



REPORT

27TH GENERAL ASSEMBLY OF ICSU

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17 January 2003

27TH GENERAL ASSEMBLY OF ICSU

Rio de Janeiro, Brazil
24-28 September 2002

REPORT

1. Welcome and Opening of the General Assembly

The Vice -Minister of Science and Technology of Brazil, C. Pacheco, gave an opening address on behalf of the Minister, R. Mota Sardenberg. He spoke of the role of science, technology and innovation and of the importance of an information /knowledge society, not just in Brazil but worldwide. The text of his speech is attached as **Annex 1**.

E.M. Krieger, President of the Brazilian Academy of Sciences, welcomed the distinguished guests and participants and emphasized the importance that holding the ICSU General Assembly in Rio had for the Brazilian scientific community, particularly as this was just 10 years after the Summit in Rio de Janeiro and not quite one month after the Summit in Johannesburg, South Africa. (See **Annex 2** for his speech.)

The President of ICSU, H. Yoshikawa, welcomed participants to Rio de Janeiro and expressed his hearty thanks to E.M. Krieger, the Brazilian Academy of Sciences and the Brazilian colleagues who had helped with the preparations of the meetings. He spoke of ICSU's achievements, of its close involvement in the World Summit on Sustainable Development and of his hope that ICSU would, in the future, not only be the centre of scientific knowledge but also the originator of the utilization of such knowledge. (See **Annex 3**.)

M. Nalecz, Director, Division of Basic and Engineering Sciences, UNESCO, brought greetings from the Director-General, K. Matsuura, who unfortunately was not able to attend the General Assembly. He stressed the importance that UNESCO placed on partnerships and in particular on its continuing collaboration with ICSU and its constituent bodies. (See **Annex 4**.)

The 27th General Assembly of ICSU was then officially opened by the President of ICSU on the evening of 24 September.

The alphabetical address list of participants is attached as **Annex 5**.

Immediately prior to the opening of the Assembly the Unions and National Members met in separate fora, with a joint two hour session at the end of the day. The reports of these fora are found in **Annexes 6, 7 and 8** respectively.

In the morning of Wednesday, 25 September, four scientific fora were held on:

1. Science for Sustainable Development (**Annex 9**)
2. Energy and Sustainable Societies (**Annex 10**)
3. Ensuring Global Access to Scientific Data and Information (**Annex 11**)
4. Capacity Building for Science (**Annex 12**)

In the afternoon of this day there was a Symposium on Science in Brazil and a brief report of this is found in **Annex 13**.

2. Adoption of the Agenda

The Agenda was adopted as distributed.

3. Appointment of Resolutions Committee and Tellers

The following persons were appointed to serve on the Resolutions Committee and as Tellers:

Resolutions Committee

Marvalee Wake (IUBS), Chair
Francis Gudyanga (Zimbabwe)
Harsh K. Gupta (India)
Juan José Saldaña (IUHPS)

Tellers

Robert Lapidot (Israel)
Phindile Clementine Masangane (Swaziland)
Henk Schenk (IUCr)

4. Report of 26th General Assembly (Cairo, September 1999) and Matters Arising (not dealt with elsewhere)

H. Yoshikawa reminded participants that the draft Report of the 26th General Assembly had been circulated to Members for comment in February 2000 and the final Report had been published as part of the 1999 Annual Report.

5. Report of the Secretary General

H. Mooney, Secretary General, reported on major changes introduced as a follow up to the ICSU Assessment report and referred, in particular, to the abolition of the General Committee and the setting up of the Committee on Scientific Planning and Review (CSPR). He informed participants about the in-depth review of COSTED given the need for ICSU to take a strategic approach to the issues of science in and for developing countries. The review had resulted in recommendations for major improvements in this area. He added that a new review procedure proposed by the CSPR was in response to the ICSU Assessment and that strategic reviews would be conducted in specific areas with a view to consolidating and targeting ICSU's efforts to make them more effective, particularly, in light of other important and potential players.

He raised the question of the best approach to science/policy issues and said that one way of addressing this was the involvement ICSU had had in the World Summit on Sustainable Development.

Finally, he presented the ICSU Secretariat and the staff.

C. Smith, Deputy Executive Director, then presented the proposed new communication strategy for ICSU. He said that to have effective communication mechanisms, increased transparency was fundamental to ICSU's role. ICSU's potential was great.

With regard to the public understanding of science, given the limited resources available, ICSU had to be selective but needed to increase its effectiveness in communicating with the media. It was crucial to redevelop the website; develop an electronic newsletter; and give a new look to *Science International*, the ICSU Newsletter. He referred to the Unions' meeting and the discussions that had taken place on how ICSU can respond effectively to the needs of members.

In the discussion which followed these presentations, S. Cox (UK) welcomed the changes outlined by the Secretary General and the Deputy Executive Director concerning the communication strategy but expressed reservations that the resources for this might prove inadequate. In order to reach policy-makers, it was important to have the media on board. Others advised caution in the move from print to electronic publications.

See **Resolution No. 1, Annex 14.**

Decisions of GA:

To note progress made in response to the recommendations in the Assessment Panel Report.

To endorse the proposed new communications strategy.

6. Follow-up to the World Conference on Science: Traditional Knowledge

H. Yoshikawa introduced J.-E. Fenstad, Chair of the ICSU Study Group on Traditional Knowledge and informed members that the Executive Board recommended that the GA take note of the Report of the Group.

J.-E. Fenstad thanked the President and introduced his presentation of the Report by reminding participants that, the Study Group having worked under great time pressure, this report should be considered as a "working document" for ICSU. The report should be viewed as a starting point for discussion and as an attempt "to map the way for ICSU" in its future actions. He personally welcomed the suggestion to take note of the report and to disseminate it to other bodies.

He further informed the participants that the report had formed the basis for a one day symposium on "Linking Traditional and Scientific Knowledge for Sustainable Development" as part of the Forum on Science, Technology and Innovation at the World Summit on Sustainable Development (WSSD) in Johannesburg, August 2002. In

addition, Report N° 4 of the ICSU Series on Science for Sustainable Development, entitled "Science, Traditional Knowledge and Sustainable Development", was based on an edited version of the first four sections of the Study Group's work.

The last paragraph in Section 1 of the Report summarizes the key points of J. -E. Fenstad's presentation; this was followed by a long discussion on the *pros* and *cons* of any further involvement of ICSU in the area of Traditional Knowledge.

Some participants (Norway, China CAST, ACOGEB, IUSS, Russia) expressed their support in favour of the report and of the future role ICSU could play in this area. Several reasons were given:

- the general public (and many scientists) not being able to draw a definite demarcation line between traditional knowledge and pseudo-science was very easily misled. Better information for the public, explaining the role of science, should be part of ICSU's new contract between science and society;
- the need to actively "fight" against pseudo-scientists and anti-scientists;
- the need to halt the progressive disappearance of Traditional Knowledge;
- the need for interdisciplinary cooperation between Science and Traditional Knowledge;
- the need to address the Intellectual Property Rights issue in relation to Traditional Knowledge.

Other participants (UK, Sri Lanka) expressed their concern as to the possible future role of ICSU relating to Traditional Knowledge:

- it might be the wrong place at the wrong moment for ICSU: the danger for ICSU of losing its core scientific mission was mentioned; is ICSU the right body to take the lead in this area?
- ICSU should analyse the relationships between logical and illogical approaches to knowledge acquisition rather than deal with Traditional Knowledge as such.

At this point of the discussion it was suggested that the Report should be noted and the remaining points of discussion referred to the elaboration of a Resolution.

The President expressed his satisfaction at such an animated discussion and said that many uncertainties were still at stake. He thanked J. -E. Fenstad and the Members of the Study Group for all their work.

See **Resolution No. 2**, Annex 14

7. Report of Committee on Scientific Planning and Review (CSPR)

G. Pearman reported on the activities of the CSPR over the past three years: a) in refining the Grants Programme to integrate activities that are consistent with ICSU's priorities; b) the review of COSTED and the recommendations to the GA; and c) the development of Emerging Issues, a process for identification of ICSU's New Initiatives. With regard to the latter, he emphasized the need to conduct a dialogue with all ICSU bodies to define future priorities and strategies, and to ensure that gaps are filled and resources maximized.

7.1 Report from CSPR Working Group on the grants' programme

F. Gros reported on the focus of the ICSU Grants Programme and the progress made over the past three years. He said that the programme was now fully competitive and peer reviewed and was designed to reflect ICSU's priority areas. Whilst there was general support for this, some reservations were expressed as to how the basic sciences fitted into the new focus, and the definition of interdisciplinarity. P. Ritchie (IUPsyS) asked that the Executive Board consider the needs of some Unions for small grants, *e.g.* for capacity building.

Decision of GA:

To note focus and priority areas of Grants' Programme.

7.1.1 *Reports from recipients of grants*

Participants heard reports from recipients of large grants, in 1999: Agenda for Research on Health and Environment (IGU/IHDP), Inter-Union Bioinformatics Group (IUPAB/IUCr/IUBMB), the IGBP Synthesis Project (IGBP); 2000: International Biodiversity Observation Year (DIVERSITAS), Standardization and Dissemination (Internet) of Physico-Chemical Property Electronic Datafiles (CODATA/ICSTI), Psychology in a Multidisciplinary Environment (IUPsyS/IBRO/IGU); and 2001: GM Foods for Development (IUNS/IUTOX), Environmental Change in Peri-Urban Areas (SCOPE). Summaries of these were in the file of documents for the GA.

7.2 Report from CSPR Working Group on Emerging Issues

J. Marks reported on the foresight study commissioned by the CSPR to identify key and emerging issues in science and society. He informed participants that the GA discussions would be the beginning of an iterative process within the ICSU family, which should lead to the identification of emerging scientific priority issues that merit attention from the global scientific community over the next three to four years, and where the involvement of ICSU would be timely and necessary. As a strategic step a first list of initial priorities would be drawn up in mid 2003, and he stressed the importance of the involvement of the Scientific Union and National Members in the consultation process and in the development of priorities.

Several members expressed satisfaction and congratulated ICSU in undertaking this initiative.

See **Resolution No. 3**, Annex 14

Decision of GA:

To endorse the CSPR's process for identification of new initiatives for ICSU.

7.3. Report from CSPR Working Group on Reviews

7.3.1 *Review of COSTED-IBN*

M. Åkerblom reported on the special review of COSTED with which the CSPR had been charged by the 26th General Assembly in 1999. The Review Panel set up by the CSPR had reviewed the functions and resources of the formal bodies of COSTED and noted that the Central Secretariat, as well as the seven Regional Secretariats, functioned autonomously, setting their own priorities and functions, as perceived by each region. Despite the limited budget a number of regional activities were carried out by scientists in developing countries. However, science was developing rapidly and new structures and mechanisms were now likely to be even more effective. In the light of these findings, the Review Panel proposed that the current structure of COSTED be replaced by a) a Policy Committee on Developing Countries, to provide vision and advice to the ICSU Executive Board on its work relating to science and technology in developing countries; and b) ICSU Regional Offices in Asia, Africa, the Arab, and the Latin American regions. These would support the work of ICSU and its Scientific Unions and National Members, as well as partner organizations, in promoting science and technology.

T. Rosswall informed the Assembly of his recent meeting with the President of the Indian National Science Academy (INSA) and the Secretary, Department of Science and Technology (DST) of India, and their positive views on the recommendations from the Review Panel. He indicated that, pending the establishment of the four Regional Offices, the Central Secretariat in Chennai would continue to function. Plans were underway to send letters to all National Members informing them of the decisions, inviting them to take part in regional meetings to set priorities, and soliciting offers to host the Regional Offices. Informal consultations had taken place with UNESCO with a view to collaborating with their regional offices on this and these would be continued.

He also reported that the Board had proposed a budget of US \$25,000 p.a. for each regional office and had set aside \$100,000 for regional consultations.

The COSTED Executive Committee, Regional Secretaries, as well as the staff at the Central Secretariat, were thanked most warmly for all their work.

E.M. Krieger, Chairman of COSTED, thanked the ICSU Executive Board and acknowledged the dedication of the COSTED Regional Secretariats and all they had achieved with minimum resources. They had been a driving force of COSTED. Chen Donghong, on behalf of CAST, indicated her support of the Asian office in Chennai and looked forward to participation in the regional programme. M.H.A. Hassan of the Third World Academy of Sciences (TWAS) stressed the importance of ICSU's decision in setting up the Regional Offices and said that he looked forward to strengthened collaboration with ICSU during the consultation process.

See **Resolution: No. 4**, Annex 14.

Decisions of GA:

To accept the proposal to dissolve the Special Advisory Committee on Science and Technology in Developing Countries and International Scientific Networks (COSTED-IBN).

To establish Regional Offices in Africa, Asia, the Arab, Latin American and Caribbean regions.

To establish a Policy Committee on Developing Countries.

To thank the Review Panel for their work.

7.3.2 *A New Strategic Review Procedure for ICSU activities*

G. Pearman explained the rationale for the new Review Procedure for ICSU activities and the need to conduct a dialogue with all ICSU bodies in order to develop a clearly articulated strategy focused on specific scientific priorities while maintaining the original strength of ICSU as an organization driven by the 'scientific community'. He referred to the three initial areas selected for the assessments, the Environment, Data and Information, and Capacity Building, and described the mechanism for carrying out these assessments.

In the discussions which followed, R. Elliott requested that the Review on Data and Information should focus on ICSU's concerns regarding data and information and not exclusively on the World Summit on an Information Society (WSIS). P. Warren (SCFCS) added that guidelines should be established for the different areas to be reviewed. P. Ritchie (IUPsyS) referred to the composition of the panels and queried if having a member of the ICSU Executive Board engaged in the review process might not be in conflict with her/his role as a Board Member.

Decision of GA:

To accept proposed change to Rule of Procedure No. 12.9 (see **Annex 15**).

8. **World Summit on Sustainable Development (WSSD), September 2002**

T. Rosswall gave an overview of the multi-faceted involvement of ICSU and its partners (WFEO, in collaboration with IAP, ISSC and TWAS) in the preparatory process which led to the participation of a strong Science and Technology Community delegation in the Summit itself and to the organization of nine of the sessions of the Forum on Science, Technology and Innovation for Sustainable Development held in parallel to the WSSD. He also mentioned the 10 reports (the eleventh would shortly be available) of the Series on Science for Sustainable Development, which ICSU had published in under six months for distribution at the Summit.

Several participants took part in the discussion which ensued and congratulated ICSU and its Executive Director for the work done.

The general feeling expressed was that, while the Science and Technology Community was identified as one of the nine Major Groups in Rio in 1992, it was only in 2000, eight years later, that ICSU and its partners, in taking the lead for the Johannesburg Summit, had finally ensured that the voice of science was clearly heard.

In the discussion which followed, the President-elect of WFEO, Yee-Cheong Lee, said, after Sir Winston Churchill: "*WSSD is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning.*" and the consensus was that the momentum should not be lost again as it was after Rio. Thus, the proposed decision by the General Assembly to request the Executive Board, in consultation with other partners, to establish an *ad hoc* Committee to further ICSU's involvement in the WSSD follow-up process was accepted and the elaboration of a resolution to that end was referred to the Resolutions Committee.

See **Resolution No. 6**, Annex 14.

Decision of GA:

To establish an *ad hoc* Committee for ICSU's involvement in WSSD follow-up.

9. Reports from Fora

9.1 Reports from Scientific Fora

The Reports of the Scientific Fora are attached as Annexes 9 to 12.

See **Resolutions Nos. 7, 8 and 9**, Annex 14.

9.2 Reports from Unions and National Members' Fora

The Reports of the Unions and National Members' separate Fora, and of the joint session, are attached as Annexes 6, 7 and 8 respectively.

10. Interdisciplinary Scientific Bodies

10.1 Genetic Experimentation and Biotechnology (ACOGEB)

M. Van Montagu gave an overview of the activities of ACOGEB over the last three years and, in particular, the meta review on Genetically Modified Foods and Crops – Safety and Security, a study commissioned by ACOGEB. The purpose of the review was to analyse science-based reviews on gene technology in agriculture and their impact on human health, biodiversity, regulatory systems, emerging issues, economic and public perception. Thirty-five reviews had been collected, commissioned by experts of national, international and private agencies. An expert consultant, Gabrielle Persley, had been responsible for the coordination and preparation of the report and the meta review. She had also produced a very comprehensive 'Biotechnology and Sustainable Agriculture' report for the WSSD process. The ICSU Executive Board, upon the recommendation of CSPR, had agreed that several topics under the heading of genetics and biotechnology might be appropriate for a detailed strategic area assessment and, pending a dialogue among ICSU members, it was recommended that ACOGEB be dissolved.

Decision of GA:

To thank Members of ACOGEB for their work and to dissolve the Committee.

10.2 Capacity Building in Science

S. Malcom reported on activities over the past three years, as well as on the outcome of the major International Conference on Science and Mathematics Education which had just preceded the 27th General Assembly. One of the recommendations of the Rio Conference was to foster networking in the Latin American and Caribbean region. Reference was made to reforms implemented in China following the International Conference in 2000, the Asia-Pacific Regional Conference held in Malaysia in 2001, the Unions meeting also in 2001, and the collaboration with Inter Academy Panel (IAP) on the ICSU/CCBS-IAP web portal on international science education activities. This was followed by a presentation of the web portal by Marc Jamous. The portal presents national science curricula, a world wide panorama, and reports of the activities of the Committee on Capacity Building in Science, as well as of the activities of the ICSU National Academies, Interdisciplinary Bodies, and Scientific Unions.

In view of the proposed strategic area assessment on capacity building to outline ICSU's future role in such activities, the recommendation to continue the mandate of CCBS for one further year was approved

Decision of GA:

To extend mandate of CCBS for one year.

10.3 Data and Information

F. Webster reported on the activities of the ICSU/CODATA *Ad hoc* Group on Data and Information which had kept a watching brief on the European Union Directive on Databases and on intellectual property rights' issues which might give rise to restricted access for research and education, particularly as these had arisen in the European Union, the Intergovernmental Oceanographic Commission (IOC), the World Meteorological Organization (WMO), the World Intellectual Property Organization (WIPO) and in national legislation.

He also gave brief reports of the activities of the Committee on Data for Science and Technology (CODATA), the World Data Centres (WDC) and the Federation of Astronomical and Geophysical Data Analysis Services (FAGS), explaining that these bodies were complementary in nature.

10.4 Committee on Sciences for Food Security (CSFS)

W.E.H. Blum reported that the Committee had been set up in 1999. A successful scoping workshop had been held in Paris in early 2002, attended by many Unions in related fields, and the results of the workshop had proved useful. He felt that any future activity in this area should await the findings of the prioritization process being carried out by the CSFR.

See **Resolution No. 12**, Annex 14.

Decision of GA:

To thank Members of the CSFS for their work and to dissolve the Committee.

10.5 Scientific Committee on Water Research (SCOWAR)

R. Naiman reported on the work of the Scientific Committee, which had completed a comprehensive overview of the ecological consequences and risks of altered hydrological regimes. The accomplishments over three years included the development of land use assessments, an internet based database, a SCOWAR/IAHS Position Statement on water development; and extensive collaboration with UNESCO/IHP/DIVERSITAS/IGBP in a publication on Water in a Changing World.

He concluded that SCOWAR understood and appreciated the need for ICSU to change and evolve in this field and stressed the importance of water science, a complex and interdisciplinary area. SCOWAR's final recommendation to ICSU was that it should have a role in providing responsible leadership in water sciences: 1) by integrating water-related scientific issues throughout the ICSU family in order to encourage interdisciplinary scientific cooperation; and 2) by liaising with appropriate international organizations addressing freshwater issues. The Chair, on behalf of the Committee, expressed his appreciation to ICSU and thanked it for the opportunity to be a part of the ICSU family.

In the discussions that followed, many members strongly supported the recommendation that ICSU provide a clear mandate to integrate water related issues throughout the ICSU family.

See **Resolution No. 11**, Annex 14.

Decision of the GA:

To thank the Members of SCOWAR and to dissolve the Committee

11. Elections of Officers and Representatives of Scientific Union and National Scientific Members on the Executive Board

As a result of the elections the composition of the Executive Board for the period 2002-2005 is as follows:

Officers

President	J. Lubchenco (USA)
President-elect	G. Mehta (India)
Vice- President for Scientific Planning and Review	D. Parry (New Zealand)
Vice-President for External Relations	P. Tyson (South Africa)
Secretary General	A.M. Cetto (Mexico)
Treasurer	R. Elliott (UK)
Past President	H. Yoshikawa (Japan)

Ordinary Members

From Union Members:

G. Berlucci	IBRO
R. Brett	IUGS
M. Denis	IUPsyS
B. Richter	IUPAP

From National Members:

H. Chaimovich	Brazil
M.-L. Chanin	France
F. Gudyanga	Zimbabwe
L. Lapointe	Canada

12. Policy and Advisory Bodies

12.1 Dissemination of Scientific Information (CDSI/ICSU Press)

Roger Elliott presented a report summarising the activities of the CDSI since the last General Assembly which were covered in more detail in the circulated paper 27GA/02/12.1. These had focused on the impact of the new technologies on the scientific information chain which had been addressed at a highly successful Second Conference on "Electronic Publishing in Science" held jointly with UNESCO in February 2001. This had brought together a very wide constituency of stakeholders and had made a number of recommendations aimed at all those involved in this rapidly moving important set of issues for the scientific community. The proceedings were available on the ICSU Press and UNESCO web sites, as well as on a CD Rom. This Conference and related activities were carried out in association with other interested bodies including the IUPAP, CODATA, ICSTI, IFLA, AAAS. These had addressed more specific issues such as the problem of maintaining a digital archive of the record of science, and the problem of defining a publication in this environment.

In more general publishing terms the Committee produced the third edition of "Guidelines for Scientific Publishing" together with translations into Spanish and French. It also registered to allow ICSU members to use DOI's (Digital Object Identifiers) on their publications. A further initiative was the creation of a pilot for a "General Navigator for Primary Scientific Publications".

In all these considerations the group had been much concerned with the special difficulties and opportunities which the new technologies provide for scientific research in less developed countries.

The programme of INASP (International Network for the Availability of Scientific Publications) had expanded greatly during this period to provide practical assistance in various ways for these scientific communities. The INASP programme balanced support for publishing with that for access to information and libraries. In particular, the programme for the enhancement of research information (PERI) provided essentially free access to the world literature to a large number of developing and transitional countries. INASP also worked to enhance the accessibility of research publications derived from developing countries, such as the African Journals on Line programme. Other important programmes included an initiative on Networking in Rural Development (South-South) and a number of library support initiatives, particularly in Africa. A complimentary programme, INASP-Health, aimed to strengthen the overall effectiveness of international health information activities and to act as a facilitator to improve access to reliable and relevant information for health professionals in developing and transitional countries.

In conclusion he informed the Assembly that he would be stepping down as Chairman of the Committee at the end of the year, thanked his colleagues for all their help and hard work during his term of office, and introduced his replacement E. Sandewall (Sweden).

12.2 Environment (ACE)

L. Goldfarb, the new ICSU Science Officer on Environment and Sustainable Development, presented an overview of some of the activities of the major ICSU bodies in the area of the environment. This overview illustrated the efforts being made towards a better integration of programmes, including involvement in new joint projects and new partnerships. Further observation of these would be part of the Priority Area Assessment on Environment in relation to Sustainable Development, which the ICSU Advisory Committee on the Environment (ACE), with additional external experts, would soon be undertaking at the invitation of the CSPR. This assessment would also provide an opportunity for ACE itself to redefine its own role within ICSU.

12.3 Freedom in the Conduct of Science (SCFCS)

The report on the SCFCS was presented by the Executive Secretary, Peter Schindler, who informed participants of the latest developments on the international scene affecting freedom in the conduct of science.

In the USA in particular, new visa issuing practices resulting from the terrorist attacks of 11 September 2002 had already affected or were likely to affect citizens of certain countries and specialists in certain science and technology disciplines. So far only long delays in obtaining visas had been reported with no refusals as yet. It was likely, however, that some people would be confronted with denials in cases where the perceptions of what constitutes *bona fide* science and what is a threat to the security of the country diverge. Although as yet only in the initial phase of these potential new problems, the SCFCS would have to follow the situation very closely in order to be ready to act rapidly should the need arise.

In some countries there had been a call for a boycott of Israeli institutions and scientists. Participants were informed that, at their meeting prior to the Assembly, the Members of the Executive Board had agreed to relaunch the Israeli scholars statement (posted on the ICSU Web site on 23 August 2002 and sent to members on 30 August) with the signature of all Executive Board Members.

Participants were informed that the publication of a new version of the Blue Book on the universality of science was planned for 2003.

Finally, the decision by the Executive Board to carry out a strategic review of ICSU's future role in relation to science and society, to ethics, rights and responsibilities was welcomed by the Committee as appropriate and timely.

In the short discussion which followed, participants were informed that all necessary information on the current visa processing situation for prospective travellers to the United States could be found on the following website: <http://national-academies.org/visas>

12.4 Responsibility and Ethics in Science (SCRES)

M. Kaiser, Chair of the Standing Committee on Responsibility and Ethics in Science, reported on the activities of the Committee since 1996, when SCRES was set up. He

referred participants to the two documents distributed at the meeting: one entitled "Report on Activities and Recommendations on the Ethics of Science as a Challenge to ICSU" and a second one entitled "Standards for Ethics and Responsibility in Science -- an Empirical Study".

He presented a proposal from SCRES for the development of an ICSU template for ethical guidelines and the following suggestions were made:

- ICSU should try again to collect information from its National and Union Members on their ethical concerns and need for guidelines. This would be the first step leading to the elaboration of a template bearing in mind that:
 - an exclusively top down approach cannot work;
 - parts of ethical standards are dependent on culture;
 - international effort to codify ethical practices is good but ultimately activity has to be at a national level;
 - ICSU could attempt to elaborate a template that may guide, advise or stimulate its Members but which should not bind those who already have their own guidelines; in some cases the ICSU template might help them to have a critical look at their own standards.
- it was also suggested that training in ethics (although informally already included for some disciplines) should formally be part of scientific training for all disciplines.

The President thanked M. Kaiser, the Members of the Committee and the Executive Director of SCRES for their work and proposed to dissolve the Committee. This was agreed.

Decision of GA:

To thank the Members of SCRES and to dissolve the Committee.

12.5 Governance (CG)

H. Metzger reported on the activities of the Committee on Governance.

12.5.1 *Applications for Membership and Associate Status*

The following proposals for admission were accepted by the Assembly:

Full National Scientific Members:

Macedonian Academy of Sciences and Arts
 Academia Nacional de Ciencias de Peru
 Academy of Sciences of the Republic of Tajikistan

The request from CONACYT, Mexico, to transfer membership to the Academia Mexicana de Ciencias was also accepted.

The three new National Scientific Members were congratulated on their admission and welcomed to ICSU by the President.

Scientific Union Member:

International Society for Photogrammetry and Remote Sensing (ISPRS)

H. Metzger informed the Assembly that the Executive Board at its meeting just prior to the Assembly had proposed that any decision on the application from the International Society for Photogrammetry and Remote Sensing (ISPRS) for admission as Scientific Union Member be postponed in light of the request by the Committee on Governance for a review of membership. This led to an animated discussion.

Some participants (IGU, Taipei, IUGG, IUTAM) reiterated their strong support in favour of approving the ISPRS application at the present Assembly; others (IUPyS, IUPESM) stressed that the problem of whether to consider this application or not was due to a lack of guidance regarding the rationale for admissions. A possible postponement was thus considered unfair to the ISPRS, whose application dated back to 1997. The risk of undue proliferation of Scientific Unions within ICSU and their possible overlap was well recognized by most participants. Participants voted in favour of the admission of the ISPRS and requested the Executive Board to set up an *ad hoc* Committee to address the issue of membership and structure of ICSU.

See **Resolution No. 14**, Annex 14.

Decision of the GA:

To admit as National Scientific Members:

- Macedonian Academy of Sciences and Arts
- Academia Nacional de Ciencias de Peru
- Academy of Sciences of the Republic of Tajikistan

To approve transfer of membership from CONACYT, Mexico, to the Academia Mexicana de Ciencias.

To admit as a Scientific Union Member:

- International Society for Photogrammetry and Remote Sensing (ISPRS)

To set up an *ad hoc* Committee to address the issue of membership and structure of ICSU

12.5.2 *Proposed modifications to Statutes and Rules of Procedure*

All the proposed modifications to the Statutes and Rules of Procedure contained in document 27GA/02/12.5.2 were accepted by the General Assembly. The revised Statutes and Rules of Procedure are attached as **Annex 15**.

Decision of GA:

To accept the proposed modifications to Statutes and Rules of Procedure.

13. **Report of the Treasurer/Chairman of CFF**

Y. Verhasselt presented the report of the Treasurer, as well as the complete financial results for the fiscal years 2000 and 2001. She explained the reasons for the surplus in both years, which had occurred mainly due to the delay in filling vacant positions in the Secretariat. ICSU's general fund had been growing since 1996, while the Mandatory

Reserve was \$1.55 million, which corresponded to minimal operational costs of one year. Since there was a 'surplus' in the general funds, the budgets for 2003-2005 did not include an increase in membership.

She explained that the budget for 2003-2005 had a new format and was designed to be more transparent and to reflect new strategies and structures.

The possibility of changing ICSU's accounts from US dollars to Euros and whether or not the annual dues should be changed from dollars to Euros was discussed and the Executive Board was asked to further reflect on this matter.

K. Moffatt (IUTAM) raised the issue of the discontinuance of the small grants to Unions which had been discussed earlier in the Unions' meeting and under Item 7.

Decision of GA:

To discharge the Treasurer from liability

To agree no increase in annual dues for the period 2003-2005

To approve the draft budgets for the period 2003-2005

To ask the Executive Board to consider the relative merit of setting the annual dues in Euros or US dollars

14. Cooperation with Partner Organizations

14.1 UNESCO

M. Nalecz, Director, Division of Basic and Engineering Sciences of UNESCO, thanked ICSU's Union Members and T. Rosswall for their input to the UNESCO Feasibility Study on the possible establishment of an international programme on the basic sciences. He informed participants that UNESCO had undertaken a review of all its regional programmes and that the General Conference would meet in the autumn of 2003 and capacity building (international networking on science education) would be high on the Agenda. He emphasized that it was necessary for UNESCO and ICSU to continue their close collaboration in order to ensure success in areas of mutual interest, such as the WSIS and Traditional Knowledge. He congratulated ICSU for its science input to the WSSD.

14.2 TWAS

M.H.A. Hassan, Executive Director of TWAS, told participants that TWAS had increased its members by 30% and had now 600 members of which 20% came from the North and 80% from the South. He explained that TWAS and ICSU had several joint programmes dating back a long time. The UNESCO/ICSU/TWAS Short-term Fellowship in the Basic Sciences started in 1991 to help young scientists from developing countries to carry out short-term studies in scientific centres throughout the world; the UNESCO/ICSU/TWAS Visiting Lectureship/Professorship Programme was renamed the UNESCO/ICSU/TWAS Visiting Scientists Programme and supported visits to institutions located in developing countries, especially those located in the Least Developed Countries in order to strengthen capacity building in these countries. M. Hassan emphasized that participation of the ICSU Scientific Unions would help the programme to progress. He said that collaboration between ICSU and TWAS had

increased greatly since January 2002 due to their partnership in events for the WSSD, and a Memorandum of Understanding had been signed between the two organizations.

14.3. ISSC

K. Pawlik, President of ISSC, explained that the ISSC is an international non-profit scientific organization. Its aim and objectives are to promote the understanding of human society in the environment by fostering the social and behavioural sciences. He explained that ICSU and the ISSC cosponsor the International Human Dimensions Programme on Global Environmental Change (IHDP) and that the ISSC was looking into ways of collaborating further with ICSU through other programmes; He invited participants to attend the forthcoming International Conference on Social Science and Social Policy in the 21st Century, which would be held in Vienna, Austria, in December 2003, and would be followed by the XXIVth General Assembly and celebration of ISSC's 50th anniversary.

14.4 WFEO

Yee-Cheong Lee, WFEO President Elect, informed participants that WFEO and ICSU had worked closely in organizing a session at the Forum on Science, Technology and Innovation for Sustainable Development during the World Summit on Sustainable Development. He emphasized that WFEO was very happy with this collaboration and hoped to continue working on such important scientific events with ICSU in the future. He invited participations to attend the World Engineering Congress on the Digital Divide to be held in Tunis in October 2003, which was a preparatory meeting for the WSIS and of which ICSU was a cosponsor, followed by the WFEO General Assembly.

14.5 IAP

Y. Quère, Co-Chair of the IAP, informed participants that IAP was a global network consisting of 85 science academies and had four main programmes: 1) Mother and Child Health, 2) Capacity Building of Academies, 3) Science and Education, and 4) Science and the Media. He emphasized the excellent relations between IAP and ICSU, notably in organizing the International Conference on Science and Mathematical Education jointly with the ICSU Committee on Capacity Building in Science in Rio de Janeiro prior to the ICSU GA. He also mentioned the Science Education Seminar being organized immediately after the TWAS 8th General Conference in October in New Delhi, India. He said that ICSU-CCBS and the IAP were building a web site portal dedicated to science education in schools (see item 10.2).

14.6 IFS

M. Ståhl, Director of the IFS, mentioned that the IFS joined ICSU in 1993 as a Scientific Associate. He informed participants that the IFS would like to have closer collaboration with ICSU, mainly in developing projects with the Third World and that the main goal of the IFS was to contribute towards strengthening the capacity of developing countries to conduct relevant and high quality research on the sustainable management of biological resources, which was also on the ICSU agenda. He welcomed participants to visit the IFS website for further information concerning IFS ongoing projects.

15. Adoption of Recommendations and Resolutions of the General Assembly

The Resolutions of the 27th General Assembly as adopted are attached as Annex 14.

16. Date and Place of 28th General Assembly

The GA accepted the invitation from the China Association for Science and Technology to host the 28th General Assembly in China in 2005. The date and venue of the meeting will be communicated to members after discussions with CAST.

It was agreed that the Executive Board should elaborate a process for dealing with multiple invitations to host the Assembly.

Decisions of GA:

To accept the invitation from CAST to host the 28th General Assembly in China.
To ask the EB to devise a process for evaluation of invitations to host the GA.

17. Any Other Authorized Business

The President thanked the Brazilian organizers of the Assembly once more for all their efforts in making this such a success and for their extremely generous financial support of the Assembly, and extended also the thanks of the GA to the ICSU Secretariat for their work over the last triennium.

There being no other business, he closed the Assembly at 13:15.

Annexes:

Annex 1	Speech by Vice-Minister of Science and Technology of Brazil, C. Pacheco
Annex 2	Speech by E.M. Krieger, President of the Brazilian Academy of Sciences
Annex 3	Speech by H. Yoshikawa, President of ICSU
Annex 4	Speech by M. Nalecz, Director, Division of Basic and Engineering Sciences, UNESCO
Annex 5	Alphabetical Address List of Participants
Annex 6	Report of Unions' Forum
Annex 7	Report of National Members' Forum
Annex 8	Report of Joint Unions and National Members Forum
Annex 9	Report of Scientific Forum on Science for Sustainable Development
Annex 10	Report of Scientific Forum on Energy and Sustainable Societies
Annex 11	Report of Scientific Forum on Ensuring Global Access to Scientific Data and Information
Annex 12	Report of Scientific Forum on Capacity Building for Science
Annex 13	Report of Symposium on Science in Brazil
Annex 14	Resolutions of the 27th General Assembly of ICSU
Annex 15	Revised Statutes and Rules of Procedure

Speech by**Ambassador Ronaldo Mota Sardenberg
Minister of Science and Technology**

Read by the Vice-Minister of Science and Technology of Brazil, C. Pacheco

Ladies and gentlemen,

At the opening session of this International Council for Science Conference, I would like to extend the warm welcome of the Government of Brazil to all the distinguished participants.

These remarks will focus on science, technology, and innovation as key elements for the progress of Brazil and other developing countries, as well as for their relative position in a changing world.

We are going through a complex period of international life, in which it is advisable to be prudent, and to keep a level head. The apprehension and instability following the indescribable tragedy of September 11 – the first year of which has just been marked –, have had extensive impact on international and domestic events, as well as on activities linked to science, technology and innovation (ST&I).

This compels us to tone down the optimism regarding the economy and technology that prevailed in the 1990's. I am not referring only to the political and security crises but also to the increasingly erratic behavior of the world economy. Indeed, in addition to the upsurge in trade protectionism in the developed countries, financial downturns have time and again negatively affected the economic prospects of emerging countries.

New setbacks have thus offset previous achievements that, though asymmetrical, tended – as they still do – to strengthen the role of research and innovation. The Knowledge Society, the Knowledge-Based Economy, and the Information Society are three of the many phrases that try to translate an already familiar international phenomenon. They describe similar though distinctive characteristics of our times and nourish hopes for a better world.

Provided they are effectively applied, scientific advances and modern technologies are determinant factors of economic growth. It should be added that the degree of participation in the knowledge revolution and in its applications condition their social and economic performance of nations and the relative international status.

This poses basic challenges not limited to the domestic sphere of each country or to their adoption of generically established models. Rather, these challenges will have to be met by means of detailed international negotiations, focusing on the modes of participation in the global order that will best suit each country.

As I make these comments, I bear in mind that, in concrete terms, we have already reached a reasonable degree of consensus in Brazil about ST&I's place on the agenda for our future. We have launched an unprecedented and – we hope irreversible – national effort to promote ST&I, which have been recognized as essential factors, although not the only ones, for our sustainable development.

I might add that the changes stemming from science, technology, and innovation—including ICTs—enrich the very idea of citizenship. At the upcoming October elections we shall be celebrating the strength of our institutions and the commitment of our political class and of our entire society to democracy. In all, 115 million Brazilians will directly participate in a fully computerized election process, conducted under conditions of the total transparency and respect for the rule of Law and democracy.

In partnership with the states, the business sector, the academic community, and society itself, the Federal Government has in recent years made intensive efforts with the aim of laying the foundations for the Knowledge Society in Brazil.

This partnership benefits from a considerable historical tradition. For fifty years, the Brazilian state and society have been engaged in a sizeable effort to build a strong university graduate and undergraduate system and a large, sophisticated, Research and Development system. This system consists today of over two hundred—fifty research and higher education institutions, many of which are internationally renowned.

As a result, Brazil's scientific output has greatly expanded. One seemingly obvious fact, of which we are nevertheless proud, is that of having reached the current figure—which still may be increased—of 97 percent children now attending school. In addition, the number of Brazilian-trained Ph.D. holders has also increased—to 6,300 per year, a 600-percent increase as compared with the early 1990s. We have also achieved a growth rate 3.5 times above world average in terms of articles published in indexed periodicals. Brazil now accounts for 1.4 percent of international output, a level achieved by only 17 countries.

In certain areas, such as aerospace industry, deep-water oil prospecting, isotopic uranium enrichment, agriculture and animal husbandry, health, genome research, and Information and Communications Technology our accumulated knowledge and innovation assets have yielded significant social and economic returns.

But these results also indicate that much more has to be done, and in this light, the current international scene provides some important, specific pointers.

Firstly, we must bear in mind that the conditions—both internal and external—associated with models that were successful in advanced countries no longer apply, so that such models cannot be simply duplicated by developing countries, not even in the restricted area of S&T policy.

We are confronted with a strong, perverse tendency toward world knowledge concentration, which is attested by hard data. The advanced countries account for nearly 90 percent of the world's total investment in R&D, including both public and private funds; the United States' share alone is certainly more than 40 percent of this total. By contrast, investment by S&T lagging countries has decreased in the past decade, and this reinforces the adverse trends in the area of international cooperation.

In the Information Era, the traditional social and economic gap between countries and regions is replicated by the Digital Divide and even more so by the contrast between knowledge and know-how, on the one hand, and the lack of knowledge and know-how, on the other.

Secondly, one should also bear in mind that today, Brazilian S&T proficiency is widely recognized, as shown by a recent World Bank study. Together with countries such as China and India, we rank between the advanced nations and the rest of the developing countries, among which a group of 20 –odd countries are on their way to achieving scientific proficiency but have not yet reached it, while some 120 other literally technology-excluded countries (the so-called *lagging countries*), for the most part, neither produce nor consume the technologies developed in more recent decades.

The world-class excellence that exists outside the advanced countries —such as in India, in mathematics and software; in China, in seismology and space research, an area in which we cooperate with each other; in the Philippines, in rice research; in Chile, in astronomy; in Cuba, in biotechnology; or in Brazil, in several well –known areas—may certainly qualify the picture of the world concentration of knowledge but in no way invalidates or distorts it.

I would not like to pass over the coldness of this apportionment of competences among nations. “Being left on the sidelines is horrible,” stated President Fernando Henrique Cardoso at the close of the international seminar on *Development in Debate*, in celebration of the fiftieth anniversary of the National Economic and Social Development Bank – BNDES. In its extreme form, exclusion certainly induces adversarial behavior and discouragement.

Two weeks ago, I was visiting South Africa and in Mozambique and was able to appreciate on site the efforts by the former —which, as Brazil, can be considered to be S&T –proficient—and the latter, which is engaged in a truly Herculean effort to overcome the barrier of digital exclusion and, more generally, scientific and technological exclusion. Mozambique’s is a truly representative case of the unfair challenge that today’s international order imposes on almost the entire African continent.

In Brazil, science and technology policies follow new paradigms and values. We are fully in the midst of intensifying our national S&T effort, so as to achieve, within a decade, one of this generation’s fundamental goals, which is to place Brazil among the advanced nations in the vast field of knowledge and its practical applications.

The extraordinary success of the National Conference on Science, Technology, and Innovation held exactly a year ago confirmed we were right in choosing as priorities the issues of incentives to advancement of science and innovation, and the formation of the so-called intellectual capital.

The recently released *White Book on Science, Technology, and Innovation*, which embodies ten-year guidelines, strategies, and lines of action points to directions defined by a broad –based consensus achieved at the National Conference. It reflects also the legacy President Fernando Henrique Cardoso’s Administration in the field of science and technology.

In the last three years, eleven Laws have been passed by Congress in order to establish of fourteen Sectoral Research Funds. The crucial objective of expanding the investment base in our field of activity was achieved, and a new, effective management model based on a shared decision-making process and focused on the pursuit and assessment of results was implemented .

A Management and Strategic Studies Center-CGEE was established during the Conference. This Center constitutes a milestone in this Administration and an evidence of its willingness to coordinate consistent efforts in the area of science and technology.

The best indicator of the consensus I mentioned is certainly the support given to the idea of designating the year 2002 as the Year of Innovation in Brazil. The building of an authentic national innovation system requires that all phases of knowledge – from generation to application – be effectively addressed.

Traditionally the major share of responsibility for scientific and technological development has fallen on the Brazilian public sector. Nevertheless, in view of the clear relation between knowledge application and socioeconomic development, this responsibility is steadily shifting to enterprises. Technological development must be strongly identified with the productive sector and its needs in meeting social and market demands, and be aimed at creating jobs and generating income.

Our White Book we have set the target of increasing, within a decade, the level of investment on research and development from a little more than 1 percent to 2 percent of GDP. This will require a doubling of public sector investment and a substantially higher performance by the productive sector, as is usual in OECD countries.

Specifically, we have sought to strengthen the interface between the private and the public sectors through effective political, legal, and institutional measures. As in the advanced countries, legislation establishing incentives to encourage enterprises to invest in research and development, was adopted, as four new pieces of legislation, including a Bill on Innovation, now address this item in Brazil.

The seventeen Millennium Institutes, established under a cooperation program with the World Bank and organized under the form of research networks, have strongly increased the installed lab base, promoted integration at the national level and with international centers, fostered the regional decentralization of knowledge and, above all, led to research excellence.

Also based on the network model, three new research institutes on such diverse and pressing issues as the Semi-arid lands, Amazon biodiversity, and nanosciences and nanotechnologies will be added this year to our structure.

We are close to accomplishing the goal of strengthening the contribution of research and innovation to entrepreneurship, with a view to opening a new, more advanced cycle of research and innovation. By consolidating this virtual cycle we expect to reach ever higher levels of both development and social well-being.

We seek to update the elements of S&T effort, by ascribing priority to innovation. This is consistent with the prevailing worldwide trend. But we recognize that what is done in Brazil and elsewhere falls also within a scientific tradition with deep historical roots, which originated in the West but has now acquired a global scope.

International cooperation in S&T should be urgently revisited in all its dimensions, aspects, and potentialities, bringing into view a global perspective.

On our part, changes are now under way also in Brazilian international cooperation policy, with the diversification of external partnerships in science and technology. The multiplication of opportunities is illustrated by the 23 agreements and memorandums of understanding Brazil signed in the last 23 months with international organizations and advanced, proficient, developing, and even lagging countries.

I find it hard to understand that in an era of S&T internationalization, cooperation efforts should still be timid both in terms of their conceptual basis and of the financial resources they mobilize. It is urgent that we proceed together to change this situation, and to activate multilateral mechanisms, so as to match international cooperation mechanisms with contemporary S&T needs and, indeed, with the global economy.

Cooperation with developed countries is certainly valuable, as it may provide access to the frontiers of knowledge and open the way for joint efforts of common interest. On the other hand, long-term international cooperation efforts are needed to mitigate the historical adversity faced by developing countries and to create conditions leading to their productive, peaceful, and socially acceptable incorporation into the globalization process.

Instability in the economic area and the real entrenchment that separates peoples are not conducive to an international scenario free of risks and violence. The development of International Law and the practice of relations among States should not take terrorism as their main reference. New barriers to international cooperation in S&T should not be created. Neither should we condone the prevalence of a pattern of international relations that allows the debacles such as that experienced lately by Argentina, which resulted in untold damage in the field of S&T.

Moreover, the paramount concern with international security, unseen since the end of the Cold War, puts in evidence the challenges created by the coexistence of technological and economic progress with historical, structural problems, such as the concentration of wealth and progress in the hands of a few countries.

Nevertheless, Brazil is open to international cooperation. Last February, we signed a Basic Cooperation Agreement with the European Space Agency. In April, we resumed our cooperation in S&T with the United States. Next November, we will sign an agreement on the Sixth Framework Program with the European Commission.

We must persevere, on the basis of our potentialities and national riches. Responding to the challenges we face is essentially up to us —Government, scientists, entrepreneurs, nongovernmental organizations—, acting together as a propelling force. To advance in the achievements of knowledge and to link them to our economic and social needs is the sure course to solve longstanding imbalances and to build a better future.

But we must also insist on international efforts, and on more effective ways to revert the existing inequalities and asymmetries. Given the evident deficit in world governance and in political and economic leadership, it is essential to create renewed moral elements and political foundations.

We must persevere in our struggle for sustainable development, for globalization with greater solidarity, for the strengthening of multilateral fora, the United Nations in particular, and for progress in other fronts of mankind's progress that are now in the shadow.

Reinvigorated, innovative forms of international cooperation – such as the one that inspires ICSU – help disseminate knowledge and lead to practical applications, while embodying a significant potential for contributing to the prevention of tensions and conflicts, thus strengthening international peace and security.

Thank you.

Speech by

E.M. Krieger
President
Brazilian Academy of Sciences

It is a great honor for the Brazilian Academy of Sciences to host the 27th General Assembly of the International Council for Science in Rio, ten years after the celebrated United Nations Conference on Environment and Development, the so called ECO -92, and just one month after the World Summit on Sustainable Development, also known as Rio + 10, recently held in Johannesburg. This is a good moment and a good place to reflect on our responsibilities in the transition towards sustainability and the role of international cooperation in this process.

Ten years after Rio -92, the world went through several major changes, which affected not only the perception of scientists about their role in society, but also the crucial role of science for the achievement of sustainability. Responsibility with the quest for solutions for society's hardships has been stressed, recognized and called for. Throughout history this engagement has always been intrinsic to the action of scientists. But if in the past society usually did not perceive this assignment as important, neither did scientists recognized this duty as a determinant component of their activities. In our days, it is almost commonsense among us the recognition of the significance of this responsibility, especially when we are dealing with environmental, economic and social issues. An increasing number of scientists became aware that to commit themselves to find solutions for social, economic and environmental problems is not enough. A proactive attitude to publicize the importance of science and technology in daily life is also needed.

The role played by ICSU in organizing the contribution of the international scientific and technological community for the construction of sustainability is important. This was clearly evidenced in the process of the World Summit on Sustainable Development, where ICSU expressed the views of scientists on the serious environmental and development problems that presently afflict humanity, showing that international cooperation is one of the most important tools for the building up of this new dialogue.

The key issues for sustainability are very well established:

- Meeting the needs of a larger world population: reducing hunger and poverty and preserving human well being;
- Preserving and maintaining the environment and the natural resource base;
- Moving towards sustainable human consumption patterns.

Also the major actions to be implemented by the scientists were identified:

- Actively generating new knowledge;
- Achieving a much more equitable access to and use of knowledge by:
 - * improving education;
 - * strengthening worldwide scientific and technological capacity;
 - * building a Global Information Network

- And finally applying the values of the scientific and technological community to build sustainability.

However, to achieve a real international cooperation, which is essential for Science to effectively contribute for sustainability we need, first of all, a minimum endogenous scientific competence in every country. For that, a qualified educational system, including scientific education at all levels, is fundamental to tap the knowledge created abroad and to train citizens to use and to benefit from all modern achievements of technology. Of course, good education requires good living conditions, including health-care, adequate nutrition and clean water.

Brazil is a good example of a developing country that exhibits a rather recent advance in basic science and is in the process of building up an efficient system of science, technology and innovation. In the symposium on science in Brazil that will be held tomorrow, the current status and future perspectives in this area will be presented. The continuously increasing annual number of scientific articles, which surpasses 10.000 per year, representing 1.4% of the world's scientific production and the number of PhD's trained yearly in our graduate programs, reaching more than 6.000 per year will also be emphasized. We will also present the institutional framework of the Science, Technology and Innovation System, both at the federal and state levels in our country. Major emphasis will be given to our greatest challenge: namely linking Science and Technology to an industrial policy and innovation system, which is fundamental not only for development but also for sustaining and expanding our basic science.

In this ceremony it is worthwhile to acknowledge that our scientific development has greatly depended, and still has much to benefit from international cooperation. We are proud to be considered an active partner of the international scientific community and certainly the organization of the General Assembly in our country is a clear demonstration of our full support and involvement with the objectives and missions of the ICSU family.

We want to thank Prof. Esper Cavalheiro, President of our National research Council, and here representing the Minister of Science and Technology Ronaldo Sardenberg, for attending this opening ceremony. The opportunity is also appropriate to acknowledge their endeavor to include S, T&I as a major issue in the political agenda of our country and for inviting our Academy to be a partner in this enterprise.

To Prof. Yoshikawa and ICSU, we want to thank the honor of choosing Rio and the Brazilian Academy of Sciences as one of the organizers of this General Assembly. To conclude, our welcome to the participants, especially to the incoming president Dr. Jane Lubchenco. We wish you all a very successful meeting.

Let us all hope that this new commitment of scientists to a more socially responsible science pave the way to a better future. To do so, let us transform this hope into real action and, in addition to Eco -92 and Rio +10, let us leave this meeting with a Rio + Science Action as a new agenda.

Welcome Address to Opening of 27th GA-ICSU

By H. Yoshikawa
President of ICSU

Dear Colleagues,

It is really a pleasure for me to have an opportunity to say a few words in the occasion of opening 27th General Assembly of the International Council for Science.

First, on behalf of ICSU members, I would like to extend a hearty gratitude to Professor Krieger and the Brazilian colleagues who have long time prepared and finally reached successfully to open the General Assembly of ICSU here in Rio-de-Janeiro.

This General Assembly is the first one in the 21st Century. It is just 3 years after the last General Assembly which was held in Cairo, but I have an impression that some discontinuous changes in science have occurred during this three -years period of time. The reason that made such an impression on me is not simply the chronological move from the 20th Century to the 21st Century.

The tremendous progress of science itself may be one reason. For example, we were surprised by the genetic scientists who have successfully read the sequence of bases in human genome just prior to the end of the 20th Century. Then, immediately, they started to progress the technique of medical treatment through the knowledge about human genome, letting people entertain hopes to conquer incurable diseases and actually there are already some signs for practical realization for some cases. There are many examples of surprising discoveries and inventions not only in bio -science but also in many other disciplines. It seems that the development of science is now going into a phase of acceleration.

Also, I was impressed by the change of significance of disciplines. It may be triggered by the development of molecular biology. The possibility designing biologically active molecules means that the biological science has made its way into very small dimension, that is nano-scale world.

On the other hand, in the field of solid physics, it has become quite popular to create new properties of materials by controlling electrons within a very narrow space so as to make them take quantum -mechanical behaviors, exerting exotic macroscopic functions. This is also within nano-scale world.

No one knows whether nano -scale material science and bio -science would merge into a unique discipline in the future. We know there are big barriers between them, at this moment, but I dare to say, that some useful communication will soon occur between these disciplines, again accelerating the development of respective disciplines.

As a result of rapid development of individual disciplines, together with preferable mutual interaction of them, the rate of progress of science now becomes extensively high. This means that human being may now enjoy plenty of useful knowledge created by science.

Then, human beings are to be confronted with a simple question. Do we have enough knowledge to cope with problems in front of us? Unfortunately the answer is NO.

My impression of discontinuous change in science seems to be attributed more seriously to this dilemma. That is, it is likely that the ability of solving problems does not increase in accordance with the rapid increase of scientific knowledge. One of the biggest problems is the difficulty of simultaneous realization of developing the world and sustaining the condition of the earth. Since 1987, we have fostered the concept of “Sustainable Development”, and actually many efforts have been paid to realize the concept both in political and scientific world. Many results were achieved, but no one can say they are satisfactory.

What are the reasons of this dissatisfaction? It is easy to attribute it to the lack of good and effective political will. It is not the matter of us, scientists. But, even if it is useful to ask politicians to have good will, it does not mean that we, scientists, are protected from the responsibility of improving the scientific knowledge to cope with the difficulties.

When we look for the reasons of this difficulty in science, it is sometimes said that: still lack scientific knowledge in spite of very rapid growth of it because of more rapid escalation of difficulty; or the present knowledge of science is useless for Sustainable Development and so forth.

I think those are not right answers, and believe that scientific knowledge is essential for Sustainable Development, however, the situation will not take a turn for the better only by increasing the rate of production of scientific knowledge.

My conclusion is that we have accumulated plenty of knowledge about facts, but have not devoted ourselves for accumulating knowledge about utilizing the knowledge about facts. Accumulating knowledge of facts is recognized as scientific activity, and other, non-scientific people have utilized it when they want. However, we have been lazy to accumulate the experience of utilizing the fact knowledge, and hence ignoring the establishment of science of knowledge utilization.

At this point, we immediately remember the declaration of World Conference on Science Budapest 1999. It opened the door for science to go into a new direction. Simply saying, it insisted that science should take leave of its traditional philosophy, that is, science for science, and suggested science for knowledge, science for peace, science for development and science for society. This important declaration implies that it is important for scientists not only to create knowledge but also to utilize it in a right way. In other words, this revolutionary declaration requests scientists to be responsible to the results of utilization, as ones who created the knowledge utilized. We, ICSU Members, willingly endorsed this declaration.

However, this is a puzzling task for scientists who are enthusiastically conducting research in their laboratories every day. Normally, their researches are driven by their own curiosity which is independent of possible results of utilization. How do they conduct research without curiosity? We have thought for a long time that the basic research is successful only when it is curiosity-driven.

It is true that our scientific knowledge has been achieved and given a consistent structure owing to the scientists' curiosity: to uncover the unknown. It is the essential driving force to round up basic researchers. Moralizing discourse may be useless to convince those enthusiastic researchers. Then, shall we divide scientists into two categories, ones conducting research according to their own curiosity and others bending their minds to science for society? The answer should be NO, then how?

ICSU has always taken important roles to bring up the scientists' mind to benefit all humankind. And, I am optimistic about that ICSU will again lead scientific research to the relevant direction.

First, ICSU achieved sound results in environment issues. It should be specially mentioned that the achievement was recognized not only by ourselves but also by general society. Although many targets to be reached and problems to be solved in our society are substantially related with science, scientific community was seldom invited to participate officially in the decision process. But, in the case of global warming, a mechanism was implemented where scientists could contribute to decisions accordant with human welfare. This successfully implemented mechanism is exactly owing to the long-time and patient requests made by scientific researchers in particular fields within ICSU. Needless to say, ICSU's interdisciplinary principle was of necessity.

We are proud of it, and at the same time, we appreciate that this experience opened new possibility for basic research in the future.

Through the collaboration between scientists and policy makers in this mechanism, a new-type curiosity has been created among scientific researchers. It is a question about future of the Earth. This question is fundamental and little uncovered. We may say it is equal to historical questions about secret of nature, thus mobilizing scientists into new-type curiosity driven research.

Besides global warming, there are countless problems in our society which people need scientific knowledge to solve. Timely advices are highly requested. In the Professor Schmitt report of external review of ICSU in 1996, the modes of scientific advices were discussed in detail. Those advices are other possibility of science to contribute society than the above-mentioned mechanism of global warming. Actually, some Members of ICSU have started to explore possible method to advice International Organizations.

I may say that ICSU has already firmly stepped forward to realize the suggestion by the Schmitt Report. In 2000, ICSU was invited to participate in a Multistakeholder Dialogue Meeting on Sustainable Energy and Transport organized by the United Nations Commission for Sustainable Development. It was an exciting meeting of Major Groups, although presentations were widely diversified. But I certainly recognized there, that the contribution from scientists is vital for humankind to find realizable paths and to trace them toward sustainability with satisfactory development.

Being based upon the successful participation to CSD9, ICSU was invited by United Nations to World Summit on Sustainable Development which was to be held in Johannesburg. United Nations requested us to be a host to organize a group representing the scientific and technological community in wider sense. At this request,

we invited the World Federation of Engineering Organization, the Third World Academy of Science, the Inter-Academy Panel and the International Social Science Council, organizing a Science and Technology consultative group.

Since then, ICSU has made significant contribution to the preparation process of WSSD. Especially our Executive Director, Professor Rosswall played an important role attending many preparatory conferences including two Prep. Coms organized by the United Nations.

WSSD itself was a political gathering, but the subject was sustainable development which is a matter of primary concern for us, ICSU. Many heads of states mentioned the high priority of science and technology for sustainable development. And I am delighted to tell you that we had three presentations in the plenary meeting, four chances in round tables with Heads of State or Government and four thematic discussions in the Summit plenary.

Doubtless, society has started to recognize the importance of contribution from science to cope with issues it is being confronted with. Through Schmitt report, declaration of the World Conference on Science and recent positive participation to WSSD, we, scientists are reaching an accord to be ready to contribute.

Frankly, I would like to say that in spite of such changes of scientists and society, the actual structures and managements of ICSU have not yet satisfactorily evolved to adapt the recent circumstances. Efforts may be necessary to mobilize the huge amount of scientific knowledge to be utilized more effectively for clearly prioritized issues, and hence necessary to reform the committee structures.

I mentioned earlier the shortage of utilization knowledge compared with the knowledge about fact. Maybe, the utilization knowledge could be created and fixed by official efforts of ICSU to utilize scientific knowledge for confronting problems, sometime collaborating with other disciplines such as social sciences.

It is my dream that ICSU is not only the collected centre of scientific knowledge about facts but also an originator of utilization science.

Speech by

Maciej Nalecz
Director of the Division of Basic and Engineering Sciences
Natural Sciences Sector
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Mr President of ICSU,
Mr President of the Brazilian Academy of Sciences,
Distinguished delegates to the General Assembly,
Ladies and Gentlemen,

It is a great honour to stand before you, representing UNESCO at the opening of this, the 27th General Assembly of ICSU, in the stunningly beautiful city of Rio de Janeiro. I bring the greetings of Mr Koichiro Matsuura, the Director-General, who was unfortunately not able to be with you here due to prior commitments.

It will come as no surprise to you that, in the context of UNESCO and ICSU's unique relationship spanning over 50 years, I wish to touch on the subject of *partnership*. Many of you will recall that the need for partnerships in science was a recurrent theme at the World Conference on Science, which our two organizations convened in Budapest in 1999. And the importance of striking new partnerships in the pursuit of sustainable development goals has been very much to the fore at the World Summit on Sustainable Development recently concluded in Johannesburg. There is widespread recognition that many of today's social, economic and environmental problems are of such complexity and dimension that solutions may only be found through the pooling of expertise and resources. Complementarity should be our watchword, not competition.

The relationship between UNESCO and ICSU has been very much characterized by the complementarity of action between an intergovernmental agency on the one hand and the non-governmental, professional community on the other. This cooperation has been close and fruitful over the five and a half decades since the founding of UNESCO. The importance of ICSU for the implementation of our Organization's global programme and the pursuit of its objectives has been recognized by its being accorded the highest status in terms of official relations with outside bodies.

In 1996 our two organizations signed a Framework Agreement to provide a general basis on which ICSU would, over a six -year period, pursue certain of UNESCO's objectives, or would undertake initiatives that complemented those of UNESCO. This Agreement was implemented to the full satisfaction of UNESCO's Member States.

Earlier this year Mr Matsuura and Professor Yoshikawa signed a second such Framework Agreement, making provision for cooperation until 2007, in particular through the implementation of projects in three priority areas, namely: innovation in science education; increasing national capacities in science through the sharing of knowledge and information; and sustainable development through international partnerships;

I should stress that the Framework Agreements cover just part of a wide range of collaboration and mutual assistance between Divisions of the UNESCO Secretariat and the individual unions or programmes of ICSU. I shall have the opportunity of reporting on this collaboration later on during the Assembly.

At the last General Assembly in Cairo our two organizations were able to reflect, with some satisfaction, on the cooperation they had enjoyed at the recently held World Conference on Science. Here, in Rio, we can look back on the Johannesburg Summit as one more major occasion on which UNESCO was able to demonstrate its readiness to work alongside ICSU. As Task Manager for the Science Chapter 35 of *Agenda 21*, UNESCO was pleased to be associated with ICSU in mobilizing the scientific community at the WSSD parallel event, the Science Forum.

The follow-up to the World Summit will probably be most noted for the so-called Type II partnerships – projects to be undertaken jointly by UN agencies with NGOs, civil society groups and the private sector. In the field of Science, UNESCO is happy to be the main intergovernmental partner with ICSU and the World Federation of Engineering Organisations for the Initiative on “Science and Technology for Sustainable Development”, developed under the leadership of Thomas Rosswall. This is an ambitious and exciting endeavour that, for UNESCO, will also serve to provide further impetus to the follow up to the World Conference on Science.

Most of you will know that water was one of the main topics of discussion at Johannesburg. In this regard, I should mention that there are two Type -II Initiatives on water involving both ICSU and UNESCO. Since water and ecosystems is the priority topic for the UNESCO Science sector, we are confident that these efforts will give rise to tangible, practical results that serve to put the WSSD rhetoric into action – the hope of the vast majority of those present in Johannesburg.

I should also like to say something on the subject of *universality*. I know that an organization like ICSU shares with UNESCO the principle of universality: the conviction that only by harnessing the talents of all scientific communities, can the pursuit of scientific research be most effectively brought about, the full benefits of scientific knowledge and application shared in an equitable way, and the major challenges facing humankind in the area of health, environmental protection and the use of natural resources best addressed.

On 12 September, in his speech delivered to the UN General Assembly, President George W. Bush announced the return of the United States to UNESCO after a break of 18 years. You can well imagine that this has been wholeheartedly welcomed within the Organization, and nowhere more so than in the Sector of Natural Sciences, where we recognize the importance of greater collaboration with the enormous intellectual resources of the American academic and scientific communities. Of course, over these last years individual US scientists and institutions have played important roles in the execution of our scientific programmes, (examples being in our oceanographic, hydrology and ecology programmes and the World Conference on Science), but the return of the United States Government to full involvement in the planning and implementation of UNESCO's activities can only serve to improve and add depth to what we do. There are many scientists within ICSU circles that have consistently campaigned and lobbied for this return to universality in UNESCO.

I should like to end by reiterating the importance UNESCO attaches to the cooperation it enjoys with ICSU and its component bodies. The recent deliberations in Johannesburg have served to underline the key role that science in all its forms has to play in the pursuit of sustainable development and the resolution of economic, social and environmental problems. The intergovernmental and non-governmental organizations such as ours have a duty to act together, and decisively so, in the coming years.

I wish you – officers, delegates and observers – well in your discussions over the coming days.

Thank you for your attention.

30 September 2002

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Report of the Scientific Unions' Forum held in Rio de Janeiro on 24 and 25 September 2002

Summary

A meeting was held with the Scientific Unions to discuss both matters pertaining to the February 2001 meeting in Paris and to future developments within ICSU. The Unions were appreciative of the forum to discuss these matters and welcomed the opportunities that were being extended to them to become actively involved in determining future policy in a variety of areas. Overall, Union attendees commented on the significant progress made by ICSU in implementing both the recommendations from the ICSU Assessment Panel in 1996 and more recently from the Unions own meeting in February 2001, and indeed in generally modernising ICSU to make it more strategic and relevant, with regard to the major issues of concern to science and society.

It was recognized that the Union representatives on the Executive Board have a key role to play in ensuring communication. It was suggested that each of the four Union representatives might represent a 'portfolio' of Unions, e.g. biological sciences, physical sciences and maths, social sciences, earth sciences.

It would be difficult to capture the full richness of the discussion in this summary note but a number of interesting and important issues arose and these are listed below against the relevant agenda items.

ICSU's mission

Many comments were received about the Mission Statement including a number of suggestions for modification. A special meeting was held on 25 September 2002 to discuss this issue in more detail. Four points emerged:

- (a) The concept of 'developed' and 'developing' countries was felt to be a divisive term which ICSU should consider removing from its Mission Statement. The concept of a worldwide community of countries, albeit at different levels of development and rates of development, was preferred.
- (b) Several delegates commented on the need to make more overt the human dimension of ICSU's activities. In other words, the interaction between science and society needed further emphasis.
- (c) The ability of the Unions to provide expertise through their discipline-based structure could be made more explicit. It is a very special attribute of ICSU that it does include such expertise amongst its membership.
- (d) Some brief description of what ICSU is, especially as regards to constituent membership, would be worthwhile.

Consequently, the Unions would like some amendments made to the Mission Statement and a suggested alternative is given below:

“The role of ICSU, through its constituent international Scientific Unions and National Members, is: to identify and address major issues of importance to science and society by mobilising the resources and knowledge of the international scientific community; to promote the participation of all scientists and scientific communities, irrespective of race, citizenship, language, political stance or gender in the international scientific endeavour; to facilitate interactions between different scientific disciplines and between scientists worldwide; to stimulate constructive debate by acting as an authoritative independent voice for international science and scientists.”

Position statements

- The science community should be active and strive to be heard;
- Speed of response is important and responsibility needs to be devolved to the EB in some circumstances, e.g. on issues relating to ‘established values’. Where the ‘substance of science’ is being addressed then wider consultation is likely to be necessary.
- ICSU needs to develop a broader communication strategy, incorporating the dissemination and impact assessment of communication activities, as well as the development process.
- The ICSU web-site could be further developed as a ‘clearing house’ to facilitate access to the position statements of ICSU members.
- It will be important to identify contact persons for statements and press releases
- An ICSU statement (category 1) on the importance of the basic sciences would be timely.
- The third World Water forum is planned for March 2003 and it was suggested by IUGG that it might be useful if the category 2 Position Statement on water quality was endorsed by all ICSU members and eventually issued as a category 1 formal ICSU statement.

Identifying and Prioritizing Emerging Issues

- Several suggestions for modifications to the questions that will be addressed to the ICSU family as part of the process to identify new initiatives were proposed. On the basis of these suggestions and the national members discussions, there was preliminary agreement on the following questions:
 1. What scientific developments would best serve the needs of society while also advancing scientific knowledge? [or i. What are the advances in scientific knowledge that are necessary to best serve the needs of society, and ii. How do these relate to the way science and technology are already developing?].
 2. What kinds of collaboration or coordination are required [in order to ensure these scientific advances in a way that is of optimal benefit to society] ?
 3. What is the unique role for ICSU following from its mission? [or In the light of its mission, what is the unique role that ICSU can play in relation to these developments?]

The ICSU grants programme

- Whilst recognizing the progress that had been made by CSPR in developing a fully competitive peer-reviewed grant scheme, several Unions questioned the decision to discontinue the small block grants. For the smaller Unions, in particular, these block grants were important in helping scientists from developing countries participate in Union activities and in leveraging additional funding. CSPR and EB members explained that the allocation of block grants entailed a considerable top-slicing of the overall grants budget and the non-competitive allocation of this funding did not fit with the new ethos of the grants programme; the grants scheme was not for funding 'core' activities of individual Unions.
- The possibility of some form of (competitive) small grants scheme specifically to help ensure the participation of developing country scientists in Union activities was raised.
- It was agreed that feedback to applicants on unsuccessful proposals could still be improved.
- It was noted that the co-funders of the grants scheme – UNESCO and NAS – were pleased with its new direction, i.e. a prioritized and fully competitive programme.

Strengthening Science in Developing Countries – the new role of ICSU

- It was noted that there was considerable intra-regional variation, e.g. Anglo-phone versus Franco-phone Africa, that would present a challenge to the proposed new ICSU Regional Offices. In this regard, the siting of these offices would be crucial; they should be located in established institutions that already have regional links. Further links would then need to be developed over time. The regional scientific networks in Latin America were cited as a good example of how this might work.
- The development of good, clear criteria for the location of the Regional Offices is important.
- There was potential benefit in linking appropriate regional activities to UNESCO Regional Offices
- The major role of the Unions should be in helping develop scientific programmes within the regions.
- The Regional Offices should also be used to improve the outreach of Unions, re. two-way communication of information.
- The Regional Offices could also provide very valuable facilities and assistance for setting-up regional workshops.
- The 'catalytic' role of the Regional Offices was key; this did not necessarily require a huge amount of financing, but rather the establishment of effective outreach processes for the sharing of information and knowledge.
- The need to coordinate and exchange information on activities in various regions across Unions was raised and a possible role for the ICSU web-site in this regard was suggested.
- In conclusion, it was suggested at the next Unions meeting in 18 months time, the Unions themselves should present their proposals on how they might work with the new ICSU Regional Offices and Policy Committee on Developing Countries. This could be done by responding to the questions that had been raised on collaboration during Professor Gupta's presentation:

1. [What are the Unions expectations?]
2. What is the Unions' contribution to Regional Offices?
3. How could Unions' associate with the Regional Offices?
4. What regional structures do Unions themselves have/work with/need to develop?
5. What are the Unions expectations of a Policy Committee? – information on needs and priorities of developing countries, advice on programme development etc
6. What kind of inputs could Unions provide to the Committee and how?

Broadening the representation and outreach of Unions

Young scientists

- A variety of practices for encouraging the participation of younger scientists in Union activities were presented. These included special prizes for young scientists and support for them to attend congresses; inclusion of young scientists in Union task forces; symposiums for young scientists; young researcher conferences linked to Union congresses.
- The need for those in the early stages of their scientific careers to gain visible credit for participation in international activities was recognized as a significant problem.

Developing Country scientists

- There is a whole range of developing countries and they have a huge amount to contribute to international science. ICSU needs to draw on the expertise of all countries and working with other knowledge bases is very important to address major issues such as sustainable development.
- A 'top down' approach to 'helping' developing countries needs to be replaced by an equitable partnership approach.
- At the same time it needs to be recognized there are significant practical problems in many countries: there are very few scientists who are over-demanded; capacity and resources are limited.
- The linkages between regional scientific networks and many Unions could be improved.
- Language is a major issue and the Unions need to think about multi-language sites and publications; some Unions are already having their e.journals translated and this type of 'best practice' should be propagated.

Encouraging women in science

- The inclusion of women is not just an equity issue.
- The IUPAP conference on women in physics was cited as a key example of 'best practice' and a milestone event for that Union.
- Symposia on/for women linked to Union conferences is one potential mechanism to address existing discrepancies
- There are regional and cultural differences in the prevalence of women in science, e.g. Northern Europe versus Southern Europe and understanding these differences can in itself be informative.

In relation to each of these three topics it was clearly stated that ‘tokenism’ was inappropriate and that representation should be on the basis of scientific merit. At the same time it was agreed that positive measures had to be taken to overcome existing divides. In this regard there was considerable scope for exchanging best practices between Unions.

Other issues

It was requested that the powerpoint presentations from the Unions’ forum should be made available on the ICSU web-site.

***Forum of National Members
Report to ICSU's
27th General Assembly***

Lucie Lapointe, Canada

- ***Context***
 - Progress relating to the recommendations from ICSU's assessment
 - Remaining challenges
- ***Consultations on:***
 - process for identifying and prioritizing 'emerging issues';
 - changes to grants program;
 - COSTED review; and,
 - ICSU' strategy to influence policy makers

General Comments

National members were:

- *encouraged by the progress made by ICSU in addressing the challenges identified by the assessment panel;*
- *given the nature of the global issues which ICSU is increasingly called upon to address, strong linkages in the social, medical and agricultural sciences as well as with engineering are required.*

Consultation on the process to identify 'emerging issues'

- *ICSU is also encouraged to attain a greater level of collaboration:*
 - between developed and developing countries;
 - between North and South countries; and,
 - between Unions and National members.

Consultation on changes to ICSU's grants program

- *Focussing the grants program on global issues may be overly restrictive. Important opportunities for ICSU action at the regional level may be overlooked; and,*
- *ICSU must assess results reached from funds invested.*

Consultation on the COSTED review

- *The review was found to be very comprehensive and of excellent quality... 'a welcome development'*
- *Members urged greater level of synergy with other organizations involved in like-areas at the regional level in order to:*
 - minimize duplication efforts and ensuing confusion and,
 - reduce costs to member countries and participants.
- *ICSU urged to work with others to contribute to reducing 'brain drain' from developing countries*

Consultation on a strategy to influence policy makers

- *we must find a common language, agree on ‘the problem’, commit to understanding the perspective of others, and listen for different perspectives*
- *the shift in the social contract of science with society: the social responsibility of scientists to educate.*
- *WSSD provided ICSU with a great opportunity to make S&T visible and relevant to this societal debate;*
- *alliances allows ICSU to build broad consensus that ultimately legitimize its contributions;*
- *the IPCC experience indicates that partnership with government stakeholders ‘from the beginning’ is key, and*
- *the prime responsibility for action resides at the local and regional level. Internationally, best practice can be shared. ICSU should provide support to ‘make the case’ for investments in science;*
- *the proposed guidelines for issuing ICSU statements were positively received.*

Other issues

- *a program proposal was received from the Academy of Athens on Physics of Life Sciences: electronic, ionic and photonics with biostructures.*

Concluding Remarks

“The objective of ICSU is to promote S&T for the benefit of humanity. The major influence ICSU should have in the international arena is in setting the agenda for science that cannot be done by governments because of political or other related reasons...

...Looking back from the year 2020 to today, we should feel confident that humanity has indeed benefitted from science because of ICSU’s interventions.”

extract from Assessment Report

Joint Session Unions and National Scientific Members' Forum

The goal of this session, chaired by H. Metzger, was to have the Scientific Unions and National Members representatives look together at a major single issue of common concern: how could National Committees improve their interaction with Scientific Unions to bring international initiatives down to the national level where actions should be implemented?

F. Gros from France, V. Krishnan from India and P. Collins from the United Kingdom presented the mechanisms in place in their respective countries. While the first two mechanisms were of a "classical" type with National Committees being linked to Unions according to their scientific disciplines and were said to be efficacious, the representative from the United Kingdom explained the recent restructuring by his country in this area. In order to maximise benefit to UK science from its present investment (£445,000 or US\$670,000), the Royal Society over the five past years had reviewed its relationship with ICSU bodies, and decided to progressively delegate its adherence, where possible, to a number of the UK's learned societies. From the Royal Society's point of view, this disengagement was said to have been successful in many respects, notably in promoting a better "engagement" of relevant scientists in their Unions. This led to a long discussion as to the advantages and disadvantages of such an approach. The conclusion was that the need for better interaction between National Committees and Scientific Unions was seen as a general problem with not simple solution.

Science for Sustainable Development

A Science Forum at the 27th General Assembly of ICSU

25 September 2002, Rio de Janeiro

1. Introduction

Sustainable development is among the most compelling, and least tractable, problems of the day. Achieving sustainability will require that fundamental issues be addressed at scales ranging from local to global. At all scales, scientific knowledge can help provide guidance to resolve the economic, social and environmental problems that may make current development paths unsustainable. Recognising the need for more serious scientific attention to issues of sustainable development, the 1999 ICSU General Assembly in Cairo charged the Executive Board with initiating a discussion about the steps that ICSU might take to be helpful in this challenge. During the intervening three years, numerous activities, workshops and dialogues have occurred, culminating in the lead role that ICSU played in coordinating the scientific input to the World Summit on Sustainable Development in Johannesburg in August 2002. Building on those activities, this Forum on Science for Sustainable Development was convened at the 27th General Assembly in Rio de Janeiro to review the current global context of the sustainability challenge, examine the current state of the Earth System, identify emerging best practices and ideas, discuss future challenges and assist the General Assembly in refining ICSU's strategy for contributing to science of sustainable development. At this Forum, presentations delivered by seven leading natural and social scientists from five continents (see the *Appendix*) covered a variety of sustainability topics.

2. Context

The 20th century witnessed unprecedented global changes. The number of people on Earth, where they live and their per capita use of resources changed dramatically. For example, between 1900 and 2000, the:

- human population increased 4 fold,
- urban population increased 13 fold,
- water use increased 9 fold, and
- marine fish catches increased 35 fold.

These changes and the ways in which human societies are developing have caused significant inequities among nations and placed unprecedented stresses on the life support systems of the planet. For example:

- the generation of energy through the combustion of fossil fuels is altering the climate;
- clear-cutting immense swaths of forests to provide timber and land for agriculture is affecting not only the climate but the provision of clean drinking water, the transmission of vectors of diseases, and the very existence of untold species,

- discharge of sewage into coastal waters coupled with overfishing and coastal sprawl is destroying nearshore marine habitats such as mangroves and coral reefs and thus future fisheries production, tourism revenues and human health,
- excess nitrogen from wasted agricultural fertilizer is polluting rivers and oceans, triggering harmful algal blooms and dead zones around the world.

These and other global -scale changes illustrate the challenges inherent in enabling continued development of countries around the world and providing for basic human needs for all, while at the same time restoring and protecting the ecological systems that provide the life support for the entire planet. It is becoming increasingly obvious that current ways of using resources, the rate of generation of wastes and the increasing inequity within and among nations is not sustainable.

While science has played a role in contributing to some unsustainable pathways, there are numerous substantive ways in which scientific knowledge can now assist in making a transition to sustainability. For example, in many countries infant mortality has declined and life expectancy is up . In addition, nation after nation has demonstrated that, once they have the wealth, protection of biodiversity and air and water quality are priorities. Policy makers and citizens are looking to scientists to provide this useful knowledge. In addition, increasing numbers of scientists are motivated to rise to this challenge, and help fulfil their “New Social Contract for Science” (Lubchenco, *Science* 279, 491-497). Presentations at this Forum highlighted how scientists are responding to this global challenge – how they are addressing the dual need to provide for basic needs for people around the world and simultaneously restore and maintain the Earth’s life support systems.

3. Earth System – Coupling Human and Natural Systems

The Earth System is governed by complex, non -linear, multi-scale processes involving the geosphere, atmosphere, hydrosphere, biosphere and anthroposphere. Although the Earth System has undergone dramatic changes during its history, it has recently entered a no-analogue state due directly to the unprecedented scale and impact of anthropogenic activities. This no -analogue state is clear from many indicators, most notably the fact that the levels of carbon dioxide and methane are now far outside the bounds in the natural fluctuations of these greenhouse gases, as measured from ice cores covering the last 420,000 years. The expected warming of the planet is likely to be significantly faster and reach higher levels than at any other time during this period. Earth's environment is becoming *terra incognita*.

Since the Earth's environment is a complex, integrated system, changing a single variable, such as temperature, has multiple global implications. This concept was poignantly discussed in the context of food security. For example, by 2080 climate change is expected to significantly reduce cereal production in Africa, India and Eastern Europe. A critical dimension of this problem is the disparity between the source of the greenhouse gas emissions (developed countries) and the most seriously impacted (many developing countries).

Resilience is one of the new interdisciplinary scientific concepts that is providing great insight for thinking about and managing complex adaptive systems, i.e., for making a transition to sustainability. In this context, resilience is a measure of the capacity of a

system to absorb perturbations and remain in a functionally similar state. An interdisciplinary, international group called the Resilience Alliance has fostered a new conceptual model that has application to both natural and social systems. This model suggests that attempts to manage a system for precise endpoints (the traditional approach of modern governments and most managers) may backfire by reducing the stresses the system can withstand, thus increasing the possibility that it will enter unknown and potentially undesirable states. In contrast, managing the system to retain its resilience is more likely to maintain it within certain bounds, provide greater stability and maintain the desired functioning of the system. Given the multiple, complex perturbations affecting the Earth System, the increasing uncertainty associated with the no-analogue state, and the coupled nature of human and social systems, guidance for maintaining the ability of the planet to provide life support systems is highly desirable.

An illustration of one aspect of resilience was provided by a focus on efforts to reduce human susceptibility to geo-hazards. An IUGG study looked at how global earthquake-caused fatalities have changed over the last century. From 1900 – 1949, there were approximately 700,000 deaths due to this natural geo-hazard but from 1950-1992, there were only 500,000 deaths. So even with the increases in population, specific steps to reduce the risks of this hazard have been quite successful. Unfortunately, this success is differentially distributed. The dramatic reduction in deaths has occurred almost exclusively in developed countries that have better capabilities and greater resources to reduce this particular risk. This success illustrates the potential for increasing the resilience of human systems to geo-hazards, but also the challenges in ensuring the benefits are equitably distributed.

4. Emerging Best Practices

Some innovative ‘best practices’ for science for sustainable development highlighted in this Forum included:

- conducting place-based, interdisciplinary studies,
- engaging relevant stakeholders in setting a research agenda,
- doing science in a participatory and action-based framework,
- bridging disciplinary barriers,
- approaching problems with a holistic complex-adaptive system perspective.

These themes were illustrated by a presentation on biodiversity research (affiliated with DIVERSITAS) in Amazonia whose goals were to identify ways of preventing impoverishment cycles by linking human uses more directly and meaningfully to ecosystem dynamics. In this project scientists interact directly with stakeholders to jointly identify solutions.

A second compelling success story was provided by a presentation on the CGIAR (Consultative group on International Agricultural Research) system. In this example participatory research is now focused on specific problems in which co-operative learning and sharing of local knowledge with stakeholders is a defining feature of the system. A range of research methods including quantitative and qualitative methods is employed.

5. Future Challenges

Discussion at the Forum revealed some of the more significant challenges for the scientific community, policy makers and society in implementing sustainable development. Such challenges include:

- utilising the rich diversity of disciplinary sciences, including full participation by social scientists,
- forging new interdisciplinary partnerships,
- linking with existing efforts,
- connecting the acquisition, communication and utilisation of knowledge,
- incorporating the breadth of stakeholders,
- improving our ability to integrate knowledge across scales and linking place-based studies to the global scale,
- establishing effective institutional frameworks both for this new way of doing science and for establishing meeting places between the science and policy worlds at local, national and global levels.

In addition, speakers and participants emphasised a number of meta-messages that included:

- focus on place,
- establish bridges among disciplines,
- accept uncertainty,
- nurture system thinkers,
- expect surprises,
- avoid abrupt or irreversible changes in Earth's environment
- manage for resilience.

6. ICSU's Role

There was a lively discussion during the Forum about the appropriate role for ICSU in effecting a transition to sustainability. Several suggestions, listed in increasing order of commitment, were:

- to serve as a clearinghouse,
- to promote partnerships,
- to help define a research agenda,
- to formulate a science plan
- * to organise and coordinate an international research program
- * to oversee an international research-action program.

During the General Assembly which followed this Forum, animated discussions about these topics and ICSU's role continued. During the final session, Resolution #6 was passed, authorising the Executive Board to initiate activities that would "...develop a science plan for sustainable development...".

The Forum will undoubtedly provide important guidance as ICSU and the international community of scholars and practitioners work collectively to rise to the challenge of creating and using the knowledge base to improve the health, well being and prosperity of people everywhere while maintaining the life support systems of the planet.

Appendix (Forum Announcement)

Chair: Jane Lubchenco
Rapporteur: Sylvia Karlsson
Organiser : Leah Goldfarb

Speakers :

Claudia Azevedo-Ramos
Universidade Federal do Pará (Belém, Brazil)
Biodiversity and Sustainable Development

Mike Brklacich
Carleton University (Ottawa, Canada)
Food Security and Sustainable Development

Harsh Gupta
IUGG/National Geophysical Research Institute (Hyderabad, India)
Geohazards and Sustainable Development

Anne-Marie Izac
International Center for Research in Agroforestry/CGIAR (Nairobi, Kenya)
The Role of Partnerships and Participatory Research for Sustainable Agriculture

Ann Kinzig
Reliance Alliance/Arizona State University (Tempe, USA)
Resilience and Sustainable Development

Jill Jäger
International Human Dimensions Programme on Global Environmental Change
(Bonn, Germany)
Science for Sustainable Development

Will Steffen
International Geosphere-Biosphere Programme (Stockholm, Sweden)
An Earth System Perspective on Sustainability

Report from the Scientific Forum on Energy and Sustainable Societies
25 September 2002

Chair: Hiroyuki Yoshikawa

Summary

Presentations at the Forum focussed on (1) the importance of energy issues for achieving sustainability during the 21st century; (2) the usefulness of scientific information and advice for policy-making on local, national and global levels; and (3) technical and policy issues in three selected energy domains (biomass, fuel cells and nuclear power). Discussions by Forum participants concentrated on the desirability and feasibility of a major new cross-cutting activity by ICSU, based on a proposal presented by representatives of the French Academy of Sciences and of the Science Council of Japan. Forum participants concluded that a new activity was desirable, and that the unique character of ICSU offers the prospect of real added value in an area where many organisations are already active. The principal goal of the activity would be to develop impartial, science-based, interdisciplinary analyses and recommendations on energy issues (chiefly, but not exclusively, R&D investments and policies). The target audience would be decision-makers, planners, and programme managers in government, intergovernmental organisations, academia, NGOs, industry, and civil society.

Forum participants agreed that further discussions during the coming months involving members of the ICSU family (as well as potential external partners) were needed to refine the scope, methods, timelines, collaborations, and other aspects of the new activity.

1. Background: Energy and Sustainability

It is widely acknowledged that the realisation of major societal goals depends, in large measure, on the ready availability of energy in all of its many manifestations (heat, light, electricity, mechanical power, radioactivity, chemical reactivity, etc). The production and use of energy are strongly linked (in negative as well as positive ways) to all aspects of a sustainable future: peace, health, prosperity, and environmental protection. During the recent World Summit on Sustainable Development, energy emerged as a vital issue in its own right.

Energy has long been a central concept in science, but questions surrounding energy and sustainability have multiple non-scientific dimensions: social, political, economic, environmental, cultural, ethical, etc. Science and technology occupy a central place, however, because many of the challenges can be addressed directly by cutting-edge scientific research, and because the methods of science (verifiability, objectivity, openness, etc.) are universally applicable to resolving complex issues.

2. Principal Challenges for the 21st Century, and the Importance of Science and Technology

At the beginning of the third millennium, it seems appropriate to focus on energy for the next one hundred years because this is the period during which demand will rise rapidly as the world population peaks, and as large developing countries experience vigorous economic growth. During this period, some energy sources (notably, oil and uranium-235) will be seriously depleted while new ones (for example, thermonuclear fusion) may achieve major importance. Since it typically takes 20 years or more to develop and exploit a new energy technology, it seems appropriate to consider energy issues for the next 50-100 years; beyond that, the well-known unpredictability of the scientific enterprise makes speculation increasingly meaningless.

Currently, fossil fuels account for most of the world's energy production, but dependence on this single source is seen as unsustainable for environmental, political and financial reasons. To sustainably satisfy global energy needs in the 21st century, major changes will have to be made to existing patterns of energy production, utilisation, transportation and storage. The principal challenges are:

- Developing sustainable energy technologies that will fulfil a demand estimated at 150% of current capacity by the year 2020, and 300% of current use by the end of the century.
- Protecting the environment, most notably from the threats of climate change, pollution, and damage to soil, water supplies, and biological diversity.
- Ensuring energy security, and confronting the dangers posed by instability in energy-producing regions, and the vulnerability of infrastructures.
- Promoting scientific and technological progress that is adapted to the needs, resources and traditions of individual communities, countries and regions, with special emphasis on the affordability of new energy solutions, as well as education and training for absorbing and managing new technologies.
- Improving the efficiency of energy production and utilisation, to make better use of scarce resources, and to minimise the negative impacts on society and the environment.

The Forum did not attempt to cover the full spectrum of existing and proposed energy solutions. Three areas were sampled to illustrate their complex and multi-disciplinary nature: biomass (with emphasis on applications in rural India), fuel cells, and nuclear power. All presenters agreed that energy solutions cannot be developed via theoretical modelling alone, or even through small-scale laboratory experiments. They must be validated over extended periods in realistic environments. This any R&D strategy must include resources for pilot projects and evaluation.

Forum participants devoted particular attention to nuclear power generation, arguing that it deserves renewed serious consideration from all stakeholders in the energy debates. During the years when new construction has been halted in many countries, considerable progress has been made by researchers and power plant operators in addressing society's major concerns: safety, cost, waste disposal, and plutonium management. A new R&D agenda is being proposed, emphasising greatly increased efficiency of fuel consumption (via fast neutron fission) and advanced waste treatment methods that limit or eliminate the need for very long-term underground storage of high-level wastes (spent fuel re-processing, transmutation).

3. A Potential New Interdisciplinary Activity for ICSU

Following presentation of a proposal by representatives of the French Academy of Sciences and of the Science Council of Japan, Forum participants considered whether ICSU should undertake a major new interdisciplinary activity that would address the scientific and technological dimensions of energy for the 21st century, with consideration of social, economic, political and cultural issues whenever appropriate. The consensus of the participants was that such an activity is worthwhile if it has a tangible impact on crucial energy-related decisions. In particular, it was felt that ICSU could develop analyses and recommendations based on the particular strengths of the organisation:

- ICSU's track record and reputation as a science-based, politically independent, open and objective body would command the attention of decision-makers. Currently, advice and opinions about proposed energy solutions too often reflect the inflexible vested interests of institutionalised proponents or opponents.
- ICSU's multidisciplinary character is a good match for the issues in question. Special efforts have to be made to bring in more expertise in the social and behavioural sciences, and the humanities as well.
- ICSU's global reach can ensure that the interests of all concerned parties (especially those in developing and transitional countries) are properly incorporated into energy-related decisions.

The new activity would focus on understanding the complex links between the scientific, technological, environmental, economic, social, political and cultural dimensions of energy -

related issues, as well as evaluating proposed solutions and technologies. In particular, ICSU could develop findings and recommendations on their advantages, costs, risks, impacts, and acceptability. The audience for the results of the new activity would be the scientific community itself, and decision-makers, planners, and programme managers in government, intergovernmental organisations, NGOs, industry, and civil society.

Original research would be undertaken, as well as integrating and adding value to existing knowledge. Resources available for the work would be limited but, ideally, one of the outcomes would be to generate and/or re-direct much larger funds that are devoted to energy research by governments and industry.

Any proposal for a new activity must take into account the long history and maturity of the debate on energy issues. There is a vast multiplicity of organisations, conferences, studies, and publications that deal with every facet of energy technology and energy policy. Thus, any new effort by ICSU would have to incorporate collaboration with appropriate international partners.

It was the consensus of the Forum that an energy-related activity is desirable, but it was also agreed that considerable further work was needed in coming months to refine the terms of reference of the effort. The proposal from France and Japan is a good starting point for this consultation.

Rapporteur: Stefan Michalowski
Organisation for Economic Co-operation and Development (OECD)

Report from the Scientific Forum on Insuring Global Access to Scientific Data and Information

Rio de Janeiro, September 2002

New information technology offers tremendous possibilities for the communication, exploitation, storage and processing of scientific data and information. At the same time, new challenges continue to appear. Data produced through research often has economic value in modern society. Some research is financed by the private sector, which complicates the access, dissemination and preservation of these data. In other cases, governments wish data collected under public funding to be commercialized. There is no consensus on how international and global monitoring systems should be financed. The increasing value of biological data is apparent to all. New information technology has motivated the creation of new intellectual property rights (IPR), such as the *sui generis* right in the European Union. The distinction between copyright and *sui generis* right does not, however, match the distinction between information and data.

Topic 1: Research databases

Background: Data and Scientific Discovery. Data preservation has been a major preoccupation of human society both to save collected data and to support scientific discovery. Several early civilisations used architecture (e.g. pyramids) for archiving astronomical information. Until recently, the simplicity and limited size of data collections allowed them to be fully accessible to individual researchers. Today, the complexity and very large size (terabytes) of databases has fundamentally changed the interaction of an individual with modern data collections. In fact it is suggested that future scientific discovery will be critically dependent on computers, and that the search for scientific discoveries may be computer-supported or even automated. Access to accurate and complete data collections is therefore important. This fundamental change in discovery is a major driving force in making data access an important issue for IC SU to address.

Current problems: New IPR legislation for databases. Data acquisition is a complex and expensive process, and there is no consensus on the conditions for making data available to the scientific community. IPR issues make it difficult to exchange data. IPR for databases in the European Union area is subject of a directive that was enacted in 1998. This directive defines a new *sui generis* right preventing extraction and/or reutilisation of the whole or substantial parts of a database for a period of 15 years, renewable. Exceptions may allow database extraction for illustration, teaching or scientific research, but these exceptions are optional and are decided by each member state. Possible directive changes can make even more complex the accessibility of data and information for scientists and may impede normal research activities.

CDSI and CODATA activities: Interaction with EU authorities. The ICSU/CODATA ad-hoc group on data and information analyzed the effects of this directive, making comparison with other legislation. The group observed that there is a real need for a short statement explaining what the problem is and what could be the effects of new

directives in this matter. Subsequently, there have been several contacts with EU authorities in order to explain the position of ICSU, as expressed in the resolution on '*Principles for Dissemination of and Access to Scientific Data*'.

Scientific Data Issues in the Biological Sciences. The Inter-Union Bioinformatics Group (IUBG) pointed out in their report that new discoveries in biology, especially in the genomics area, clearly demonstrate the need for a primary data repository in public archival database, even for commercial data, in order to safeguard them for the future. This requires long-term commitments. Additional work is needed on standardization issues with respect to vocabulary, hierarchy of terms, gene ontology, format and data exchange.

Topic 2: Research Knowledge Management

Background: The use of computer-based document preparation, whereby authors have taken over a large part of the activity previously done by typesetters, as well as communication by electronic mail and the easy dissemination of research articles using the world-wide web, has radically changed all steps in the publication chain for research articles. This is often perceived both as an opportunity for better and less costly communication in the research community, and as a threat to organizations that are traditionally involved in the publication chain. At the same time, it is clear that only a limited part of the possibilities of new technology are presently being used in this context.

In particular, a large number of free-access research journals have been started in recent years, allowing readers to access articles from web pages without subscription or other charges. In some cases, these new journals have also pioneered new ways of operating the peer-review process and introduced author-reader interaction. It has been presumed that the cost of production of the journal will be orders of magnitude smaller under this system, but the question of how to finance the remaining costs has not been resolved in a definite way.

Perspective: This topic was addressed by adopting the perspective of how the scientific community as a whole manages its needs for internal communication and for knowledge management (borrowing a term that is widely used in industry). The present publication system can be understood as though our community 'outsources' the solution to its internal communication needs, and at high cost. The emergence of free-access journals can then be interpreted as a way of 'insourcing' that same function, and we need to discuss whether which approach is the most efficient from a total system point of view.

The data and information of concern here appears in three steps: the raw data that precede the publication of articles; the research articles themselves; and the information that enables readers to select articles that are relevant for them. The great importance of the third type of information was emphasized, and a number of ways of extending it using modern information technology were proposed.

With respect to how the costs in the publication chain could best be covered in the context of the new technology, it was proposed:

- that the preparation costs for the documents, including both typography and language correction, could best be met by the author's home institution, often on a do-it-yourself basis;
- that the costs for posting articles and making them publicly available over the Internet ought to be considered as infrastructure, to be covered on a common basis, in a way similar to how university libraries are usually financed;
- that the cost of the selection -supporting information, ranging from classical peer review to discussion groups, dynamically updated bibliographies, etc could often be covered in ways similar to computer freeware, that is, by a combination of voluntary efforts and direct support by parties that have a concrete interest in the proper functioning of these activities. This would include, in particular, the research funding agencies, but other possibilities were also suggested.

It was argued that a freeware approach to the third type of information would be the most conducive to the emergence of new methods and new services.

It emphasized, finally, that such an organization of research publication could only be seen as a complement to the traditional one, and that for the foreseeable future it should co-exist with the conventional, subscription-based publication system.

Topic 3: Worldwide dissemination of scientific information

Background: *Developing Countries' Problems in Accessing Data and Information.* The digital divide is increasing, extending the knowledge gap and making it even more difficult for developing country scientists to access data and information. Usually, developing countries have limited and low quality access to the digital community, due to a lack of financial resources and of infrastructure. The industrially developed countries invest on the average 2.5% of GDP for research, compared to less than 0.6% for third -world countries. The conditions are very different between developed and developing countries: access to telephones differs by a factor of 4, network connection by a factor of 200, and Internet usage by a factor of 2000. There is a need for skilled manpower, for low -cost information access, for journals and for contacts. Recent initiatives by publishers offering favorable pricing rates for TWC must be encouraged. Some recommendations are to encourage TWC scientists to publish in electronic form, to exploit existing electronic archives, e.g. IAP, TWAS, ISCA, and to persuade publishers to give them free or strongly discounted electronic access to scientific journals.

CDSI and CODATA activities. CDSI initiated in 1992 an International Network for the Availability of Scientific Publication (INASP) to promote the diffusion of scientific information in an accessible form in developing countries through newsletters, handbooks, manuals, web sites on general science, health and rural development, library support, etc. INASP aims to deliver information, to raise awareness, to disseminate national and regional information, and to strengthen local scholarly publishing. Its most recent initiative, the Programme for Enhancement of Research Information (PERI) provides core journals from international publishers and considerably reduced rates. Further information can be found on their website at www.inasp.info/ajol/index.html.

Issues for the future

Many questions still remain with respect to scientific data and information. To what extent will commercial consideration complicate access, preservation and control of information? ICSU-CODATA have made recommendations concerning the importance for the scientific community of having the right of free access included in the EU database directive. Scientific endeavor on the international level needs to be able to use the exception clause in that directive. Attempts to energize national members on this issue met were not very successful. IUBG analyzed medical genome data; CODATA can encourage code development and standardization. New technology is changing the world, science can help keep technology under control and has the will to do that. But science needs to use new structures and new modes of operation. How the opportunity of new technology can amplify the access to information is a fundamental question for the future. An important challenge for ICSU is to provide a continuous funding program that does not depend too much on a single source.

Proposal for resolutions

The General Assembly

- 1) Notes the tremendous impact of new information technology on the acquisition, exploitation, processing, communication, storage and long-term availability (preservation) of scientific data and information and calls on all ICSU members to maximize its use for the benefit of the scientific enterprise.
- 2) Emphasises that efficient and well functioning infrastructure for information and communication technology is of the utmost importance for science and the dissemination of data and information worldwide.
- 3) Endorses the Position Statement based on the Report of the CODATA/ICSU ad hoc Group on the necessity of full and open access to scientific data and supports the recommendations of the IUBG Inter-union Bioinformatics Group in relation to biological data
- 4) Encourages all ICSU members to use the new possibilities to obtain greater control by the scientific community of the information chain, by considering alternative forms of publication of scientific articles.
- 5) Notes the special challenges encountered by developing countries in making optimal use of the new facilities and support the activities of INASP and similar programmes which make production of and access to data and information more available across the digital divide.
- 6) Proposes the formation of an ad hoc group based on the ICSU bodies concerned with data and information, (CDSI, CODATA, ICSTI and Unions) to identify the issues which the scientific community would wish to bring to the World Summit on the Information Society.

Forum 4: Capacity building for science

25 September 2002, 09:00 — 13:00

Chair: C.N.R. Rao

Rapporteur: A.M. Cetto

C.N.R. Rao: Opening remarks

1.- A broad definition of capacity building (CB) should be used. CB is not just about education; it includes also such diverse things as training technicians and policy making. All countries and regions require a CB component, at all levels.

2.- We need to empower the local scientists to contribute to CB. The local context is essential, and each one is happy in his/her own working environment.

3.- In any CB initiative one should try to answer such basic questions as: What is the message of science you want to convey? What is the science literacy you want to achieve?

Shirley Malcom: Science teaching at primary and secondary levels

The presentation focused on the need for interactions across the science and teaching communities and the connection of these to the education policy community. Catalyzed through the action of CCBS, initiatives have been undertaken to promote inquiry based, hands on models at the primary school level; the successful experiences in China and Malaysia were specifically mentioned. Beyond the Conferences and networking, a website is being developed, with the purpose of collecting and disseminating quality material to support science and maths teaching.

Discussion: Concerns were expressed about the need to reach out more systematically and directly to the teaching community, including the teachers' associations, rather than just the individuals. Questions were also raised about the availability of material in English when instruction is in the local languages, and a clearing-house was proposed to be set up by ICSU for translation of materials.

A plea was made to resurrect the International Young Scientists' Forum, set up after the Budapest Conference (1999), in order to involve young scientists in these initiatives.

Linking of scientists with teachers is seen by many as a major challenge; until science teaching gets duly recognized, it will not be done by scientists. ICSU and the Academies have a role to play in changing this.

Peter Tyson: Capacity building and the sustainability of scientific networks in developing countries (dc's)

Experience with START shows that there are no shortcuts to effective CB. START's primary goal is research-based CB using a regional approach and working with different partners. No single activities or methods suffice; they need to be packaged. Activities carried out have a greater impact on the organizers than on the target, unless there is effective follow up. Initially activities were from developed countries (DC's) to dc's; now many are from dc's to dc's. Confidence building and recognition are two of the most important aspects of CB. There are always people who have some knowledge base and want to participate.

Present initiatives include: Integration of START scientists into international programmes, Global Change Institutes, and activities of synthesis of regional research. Institutional CB has turned out to be so expensive that it has not been carried out, in the hope that the countries can get the extra needed resources from another source.

Discussion: The shortage of interdisciplinary centres and of links in the innovation chain in dc's was mentioned. The intense competition to enter the START courses was noted with concern, as it may mean supporting those who are successful anyway, and keep good people out who need this support. However, START makes an effort to keep a good balance of participants.

Jacob Palis: Capacity building in science

A brief report of the InterAcademy Council (IAC) activities in CB was presented, based on the study entitled "Urgency of promoting worldwide science and technology capacity". The report focused on two initiatives:

1.- Millennium Initiatives (MI). New structures seem necessary for dc's to respond more rapidly to new challenges. A MI is a network of the best research groups of some of the main existing institutions, to develop more extensive research projects ; in Latin America, several such institutions have been identified. In Africa, the idea is to start with instrumentation.

2.- Creation of Sectorial Funds stimulated by tax incentives, to promote both integration of industry with scientists, and fundamental research and infrastructure. These Funds will depend on the country and its strategy for development. In Brazil, for instance, fourteen such Funds have been created, and the initiative has been welcomed by politicians.

Discussion: Concern was expressed on the continuing flow of young well -trained scientists out of dc's. It is clear that young people have to be treated better in the future, and measures have to be found to retain this young talent in their countries of origin.

Michael Ståhl: Research capacity building — challenges for the individual, the institution and the nation

CB was discussed in the light of the IFS experience and the recent WSSD. It was made clear in Johannesburg that knowledge is essential for development, and it will be expensive in the longer term for any country not to join in this effort. The term CB should be used for organizations not individuals. It has to be maintained, enhanced and expanded into new research areas; but this has become difficult due to lack of funding. Also in dc's one can find academic tradition; but research capacity is being eroded in some institutions, which shows that it is a perishable good. One example mentioned was Argentina; another one was the African countries where in the last ten years there has been little recruitment and hence the retiring scientists will not be replaced.

Proposals made in the WSSD to address these problems do not seem to be real solutions: bringing back the diaspora is difficult, as emigrated scientists cannot afford to abandon their positions; regional centres of excellence cannot be funded with the money

of the national institutions, as this would imply capacity erosion at the national level. CB should also involve training a generation that will not work in universities, but in industry, the civil society, etc.

Summary discussion: Reference was made to the ICSU report on *Science education and CB for sustainable development*, produced for the WSSD. CB should be conceived as a cumulative sum of all the above-mentioned elements, looked at in a holistic form. Capacity *strengthening* is perhaps a better term than CB in the present context. It is important to unleash and optimize existing capacities, and to think across disciplines. CB is country-specific and differs from society to society; research has to be done with what is available locally, and should draw more on collaboration between scientists from different countries.

Access to locally produced information is a necessary complement to international information. Further, one should analyze whether the Internet really provides information or just titles.

The model developed by African scientists shows that networks of selected national research centres can be better than regional centres of excellence; in order to retain their scientists, universities should create such research centres. In the least developed countries, TWAS will identify the institutions that do reasonably good work and try to improve their infrastructure with external funding.

Tasks for ICSU include the involvement of the Unions in the promotion of local capacities and their support to ongoing CB efforts. ICSU should however ask itself whether it has within its boundaries the right people for these tasks — including the engineers and the social scientists.

SYMPOSIUM ON SCIENCE IN BRAZIL

The Symposium on Science in Brazil, Rio de Janeiro September 25th, was one of the Associated Meetings held during the 27th General Assembly of ICSU. Under the Coordination of Hernan Chaimovich, one of the Directors of the Brazilian Academy of Sciences, the Symposium included presentations of aspects of the structure of the Brazilian system of science and Technology. Dr. Alice Abreu, Vice-President of the Brazilian Research Council (CNPq) described the Institutional Framework for Science and Technology in Brazil and analysed the role of CNPq on Capacity Building. The increasing differentiation of the research and technology funding manifold in Brazil, including Economic Activity-associated National Research Funds (FS) was described in some detail. The role of CNPq on Capacity Building at the public universities, both at the undergraduate and graduate level was presented. Dr. Mauro Marcondes Rodrigues presented the structure and mission of the Foundation for Support of Projects and Studies (FINEP) an Agency of the Ministry of Science and Technology devoted to the support of Research, Development and Innovation Projects as well as the financing of industrial innovation with official loans. Dr. José Fernando Perez, Scientific Director of the Research Support Agency of the State of São Paulo (FAPESP) analysed the role of this state agency in the support of basic research, industrial innovation, and public policy formulation. The effect of investment policies of FAPESP on Genomics and Biodiversity Research in the State of São Paulo were highlighted. Dr. Eduardo M. Krieger, President of the Brazilian Academy of Sciences and President of the Council of the Management and Strategic Studies Center (CGEE) of Brazil examined the role of this Center in the design of Sectorial Foresight studies as well as in the management and strategic analysis of the FS's. Dr. Antonio Carlos Campos de Carvalho introduced the Book "Science in Brazil" (Brazilian Academy of Sciences ISBN 8585761237) a recent publication describing the state of the art, evolution and challenges of science in Brazil. Dr Jacob Palis, President of the Institute of Pure and Applied Mathematics of Brazil (IMPA) gave an overview of the 50 year history of IMPA emphasising the role of IMPA in capacity building, scientific contribution and the recent expansion of the applied mathematics groups in several areas. Dr. Hernan Chaimovich analysed the role of Universities on the infrastructure of Brazilian Science and technology. The significant increase of published papers, essentially related with the growth of the graduate programs in public universities was contrasted with major challenges in capacity building for the country as well as with the Brazilian geographical imbalances and growth of the for profit, research-poor private universities. Dr. Adalberto Vasques, Director of the Agency of the Ministry of Education responsible for Graduate Capacity Building (CAPES) described the Agency emphasising the central role of the National Evaluation of Graduate Programs on the quality of Brazilian Graduate Programs. The role of CAPES as the main federal financing agency for graduate scholarships was also stressed. Dr. Luis Manuel Fernandes, President of the Research Support Agency of the State of Rio de Janeiro (FAPERJ) described the mechanisms of social validation that recently contributed to increase the operational budget of FAPERJ. The reaction of the ICSU members attending the Symposium was highly positive since for most of them the presentations gave a balanced view of a system of science and technology in a country in the road to development that was largely unknown by those not residing in Brazil.

RESOLUTIONS OF THE 27TH GENERAL ASSEMBLY OF ICSU

1. Response to Report of Assessment Panel

The 27th General Assembly of ICSU,

Noting the report from the Executive Board on implementation of the recommendations in the report of the ICSU Assessment Panel;

Expresses satisfaction with the considerable progress made since the 26th General Assembly; and

Requests the Executive Board to take note of the discussions during the 27th General Assembly and to implement further the recommendations of the Assessment Panel.

2. Traditional Knowledge

The 27th General Assembly of ICSU,

Noting the report of the Study Group on Science and Traditional Knowledge;

Acknowledging with gratitude the work done by the Chairman and Members of the Group in preparing the report;

Affirms the importance of traditional knowledge;

Further affirms its opposition to all forms of pseudo-science; and

Recommends that members of the ICSU family suggest concrete initiatives to the Executive Board which ICSU itself could undertake; and themselves take action appropriate to their own circumstances.

3. Development of Strategic Priority Initiatives

The 27th General Assembly of ICSU,

Expresses its satisfaction with the work of the CSPR; and

Noting the proposed procedure by the CSPR to identify new ICSU priorities;

Requests the CSPR to consult with the wider ICSU community in the process of priority setting, considering, *inter alia*, the SPRU studies, the reports from the Fora and relevant discussions during, and resolutions of, the General Assembly; and

Further requests the Executive Board to initiate detailed planning of initiatives with wide interest and support from the ICSU community, with special emphasis on areas of societal importance, and to report to the 28th General Assembly.

4. COSTED-IBN

The 27th General Assembly of ICSU,

Expresses its appreciation to members of the COSTED Review Panel;

Further expresses its appreciation to the COSTED -IBN Executive Committee and Secretariat staff for the excellent work conducted over many years; and to the Indian National Science Academy and the Government of India for their generous support of COSTED since its inception;

Decides to dissolve the Special Advisory Committee on Science and Technology in Developing Countries and International Scientific Networks (COSTED/IBN); and to set up a Policy Committee on Developing Countries; and

Further agrees to establish ICSU Regional Offices for Developing Countries in Africa, Asia, the Arab Region, and Latin America and the Caribbean.

5. International Biodiversity Observation Year

The 27th General Assembly of ICSU,

Aware that 2001 and 2002 were designated by DIVERSITAS as the International Biodiversity Observation Year (IBOY), and that an ICSU large grant in 1999 was instrumental in launching IBOY;

Noting that IBOY successfully addressed ICSU's priorities; and

Further noting that the new networks, databases, web pages, publications and community of scientists with training in media communications built during IBOY can significantly support ongoing programmes in biodiversity and the science of sustainability;

Thanks all those involved in the International Biodiversity Observation Year for their work in building capacity for integrative biodiversity research and science communication; and

Urges ICSU members to help ensure that the networks and resources produced by IBOY are continued and used to strengthen ongoing programmes in biodiversity science, including, but not limited to, DIVERSITAS.

6. Follow up to the World Summit on Sustainable Development

The 27th General Assembly of ICSU,

Noting the request by the 26th General Assembly that the Executive Board should assess what steps ICSU should take in pursuing a science agenda for sustainability;

Taking into consideration the discussions that have taken place over the past year in preparation for and during the World Summit on Sustainable Development (WSSD) (2002);

Further noting the decision by the CSPR to launch a strategic review of ICSU activities in environment and sustainable development and the presentations and discussion during the Scientific Forum on Science for Sustainable Development at the General Assembly;

Invites the Executive Board to appoint an *ad hoc* committee, in consultation with other partners, to develop a science plan for sustainable development and to identify topics for possible early action in consultation with ICSU's Scientific Unions, National Members and Interdisciplinary Bodies;

Decides that ICSU should provide the necessary financial and Secretariat resources to enable the planning group to undertake this task; and

Requests that a report be presented to the 28th General Assembly on progress made and the status of implementation of a new programme.

7. Energy and Sustainable Societies

The 27th General Assembly of ICSU,

Realising that energy is a challenging domain of ongoing interdisciplinary research;

Recognizing that the production and utilisation of energy are strongly linked, in positive as well as negative ways, to all aspects of sustainability;

Noting that energy was identified as a vital issue in its own right at the World Summit on Sustainable Development;

Further noting that science and technology are essential for improving the ways in which energy is produced, utilized, stored and distributed, and that the development of sustainable energy policies requires consideration of many issues across multiple domains, such as the social, political, economic, cultural, and ethical;

Acknowledging that ICSU, as a politically independent, multidisciplinary global organization, is ideally suited, together with international partners, to provide scientific analyses and advice on energy issues for decision-makers in government, industry and society;

Recognizing that successfully addressing the complex set of energy issues requires the integration of existing knowledge from several domains, and the development of partnerships with organizations that are already active in the energy field, as well as organizations that have expertise in the social and behavioural sciences, and the humanities;

Requests that the Executive Board establish an *ad hoc* committee that will make an area assessment in preparation for a new ICSU initiative on energy and sustainability, develop a plan of action for ICSU, and report to the 28th General Assembly.

8. Ensuring Global Access to Scientific Data and Information

The 27th General Assembly of ICSU,

Noting the tremendous impact of new Information and Communication Technology (ICT) on the acquisition, exploitation, processing, communication, storage and long-term availability and preservation of scientific data and information, calls on all ICSU members to maximize the use of ICT for the benefit of the scientific enterprise;

Emphasising that an efficient and well functioning infrastructure for information and communication technology is of the utmost importance for science and the dissemination of data and information worldwide;

Accepts the recommendations of the IUBG Inter-Union Bioinformatics Group in relation to biological data;

Encourages all ICSU members to use the new possibilities to obtain greater control by the scientific community of the information chain, through use of alternative forms of publication of scientific articles; and

Further noting the special challenges encountered by developing countries in making optimal use of the new facilities,

Applauds the activities of the International Network for the Availability of Scientific Publications (INASP) and similar programmes which make production of, and access to, data and information more available across the digital divide;

Encourages the relevant members of ICSU to identify the issues which the scientific community would wish to bring to the World Summit on the Information Society, and charges the Executive Board to ensure the timely input of the scientific community, in cooperation with appropriate partners, to this Summit; and

Requests that the Executive Board take all appropriate action to safeguard international databases and to ensure that full and proper access is maintained.

9. Capacity Building

The 27th General Assembly of ICSU,

Recognizing the importance of capacity building as discussed in several fora and by many committees;

Encourages the ICSU Executive Board, ICSU Unions, National Members and Interdisciplinary Bodies to intensify their efforts in effecting partnerships within and beyond the ICSU family to strengthen capacity building, especially for developing countries, and to broaden outreach to teachers and young scientists.

10. Earth System Science Partnership

The 27th General Assembly of ICSU,

Recognizing the importance for science and society of the evolution of the four ICSU Global Environmental Change Programmes (IGBP, WCRP, IHDP and DIVERSITAS) to a truly integrated Earth System Science Partnership (ESSP) and of the Global Change System for Analysis, Research and Training (START), which are delivering significant scientific results regarding the causes and consequences of global change;

Noting the difficulties of the ESSP and START in generating the stable core financial resources required to perform their tasks of coordination, synthesis, integration, and communication of their scientific activities; and

Recalling Resolution 2 of the 26th General Assembly;

Requests the Executive Board to assist the ESSP and START by taking appropriate action to create a dialogue between the ICSU National Members, the funding bodies responsible for the contributions to the ESSP and START programmes, and the broader global change funding community in order to provide long-term, stable, core funding.

11. Water Research

The 27th General Assembly of ICSU,

Expresses its thanks to the Members of the Scientific Committee on Water Research (SCOWAR) for their efforts;

Agrees to dissolve the Committee; and

Taking into account the overwhelming importance of water to the world,

Charges the Executive Board to develop a strategy for ICSU's involvement in this area.

12. Food Security

The 27th General Assembly of ICSU,

Expresses its thanks to the Members of the Committee on Sciences for Food Security ;

Agrees to dissolve the Committee; and

Recognizing the significance of food security,

Requests the Executive Board to provide an innovative and integrative approach to this high priority scientific issue.

13. Observing Systems

The 27th General Assembly of ICSU,

Recognizing that monitoring of global change is critical to the support of their programmes,

Urges all ICSU members to bring to the attention of the appropriate government agencies the need for environmental observations in the framework of the Global Climate Observing System (GCOS), the Global Ocean Observing System (GOOS) and the Global Terrestrial Observing System (GTOS) to meet observing standards for global change monitoring, and the need to improve research access to global data.

14. Membership and Structure of ICSU

The 27th General Assembly of ICSU,

Noting the recommendations in the ICSU Assessment Report that Unions representing engineering, medical and agricultural sciences be admitted, and noting the recommendation that criteria for membership be developed to avoid redundant representation of disciplines and to discourage fragmentation, especially in the biological sciences;

Further noting discussions during the Forum of Scientific Unions and during the Business Meeting of Scientific Unions;

Requests the Executive Board to establish an *ad hoc* committee to review the overall balance of scientific disciplines within ICSU, to provide guidelines for the acceptance of new Scientific Union Members, and to establish a more proactive mechanism with regard to National Membership. The *ad hoc* committee should present its preliminary findings to the meeting of Scientific Unions in 2004 for discussion and to the National Members for their input. The results of the review should be reported to the 28th General Assembly.

15. Expressions of Appreciation

The 27th General Assembly of ICSU

Expresses its deep gratitude to the Brazilian Academy of Sciences, its President, Eduardo M. Krieger, the staff of the Academy and the members of the Local Organizing Committee for the excellent arrangements made for the ICSU meetings, for the generous support of representatives from developing countries, and for the warmth of the welcome extended to participants;

Extends its sincere thanks to the Officers of ICSU and the Members of the Executive Board for all their dedication and hard work in the service of ICSU over the last three years; and

Thanks the Secretariat of ICSU for its work during the last triennium and in the preparation of this Assembly.



ICSU: THE INTERNATIONAL COUNCIL FOR
SCIENCE

STATUTES AND RULES OF PROCEDURE

As approved by the 27th Session of the General Assembly of ICSU
Rio de Janeiro, September 2002

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STATUTES

I. DENOMINATION AND DOMICILE

1. ICSU: The International Council for Science, hereinafter called "ICSU", is an international non-governmental and non-profit making scientific organization.
2. The International Council of Scientific Unions (ICSU) was created, following the dissolution of the International Research Council, in Brussels in 1931 where it had its first legal domicile. The name of the Council was changed to ICSU: The International Council for Science at an Extraordinary General Assembly in 1998, but the acronym ICSU has been maintained. The present legal domicile of ICSU is in Paris, France, where its Secretariat is located.

II. OBJECTIVES

3. The principal objectives of ICSU are:
 - a) to encourage and promote international scientific and technological activity for the benefit and well-being of humanity;
 - b) to facilitate coordination of the international scientific activities of its Scientific Union Members (see Statute 7) and of its National * Scientific Members (see Statute 8);
 - c) to stimulate, design, coordinate or participate in the implementation of international interdisciplinary scientific programmes;
 - d) to act as a consultative body on scientific issues that have an international dimension;
 - e) to encourage the strengthening of human and physical scientific resources world-wide with particular emphasis on the developing world;
 - f) to promote the public understanding of science;
 - g) to engage in any related activities.
4. In order to further the attainment of these objectives ICSU may, whenever appropriate:
 - a) enter, through the intermediary of the national adhering organizations, into relations with the governments of their respective countries in order to promote scientific research in these countries;

* The term "National" as used in these Statutes and Rules of Procedure has no connotation other than denoting a Member admitted under the provisions of Statute 8.

- b) cooperate with the United Nations and its agencies, and with other international intergovernmental or non-governmental organizations;
 - c) provide, through suitable channels, information to interested parties and the public at large about progress in science and technology and its impact on society;
 - d) undertake actions to strengthen the well-being and effectiveness of science and scientists;
 - e) establish and promote programmes either within the ICSU family or in partnership with others.
5. In pursuing its objectives in respect of the rights and responsibilities of scientists, ICSU, as an international non-governmental body, shall observe and actively uphold the principle of the universality of science. This principle entails freedom of association and expression, access to data and information, and freedom of communication and movement in connection with international scientific activities, without any discrimination on the basis of such factors as citizenship, religion, creed, political stance, ethnic origin, race, colour, language, age or sex. ICSU shall recognize and respect the independence of the internal science policies of its National Scientific Members. ICSU shall not permit any of its activities to be disturbed by statements or actions of a political nature.

III. MEMBERSHIP

6. Each Member has the obligation to support the objectives of ICSU, uphold the principle of the universality of science, and meet its financial obligations as appropriate. Members shall normally adhere to ICSU in either of two categories:
- a) Scientific Union Members,
 - b) National Scientific Members.
7. A Scientific Union Member shall be an international ^{*} non-governmental organization devoted to the promotion of activities in a particular area of science and shall have been in existence for at least 6 years.
8. A National Scientific Member shall be a scientific academy, research council, scientific institution or association of such institutions. Institutions effectively representing the range of scientific activities in a definite territory may be accepted as National Scientific Members, provided they can be listed under a name that will avoid any misunderstanding about the territory represented, and have been in existence in some form for at least 4 years.

* In these Statutes and Rules of Procedure, international bodies are taken to mean those bodies to which appropriate organizations in all countries of the world are eligible to adhere.

9. The scientists of more than one nation may form a scientific body (academy, research council, etc.) for application as a National Scientific Member. No organization of scientists may adhere through more than one national membership.
10. Exceptionally, any other grouping of institutions acceptable to ICSU may be admitted to membership in category a) or b) on a case by case basis.

IV. ASSOCIATES

11. Each Associate has the obligation to support the objectives of ICSU, uphold the principle of the universality of science, and meet its financial obligations as appropriate. Associates shall adhere to ICSU in one of three categories:
 - a) International Scientific Associates
 - b) Regional Scientific Associates
 - c) National Scientific Associates

Such bodies shall not have voting rights.

12. An International Scientific Associate shall be an international non-governmental organization in the natural sciences or an organization in a field cognate to those of ICSU, such as the humanistic, medical, social and technical sciences, whose association with ICSU is likely to be of mutual benefit or to advance the cause of science, and whose scientific activities do not fall primarily within the scope of a single Scientific Union Member. An International Scientific Associate shall have been in existence for at least 6 years.
13. A Regional Scientific Associate shall be a non-governmental Scientific Academy, Science Council, or other scientific institution, to which scientists or scientific bodies from more than one nation adhere, whose association with ICSU is likely to be of mutual benefit and will facilitate the attainment of ICSU's objectives, and whose scientific activities do not fall primarily within the scope of a single Scientific Union Member. A Regional Scientific Associate shall have been in existence for at least 6 years.
14. A National Scientific Associate shall be a scientific academy, research council or other comparable scientific organization that is potentially qualified, but not yet ready, for full national membership. National Scientific Associates shall normally be expected to apply for full membership after 6 years in this category.

V. OBSERVERS

15. A Member that has failed to fulfil its financial obligations (see Rule of Procedure 10.2) shall only have Observer status. Observers shall be expected to resume full membership in ICSU as soon as possible. Normally no Observer shall be allowed to remain so for more than 6 years. Observers shall not have voting rights.

VI. DECISION-MAKING BODIES

16. The decision-making bodies of ICSU shall be:
- a) The General Assembly
 - b) The Executive Board
 - c) The Officers
17. The composition and function of these bodies are defined in Sections VII, VIII and IX below.

VII. GENERAL ASSEMBLY

18. The General Assembly is the highest authority of ICSU and consists of the representatives of the Scientific Union Members and of the National Scientific Members. It shall, as appropriate and generally after recommendations from the Executive Board:
- a) determine general policy;
 - b) review the day -to-day administration of ICSU as overseen by the Executive Board since the end of the previous ordinary session of the General Assembly;
 - c) discharge the Treasurer from liability, set the scale of annual dues to be paid by Members and approve the draft budgetary outlines as proposed by the Executive Board for the ensuing period;
 - d) initiate scientific programmes and decide on future priorities for scientific activities of ICSU, upon the recommendation of the Executive Board;
 - e) establish whatever bodies it may deem necessary for the scientific, educational and administrative work of ICSU, taking into account any relevant recommendations of the Executive Board.
- Such bodies shall be established initially for a specific period of time. Extensions of this period may be granted by the General Assembly as a result of reviews of their work.
- f) ratify the creation of bodies established by the Executive Board, subject to Statute 29. g), since the previous session of the General Assembly.
 - g) examine, on both scientific and financial grounds, and in the light of the recommendations of the Executive Board, the work of any body created by ICSU, in the presence of appropriate representatives of the body

- concerned. When appropriate and where possible, it shall arrange for the transfer of its work to a more suitable organization;
- h) approve the dissolution of any ICSU -created body taking into account any relevant recommendations of the Executive Board;
 - i) examine and decide on applications for Scientific Union Membership; and, in those cases that have not already been dealt with by the Executive Board, on applications for National Membership and Associate status. The Assembly should pay due attention to any relevant recommendations of the Executive Board;
 - j) terminate, if it so decides, the status of any Member, Observer or Associate of ICSU which has failed to fulfil any of its obligations, or with which the association is no longer appropriate;
 - k) elect the Officers and the Ordinary Members of the Executive Board;
 - l) modify the Statutes and the Rules of Procedure;
 - m) deal with any other item that may be referred to it.
19. An ordinary session of the General Assembly shall normally be held every 3 years, at a place and date determined by the General Assembly at the previous ordinary session or, failing that, by the Executive Board.
 20. The Secretary General shall inform Members, at least 6 months in advance, of the place and date of the next session of the General Assembly.
 21. Applications for admission to ICSU must be received by the Secretary General 6 months before the date fixed for an ordinary session of the General Assembly.
 22. Items proposed for inclusion in the Agenda must be received by the Secretary General at least 4 months before the date fixed for an ordinary session of the General Assembly. The Agenda of the General Assembly shall be communicated by the Secretary General to all Members, Associates and Observers of ICSU at least 3 months before the 1st day of the session. No item that has not been placed on the Agenda may be discussed unless a proposal to that effect is approved in the General Assembly by at least two-thirds of the votes of the Members taking part in the vote.
 23.
 - a) In order to ensure equality of votes of the two categories of membership in the General Assembly, each National Scientific Member shall have one vote, and each Scientific Union Member that number of votes which is equal to the number of National Scientific Members divided by the number of Scientific Union Members, except in votes concerning finance, in which case each Member shall have one vote.
 - b) The vote of each Scientific Union Member or National Scientific Member shall normally be cast at the meeting by the representative of

that Member or by a proxy nominated by that Member. This nomination must be submitted in writing to the Secretary General prior to the session at which the proxy is to operate. If a Member is unable to designate a proxy to vote at the meeting, votes on those issues already on the Agenda (and not arising from the floor) may be submitted in writing to the Secretary General prior to the meeting.

- c) The Officers (see Section IX) should attend sessions of the General Assembly, but have no right to vote. Nevertheless, in the event of an equality of votes, the Chairman of the session shall have a casting vote.
24. In connection with ordinary sessions of the General Assembly, appropriate time shall be set aside for fora, convened by the respective Union and National representatives on the Executive Board, for discussion of issues of particular concern to their separate constituencies and to plan for interim activities until the succeeding Assembly. Any recommendations and propositions for action will be presented to appropriate sessions of the General Assembly.
25. An Extraordinary Session of the General Assembly may be summoned by the President with the consent of the Executive Board. He or she is obliged to do so if requested in writing by at least one-third of the Members of ICSU.

VIII. EXECUTIVE BOARD

26. a) The Executive Board consists of:
- i. six Officers, namely the President, the Past President or President-Elect, two Vice -Presidents, the Secretary General and the Treasurer (see Section IX);
 - ii. eight Ordinary Members, four from the Scientific Union Members and four from the National Scientific Members (see Rule of Procedure 7 for the election procedure). The Ordinary Members of the Executive Board are elected in their individual capacities.
- b) Each Officer and each Ordinary Member has one vote; in the event of an equality of votes the President has, in addition, a casting vote.
27. The Ordinary Members of the Executive Board shall normally hold office until the end of the ordinary session of the General Assembly following their initial election and are eligible for one additional term of office. A member appointed by the Executive Board to fill a vacancy occurring between sessions of the General Assembly shall initially hold office for the unexpired term only, but this shall not prejudice his or her eligibility for subsequent election for one or two full terms. Elections should, if possible, be so arranged that at each ordinary session of the General Assembly, two members from the Scientific Union Members and two members from the National Scientific Members are in their first term.

28. No person, except the President or Past President, may serve on the Executive Board for more than 9 consecutive years.
29. The Executive Board is responsible to the General Assembly. It oversees the operations of ICSU; recommends the directions and priorities of ICSU to the General Assembly, taking into consideration the recommendations of the appropriate Committees; and implements and communicates ICSU's policies and views between sessions of the General Assembly. It shall meet as often as is necessary and at least once a year. It can be convened by a decision of the President in case of particular urgency, provided at least 30 days' notice is given. Among its duties it shall:
 - a) prepare the Agenda for the General Assembly;
 - b) present, to each General Assembly, a report of the scientific and administrative activities of ICSU since the previous ordinary General Assembly;
 - c) propose, for consideration by the General Assembly, a draft budgetary outline of ICSU, and the scale of annual dues to be paid by Members of ICSU for the ensuing 3-year period;
 - d) appoint the Nominating Committee;
 - e) examine and approve the audited accounts of ICSU;
 - f) decide on the annual budget of ICSU and on disbursements of grants for scientific purposes from ICSU's funds;
 - g) admit new National Scientific Members and Scientific Associates (National, Regional and International) in between sessions of the Assembly (Rules of Procedure 8 and 9);
 - h) when urgent action is needed, establish (with precise terms of reference for limited periods of time) or suspend ICSU bodies, subject to ratification by the next session of the General Assembly;
 - i) review the scientific activities of ICSU as carried out by its interdisciplinary bodies and make appropriate recommendations to the General Assembly;
 - j) review periodically the relationship with the International and Regional Scientific Associates and make appropriate recommendations to the General Assembly.
30. The Executive Board shall be assisted by a Secretariat responsible for the execution of the day-to-day work of ICSU. This Secretariat shall be directed by an Executive Director appointed by the Executive Board on the recommendation of the Officers.

31. In the event of a vacancy among the Ordinary Members of the Executive Board, the Officers shall have the power to fill the vacancy for the unexpired term.

IX. OFFICERS

32. a) The **Officers** of ICSU are:
- i. The President
 - ii. the Vice-President for Scientific Planning and Review
 - iii. the Vice-President for External Relations
 - iv. the Secretary-General
 - v. the Treasurer
 - vi. the Past-President or President-Elect
- b) The Officers are responsible for the day -to-day affairs of ICSU between meetings of the Executive Board. They shall meet as often as is deemed necessary, normally twice a year.
- c) The **President** shall hold office for one term of 3 years^{*}, non renewable.
- d) The **Vice-Presidents** shall hold office for one term of 3 years^{*}, non -renewable;
- e) The **Secretary General** and the **Treasurer** shall hold office for terms of 3 years^{*}, renewable once;
- f) The **immediate Past President** shall serve as an Officer for a period of 18 months^{**} following the termination of the period of office held as President, to be succeeded until the end of the next General Assembly by the **President-Elect**.
- g) Should any Officer be appointed initially to fill a vacancy arising from the inability of his or her predecessor to complete a full term, this shall not prejudice his or her eligibility for subsequent election for a full term or terms as specified in Statute 32 c), d), and e) above.
33. The Executive Board shall decide which of the two Vice -Presidents, or, failing this, the Past President shall fulfil the duties of the President should he or she

* The words "3 years" with reference to the periods of office of all elected Officers and Ordinary Members of the Executive Board are interpreted as meaning "until the end of the ordinary session of the General Assembly following his or her election".

** The words "18 months" are to be interpreted as a period ending approximately half way between ordinary sessions of the General Assembly.

become unable to discharge them. If none of these is able to fulfil the duties of the President, the Executive Board shall decide who is to undertake these.

34. The Executive Board shall also decide who shall undertake the duties of any of the other Officers if they are unable to discharge their duties.

X. ADVISORY BODIES

35. **Policy Committees** are Standing Committees set up by the General Assembly for a period of 3 years, renewable, to assist the Executive Board in fulfilling the governance objectives of ICSU. One such Committee shall address finance; others may address issues such as: scientific planning and review, governance, external fund-raising, responsibility and ethics in science, and freedom in the conduct of science.
36. **Special Advisory Committees** are set up by the General Assembly for a specified, renewable, period. They may address such issues as: dissemination of scientific information, science and technology in developing countries and ICSU's activities in the environment.
37. **Ad hoc Committees** are set up by the General Assembly or the Executive Board for a limited duration and include the **Nominating Committee** and **Resolutions Committee**.
38. Terms of reference for these Committees are provided in Rule of Procedure 11.

XI. SCIENTIFIC INTERDISCIPLINARY BODIES

39. The Executive Board may recommend to the General Assembly the creation or dissolution of appropriate interdisciplinary bodies to facilitate and coordinate interdisciplinary scientific and educational activities on an international basis (see also Statutes 18. e) and 29. g.). The Scientific Interdisciplinary Bodies shall function in accordance with Terms of Reference found in Rule of Procedure 12.
40. The Executive Board has the right to send an observer to any meeting of the governing body of a body created by ICSU.
41. Each Scientific Interdisciplinary Body shall be invited to send a representative to ordinary sessions of the General Assembly. They shall also be invited to attend special or extraordinary sessions of the General Assembly which are called in order to make decisions which may have an impact on them, either jointly or separately.

XII. FINANCE

42. The funds of ICSU are obtained from:
- a) the dues of Members;
 - b) the dues of International and Regional Scientific Associates; and
 - c) subventions, donations and other financial support accepted by the Executive Board on behalf of ICSU.
43. Each Member of ICSU shall pay annual dues within a scale determined by the General Assembly. Each Scientific Union and National Scientific Member of ICSU may choose its own category for payment of dues. Each International and Regional Scientific Associate shall pay annual dues determined by the General Assembly. National Associates pay no dues.
44. In the event of resignation or cancellation of membership, the Member concerned is liable to pay any dues owed including those for the current calendar year.
45. Funds derived from donations accepted by ICSU shall be used in accordance with the agreements made with the donors. A donation shall not be accepted if this could interfere with the independence of ICSU.
46. In the event of the dissolution of ICSU, its assets shall be ceded to one or more charitable organizations to be utilized in conformity with the aims of ICSU.
47. On request, ICSU shall reimburse the expenses of members of the Policy, Special Advisory and *Ad hoc* Committees, and the Executive Board for attendance at their meetings and when discharging of official duties. ICSU shall also reimburse the representatives of the Scientific Interdisciplinary Bodies for their attendance at the General Assembly.

XIII. LIABILITY

48. The liability of each Member of ICSU shall be limited to the amount of that Member's annual dues, including any dues outstanding.
49. ICSU and bodies created by it may not incur expenditure in excess of the funds at their disposal.

XIV. LEGAL REPRESENTATION

50. The President, or if he or she is not available, one of the Vice -Presidents, the Past President or the President -Elect, is the legal representative of ICSU. The President or his or her legal representative may authorize the Secretary General, Treasurer or the Executive Director to represent the President.

XV. MODIFICATION OF THE STATUTES

51. No change may be made in the Statutes except with the approval of the General Assembly by two-thirds of the votes cast by the Members taking part in the vote. Introduction of changes in the Statutes must follow the time limitations set forth in Statute 22. Changes to the Statutes are effective at the end of the General Assembly adopting them, unless otherwise specified by a Resolution of the General Assembly.

XVI. INTERPRETATION OF THE STATUTES

52. These Statutes shall be governed by, and interpreted in accordance with, French law. In case of conflict between the English and French versions of these Statutes, the English version shall prevail.

Revised and approved by the
27th General Assembly of ICSU, September 2002

R U L E S O F P R O C E D U R E

1. ANNUAL REPORTS

- 1.1 The Scientific Union Members of ICSU, the International and Regional Scientific Associates, and all ICSU -created bodies set up under the terms of Statute 18 shall submit annual reports on their relevant activities in writing to the Secretary General by 31 March of the subsequent year. The Secretary General shall make such reports available to all Members of ICSU.

2. QUORUM

- 2.1 In sessions of the General Assembly and of the Executive Board more than 50 per cent of the voting membership shall constitute a quorum.
- 2.2 For any decision made by the Officers in accordance with the Statutes, at least four of the six Officers must register their support.

3. VOTING PROCEDURES

- 3.1 Decisions of the General Assembly shall be by a majority of the votes of those present or otherwise taking part, except as indicated in Statutes 22 and 51 and in Rule of Procedure 10.3. Decisions of the Executive Board and of the Officers shall be by a majority of the votes of those present or otherwise taking part.
- 3.2 All majorities shall be calculated on the basis of the total number of affirmative and negative valid votes actually cast.
- 3.3 The election of the Members of the Executive Board at the General Assembly shall be by secret ballot. Each voting member shall vote for no more names than there are vacancies to be filled.*
- 3.4 At each ballot the list of candidates shall be ordered according to the number of votes each receives and they shall be elected in that order, provided that no candidate shall be elected who has received less than half the total number of votes actually cast. If at any stage a choice must be made between candidates who have obtained the same number of votes, a separate ballot shall be taken. At any ballot in which no candidate has obtained the required majority, the candidate with the least number of votes shall be eliminated, and the voting continued.

* The number of votes to be cast by each voting member shall be in conformity with Statute 23. a).

4. MEETING PROCEDURES

- 4.1 Decisions of ICSU governing bodies may be arrived at entirely or in part by electronic means, as appropriate. The latest edition of Robert's Rules of Order shall be used for the conduct of all ICSU meetings.**

5. GOVERNANCE

- 5.1 a) The **President**, or his or her deputy in accordance with Statute 33, shall chair all meetings of the General Assembly, the Executive Board and the Officers. He or she shall be responsible for the implementation of ICSU's mandate.
- b) On the advice of the Executive Board the President may invite any individual to an ordinary or extraordinary session of the General Assembly, or the Executive Board.
- 5.2 a) The **Vice-President for Scientific Planning and Review** shall chair the Committee on Scientific Planning and Review (CSPR) (see Rule of Procedure 11.1.a).
- b) The **Vice-President for External Relations** shall be in charge of external relations.
- 5.3 The **Secretary General** shall:
- serve as Secretary of the General Assembly and Executive Board;
 - oversee the administration of the Secretariat on behalf of the Executive Board;
 - participate in the recruitment of Secretariat staff, as appropriate;
 - serve as an *ex officio* non-voting member on ICSU's Policy Committees
 - report on administrative matters to the General Assembly.
- 5.4 The **Treasurer** shall:
- oversee the administration of the finances of ICSU, in accordance with the directives issued to him or her by the Executive Board and the General Assembly;
 - set and oversee the budget for the operations of the Secretariat;
 - authorize expenditure not budgeted for in an amount of up to 10 per cent of each budget line or up to US \$5,000 on each budget line, whichever is more, up to a total of 3 per cent of the total budget per financial year. Expenditure increases corresponding to an equivalent increase in earmarked income are not subject to the above limitations. The record of this expenditure shall be brought to the attention of the Executive Board;
 - serve as an *ex officio* non-voting member on the Committee on Finance and Fund-raising;

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The Scott Foresman Robert's Rules of Order, Scott, Foresman and Company, Glenview, Illinois, London, Library of Congress Cataloging-in-Publication Data

- report on financial matters to the General Assembly.

5.5 The **Executive Director** shall:

- be accountable to the Executive Board through the Secretary General for the day-to-day administration of the ICSU Secretariat;
- be accountable to the Executive Board through the Treasurer for expenditure incurred by the ICSU Secretariat within the budgetary envelope allocated to it;
- act as the Recording Secretary of the General Assembly and of the Executive Board;
- act as an *ex officio* non-voting member of ICSU's Policy Committees.

5.6 With the approval of the Executive Board, responsibility for a particular duty normally discharged by the President, the Vice -Presidents, the Secretary General, or the Treasurer, may be delegated to other persons.

6. ELECTION OF OFFICERS

6.1 At least 6 months in advance of an ordinary session of the General Assembly, each Member shall be invited by the Nominating Committee to propose a single name for each of the offices of President -Elect, Secretary General, Treasurer, and each of the two Vice -Presidents. Each proposal shall be accompanied by biographical information and by the agreement of the candidate to serve if elected.

6.2 The Nominating Committee, after reviewing these proposals and with appropriate regard to scientific and geographical breadth, shall propose a slate of candidates containing if possible

- one name each for Secretary General and Treasurer, two names for President-Elect, and two or more names for each position of Vice -President.

This slate shall be sent to all Members of ICSU 4 months in advance of an ordinary session of the General Assembly.

6.3 If the Nominating Committee's list does not contain a Member's proposed candidates, the Member may re-submit the name(s) put forward or submit additional names in accordance with Rule of Procedure 6.1. Such re-submissions or new submissions of candidates must be received by the Secretary General 2 months in advance of an ordinary session of the General Assembly.

6.4 The list of candidates for Officers, including the Nominating Committee's proposal and all resubmissions and additional submissions, shall be distributed to all Members at least 1 month in advance of the date of the ordinary session of the General Assembly. This shall constitute the final list of nominations.

- 6.5 Election of the Officers by the General Assembly shall take place according to established voting procedures (see Rule of Procedure 3).

7. ELECTION OF ORDINARY MEMBERS OF THE EXECUTIVE BOARD

- 7.1 Proposals for Ordinary Members of the Executive Board, accompanied by biographical information and the agreement of the candidate to serve if elected, shall be invited by the Nominating Committee at least 6 months in advance of an ordinary session of the General Assembly and submitted to the Nominating Committee at least 2 months prior to the ordinary session of the General Assembly.
- 7.2 At the beginning of an ordinary General Assembly, a meeting of the Scientific Union Members, chaired by one of the four Ordinary Members of the Executive Board elected from the Scientific Union Members, shall select a list of six names from among the candidates nominated from which the General Assembly shall elect four. The Nominating Committee may suggest additional names for this list, if it deems it to be inadequate.
- 7.3 At the beginning of an ordinary General Assembly, a meeting of the National Members, chaired by one of the four Ordinary Members of the Executive Board elected from the National Members, shall select a list of six names from among the candidates nominated from which the General Assembly shall elect four. The Nominating Committee may suggest additional names for this list, if it deems it to be inadequate.
- 7.4 In selecting the final lists of candidates for Ordinary Members, the Scientific Union Members and the National Scientific Members shall pay due attention to the scientific and geographical breadth of the full Executive Board.

8. APPLICATIONS FOR MEMBERSHIP

- 8.1 All applications for membership must be addressed in writing to the Secretary General and must be received at least 6 months in advance of the session of the General Assembly or Executive Board at which they are to be considered.
- 8.2 a) Applications for Scientific Union Membership must be accompanied by a copy of the Statutes of the organization and a signed statement that the applicant will comply with ICSU's Statutes and Rules of Procedure. Applicants must furnish proof that the organization or the organization it has succeeded, or of which it is an offshoot, has been in existence for at least 6 years and has held or sponsored international meetings.
- b) The Statutes and by-laws of Scientific Unions seeking admission to the Council should:
- i. indicate the objectives of the Union;

- ii. provide for the governance of the Union by a General Assembly of its members;
 - iii. set forth the rules of voting.
- c) Upon the guidance of the Executive Board, the Secretariat shall approach the relevant Members of ICSU to seek information as to the benefits to ICSU of admitting the applicant and to ensure that there is no possibility of the applicant being accommodated within an existing Scientific Union Member through modification of the structure of that Member. The Secretariat shall then transmit the application to the Executive Board who shall decide whether to ask the ICSU Secretariat to ascertain if there is adequate support for the application from at least 12 Members, including at least three Scientific Union Members and three National Scientific Members by request to all ICSU Members. Support for applications should clearly indicate that membership in ICSU of the organization concerned would enhance ICSU's scientific activities. The Executive Board shall then decide on its recommendation to the General Assembly in the light of the indications of support that have been received.

8.3 Applications from an organization for National Scientific Membership must be accompanied by a copy of its Statutes or a similar type of document, a description of its activities, proof that it has been in existence for at least 4 years, and a signed statement that the applicant will comply with ICSU's Statutes and Rules of Procedure. If necessary, and upon the guidance of the Executive Board, the Secretariat shall seek additional information. The Executive Board shall then decide on the application.

8.4 All successful applications shall have effect from the conclusion of the General Assembly or session of the Executive Board at which they were agreed.

9. APPLICATIONS FOR ASSOCIATE STATUS

9.1 All applications for membership must be addressed in writing to the Secretary General and must be received at least 6 months in advance of the session of the General Assembly or Executive Board at which they are to be considered.

9.2 a) Applications for International Scientific Associate or Regional Scientific Associate status must be accompanied by a copy of the Statutes of the organization and a signed statement that the applicant will comply with ICSU's Statutes and Rules of Procedure. Applicants must furnish proof that the organization or the organization it has succeeded, or of which it is an offshoot, has been in existence for at least 6 years. They shall state the reasons underlying the application and give indications of the activities in which they wish to be associated with ICSU, e.g. the organization of joint symposia or meetings, preparation of joint programmes, development of standards, etc.

b) The Secretariat shall transmit the application to the Members of the Executive Board which shall decide whether to ask the ICSU Secretariat

to ascertain if there is adequate support for the application from at least nine Members, including at least three Scientific Union Members and three National Scientific Members by request to all ICSU Members. Support for applications should clearly indicate that associate status in ICSU of the organization concerned would enhance ICSU's scientific activities. The Executive Board shall then decide on the application in the light of the indications of support that have been received.

- c) In any case when no objections have been received to the application, and the necessary evidence of support has been received more than 12 months before the next session of the General Assembly, the Executive Board shall be empowered to admit the new Associate with immediate effect.
- 9.3 Applications from an organization for National Scientific Associate status must be accompanied by a copy of its Statutes or a similar type of document, a description of its activities, and a signed statement that the applicant will comply with ICSU's Statutes and Rules of Procedure. If necessary, the Secretariat shall seek additional information before transmitting the application to the Executive Board. The Executive Board shall then decide on the application.
- 9.4 The General Assembly or Executive Board shall examine applications for Associate status in ICSU and may accept or reject them. Such acceptance shall become effective at the conclusion of the meeting of the General Assembly or Executive Board at which it was agreed.

10. RESIGNATION OR TERMINATION OF MEMBERSHIP OR ASSOCIATE STATUS

- 10.1 A Member or an Associate wishing to resign from ICSU must give 3 months' notice in writing, addressed to the Secretary General.
- 10.2 Any Member of ICSU which is in arrears with its dues (payable before 31 December in each year) for 2 or more years shall have observer status only, until the dues outstanding at the time of cessation of full membership have been paid, subject to the provisions of Statute 15. The Executive Board may, in extraordinary circumstances, waive the payment of outstanding dues.
- 10.3 The General Assembly may, with the agreement of a majority of at least two-thirds of the votes of the Members taking part in the vote, exclude from membership or Associate status any Member or Associate which has failed to fulfil any of its obligations or for which affiliation with ICSU is no longer deemed appropriate.

11. TERMS OF REFERENCE OF ADVISORY BODIES

- 11.1 **Policy Committees** are Standing Committees set up by the General Assembly and are responsible to the Executive Board and to the General Assembly.

Members and Chairmen, if not otherwise designated, are appointed by the Executive Board. The currently constituted Committees include the following:

- a) Committee on **Scientific Planning and Review (CSPR)**, chaired by the Vice-President for Scientific Planning and Review, with the Secretary General, President-Elect and Executive Director as *ex officio*, non-voting members. The Committee will coordinate the collection and development of proposals for major new scientific initiatives by ICSU and advise the Executive Board on priorities for such initiatives. The Committee will also review the activities carried out by the Scientific Interdisciplinary Bodies and advise the Executive Board on the future course of these activities.
- b) Committee on **Finance and Fund-raising (CFF)**, with the Secretary General, Treasurer and Executive Director as *ex officio* non-voting members, which makes recommendations on finance and external fund-raising.
- c) The **Committee on Freedom in the Conduct of Science**, which shall be appointed by the Executive Board and shall include the Secretary General and Executive Director as *ex officio*, non-voting members. Under the over-riding authority of the Executive Board, it shall seek to find solutions to problems concerning the free passage of scientists, free collaboration among scientists and freedom to pursue science. It may make relevant recommendations and give advice to the Executive Board.

11.2 **Special Advisory Committees** are created by the General Assembly and are responsible to the Executive Board and to the General Assembly. Members and Chairmen, if not otherwise designated, are appointed by the Executive Board. These Committees, as presently constituted, are the following:

- a) Committee on **Dissemination of Scientific Information (CDSI)** which provides advice to the ICSU family about scientific publications, new developments in information technology, access to data and information, and pertinent legal issues. The Committee shall continue to use the imprimatur "ICSU Press" on appropriate publications and activities.
- b) Advisory Committee on the **Environment (ACE)** which provides advice to the Executive Board on the status and development of activities in the environment, undertaken by ICSU alone or in partnership with others.

11.3 **Ad hoc Committees:**

- a) The **Nominating Committee**, which shall consist of the President of ICSU and six other members, appointed by the Executive Board 1 year prior to an ordinary session of the General Assembly. The Executive Board shall endeavour to ensure a fair (scientific and geographic) representation on the Nominating Committee. No member of the Executive Board, except the President, shall serve on the Committee, and

no member of the Committee shall be a candidate for election to the Executive Board, as an Officer or Ordinary Member, at the particular General Assembly concerned. The Nominating Committee shall request nominations for vacancies in the positions of Officers (Rule of Procedure 6.1) and shall make recommendations on these in accordance with Rule of Procedure 6.2. It shall also receive nominations for Ordinary Members of the Executive Board in accordance with Rule of Procedure 7.1.

- b) The **Resolutions Committee**, which shall consist of four members, appointed by the General Assembly at the suggestion of the Executive Board. It shall collate, edit and present the resolutions proposed for adoption by the General Assembly. Resolutions proposed at a General Assembly must be related to an item on the Agenda and must have been discussed at the current Assembly in order to be considered. Any proposed resolution which does not fulfil these criteria will be ruled out of order by the Resolutions Committee. Resolutions should be addressed to a particular ICSU body for follow-up. The Executive Board will continue to keep a watching brief to ensure that all necessary action is taken. Where the proposal contained in a Resolution will require administrative and financial support, indications should be given as to sources of such support.

12. TERMS OF REFERENCE FOR SCIENTIFIC INTERDISCIPLINARY BODIES

- 12.1. By virtue of Article 18. e) of the Statutes of ICSU, Scientific Committees and Programmes may be created by the General Assembly to facilitate the planning and coordination of interdisciplinary scientific research and related activities on an international basis, such as necessitates the cooperation of two or more Members.* These bodies are set up for a specified period, renewable by decision of the General Assembly.
- 12.2. a) A Scientific Committee shall normally focus on a well-defined interdisciplinary theme.
- b) A Programme shall normally focus on a set of interlinking interdisciplinary themes undertaken by ICSU alone or in partnership with others.
- 12.3. Each Interdisciplinary Body shall function under a constitution, approved by the Executive Board, which is appropriate to its specific task.
- 12.4. The adherents to an Interdisciplinary Body may be Members and Associates of ICSU, other ICSU interdisciplinary bodies or other appropriate regional or international scientific or technological organizations.

* Bodies which were formerly referred to as Inter-Union Commissions may become Scientific Committees

- 12.5. Interdisciplinary Bodies shall have the obligation to submit to the Officers of ICSU, and to their own adherents, the agenda of all meetings and subsequently a full and proper record of their proceedings.
- 12.6. Each Interdisciplinary Body shall ensure the maintenance of an ongoing record of its activities and of projects it has launched, and, where appropriate, of their scientific results.
- 12.7. Each Interdisciplinary Body shall submit to ICSU an annual report on its work, the budget for the ensuing year and the audited financial statement for the preceding year. If the body is in arrears financially, the budget for the new year has to be approved by the Treasurer of ICSU.
- 12.8. Interdisciplinary Bodies must acquire, in addition to basic funding, adequate funds for planning and administration.
- 12.9. Individually, or in the context of broader policy reviews, Scientific Interdisciplinary Bodies will be reviewed by the ICSU Committee on Scientific Planning and Review for every second General Assembly of ICSU.

13. MODIFICATION OF THE RULES OF PROCEDURE

- 13.1 No change may be made in the Rules of Procedure except with the approval of the General Assembly by the majority of the votes cast by the members taking part in the vote. Changes to the Rules of Procedure are effective at the end of the General Assembly adopting them, unless otherwise specified by a Resolution of the General Assembly.

Revised and approved by the
27th General Assembly of ICSU, September 2002