It is co-sponsored by TWAS, ICSU, UNESCO and the United Nations University/Institute for Advanced Study.

*“ICSU will form partnerships and co-sponsor activities on a case by case basis where these partnerships can clearly add value.”*

international science but it is not an implementing organization. The first study report on capacity building (IAC, 2004a) was widely acclaimed and provided a valuable starting point for ICSU's own more-limited priority area assessment on this topic (ICSU, 2005b). The recent study on agriculture and food security in Africa (IAC, 2004b) will provide important input to the International Assessment on Agricultural Science and Technology for Development launched by the World Bank and other UN organizations and in which ICSU is one of the key scientific partners. The planned studies on "Women in Science" and "Energy" should be similarly valuable in informing future ICSU activities.

ICSU often works closely with other representative organizations, when there is need for disciplinary expertise outside that of its own Scientific Unions. This is particularly the case in relation, to engineering, health and social sciences. For example, the World Federation of Engineering Organizations is a formal partner in representing the Science and Technology Community in the Commission on Sustainable Development (although there are other active organizations that represent technological sciences and with whom productive partnerships might also be developed). The International Social Sciences Council has also been involved, albeit to a lesser extent, in the UN sustainable development discussions, as well as being a co-sponsor of the International Human Dimensions Programme. In the health area, the newly created InterAcademy Medical Panel may develop into an appropriate partner for some activities, where clinical representation and expertise is required.

One up-and-coming event for which additional partnerships will be necessary is the 75th anniversary of ICSU, which will occur in 2006. The tentative focus for this will be 'young scientists and international science'. In order to be effective, ICSU will have to work with its own membership and develop links with those organizations that represent the younger scientific community, such as the nascent World Academy of Young Scientists.

In nurturing all of these partnerships it needs to be recognized that there can be considerable extra cost in terms of workload and dilution of recognition/credit as well as significant potential added-value and increased impact. The balance between the costs and the rewards need to be carefully assessed on a case by case basis and the roles and responsibilities of the various partner organizations need to be clearly defined. However, ICSU's capacity is limited and international science is a very broad area. Active and productive partnerships with other organizations will be critical in taking forward ICSU's strategy.

#### **SPECIFIC ACTIONS:**

- ICSU will form partnerships and co-sponsor activities on a case by case basis and where these partnerships can clearly add value and the activities themselves directly contribute to ICSU's own mission.
- TWAS continues to be a major ICSU partner and new joint projects will be developed in support of the Regional Offices, basic sciences in developing countries, and other areas of common interest.
- ICSU will work with the InterAcademy Panel to ensure that its membership is fully informed of ICSU initiatives and identify areas where there is potential to develop productive collaboration.
- ICSU will strengthen its links with the InterAcademy Council, whose expert reports can be very valuable in informing ICSU's strategy. ICSU will review what it can contribute to the implementation of recommendations in such reports.
- ICSU collaboration with the International Social Sciences Council as co-sponsors of the International Human Dimensions Programme will continue. ICSU will increasingly seek productive collaboration in areas of social science, where it lacks expertise.

- In order to strengthen input from the engineering sciences, ICSU will explore collaboration with the International Council of Academies of Engineering and Technological Sciences, whilst continuing the existing partnership with the World Federation of Engineering Organizations for the UN Commission on Sustainable Development.
- As the need for expertise in the medical sciences increase, ICSU will develop partnerships with the InterAcademy Medical Panel and/or other representative organizations.
- ICSU will work with its Members and develop new partnerships with young scientists as necessary to organise activities to mark its 75th anniversary in 2006.

**8.5 MORE FLEXIBLE IMPLEMENTATION MECHANISMS AND QUALITY ASSURANCE**

Historically, ICSU has implemented new initiatives by establishing Interdisciplinary Bodies or co-sponsored Joint Initiatives. It has also, over time, established a small number of Policy or Advisory Committees to advise the Executive Board and membership in key areas such as ethics, Universality and scientific publishing. Almost all of these structures were conceived at the outset

**BOX 5. TURNOVER AND RENEWAL OF ICSU ACTIVITIES, 2002-2005**

INTERDISCIPLINARY BODY	ACTION TAKEN
Water Research (SCOWAR)	Closed 2002, theme being followed up by other environment programmes
Biotechnology (ACOGEB)	Closed 2002
Food Security (CSFS)	Closed 2002, theme being followed up by environment programmes
Disaster Reduction (CDR)	Recommended for closure 2005, <i>ad hoc</i> scoping group for new programme established
Science Education (CCBS)	Recommended for closure 2005
Lithosphere (SCL)	Recommend devolve to Unions, 2005
Astronomical and Geophysical Services (FAGS)	Recommend devolve to Unions, 2005
-----	
POLICY / ADVISORY COMMITTEE	ACTION TAKEN
S&T for Developing Countries (COSTED)	Closed 2002, replaced by Regional Offices and a new Policy Committee
Governance (GC)	Closed 2002, functions taken on by Board
Research Ethics (SCRES)	Closed 2002
Environment (ACE)	Closed 2002, functions taken on by CSPR
Scientific Information (CDSI)	Recommended for closure 2005
Conduct of Science (SCFCS)	New Universality of Science Committee, 2005

*“There needs to be a move away from permanent structures to more ad hoc, time-limited activities.”*

as long-term ‘standing’ bodies. Some renewal mechanisms were built into them, with committee membership being changed every three years and statutory performance reviews every six years. However, the broader issue of whether any individual body should continue to be a high priority for ICSU was not directly addressed. The net result was that many ICSU bodies had very long life-spans and ICSU’s overall portfolio expanded in a somewhat *ad hoc* manner that did not necessarily reflect the key priorities for science and society.

Over the past four years, CSPR and the Executive Board have overseen a review process that has considered all of ICSU’s Interdisciplinary Bodies, Joint Initiatives and Policy/Advisory Committees in a broader strategic context. As a result of this process, ten bodies or committees have been disbanded or devolved since 2002 (Box 5) and several others are being re-focused. ICSU now has a more coherent portfolio of bodies and committees that address its main strategic priorities and will be complemented by the other new initiatives described in this strategic plan. However, it has also become clear from the strategic review process that the existing implementation mechanisms need to be modified to prevent stagnation and ensure renewal of future activities. In particular, there needs to be a move away from permanent structures to more *ad hoc*, time-limited activities and new initiatives will in future be established with clear ‘sunset clauses’ from the outset.

**GOAL:** To ensure that all ICSU activities continue to be of high quality and strategically relevant.

**SPECIFIC ACTIONS:**

- The implementation of new ICSU initiatives will be done by establishing *ad hoc* committees and structures for limited periods of time.
- As part of its ongoing strategic planning role, CSPR will continue to monitor the ICSU portfolio of current and new activities, initiating new Priority Area Assessments or specific *ad hoc* reviews, as necessary. This should ensure both the quality of individual activities and the strategic direction of the portfolio as a whole.

## 8.6 FUNDING

*“Some augmentation of Member dues and the consolidation of existing financial support form partners will be necessary.”*

The principal source of funding for ICSU is membership dues. The costs of core activities, as agreed to by Members, need to be covered by these dues. In the very active period of development of this strategic plan, 2003-2005, ICSU’s budget was significantly reduced in real terms because of the devaluation of the US Dollar versus the Euro. Dues were established in US Dollars at the 2002 General Assembly on an assumption of parity with the Euro. As most of ICSU’s expenditure is in Euros, this has caused a major budget deficit, which could only be solved by using up ICSU’s non-mandatory reserves. It will be proposed to the 28th General Assembly (October, 2005) that dues should be fixed in Euros to ensure income and expenditure in the same currency.

Historically, the other major sources of funding to ICSU have been grants from partner organizations and foundations, including annual funding from the US State Department and UNESCO, which has been used to seed new initiatives via the grants programme, and the US National Science Foundation - for activities in the general area of the environment. In 2002 additional funding was also secured from several foundations in the USA for activities related to sustainable development. Whilst, the continuity of this ‘external’ funding cannot be relied upon to support long-term core activities, it is essential for seeding new initiatives, via the grants programme, and for ‘kick-starting’ any major programme or policy activities.

In order to initiate the strategic actions laid out in this document, some augmentation of Member dues and the consolidation of existing financial support

from partners will be necessary. However, this alone will not be sufficient to cover the full implementation costs of the proposed major new scientific initiatives. A concerted effort will have to be made to secure funding for these from a variety of potential sources, including:

1. Special *à la carte* contributions from ICSU Members similar to that for some of the Interdisciplinary Bodies that have recently been disbanded
2. 'In kind' support from Members and partners, including secondments, or the hosting of secretariat functions for new initiatives.
3. Competitive funding from national and regional funding agencies and private foundations. The strategic plan itself provides the basis for concerted fund-raising efforts over the next six years.

**GOAL:** To ensure adequate long-term funding to support the planning, coordination and support functions of ICSU and the additional funding necessary to fully implement the new initiatives described in this strategic plan.

---

# References

www.icsu.org

- ICSU, 1996 Final Report ICSU Assessment Panel. 42pp
- ICSU, 2002a. Report of ICSU's CSPR Panel for Review of Committee on Science and Technology in Developing Countries (COSTED). 39 pp.
- ICSU 2002b. Identification of Key Emerging Issues in Science and Society: an International Perspective on National Foresight Studies. 28 pp.
- ICSU 2002c. Science and Technology at the World Summit on Sustainable Development, 26 August to 4 September 2002, Johannesburg, South Africa. ICSU Series on Science for Sustainable Development No. 11. 76pp. For other volumes in the series, see [www.icsu.org](http://www.icsu.org).
- ICSU 2002d Energy and Transport, 20pp
- ICSU 2003a. Environment and its Relation to Sustainable Development. Report of the CSPR Assessment Panel. 62 pp.
- ICSU 2003b. New Genetics, Food and Agriculture: Scientific Discoveries – Societal Dilemmas. 56pp.
- ICSU 2003c. Science in the Information Society 1-4 and, together with ISSC, Optimizing Knowledge in the Information Society. 6+6+6+6+6 pp.
- ICSU 2004a. Foresight Analysis: Report of the CSPR. 26 pp.
- ICSU 2004b. Energy and Sustainable Societies. Recommendations for ICSU from the Working Group on Energy and Sustainable Societies. 19pp.
- ICSU 2004c. Scientific Data and Information. A Report of the CSPR Assessment Panel. 42pp.
- ICSU 2004d. A Framework for the International Polar Year 2007-2008. 38 pp.
- ICSU 2004e. Workshop Report on Socioeconomic Data in Relation to the Integrated Global Observing Strategy Partnership (IGOS-P). 10 pp.
- ICSU 2004f. The Value of Basic Scientific Research (position statement). 2 pp.
- ICSU 2004g. Universality of Science in a Changing World (position statement). 3pp
- ICSU 2005a. Science and Society: Rights and Responsibilities – a Strategic Review. 38pp
- ICSU 2005b. Capacity Building in Science: Report of the CSPR Assessment Panel.
- ICSU 2005c. Review of Membership and Structure.
- ICSU 2005d. Regional Meeting for Africa. Conference Report. 63 pp.
- ICSU 2005e. Science and Natural Hazards (position statement). 1pp
- ICSU-ISTS-TWAS 2005. Harnessing Science and Technology and Innovation for Sustainability. Report from the Advisory Group report on Science for Sustainable Development.
- InterAcademy Council 2004a. Inventing a Better Future. A Strategy for Building Worldwide Capacities in Science and Technology. 144 pp. [www.interacademycouncil.net](http://www.interacademycouncil.net)
- InterAcademy Council 2004b. Realizing the Promise and Potential of African Agriculture. Science and Technology Strategies for Improving Agricultural Productivity and Food Security in Africa. 266 pp. [www.interacademycouncil.net](http://www.interacademycouncil.net)

# Membership

July, 2005

## NATIONAL MEMBERS

List includes full Members, Scientific Associates\*, and Observers\*\*

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

*In addition to full voting members, there are two other categories of National Member. National Scientific Associates are bodies that are not quite ready for full membership. They are normally required to apply for Full Member status within six years of becoming an Associate Member. Associates do not have voting rights at ICSU General Assemblies and do not pay dues. The Observer category allows Members who cannot currently meet their financial obligations to maintain ties with ICSU. Normally, no Observer shall be allowed to remain in this category for more than six years. Observers do not have voting rights at ICSU General Assemblies.*

## SCIENTIFIC UNION MEMBERS

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

## SCIENTIFIC ASSOCIATES

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

*Scientific Associates pay a minimal annual subscription and do not have voting rights. They bring their own particular perspectives to ICSU activities. For example, the International Arctic Science Council is a valuable partner in implementing the International Polar Year. Depending on their structure and involvement, some Associates may apply to be recognized as full Union Members."*

# Secretariat

## 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*

**Elisabeth Merle**  
*Administrative Officer*

## Scientific Planning and Special Projects

**Laurie Geller**  
*Science Officer*

**Rohini Rao**  
*Administrative Officer*

## Communication and Information Technology

**Mustapha Mokrane**  
*IT Officer / Webmaster*

## Administrative Staff

**Maureen Brennan**  
*Administrative Officer, Membership*

**Eric Leparmentier**  
*General Services*

**Natacha de Marchi**  
*Accountant*

# Executive Board, 2003-2005

## Officers

**Jane Lubchenco**

*President*

**Goverdhan Mehta**

*President-elect*

**Hiroyuki Yoshikawa** (until March 2004)

*Past-President*

**David Parry**

*Vice-President for Scientific Planning  
and Review*

**Peter Tyson**

*Vice President for External Relations*

**Ana María Cetto**

*Secretary-General*

**Roger Elliott**

*Treasurer*

## Ordinary members

**Giovanni Berlucchi** (IBRO)

**Robin Brett** (IUGS)

**Michel Denis** (IUPsyS)

**Burton Richter** (IUPAP)

**Hernan Chaimovich** (Brazil)

**Marie-Lise Chanin** (France)

**Francis Gudyanga** (Zimbabwe)

**Lucie Lapointe** (Canada)

# Committee on Scientific Planning and Review, 2003-2005

**David Parry**, *Chairman*

Biophysics, New Zealand

**Anne Buttimer**

Geography, Ireland

**Michael Clegg**

Plant Sciences, USA

**François Gros**

Molecular Biology, France

**Kiyoshi Kurokawa**

Medicine, Japan

**John Marks**

Environmental Sciences, Holland

**Khotso Mokhele**

Microbiology, South Africa

**Eric Odada**

Geology, Kenya

**Graeme Pearman**

Environmental Sciences, Australia

**Ranjan Ramasamy**

Biochemistry, Sri Lanka

**Dai Rees**

Biochemistry, UK

**Pierre Ritchie**

Psychology, Canada

**Goverdhan Mehta** (*ex officio*)

Chemistry, India

**Ana-Maria Cetto** (*ex officio*)

Physics, Mexico

**Thomas Rosswall** (*ex officio*)

Microbiology, Sweden

# List of Acronyms

ACOGEB	Advisory Committee on Genetic Experimentation and Biotechnology
AIDS	Acquired Immune Deficiency Syndrome
CDSI	Committee on Dissemination of Scientific Information
COSPAR	Committee on Space Research
COSTED	Committee on Science and Technology in Developing Countries
CSPR	Committee on Scientific Planning and Review
DIVERSITAS	An international programme of biodiversity science
ESF	European Science Foundation
FAGS	Federation of Astronomical and Geophysical Data Analysis Services
FAO	Food and Agriculture Organisation of the UN
GA	General Assembly
GCOS	Global Climate Observing System
GEOSS	Global Earth Observation System of Systems
GOOS	Global Ocean Observing System
GTOS	Global Terrestrial Observing System
IAC	InterAcademy Council
IAP	InterAcademy Panel on International Issues
ICSTI	International Council for Scientific and Technical Information
ICSU	International Council for Science
IGBP	International Geosphere Biosphere Programme
IGFA	International Group of Funding Agencies for Global Change Research
IGOS	Integrated Global Observing Strategy
IGY	International Geophysical Year
IHDP	International Human Dimensions Programme on Global Environmental Change
INASP	International Network for the Availability of Scientific Publications
IOC	Intergovernmental Oceanographic Commission
IPY	International Polar Year
ISSC	International Social Science Council
IUBS	International Union of Biological Sciences
IUCAF	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science
IUMS	International Union of Microbiological Societies
MA	Millennium Ecosystem Assessment
WDC	World Data Centres
WIPO	World Intellectual Property Organization
NEPAD	New Partnership for African Development
NGO	Non Governmental Organization
OECD	Organisation for Economic Cooperation and Development
SCAR	Scientific Committee on Antarctic Research
SCL	Scientific Committee on the Lithosphere
SCOPE	Scientific Committee on Problems of the Environment
SCOR	Scientific Committee on Oceanic Research
SCOSTEP	Scientific Committee on Solar Terrestrial Physics
TWAS	Academy of Sciences for the Developing World
UN	United Nations
UNEP	United National Environment Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
UNU/IAS	United Nations University/Institute of Advanced Studies
WCRP	World Climate Research Programme
WMO	World Meteorological Organization
WSIS	World Summit on the Information Society
WSSD	World Summit on Sustainable Development

Photo credits: British antarctic Survey (p. 21); CNRS Photothèque, Georges Dubosclard, (p. 29);  
all other photos, Getty Images.

Designed & produced by Communiquer +33 (0)4 9395 2875

## 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.

ICSU  
51, boulevard de Montmorency  
75016 Paris, France

Tel. +33 (0)1 45 25 03 29  
Fax +33 (0)1 42 88 94 31  
secretariat@icsu.org