Enhancing Involvement of the Social Sciences in ICSU

ICSU
International Council for Science

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Founded in 1931, the International Council for Science (ICSU) is a non-governmental organization with a global membership of national scientific bodies (114 Members, representing 134 countries) and international Scientific Unions (29 Members).

The Council is frequently called upon to speak on behalf of the global scientific community and to act as an advisor in matters ranging from scientific conduct to the environment. ICSU's activities focus on three areas: planning and coordinating research; science for policy; and strengthening the Universality of Science.

Suggested citation:

International Council for Science (2008) Enhancing Involvement of the Social Sciences in ICSU

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Prepared for the 29th General Assembly

October 2008

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1. Introduction

At the ICSU 28th General Assembly (2005) it was recommended that the Executive Board be mandated to explore and identify the most appropriate mechanisms for securing the interaction and added value of the social sciences in ICSU's scientific work; and asked to report back on its findings and recommendations at the next General Assembly in 2008. This was after the *Ad hoc* Committee on Membership Issues found that with regard to the representation of disciplines within ICSU, the following areas warranted further consideration: Social sciences (Economics, Law, Demography, Sociology) and Health (Clinical epidemiology, Clinical research). Specifically, the Executive Board was mandated to explore and identify the most appropriate mechanisms for securing the interaction and added value of the social sciences in ICSU's scientific work.

The Executive Board charged ICSU's Committee on Scientific Planning and Review (CSPR) to draft a response to this resolution that the Executive Board could present to the GA in Maputo, Mozambique.

At its September 2006 meeting, CSPR discussed options for strengthening involvement of social sciences in ICSU, such as adding Member Unions in social science disciplines not yet represented, more fully involving International Social Science Council (ISSC) as institutional partner in ICSU activities, and continuing in an *ad hoc* fashion to seek names of scientists from disciplines not represented by the current ICSU Scientific Unions. CSPR decided to focus a major part of its February 2007 meeting on this topic and to commission background papers from two groups of CSPR Members and the Secretariat. In addition, Professor Gudmund Hernes, President of ISSC, and Dr. Heide Hackmann, ISSC Secretary-General, were invited to participate.

At the meeting in February 2007, CSPR engaged in an in depth discussion. Dr. Hackmann and Professor Hernes gave presentations on their mandate to reform the ISSC and their aspirations for the next three years. Based on this discussion, CSPR submitted to the Executive Board for consideration a suite of views and ideas to enable the Executive Board to provide further guidance to the CSPR before it made final recommendations to the Executive Board. The five options could be considered singly, as some are mutually exclusive, or in various combinations.

1. ICSU should take maximum advantage of the positive changes that are taking place in the ISSC and assist in any appropriate way to ensure success in the revitalisation of the ISSC.
2. ICSU could consider encouraging a small number of ISSC Unions and Associations which are considered key to the implementation of the ICSU Strategic Plan to apply for ICSU membership. Included in this group could be International Political Science Association, International Sociological Association and the International Union for the Study of Population.
3. Alternatively, ICSU could enlist the support of the three bodies mentioned above in the implementation of the ICSU Strategic Plan without encouraging them to apply for ICSU membership. A close working relationship between ICSU and these bodies would enable ICSU to know the bodies better, and vice versa, and assist ICSU to determine what an appropriate long term relationship with these would be.
4. ICSU could consider it sufficient to simply continue working with ISSC and its key Unions and Associations in an *ad hoc* manner to improve ICSU's ability to identify the best Social Science researchers and scholars who can assist in the implementation of the ICSU Strategic Plan.
5. ICSU could take greater advantage of the experiences of those of its National Members whose mandate includes Social Sciences and Humanities in mobilising good social sciences input into its activities.

At its meeting in September 2007, the CSPR decided to consult with ICSU Members based on the background document prepared for its previous meeting. ICSU Members were requested to provide CSPR with succinct and constructive comments on the ideas in these documents and to submit new perspectives and ideas not already mentioned. The response was very poor and only two National Members a none of the Unions provided substantive comments out of a total response of five National Members and one Scientific Union.

2. The Development of Science – from Disciplinary to Interdisciplinary

As pointed out by the ICSU National Member of Tanzania in its review of the draft version of this document, the *Concise Oxford English Dictionary* gives two definitions of science:

- The intellectual and practical activity encompassing the systematic study of the structure and behaviour of the physical and natural world through observation and experiment.
- A systematically organized body of knowledge on any one subject.

This inclusive interpretation of science is also used by UNESCO (the United National Educational, Cultural and Scientific Organization), which includes sectors of Natural Sciences as well as Social Sciences and the Humanities, thus emphasizing the capital S in its name as all embracing.

Science has developed exponentially and it is no longer possible to have a Renaissance scientist trying to cover all aspects of knowledge. It is not even possible to have a professor of medicine developing a system for natural classification as did Carolus Linnaeus 250 years ago. We witness an even great specialization and the frontiers of scientific understanding are changing, while the scientific discipline is in a flux. The scientific congresses of ICSU Unions have more and more parallel sessions, often engaging scientists from other disciplines. Such sessions attract great interest, but the plenary sessions that try to cover a very wide field of the discipline and neighbouring disciplines find it increasingly difficult to attract a large audience.

In 1956, the Chancellor of the University of Chicago complained about the eroding frontiers between disciplines: 'It is alarming to note that history moves into the humanities, that economics becomes mathematics, that anthropology and psychology ally themselves with biology, and that geography is at home with the physical sciences'. (Kimpton, L. A. 1956. The Social Sciences Today. In: White. L. (ed.) *The State of the Social Sciences*. Chicago: University of Chicago Press; as cited by Apter, D. E. 2007. *An Approach to Interdisciplinarity*. Paris: ISSC). Today most of the exciting sciences are at the borders between disciplines; both within natural sciences and between natural and social sciences. The scientific world has changed.

Biochemistry is no longer a multidisciplinary science between biology and chemistry; it is a recognized discipline in itself with its own ICSU Scientific Union. Thus, the scientific disciplines are fragmenting and combining. Ecological economics is not yet a generally defined discipline, but it is an area of exciting scientific advances. Many such hybrid specialities recognize their genealogical roots: political economy, bio-geography, social ecology, etc. In other cases, new disciplines re-formed; cognitive science branched out from psychology.

When it comes to interdisciplinarity, based on the disciplinary strengths of the Scientific Unions, one must look at the definition of terms such as interdisciplinary, transdisciplinary and multidisciplinary, which are often used interchangeably. The following definitions are based on publications by Collins (*Bioscience* 52(1), 75, 2002)) and Stokols et al. *(Nicotine and Tobacco Research*, 5, S21, 2003).

Discipline: a body of knowledge or branch of learning characterized by an accepted content and learning.

Cross-disciplinary Research: Research effort that involve investigators drawn from different disciplines. This term refers to all types of discipline-crossing research without qualifying the interaction between the investigators.

Multidisciplinary Research: The coordinated efforts of several disciplines to achieve a common goal. In multidisciplinary research the nature of the problem requires that investigators from different disciplines collaborate and share results. However, the contributions drawn from different disciplines are largely complementary not integrative.

Interdisciplinary Research: integration of several disciplines creating a unified outcome that is sustained and substantial enough to enable a new discipline to develop over time. Integration of multiple disciplines requires collaboration at the level of designing new types of (experimental) approaches and analysis that combine methods and concepts from the different disciplines. While working jointly, investigators work from each of their respective disciplinary perspectives.

Transdisciplinary Research: Development and application of a shared, integrative conceptual framework based on discipline-specific theories, concepts, and methods. Instead of working in parallel, investigators collaborate across levels of analysis and intervention to develop a comprehensive understanding of the problem at hand. In transdisciplinary research, investigators develop a shared conceptual framework that integrates and transcends their respective disciplinary perspective.

3. Development of Interdisciplinarity in ICSU

According to the Strategic Plan 2006-2011, ICSU has three major themes: (i) International Research Collaboration, (ii) Science and Policy, and (iii) Universality of Science. ICSU is probably best known for planning and coordinating major international and multidisciplinary research programmes such as the International Geophysical Year 1957-1958, the International Biological Programme (IBP) 1964-1974, the Global Change Research Programmes (from 1980 and ongoing) and the International Polar Year 2007-2008.

The need for multidisciplinary approaches in these programmes has changed rather dramatically over the past decades. The IBP provided, among other things, the basis for ecosystem science, which necessitated the bringing together of different biological disciplines. This was not always easy, but the botanists, zoologists and microbiologists learnt to work together in a coordinated manner that advanced ecosystem science and provided a solid scientific basis for addressing the functioning of Planet Earth as an ecosystem.

When the planning for the International Geosphere-Biosphere Programme: A Study of Global Change (IGBP) started in the mid-1980s, the challenge was to bring the biologists together with the chemists and physicists to analyze the interactive physical, chemical and biological processes that define Earth System dynamics. The need to bring together all the relevant natural sciences offered a true challenge and a number of obstacles to a truly integrated study of the Earth as a system had to be overcome. But just as IBP brought together the biological sciences, IGBP was successful in bringing together all relevant disciplines in the natural sciences.

The IGBP planning was very much guided by the so-called Bretherton diagram, which was developed to show the need for linking biological, chemical and physical sciences. In its schematic version (Fig. 1), humans, like the sun, were considered as external drivers of the Earth System, not as an important component of the system. However, in the early discussions, efforts were made to encourage the social science community to engage in addressing global processes to unravel the functioning of the Earth system and the ISSC started the planning for a human dimensions programme on global environmental change already in the late 1980s.

In 1996, the International Human Dimensions Programme on Global Environmental Change (IHDP) was established by ICSU and the International Social Science Council (ISSC). It had become very clear that it was impossible to understand the Earth as a system without addressing humans as influencing the planet and as an essential driving force in shaping the future of Planet Earth. Thus, a major new step was taken to clearly recognize the need for not only including the relevant natural sciences but also the social sciences.

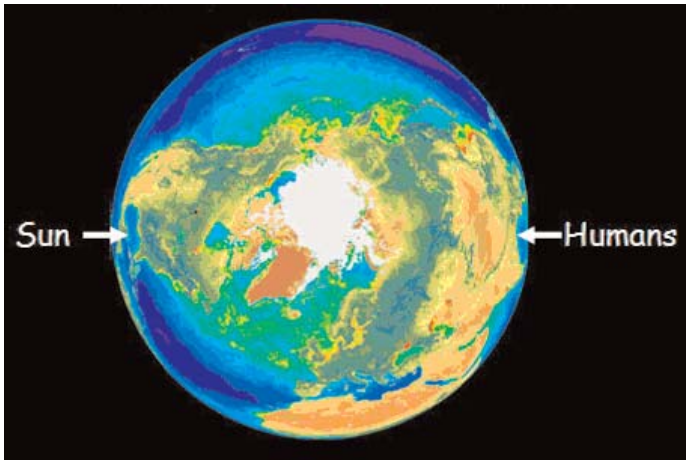

Fig. 1. A schematic picture of the Bretherton diagram (1986) cited from R. Lehmans 'Earth System Science: Progress and Challenges'. Plenary presentation at the 'Earth System Science Partnership Open Science Conference', 9–12 November 2006.

In 2001, the four global change research programmes (World Climate Research Programme (WCRP), IGBP, IHDP and DIVERSITAS, all sponsored by ICSU) organized the first Global Change Open Science Conference. As a result of the conference, the programmes decided to establish the Earth System Science Partnership (ESSP). The ESSP is a partnership for the integrated study of the Earth System, the ways that it is changing, and the implications for global and regional sustainability. The Earth System is the unified set of physical, chemical, biological and social components, processes and interactions that together determine the state and dynamics of Planet Earth. Earth System Science is the study of the Earth System, with an emphasis on observing, understanding and predicting global environmental changes involving interactions between land, atmosphere, water, ice, biosphere, societies, technologies and economies. Thus, a truly interdisciplinary approach was developed involving all relevant sciences, both natural and social.

In 2002, ICSU was responsible for the input from the international science community to the World Summit on Sustainable Development (WSSD). In its report, ICSU challenged the scientific community to:

- Address the environmental, social and economic pillars of sustainable development,
- Develop participatory approaches involving private and public sectors in setting the research agendas, and
- Develop place-based, integrated approaches to science for sustainable development.

Thus, for the scientific community to contribute best available scientific knowledge, it must involve the natural and social sciences. However, some areas of studies often included in the humanities are also important in understanding the interaction among natural, social and economic systems. This was also highlighted in the Millennium Ecosystem Assessment (MA) and will most likely also be expanded upon by the ICSU-UNESCO-UNU Working Group on the follow-up to the MA.

Governments have defined eight Millennium Development Goals. For the international scientific community to be able to meaningfully contribute scientific knowledge important in achieving these goals, it is essential to draw on the expertise from the natural and the social sciences.

Based on ICSU's strong portfolio of global change research, it is also important to link this research to development research, which is place-based and primarily relies on social sciences. The global change and the development research communities have in the past had almost no interaction. ICSU and the International Group of Funding Agencies for Global Change Research (IGFA) have over the past two years stimulated a dialogue starting with a major workshop at Krusenberg in Sweden (May 2005). Two sessions at the ESSP Open Science Conference in November 2006 also addressed this issue and there are plans to address this new and truly multidisciplinary challenge through various efforts, including the co-sponsorship by ICSU of the Resilience Alliance Conference in April 2008. These issues were also be addressed by the ESSP Review Panel in 2007.

ICSU has thus been able to develop truly interdisciplinary approaches to current priority areas primarily through the identification of individual scientists from different disciplines. The current ICSU Unions members in the social sciences, in particular International Geographical Union (IGU) and International Union of Psychological Sciences (IUPsyS), have played important roles in helping to identify relevant scientists from the social sciences. ISSC has also been important as a co-sponsor of IHDP but less so in other contexts.

It is important that the interdisciplinarity is based on the best available disciplinary knowledge and the Scientific Unions have a very important role to play. The scientists in the interdisciplinary programmes of ICSU must strive not to lose contact with its siblings in the discipline, while extending their family of scientific friends outside their discipline to address important issue, where international science for the benefit of society.

4. Current ICSU Membership and Interactions with the Social Sciences

ICSU has four Scientific Unions that cover areas of social sciences and humanities belonging to the ICSU social science cluster of Unions: IGU, International Union of Anthropological and Ethnological Sciences (IUAES), International Union of the History and Philosophy of Science (IUHPS), and IUPsyS. Geography, anthropology and psychology straddle the social and natural sciences and provide a necessary bridge between the two domains of science and thus also between ICSU and ISSC. In addition, The International Unions of Forestry Research Organizations covers areas of social sciences.

There are two international organizations in the social sciences and humanities that are similar to ICSU: the International Social Science Council (ISSC) and the International Council for Philosophy and Humanistic Studies (CIPHS). ICSU has collaborated in particular with ISSC, which, together with ICSU, is a cosponsor of the IHDP. ISSC has also supported ICSU in the preparation of the science input to the WSSD and the World Summit on the Information Society (WSIS).

5. The Case for more Social Sciences in ICSU

The history of ICSU since its establishment in 1931 has reflected the main trends in science and the changes in the institutional structures that conduct, use and fund scientific research. These trends include:

1. A weakening of disciplinary silos so that more discoveries and investments are made in interdisciplinary fields;
2. An increased demand for policy relevance and results that are seen as having practical usefulness;
3. Greater concern with the role of science in international development;
4. More involvement of the private sector in funding and conducting scientific research;
5. Huge increases in the amount of scientific data and our ability to organize, store and process them.

Underwriting, or at least paralleling these trends has been increased integration of natural and social sciences in tackling some of the major scientific research challenges – environment and natural resources management, global change, sustainable development, poverty reduction, and environment and human health. Further details are found in Annex 1.

The greater involvement of social sciences in the work of ICSU has mirrored the rise of social sciences more generally. Indeed, it could be argued that ICSU is at a point in its history where it is increasingly *dependent* on social science to fulfil its mission. Thus, better integration of the social sciences into ICSU is no longer an option, it is a necessity. The evidence for this can be found in ICSU's mission statement, in its Strategic Plan 2006-2011, and in its own internal concerns about how to increase the input from social sciences into its scientific work.

5.1 ICSU's Vision and Mission

ICSU has laid out a vision and a mission that assumes it will engage the social sciences and social scientists. They include the participation of scientists from all disciplines and engagement with civil society and the private sector, as well as a world in which scientific knowledge is effectively linked to policy-making.

5.2 The ICSU Strategic Plan 2006-2011

The title of the Strategic Plan is 'Strengthening International Science for the Benefit of Society'. In it ICSU sets out to 'facilitate interaction amongst scientists *of all disciplines*'. The major issues to be addressed include environment, where ICSU plans to increase the involvement of the social, health and engineering sciences in investigating human influences on environmental change and assessing the implications of such change for society.

A second major issue in the ICSU Strategic Plan is sustainable development. The four research priorities identified absolutely require that ICSU strengthens its own capacity to integrate social sciences into its work. They are:

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

The third major issue identified is human health; and the fourth is exploring new horizons which include interdisciplinary initiatives such as on cognitive neurosciences, human security and environmental refugees and transgenic crops and animals.

Thus ICSU has set out for itself a strategic course which can *only* succeed if it can attract the best of social scientists, as well as engineering and health scientists to work on its planned activities for 2006-2011.

6. Steps to Increase Social Sciences in ICSU

ICSU can continue to increase the involvement of individual social scientists on its committees and interdisciplinary bodies as it has done in the past or it can also take the next step and introduce more social sciences into its formal structures. Behind these two approaches lie different views about the nature of social sciences *as sciences* and whether their differences with the natural and biological sciences are sufficient to impede effective integration of method, data or theory. Perhaps now is the time for ICSU to engage in a deeper reflection about the classification of sciences and the nature of scientific disciplines in 2008 and what this means for ICSU as a leading institution for international science.

In its submission to the UNESCO Panel that was set up to review the Natural Science Sector and Social Science and Humanities Sector, the ICSU Executive Board argued strongly for closer collaboration, and perhaps even integration, of the two Sectors, since this would strengthen the ability of the organization to address current and future challenges (see further details in Annex 2).

6.1 Adding More Social Scientists to ICSU Committees

Over the last 30 years ICSU has increasingly encouraged the participation of social scientists in its committees, task forces and collaborative research initiatives. Any analysis of the disciplinary backgrounds of the social scientists who have become more involved in ICSU may find that some social science disciplines are over-represented compared to others, but nonetheless the representation of social sciences on most advisory and decision-making bodies of ICSU is no longer an issue. Indeed the Strategic Plan 2006-2011 attests to the influence of social scientists in defining the way ahead. This trend should continue, especially as ICSU now needs more social science input to deliver on its own strategic plan.

6.2 Stimulating More Social Science Unions to Join ICSU

Currently ICSU International Scientific Unions that cover areas of social sciences and humanities include IGU (geography), IUAES (anthropology and ethnology), IUHPS (history and philosophy of science), and IUPsyS (psychological science). Missing from this list are Unions covering the disciplines of economics, law, sociology, demography and political science (among others) – each of which have important contributions to make to ICSU's strategic priorities. Disciplines such as geography, anthropology and psychology include strong natural science components as well as being social sciences (and health sciences in the case of psychology). These disciplines offer concrete examples of how natural, social and health sciences can work productively within the same organizational structures.

The case for inviting more social science unions to join ICSU is strong. Many of the National Members of ICSU already embrace both natural and social sciences within their structures although the degree of interdisciplinary integration varies. For example, 31 of the 42 European ICSU National Members include natural and social sciences.

When ICSU conducted a foresight exercise in 2004 with its National Members, it was clear from the priorities identified that National Members saw the areas having the most potential in terms of scientific advance, opportunities for international and interdisciplinary collaboration and highest potential societal impact were those that cut across the domains of natural, social and health sciences. Many of these areas fell into the realms of biotechnology, environment and sustainable use of natural resources and information and communication technologies.

If many National Members of ICSU include both natural and social sciences, does it not argue for greater social science expertise among the Union members? Or to invert the question, why would one *not* have more social science Unions in ICSU given the needs of the programme and strategic plan and the involvement of social sciences in the National Members?

7. Some Lingering Concerns

Despite the logic of the above arguments, some members of ICSU are resistant to further increases in the role of social sciences in ICSU. While they recognise the value of social science expertise to help communicate scientific results to policy makers and to bring human behaviour into the models of environmental change or new technology, they feel that social sciences should only play a supporting role in ICSU – their role defined by natural scientists rather than being equal partners in scoping the scientific agenda.

For many natural scientists, social scientists are seen as having high transaction costs – it is alleged that they slow down scientific research or committee work by raising fundamental questions about research ethics, and the potential negative impacts on the public good. Social scientists are often seen as obsessed with process and willing to talk about such topics as participatory research, full cost pricing, traditional knowledge and rights-based approaches for much longer than most natural scientists can tolerate.

What is more, although these concerns are rarely brought out into the open, some natural scientists believe that social science is not really science. They think that the social sciences lack the rigorous application of scientific method and their bodies of theory are poor substitutes for that of physics or mathematics or geology. Finally, some argue that social sciences can sometimes take the research process a long way from science and perilously close to the slippery slopes of politics and subjective perceptions – both of which they believe are generally best avoided.

The assessment of ICSU in 1996 reflected similar concerns. The Panel characterised the Natural science disciplines as those:

> 'whose fields of study, methods of inquiry and of verification, enable them to reach a high degree of consensus about the underlying facts, principles, laws, and theories of the field. While there may be disagreements among the practitioners of the field, especially at times of shifting paradigms, these fields are still characterized by strong confidence that the differences will be resolved through their methods of inquiry and verification. Disciplines that would not fit well into the ICSU family are those split into persistent schools of scholarship that rely to a large extent on *ad hoc* concepts or schemes as unifying principles of each school. It is the opinion of Panelists that some of the branches of the social sciences would fit into this category.'

8. Ways Forward

ICSU, in collaboration with ISSC, should stimulate a broader cross-disciplinary reflection on the nature and boundaries of the natural and social sciences as they are today. ICSU has, after all, not only its own experience to draw on but also that of ICSU's National Members, its scientific committees like SCOPE, and that of interdisciplinary initiatives such as the Global Change Programmes and the Millennium Ecosystem Assessment.

What evidence is there that when natural and social sciences bring their different perspectives to work on a common problem – such as ecosystems services – something greater than the sum of the parts is produced? What are the obstacles either in scientific processes or structures that prevent achieving this *gestalt* and how can they be overcome? One could even imagine that an ICSU initiative might help to redefine the nature of science and scientific endeavour in ways that are more appropriate to how science works in the world today. At a minimum, ICSU-led reflection might peel apart some of the traditional assumptions about other sciences and lead to a new accord or understanding among disciplines. ICSU has not spent much time in the past in introspection but a little navel gazing in this regard might be well worth the effort.

Whether ICSU decides to invest time and effort in thinking about scientific epistemology, what is important is that ICSU moves ahead with increasing social sciences involvement in its structures and activities on the reasonable assumption that the accumulation of positive interdisciplinary experiences will eventually trump any lingering prejudices. Beyond those social sciences that are already within the ICSU family, demography, economics, sociology and political science are very relevant to ICSU's work and meet the criteria for being accepted as 'sciences' within ICSU. Fast-tracking more social sciences into ICSU will not only 'strengthen international science for the benefit of society' but will better fit ICSU for the decades ahead. The sting in the tail may be that without a stronger affirmation from ICSU about the value-added of social sciences to its work, ICSU may not be attractive enough to the social science unions it needs to successfully engage them within its formal structures.

9. Recommendations

The question is not how to expand the ICSU mandate but how to best fulfil the mission of 'strengthening international science for the benefit of society.' Based on the preceding discussion, the following recommendations are made:

- To note the strengthened involvement of social scientists in the planning of new initiatives as part of the implementation of the ICSU Strategic Plan 2006-2011 and to further enhance this as relevant;
- to challenge National Members, especially those that include social sciences, to assist ICSU in identifying social scientists to serve on relevant ICSU planning and review committees to ensure that such initiatives have proper balance among relevant disciplines;
- to work with the International Social Science Council (ISSC) as a key partner in strengthening international social science of relevance for implementing ICSU's Strategic Plan and to engage ISSC in the dialogue concerning the development of the Second Strategic Plan 2012-2017;
- to assist ISSC in strengthening its programme by identifying scientists as appropriate who could help inform the further development of ISSC;
- to consider applications from social science Unions in order to strengthen the involvement of social sciences in the development of the ICSU agenda; and
- to recommend to the Executive Board that the role of social sciences be included on the agenda for the National and Union Members Fora at the 29th General Assembly.

Annex 1: ICSU and the Social Sciences

Introduction

As mentioned in the report, ICSU has developed research programmes at the cutting edge of interdisciplinarity over the past decades, but the interpretation of what constitutes an interdisciplinary approach has varied. Examples include:

IBP 1964–1974: Integrating botany, zoology and microbiology with knowledge of the abiotic environment to shape ecosystem science.

IGBP 1986– : Integrating physics, chemistry and biology to understand the functioning of the global system; global change research and science

IHDP 1996– : Addressing human impacts on the global system and how global change affects humans

ESSP 2001– : Understanding the combined effects of natural and social processes and systems on the functioning of Planet Earth: Earth System Science. The study of coupled ecological-social systems is an essential subject of research.

ESSP 2005– : Linking Earth System Science research and development research; the next challenge.

The focus for international and interdisciplinary research will continue to change. What was once interdisciplinary, e.g., biochemistry, has now developed into a discipline in its own right. This is the definition of interdisciplinary science as cited above. All major challenges that ICSU faces today in order to strengthen international science for the benefit of society necessitate the involvement of social sciences. This is where some of the most exciting new research is also developing and ICSU must find ways to develop and promote science that integrates relevant disciplines of both natural and social sciences. The current system is not set up appropriately to truly address this challenge.

In practice, there are very few topics that ICSU has taken on over the past 5 years or that are included in the Strategic Plan for the next 6 years where an important role for the social sciences has not already been recognised.

International Human Dimensions Programme

In 1990, the International Social Science Council (ISSC) established the Human Dimensions Programme on Global Environmental Change (HDP) to complement WCRP and IGBP. HDP Officers concluded that *'Issues of global environmental change simultaneously touch numerous disciplines within the natural, physical and social sciences. … HDP seeks to promote increased collaboration between natural and social scientists researching global environmental change.'* Hence, in 1992, the President of ISSC and the Chair of HDP initiated discussions with ICSU concerning establishing increased cooperation between the two organizations. In the minutes from a meeting of the HDP Officers in November 1994, it is stated that *'One of ICSU's long-term goals is to achieve enhanced cooperation between the natural and the social sciences'*.

As a consequence, and in 1996, ICSU joined the ISSC to launch a 'new generation' of the human dimensions programme (The International Human Dimensions Programme on Global Environmental Change, IHDP). Although planning for a parallel to IGBP started already in 1990, it was only after ICSU joined that the programme developed into a necessary and vital component of the global change research effort. The Scientific Committee for IHDP is now appointed jointly by ICSU and ISSC, the Director is also appointed jointly and the two sponsors have frequent consultations on the future of the programme. In 2003, IHDP was reviewed as part of the ICSU Priority Area Assessment (PAA) on Environment and it Relation to Sustainable Development (see below). With regard to IHDP, the PAA Report concluded that: *'The Panel endorses the need for a vibrant, interdisciplinary IHDP that addresses the coupled human-natural system in the context of global environmental change, and recognizes its essential role in the Earth System Science Partnership (ESSP).The most visible success to date has been the Land Use and Cover Change (LUCC) project. The Panel encourages IHDP to broaden its range of social science disciplines, especially economics, and establish stronger links with appropriate ISSC activities and commissions. If ISSC is unable to take a stronger responsibility for programme development then the Panel recommends that ICSU consider an alternative arrangement'*.

In 2004, ICSU and ISSC decided to have a dedicated review of the programme. A major conclusion from this review was: 'IHDP has been successful in developing an international research programme, enhancing the involvement of social sciences in global change issues, and contributing to heightened political and social awareness of the human dimensions of global change'.

The ICSU PAA Report on Environment 'encouraged IHDP to strengthen the involvement of economists in its project.' As pointed out by the IHDP Review Panel, an assessment of the distribution of social science disciplines in IHDP governing bodies (1996-2004) estimated that economics/environmental economics (22%; 24 out of 108) is the single largest disciplinary grouping represented in the IHDP. That suggests that ICSU's definition and IHDP's may be different. It also suggests, however, a heavy disciplinary concentration in IHDP. Three disciplines made up the majority of representatives (52% with economists/environmental economists, geographers and political scientists). Sociology, anthropology and law combined represented 15% of the representatives. Systems sciences, agricultural sciences and demography together were less than 10% of the total disciplines. Thus, the sponsors and IHDP have not been successful in ensuring broad disciplinary representation within IHDP. Of the disciplines mentioned by the Review Panel, ICSU's own disciplinary expertise through Scientific Unions only cover human geography and anthropology.

Over the past year these discussions between ISSC and ICSU in relation to IHDP have been particularly intense as a result of the Review Panel report and the decision to invite the United Nations University to become a third sponsor. In general, ICSU has considerably more interaction with IHDP than ISSC, since ICSU is also a sponsor of the other programmes and very much involved in the discussions about the future of ESSP. Thus, there are many more opportunities for ICSU to meet with IHDP leadership.

DIVERSITAS

DIVERSITAS, one of the four global change research programmes, brings together biological, ecological and social sciences to address four key questions that underlie our limited understanding of the current situation.

How did biodiversity evolve in space and time to reach current state?

How much biodiversity exists and how does its change or loss affect the system as a whole?

How does biodiversity correspond to the delivery of ecosystem functions and services, and what is the true value of these commodities?

How can scientific investigation support policy and decision making to encourage more sustainable use of biodiversity?

Collectively, DIVERSITAS Core Projects comprise a cycle of discovery, analysis and information sharing that supports the application of socially relevant knowledge. The Core Projects are complementary in that they allow DIVERSITAS to tackle broad issues from various angles and that new knowledge acquired in one area will help to advance research in others. Led by a team of Co-chairs and a Scientific Committee, both of which include representatives from natural and social sciences, each Core Project implements its Science Plan to support the DIVERSITAS international framework. DIVERSITAS has been particularly successful in involving economists in its activities. The strong collaboration between ecologists and economists is also evident in the Millennium Ecosystem Assessment of which ICSU was one of the sponsors. It is also reflected in the composition of the ICSU-UNESCO-UNU Scoping Group for reviewing the gaps in scientific understanding identified through the MA process.

Thus, DIVERSITAS has been able to attract several key economists. ICSU has, however, no Union representing the economic sciences. When ICSU needs an economist, it can tap the DIVERSITAS network and other networks known to the EB, CSPR or Secretariat.

Earth System Science Partnership

In the Amsterdam Declaration from the First Global Change Open Science Conference (July 2001), it was stated that:

> 'A new system of global environmental science is required. This is beginning to evolve from complementary approaches of the international global change research programmes and needs strengthening and further development. It will draw strongly on the existing and expanding disciplinary base of global change science; integrate across disciplines, environment and development issues and the natural and social sciences; collaborate across national boundaries on the basis of shared and secure infrastructure; intensify efforts to enable the full involvement of developing country scientists; and employ the complementary strengths of nations and regions to build an efficient international system of global environmental science.'

The Amsterdam Declaration led to the establishment of the Earth System Science Partnership by WCRP, IGBP, IHDP and DIVERSITAS to ensure that key issues relating to sustainability of Planet Earth can be addressed by joint efforts of all relevant sciences, both natural and social.

In the development of the Joint Projects of ESSP (on carbon, food, water and health), IHDP and social sciences

have played crucial roles in developing the agendas for research. The ESSP is successful because it involved an IHDP which has developed into a strong research programme with its own identity and priorities. The global change science community is now fully convinced that the Earth system can only be understood by viewing humans as integrated components of the system. Thus, the old Bretherton diagram is no longer considered valid.

From 2007, ICSU will appoint four members of the ESSP Scientific Committee. Of the appointed members of the Scientific Committee for ESSP, at least one and preferably two, members should be social scientists. ISSC has no role in ESSP more than as one of the sponsors of one of the four programmes, while ICSU remains instrumental in ensuring the quality of the science.

ICSU has also appointed a Review Panel for ESSP with a report expected in early 2008. Nominations for social sciences members of the Scientific Committee as well as the Review Panel should have come from the global change programmes as well as from IGFA. However, the programmes nominated no social sciences and only late in the process did IGFA propose a political scientist. Thus, the formal social sciences competence on the Review Panel is weak. Since ICSU does not have the formal networks through Unions to identify experts in the areas of, e.g., economy, political sciences and sociology, it is difficult to get an appropriate disciplinary balance, if nominations fail to produce a balanced slate.

Priority Area Assessment on Environment and its Relation to Sustainable Development

The environment PAA, published in 2003, was part of the CSPR strategic process to develop background for the ICSU Strategic Plan. The membership of the Review Panel was largely based on the membership of the then ICSU Advisory Committee on Environment (ACE). Originally the CSPR Assessment Panel had three social scientists from human geography, economy and anthropology. There was only one social scientist on ACE (anthropology) and the human geographer was the CSPR *ex officio* member. A well-known economist with a strong tradition of ecological economics was added to provide the experience from someone who had worked in partnership of natural and social sciences for a long time.

Unfortunately the anthropologist and economist, apart from being extremely busy like everybody else, also had different epistemological views and due to strong differences in approach, both withdrew from the Panel. Thus, the Panel composition did not have the disciplinary balance originally sought. Despite this, one of the key recommendations was to:

> 'Ensure that the social sciences are fully integrated into ICSU's programmes as appropriate'. The report also states that: 'The Panel encourages the development of new multidisciplinary projects that fully incorporate the social science dimensions. The social sciences, including economics and the humanities, are essential components in addressing environmental problems in a holistic way. However, the Panel is disappointed in the weak interactions with the International Social Science Council (ISSC). If the ISSC is unable to take a stronger responsibility for programme development, then the Panel recommends that ICSU make alternative arrangements.'

Linking Global Change and Development Research

In 2005, ICSU and IGFA organized a workshop on 'The Interaction Between Global Environmental Change and Development-Oriented Research'. The meeting brought together members of four groups: Global Environmental Change researchers, funders of Global Environmental Change, development researchers, and the funders of development-oriented research, to discuss their distinct approaches and areas of possible collaboration. It was the first time that these four groups had met together and there was a lively exchange of views.

The discussions revealed that while their were some differences in the approaches, language, as well as spatial and temporal scales for the Global Environmental Change versus the development community, there is an area of overlap where there would be substantial benefit in developing a common agenda for action. The Global Environmental Change community primarily focuses on making advances in the understanding of the Earth system. These include better comprehension of climate, biogeochemical cycles, ecosystem functioning and the dynamics of social systems. Development work centers on improving human well-being with the Millennium Development Goals being one measure of progress. A common goal for both communities could be to achieve sustainable development.

This dialogue goes further than just linking natural and social sciences to understand the coupled Earth system, since it tries to link global and local processes and approaches consistent with the identified needs proposed by the international science community at WSSD. Follow-up discussions were held in conjunction with two sessions

at the ESSP Open Science Conference (November 2006). One was organized by ICSU and IGFA as a direct follow-up to the 2005 workshop. The other one was organized by ESSP, and chaired by ICSU, to address the changing landscape and expectations of ESSP when it tries to address issues of direct relevance to sustainable development. ICSU has played a major role in fostering these bridge-building efforts and to spearhead developments that will make the ICSU sponsored Global Environmental Change Programmes more relevant for development issues and thus the Millennium Development Goals. However, ICSU's Union membership does not cover the necessary disciplines.

International Polar Year

In February 2003, the ICSU Executive Board decided to plan for an International Polar Year. In the background document it is clearly stated that one of the key characteristics should be that the programme is 'multidisciplinary, including human dimensions'. The importance of the human dimension was especially stressed by the National Member from Canada. The planning for the programme took this on board.

IPY will thus:

> 'promote constructive and respectful engagement with northern people, through community monitoring, through acknowledgement and protection of traditional knowledge, and through inclusion of northern people as valued partners in planning and conducting IPY and in evaluating and assessing IPY results and legacies. IPY researchers will focus on northern human health, particularly on impacts of pollution, contaminants and parasites in traditional foods, existing and emerging infectious diseases, chronic diseases, and unhealthy behaviours. Researchers will explore many facets of Arctic social systems, to determine resiliency to internal and external change and to develop adaptation and mitigation strategies. IPY investigations will include studies of unique uses of language, such as for intergenerational understanding of sea ice, studies of how legal systems protect the value and integrity of traditional knowledge, and economic and social assessments of the impacts and opportunities related to natural resource management and energy and transportation developments.' *(From the IPY website)*

While the third IPY in conjunction with the International Geophysical Year was rather narrow and geophysical in its approach, the fourth IPY, 50 years later, has a broad interdisciplinary approach. The accepted projects have been divided into six categories (number of accepted projects in each category in brackets): earth (6), land (37), people (37), ocean (39), ice (26), atmosphere (16) and space (9). Although this does not divide the projects into physical, chemical, biological, geological and social sciences, a significant shift of disciplinary interest can be noted over the past 50 years with the emergence of social sciences projects as very important.

Natural and Man-made Environmental Hazards and Disasters

Based on the studies leading up to the development of the ICSU Strategic Plan, the topic of natural and human-induced natural hazards was selected as a priority. CSPR initiated an initial planning exercise and the findings were reported to the 2005 General Assembly. The report called for a an international collaborative research programme lasting a decade or more building on the combined insights of the natural, health, social and engineering sciences. The GA approved the plans and added 'Disasters' to the name to stress the importance of the effects of hazards on people and societies.

In appointing members to the Planning Group, CSPR took note of the need for such a broad disciplinary approach and appointed a planning group consisting of scientists including those with a disciplinary background in history and social study of disasters, social psychology, human geography and economic geography.

At its first meeting, the Planning Group defined the following tentative objectives: 'to undertake coordinated international multidisciplinary research studies leading to a more effective global societal response to natural hazards and resulting in the reduction of the impacts of natural hazards on humans and their socio-economic activities and infrastructure.' Thus, the planning includes a major component of social sciences.

Consortium Advisory Group on Science and Technology for Sustainable Development

To build upon its work at the World Summit on Sustainable Development, ICSU convened an *Ad Hoc* Advisory Group to recommend strategies for harnessing science and technology for sustainable development. Approximately half the membership of this group, including one of the co-Chairs, was social scientists (coming from backgrounds in economics, political science, sociology, geography, and indigenous knowledge).

The strong social science presence clearly influenced the recommendations from this group. Suggested research priorities included: Resilience and Vulnerability of Social-Ecological Systems; Sustainable Production and Consumption; Governance and Institutions for Sustainability; The Role of Culture and Values in Sustainable Development. And the group's central recommendation was to establish a new 'social process' for allowing civil society to play a more active role in defining scientific research needs. (As a direct follow-up to this recommendation, ICSU has been convening stakeholder dialogue gatherings at the yearly meetings of the UN Commission on Sustainable Development).

In their work, this committee struggled though many of the classical challenges of bringing together such a wide array of disciplines (different academic jargon, different research methodologies, different conceptions of what constitutes scientific knowledge). The group's recommendations were met with great skepticism by some members of the ICSU Executive Board, seemingly because the strong social science influence made this report a significant departure from 'business as usual' for ICSU.

Other Recent Examples of Working with Social Sciences

In addition to the detailed examples given above, which relate to ICSU's evolving environmental research portfolio, there are several other key areas where the necessity of working closely with the social sciences has become apparent. Several of these are listed below

Human Health and Wellbeing: Stimulated initially by a proposal from a large number of Unions, CSPR has established a Scoping Group to focus on population health for policy. In so doing, it was explicitly recognised that the ICSU niche would require collaboration between the natural, health and social sciences. Some of this expertise already exists within the ICSU family – geography, psychology, anthropology but it has become apparent in the scoping group discussions that other areas important such as economics and medical sociology are not included.

Energy: In 2003, ICSU convened a committee to recommend future activities related to 'Sustainable Energy'. Among the activities recommended by this group were (social science) studies on the economic, institutional, political, and social barriers that hinder the dissemination and implementation of new clean energy technologies. ICSU's International Science Panel on Renewable Energies (ISPRE) is likewise considering questions about energy-related economics and policy research, public acceptance of new technologies, and other social science issues.

Earth Observations: ICSU, in cooperation with the Integrated Global Observing System Partnership (IGOS-P) organized a meeting on the topic 'Socioeconomic Data in Relation to IGOS-P' in 2004. The report examined what is meant by socioeconomic data and how they are collected, the importance of socioeconomic data to IGOS and the broader community, and then concludes with recommendations to IGOS, governments, and data experts. ICSU has continued to stress the importance of georeferenced socio-economic data in the context of the Global Earth Observation System of Systems (GEOSS).

Data and Information: In preparation for the World Summit on the Information Society (WSIS, 2003 and 2005), ICSU worked to a limited extent with the ISSC. In terms of trying to represent the whole of science this partnership was useful but substantively there was very little input from ISSC. At the level of scientific research needs, it is becoming increasingly necessary to integrate data from natural and social sciences (see previously regarding Earth Observations), which means agreeing on common standards and management procedures across disciplines. The need to establish a shared framework for scientific data collection, management and dissemination was emphasised by the PAA on Data and Information (ICSU, 2005) and is a real time challenge for new ICSU programmes, such as IPY.

Universality/Science and Society: the ICSU strategic review – Science and Society: Rights and Responsibilities (ICSU, 2005) was conducted by a mixed group of natural and social scientists, with co-Chairs from each disciplinary grouping. This created some tension, in particular between different disciplines within the social sciences, but overall this was constructive rather than problematic. In particular, the contribution of the Science and Technology Studies members was very important.

The new ICSU Standing Committee on Freedom and Responsibilities in the conduct of Science (CFRS) includes a mixture of natural and social sciences and the disciplinary bias of ICSU was an unforeseen topic of discussion at its first meeting.

Annex 2: Social Sciences, ICSU and UNESCO

Planning and preparation for the World Conference on Science (1999), a mile-stone event co-organized by UNESCO and ICSU, failed to fully recognize the social science community. This reflected a lack of involvement on the part of the Sector of Social & Human Sciences and, probably as a result, the ISSC – and this despite the Conference theme on science-society interaction.

UNESCO is currently reviewing its Natural and Social & Human Sciences programmes, and the Executive Board has submitted its views to the Review Committee. One of the recommendations relate directly to the need to strengthen collaboration between the Natural and Social Sciences: 'Important scientific questions of societal importance almost always necessitate input from both the natural and the social sciences. The two UNESCO Sectors have so far not been successful in building on the combined strengths of both for the benefit of society. Thus, serious consideration should be given to finding solutions to the issue, including a possible merger of the two Sectors. If a merger is to become successful, it is necessary to further strengthen the social science components, especially as they relate to 'study what is (empirical social science research)'. However, philosophy and prospective studies to anticipate what could be are also essential and can be further strengthened by the involvement of natural sciences.' ICSU has collaborated with the Natural Science Sector for many years and the Sector is a cosponsor of DIVERSITAS and also takes part in the current review to identify scientific gaps identified through the Millennium Ecosystem Assessments.

Attempts have been made to also engage with the Sector of Social & Human Sciences, but this has been less successful. ISSC has its Secretariat located at UNESCO and received substantial funding from UNESCO, but this does not seem to have resulted in much collaborative action to strengthen social sciences in an international context. At the most recent UNESCO General Conferences, ICSU has probably been a stronger spokesperson for social sciences than ISSC.

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Cover design by: www.ardephwerk.fr

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