

International Group of  
Funding Agencies for  
Global Change Research

**IGFA**

Meeting Report No. 12

Hotel Inter-Continental Zürich  
Zürich, Switzerland  
October 22 - 26, 2000

**The International Group of Funding Agencies for Global Change Research (IGFA)** is an informal group of representatives of agencies and ministries of 21 countries and the EU, responsible for the funding of global change research. The purpose of the Group is to facilitate international global change research in the natural, social and economic sciences by bringing the perspective of these national funding agencies to strategic planning and implementation of such research.

**IGFA's goals are:**

- (i) internal communication about funding issues;
  - (ii) communication with the international organisations dealing with global research issues;
  - (iii) addressing specific issues related to global change research and its funding.
- Once a year IGFA has a plenary meeting.

Additional copies of this report may be found in PDF format on the web at [www.igfagcr.org](http://www.igfagcr.org) or obtained upon request from:

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## **EXECUTIVE SUMMARY**

In the 2000 Plenary Meeting of IGFA representatives from 17 IGFA countries, the international global change programmes WCRP, IGBP, IHDP and DIVERSITAS, and ICSU, APN, ENRICH, IAI and START exchanged information on the funding of global change research (GCR) and discussed the state of and developments in the international global change research programmes. The most important conclusions, recommendations and 'action items' can be summarised as follows:<sup>1</sup>

### **National Updates – Funding Trends**

The information provided in the national updates indicates that the total funding for GCR in 1999 was at least as high as the level of USD 2114 M reported in the 1995 Second Resource Assessment.

Most countries reported an increase in the funding levels, initiation and deployment of new national programmes and in some cases even establishment of new research centres. Apart from a few countries where funding for GCR is still under pressure, there is reason to believe that GCR has still high priority.

### **Regional Networks**

The Regional Networks are important instruments for carrying out world-wide GCR. Grown out of different motives and set up for different purposes the Regional Networks have rather different modes of operation and budgetary situations.

Inclusion of young scientists and further capacity building are high priority issues for the networks. This is of great relevance with regard to minimising brain drain from developing to industrialised countries and from the public sector to the private sector.

IGFA encouraged the Networks to continue their process towards more intensive co-operation and to find and implement better means for synthesising their efforts, but also acknowledged their different histories and cultures.

IGFA members and the International Programmes advised the Regional Networks to build up closer co-operation with the International Programmes.

### **International GCR Programmes**

WCRP, IGBP, and IHDP reported good scientific progress. There is a notable trend towards more integrated research / system science with increasing demand for inter- and multidisciplinary efforts. The three programmes are developing new joint projects linking 'earth system science' and 'global sustainability science'. The development of new projects will require a wider consortium of donors than only IGFA agencies, and new partnerships should be sought.

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<sup>1</sup> Action items and concrete recommendations are highlighted with the symbol '=>'.

The programmes reported a general lack of long-term stability in the funds currently being provided for the centralised infrastructure costs (glue money). It was noted that seven International Project Offices (IPOs) were reaching the end of their normal funding periods. In particular for IHDP, there seems to be a discrepancy between the increasing interest in human dimensions research and the amount of glue money available for the programme.

DIVERSITAS reported that the effort to raise funds among IGFA agencies for the co-ordinating office had so far resulted in promises of USD 215 k for each of the years 2000 and 2001, and that selection of a new Executive Director was in progress. It was, however, noted that if additional core funding is not obtained, re-launching of the programme might be jeopardised.

It was agreed that IGFA should invite member agencies that do not yet contribute to DIVERSITAS to do so through a letter that includes background from DIVERSITAS to bring IGFA members up-to-date on progress.

### **Statement of the mode of operation regarding support for integration and co-ordination activities**

The plenary agreed on a statement on the mode of operation regarding support for integration and co-ordination of international co-operation in global change research. The document is written as a statement between funding agencies collaborating in IGFA, ICSU and the international global change research programmes.

It was agreed that IGFA should send the statement to all member agencies, ICSU, and the programmes, requesting their signature by the appropriate/authorised person in each country before 1 January 2001. Should any of these not be able to sign by that date, they should so inform IGFA.

### **Future Role of IGFA**

To prepare the stage for discussions about the future role of IGFA Prof. Hans Joachim Schellnhuber (PIK-Potsdam, Germany) and Prof. William C. Clark (Harvard University, USA) were invited to give keynote lectures on 'Future directions of Global Change Research'.

The lecturers explained that we are now at the threshold of a 'Second Copernican Revolution' towards a science of sustainability. Scientific research in the field of global change is driven by the basic question of how to provide food, water, and energy to human society in the future. There is an increasing demand to focus on regional hotspots of global change, to get away from problem-identification to solution-specification, and for re-engagement with the social agenda for sustainable development in order to meet the needs of a growing population, to reduce hunger and poverty and to sustain earth's life support systems. Furthermore, the understanding of dynamic interactions between nature and society is becoming increasingly important.

This new approach to global change science will inevitably have tremendous implications for both the scientific community and funding agencies. The lecturers mentioned that a

scientific community able to deal with the new challenges must be built up. The capacity for sustained, self-initiated research in the developing world has to be radically increased. Furthermore, an integrated approach co-ordinating global, national and regional institutions must be promoted right from the beginning on in research planning, implementation, monitoring, and assessment.

One of the main questions of relevance to IGFA in this regard is how this transition towards a science of sustainability can be funded. According to the lecturers the reforms needed in research infrastructure include the creation of collaborative research partnerships (governments, NGOs, private enterprises). Furthermore, we have to come away from the bias for disciplinary over interdisciplinary research in granting funds.

On the basis of the input from the keynote lectures, the outlook given by the programmes and the mode of operation regarding support for integration and co-ordination activities agreed upon during the meeting, there was a discussion that resulted in identification of several challenges and items for potential future action by IGFA.

To follow through on this discussion it was decided that:

The Steering Committee should evaluate and prioritise the identified challenges and items for potential future action, with assistance from outside experts when appropriate; prepare an action plan with specific tasks for both IGFA and its members; and report on its progress to IGFA at the next plenary meeting.

### **New Chair and Secretariat**

Hansvolker Ziegler, Germany, was elected new Chair of IGFA. Carola Röser will act as Secretary of IGFA and Chair of the Staff Group.

### **Next meeting**

The 2001 plenary meeting of IGFA will be hosted by Sweden in Stockholm.

## **1. OPENING SESSION**

On behalf of the Swiss National Science Foundation (SNSF) Katja Remane welcomed the participants from 16 member countries and the EC to Zürich. Then the Chair of IGFA, Kirsten Broch Mathisen, welcomed everyone to actively take part in this 12<sup>th</sup> plenary meeting of IGFA. A special welcome was given to the representatives participating in an IGFA meeting for the first time.

The agenda was adopted.

## **2. NATIONAL UPDATES**

Most member countries had delivered written communications on highlights with regard to funding of global change research (GCR). Following the decision of the plenary meeting in Beijing in 1999 that a 'light' resource assessment should be held, the members were specifically asked to report on i) funding levels in 1999 and ii) national mechanisms for supporting integration and co-ordination of international co-operation in GCR ('glue money mechanisms'). The individual country reports are available in a separate volume.

In addition to the written reports each member country gave a brief oral presentation. Most countries reported increase (in some cases considerable) in the funding levels, initiation and deployment of new national programmes and in some cases even establishment of new research centres. Only few countries reported that their funding levels were under pressure. Countries represented for the first time reported on the position of R&D in general in their countries.

Discussions developed on the integration of natural and socio-economic science and on the role of combining thematic programmes with person-oriented granting instruments. Further, recruitment of young scientists, brain drain from developing countries and from the public sector to the private sector, and difficulties in securing long-term funding were identified as common problems. These issues were brought forward to relevant discussions later in the meeting.

### **Resource Assessment Light**

Based on the information given in the written communications a general analysis of the funding levels for GCR and the glue money situation was presented. Detailed direct comparison with the 1995 Second Resource Assessment was not possible due to the different approaches used in the two analyses. The presented information did, however, indicate that there has been a positive trend in the funding levels for GCR since 1995. In other words, it is reasonable to believe that the total funding for GCR in 1999 was at least as high as the level of USD 2114 M reported in the 1995 Second Resource Assessment.

A summary of the level of and mechanisms for support of international integration and co-ordination activities by the programmes ('glue money') was difficult to give as the interpretation of the glue money concept varied considerably from country to country.

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### **3. REGIONAL NETWORKS**

Julia M. Kundermann gave a brief presentation of the outcomes of a meeting between the four so-called Regional Networks in Brussels on 8 September 2000. In this meeting, which had been convened after an informal discussion between the networks in Beijing during the last IGFA plenary, the four networks discussed means of optimising co-ordination and co-operation between them. The minutes of the meeting are included in Appendix A. The networks then gave short presentations on their modes of operation, budgetary options and regional and topic coverage. The four networks have been set up for different purposes, have different histories and cultures, and, as a consequence, work in different ways.

#### **Discussion and Conclusions**

The discussion revealed that there is a need for better integration of national programmes and networks and that there is some confusion on who is doing what. A study of all regional networks could therefore be an interesting undertaking. Concerning a possible mechanism for better integration it was stated that the research performed in the different regions may partly follow regional patterns of asking the crucial research questions. Further, it was noted that growing regional scientific capabilities and self-confidence add value to the regionalness of global change research and lead to a converging level of performance in science and research between industrialised and developing countries. The Regional Networks have played an important role for this to happen.

Yet, it was felt that inclusion of young scientists and further capacity building were of very high importance. This is also of great relevance with regard to minimising the brain drain from developing to industrialised countries and from the public sector to the private sector. Capacity building and in particular building centres of excellence could help to reverse this trend.

The International Programmes consider that they have a role in integration and connectivity of the activities of the Regional Networks. Other IGFA members also pointed out that the inclusion of young scientists in the research agendas should be a concern of the International Programmes. This element of adjusting research agendas to the needs of the regions should be translated into IPCC.

Results of a study by William Clark showing that even small science can have big impact in the Southern countries, as mentioned in his keynote (See session 'Future Role of IGFA'), underlines other statements about the Regional Networks being an important instrument for carrying out world-wide global change research.

IGFA encouraged the Networks to continue the process towards more intensive co-operation and to find and implement better means for synthesising their efforts, as mentioned in the minutes of the meeting of the Regional Networks, but also acknowledged their different histories and cultures.

IGFA members and the International Programmes further advised the Regional Networks to build up closer co-operation with the International Programmes.

#### **4. REPORTS FROM THE PROGRAMMES AND WORKING GROUPS**

The two IGFA working groups and the four associated international global change programmes presented recent news and developments.<sup>2</sup>

##### **Working Group on Observations and Data**

Tom Spence, Chair of the Working Group, updated IGFA as follows:

- The initial operating system of the Global Climate Observing System (GCOS) is being implemented and regional networks have been initiated.
- The Global Ocean Observing System (GOOS) and the Global Terrestrial Observation System (GTOS) are being implemented and are building on existing networks. Liaison between the two is taking place with respect to the coastal zone.
- The Integrated Global Observing Strategy (IGOS) is a strategic planning process rather than an observing system in which IGFA is a partner along with space agencies and others. It currently has two themes, oceans and the carbon cycle, and three possible further themes including the global water cycle. The plans also include identifying and engaging users, and capacity building.

Tom Spence addressed the question of the role of the working group and its interaction with others. A working group meeting was held in the margins of the IGFA plenary to discuss further. Members agreed to identify national contact points if they haven't already done so, and that the working group should refocus its effort on:

- continuing to represent IGFA at relevant meetings;
- participating in IGOS-partnership activities;
- keeping IGFA members informed of issues as they arise;
- assisting IGFA members when requested.

In the discussion IGFA agencies were encouraged to involve in regional scale activities.

##### **Working Group on Human Dimensions**

Uno Svedin, Chair of the Working Group, described the group as mainly concerned with:

- the funding situation of IHDP;

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<sup>2</sup> The funding status of the programmes is reported on in the session on 'Support for International Integration and Co-ordination in GCR'.

- keeping IGFA abreast of issues regarding the interface between human dimensions research and natural science research.

Over the last year the group has concentrated its efforts on increasing financial support for the IHDP Secretariat and IPOs from IGFA members, but without much success. Uno Svedin suggested four possible explanations for this:

- Financial saturation in support for human dimensions research.
- A delay as interest in IHDP catches up with the increasing interest in related research.
- International Project Offices (IPOs) not being an appealing mechanism for integration and co-ordination of such research.
- Integration of IHDP with WCRP and IGBP increasing rather than decreasing the demand for financial support for the programmes.

Uno Svedin invited comment on the above and suggested that interest from policy makers, developing countries, and non-governmental organisations in human dimensions research could be utilised to partially solve the funding problem.

Discussion left the questions unanswered.

### **International Human Dimensions Programme (IHDP)**

Jill Jäger, IHDP Executive Director, presented the following updates and highlights:

- The Steering Committee has a new Chair, Vice Chair and Treasurer.
- The science plan for the *Industrial Transformations (IT)* programme was distributed in January. Various other publications have also been produced lately.
- The Steering Committee has agreed on three flagship programmes: post-Kyoto carbon management; political economy of tropical and Boreal forests; and institutional arrangements in fisheries.
- A task force on 'vulnerability' has been set up and will cut across all IHDP programmes.
- A very successful workshop on the coastal zone was held in September 2000.

### **World Climate Research Programme (WCRP)**

David Carson, WCRP Director, focused on the following highlights:

- *Global Energy and Water Cycle Experiment (GEWEX)*

High priority in Phase I had been given to assembling global datasets of crucial climate factors (e.g. radiation, clouds and rainfall) and on conducting several continental scale experiments in various parts of the globe. The latter will now form the basis of a proposed Co-ordinated Enhanced Observing Period in Phase II of GEWEX, in which the four key questions to be addressed are:

- Are the energy and water cycles changing?

- Can we predict these changes seasonally and inter-annually?
- How do the processes involved cause, and feed back to, natural variability?
- What are the impacts on water resources?
- *Arctic Climate System Study (ACSYS) / Climate and Cryosphere (CliC)*

ACSYS is already providing information on sea ice in the Nordic seas and helping to improve climate models through validation and improved representation of their cryospheric processes. The CliC Project, now being implemented, will extend such WCRP studies to the full global cryosphere aimed at:

  - understanding processes in the cryosphere;
  - improving models and predictions;
  - assessing impacts of climate variability and change on the cryosphere;
  - improving observations.

## **DIVERSITAS**

José Sarukhán, Chair of DIVERSITAS SSC, presented an overview of the history, goals and objectives of DIVERSITAS and an update of the progress of the programme. Recent highlights include:

- The Core Element *Ecosystem Functions* has joined with GCTE (IGBP). A project proposal for the new phase of DIVERSITAS is being prepared.
- The Core Element *Systematics, inventorying and taxonomy* has arranged several workshops, resulting in action plans, the Darwin Declaration to the *Global Taxonomy Initiative (GTI)* and a document recommending guidelines to the Convention on Biological Diversity/SBSTTA (in press). In 2001 a joint workshop will be held with the GTI on Global and Regional Taxonomic Networks.
- In the framework of the International Biodiversity Observation Year (IBOY, 2001) over 40 projects will be executed at national and international level, involving over 50 countries. IBOY will be accompanied by a strong PR policy: films, TV, articles and national celebrations.
- The *Global Invasive Species Programme (GISP)* has so far organised seven workshops and a SSC meeting. More workshops are in preparation.
- Concerning overall co-ordination of the programme, the selection of a new Executive Director is in progress. It is expected that the new ED will start next January.
- With respect to the funding status of the co-ordinating office the amounts requested from IGFA (USD 346 k in 2000 and USD 395 k in 2001) has so far resulted in promises of USD 215 k a year for 2000 and 2001. (More information under 'Support for International Integration and Co-ordination in GCR')

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Summarising the status of DIVERSITAS, José Sarukhán stated that the programme is 'ready to take off, the pilot will arrive soon, but that fuel is still short'.

### **International Geosphere-Biosphere Programme (IGBP)**

Will Steffen, Executive Director of IGBP, presented an overview of the status and implementation strategy of IGBP. IGBP has a very close collaboration with WCRP and IHDP and is developing strong links to DIVERSITAS as well. The generic goals of the implementation strategy of IGBP are to:

- add value by integrating projects at an international level;
- identify gaps;
- prioritise research;
- develop scientific networks (core business);
- standardise methodologies;
- foster model inter-comparison;
- foster resource allocations.

IGBP seeks to develop new research tools and modelling tools.

Highlights and recent developments include:

- A major synthesis is underway at the core project and programme level.
- IGBP contributes to timely policy and resource management advice; e.g. advice to IPCC on the carbon cycle.
- Several Programme Elements are now in their final synthesis stages; their work will provide a sound scientific base for the new IGBP structure and much of their ongoing research will be carried over into that structure. A new IGBP-wide synthesis will be undertaken on *the earth in the anthropocene*; five workshops have been held in Stockholm to contribute to this synthesis.
- Plans are being developed to restructure IGBP ('phase II') into a programme on *Earth system science and global sustainability*. IGBP is consulting with WCRP, IHDP and DIVERSITAS throughout this process. Future meetings will identify new programme elements and new structures as current programme elements come to an end.
- The communication policy is being improved. New communication strategies will be deployed with special attention given to the IGBP science series, a special session at the AGU-fall meeting, the AAAS meeting in February 2001 and the Open Science Meeting in Amsterdam in July 2001 (see [www.sciconf.igbp.kva.se](http://www.sciconf.igbp.kva.se)).

In the discussion appreciation was shown for the ambitious and innovative future plans of IGBP.

### **Global Environmental Change Joint Projects**

Will Steffen informed IGFA of the intentions of IGBP, WCRP and IHDP to develop new joint projects linking 'earth system science' and 'global sustainability science'. The following three key topics have been selected for exploration and development as the first such joint projects:

- Global Environmental Change and Food Systems;
- Carbon Cycle;
- Water.

Two others (Human Health; Ecosystem Goods and Services) have also been identified by IGBP as potential future candidates for IGBP/IHDP/WCRP Joint Projects.

The development of new projects will require a wider consortium of donors than only IGFA, and new strategic partnerships should be sought.

In the discussion IGFA members expressed that these plans were very interesting new developments. Further, it was brought forward that DIVERSITAS might also contribute to these issues in due course.

## **5. SUPPORT FOR INTERNATIONAL INTEGRATION AND CO-ORDINATION IN GCR**

### **Status**

Hans De Boois presented a summary of the funds provided for the centralised infrastructure costs of the major international global change research programmes. His summary was based on information provided by the programmes themselves. He reported that seven International Project Offices (IPOs) were reaching the end of their normal funding periods. The representatives of the programmes described their respective funding situations as follows:

### ***DIVERSITAS***

With respect to the funding status of the co-ordinating office the amounts requested from IGFA (USD 346 k in 2000 and USD 395 k in 2001) have so far resulted in promises of USD 215 k a year for 2000 and 2001. José Sarukhán (DIVERSITAS) noted that, if additional core funding for DIVERSITAS is not obtained, then meetings of the Scientific Steering Committee (SSC) and Executive Committee (EC) might have to be curtailed; that new programmes could not be initiated; and that funding for the Executive Director's position might be jeopardised. DIVERSITAS is now planning to focus its activities on recruiting and

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completing selection of an Executive Director; getting the office set up and operating; convening one meeting each of the SSC, EC, and convenors; some IBOY support; staff travel; the three present projects; maintaining the web page and issuing a newsletter; and convening two scientific workshops.

IGFA stressed the importance of getting DIVERSITAS off the ground. It was agreed that the filling of the Executive Director post should help substantially in this respect.

It was agreed that IGFA should invite member agencies that haven't yet contributed to DIVERSITAS to do so through a letter that includes background from DIVERSITAS to bring IGFA members up-to-date on progress, especially with respect to the selection of the new Executive Director and DIVERSITAS' plans for activities over the next year. The letter should also include a draft budget that indicates what DIVERSITAS would do with the money already in hand and with additional funds, should they be received and a list of national committees and their chairs.

### **WCRP**

David Carson (WCRP) reminded members that the funding for the WCRP central Secretariat comes mostly through the WMO, with significant contributions also from ICSU and the IOC. Right now the primary problem facing the central Secretariat is not money, but the need to fill two key senior scientific officer posts. The funding of the WCRP IPOs is generally achieved by other means. In particular, the GEWEX IPO is supported by the U.S./NASA and no notification has been given of impending financial problems. He noted that, while GEWEX is one of the programmes for which office funding appears soon to expire, at this stage the projected expiry date simply reflects the timing of the U.S. funding award which is expected to be received on a timely basis, and hopefully will continue. The CLIVAR and WOCE IPOs are co-located in the UK, hosted and financed mainly by NERC, but with critical additional contributions from other funding agencies outside of the UK. Again, there is no indication of problems in the location or the continuing funding for the CLIVAR and WOCE IPOs. A small ACSYS/CliC IPO has been established at the Norwegian Polar Institute in Tromsø, funded mainly by Norway but with a welcome contribution also from Japan. The SPARC IPO is led by Marie Lise Chanin and is supported wholly by three French agencies. Additional funds are always needed and welcomed for the activities of the WCRP IPOs. A most direct, constructive, cost-effective and controlled way of making a positive contribution would be to support the secondment of active scientists to any of the WCRP IPOs. This would be very helpful, welcome and productive, especially from a scientific perspective

### **IGBP**

Will Steffen (IGBP) reported that support for the IGBP comes from fifty countries, including virtually every country represented in IGFA. This funding has been solid and very stable. The IPOs with budgets of around USD 500K are doing a great job, as is LOICZ. GCTE's distributed staffing system also is working well. GCTE is planning to shift around its focus group leadership involving Wallingford and Denmark.

**START**

Roland Fuchs (START) noted that the START Secretariat in Washington DC derives its support from one country, the U.S., which has provided adequate stable funding, but has also encouraged START to broaden its support from other countries as well. However, START needs support for international costs associated with operations of some of its regional offices. Fuchs suggested that capacity building be a major theme for the IGFA meeting next year.

**IHDP**

Jill Jäger (IHDP) reported that most of the funding for IHDP central operations comes from two countries and that another four or five provide additional support. They are making a major effort to encourage wider participation in the programme. Belgium has recently announced support for LUCC (Joint effort IGBP/IHDP). The allocations for some centralised functions are not adequate. Obviously, there is a lack of long-term stability. Some projects simply lack central offices and thus cannot carry out the work that they 'have been asked to do'. Funding for capacity building is in particularly short supply. However, in some cases, IPOs have sufficient funding to operate virtually independently, without regard to oversight and co-ordination at the programme level.

In the discussion it was suggested that early identification of potential severe problems related to infrastructure funding could help IGFA in resolving glue money issues and providing funds when appropriate. For this reason it might be useful to maintain and update the glue money table presented by Hans de Boois as an indicative summary. Further, members were reminded that, when a lead country decides it can no longer provide the desired level of funding for a particular IPO, then the IGFA policy developed in Oslo in 1996 comes into force.

Jill Jäger reported that the programmes had established a Resource Development Committee, through which they will go together and 'sell' the GEC programmes as a whole. They intend to approach foundations and corporates looking for people interested in dialogue about partnership on earth system science.

**Statement on the mode of operation**

Availability of money for international integration and co-ordination activities was extensively discussed also at the last IGFA plenary in Beijing 1999. It was then agreed that a set of agreed commitments should be embodied in a document that should be endorsed both by IGFA member agencies and the international programmes. Following this decision, the Steering Committee and Staff Group had prepared a draft Memorandum of Understanding (MoU) on the issue. The draft MoU had been distributed to the members prior to the meeting, and the participants had been encouraged to discuss the document in their home organisations before coming to Zürich.

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The plenary discussed the draft MoU in two rounds. First, the Chair opened for initial comments to the proposed document. Based on the comments, which were largely about the need and status of the document, an ad hoc group met and reviewed the text. The group recommended that the title of the document be changed to 'Statement on the mode of operation...' and to delete the word 'national' wherever it appeared in the text.

The ad hoc group also recommended the following specific changes:

- The four programmes should be included and referenced by name.
- The word 'will' should be changed to the word 'shall' generally and especially in articles 2 and 3.
- In article 4 the reference to the title of the document should be changed to make it consistent with the revised title recommended above.
- In the same article, references should be added to all of the programmes.
- Articles 5 and 6 should be combined, but with much of the 'legal' language deleted.

A new version of the document was distributed before the final round of discussion. In this round it was noted that there was a reference to IGFA in the text, but not in the title. It was recognised that some of the entities to be involved in this document are not legal entities.

The document was reviewed, paragraph by paragraph:

- It was proposed and agreed that the term IGFA be deleted from the opening sentence of paragraph 5 of the preamble.
- Article 1 was approved.
- In Article 2 it was suggested that the phrase 'their representatives and' be inserted in paragraph 2 after the word 'encourage'.
- In Article 3 it was agreed to add ICSU and to retain the word 'scientists'.
- It was proposed and agreed to replace the phrase 'in this area' with the phrase 'regarding the activities defined in Article 1'.
- Article 4 was approved.
- Article 5 was approved after the word 'written' was deleted from the third paragraph.

After the text had been approved, a new copy of the statement was distributed. This version is appended to this report (Appendix D).

It was agreed that IGFA should send the statement to all member agencies, ICSU, and the Programmes, requesting their signature by the appropriate/authorised person in each country before 1 January 2001. Should any of these not be able to sign by that date, they should so inform IGFA.

## **6. KEYNOTES: FUTURE DIRECTIONS OF GLOBAL CHANGE RESEARCH**

This session was designed to prepare the stage for the discussion about the 'Future Role of IGFA' and included keynote lectures from Hans Joachim Schellnhuber (PIK-Potsdam, Germany) and William C. Clark (Harvard University, USA). Because Prof. Clark could not attend the meeting personally, he gave his talk via videoconferencing.

### **Future Science Direction of GCR (Hans Joachim Schellnhuber)**

Prof. Schellnhuber claimed that we are now at the threshold of a 'Second Copernican Revolution' towards a science of sustainability. Scientific research in the field of Global Change is driven by the basic question of how to provide food, water, and energy to human society in the future.

Major goals of sustainability science are intra- and intergenerational equity, preservation of humankind's natural and cultural heritage, reduction of regional and local vulnerability, creation of institutions for global governance, organisation of participatory procedures of decision making, and maintenance or even enhancement of the evolutionary potential of life on Earth.

One of the main questions relevant for IGFA is a problem identified at the 'Sustainability Science Workshop' at Friibergh, Sweden, 10-14 October, 2000: How can the transition towards a science of sustainability be funded?

Prof. Schellnhuber made reference to the Programme 'Rio + 100', which shows the scientific challenges we are facing:

- global vulnerability assessments;
- analysis and evaluation of regulative/evolutionary power of biosphere;
- advancement of geophysiology and astrobiology;
- construction of regional simulators;
- development of earth system model hierarchy;
- establishment of global monitoring systems;
- safe operational manual for the planet;
- advancement of sub-optimal environmental control theory;
- establishment of quantitative adaptation science;
- establishment of political economy of global governance;
- scientific agenda setting for the green technological revolution;
- road map for transition to sustainable energy system;
- new concepts for planetary partnership;

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- object-oriented organisation of transdisciplinary co-operation;
  - establishment of co-production of sustainability wisdom.

Prof. Schellnhuber then raised the question of how to fund this new enterprise. It is estimated that ten billion dollars are needed until 2010. He saw two possibilities:

- a multinational agreement;
- a sustainability science fund as a private enterprise.

Further, the bias in favour of disciplinary over interdisciplinary research projects in granting funds has to be overcome.

### **The Future of GCR - Scientific and Institutional Challenges (William C. Clark)**

Prof. Clark focused on three major questions:

- *How are the demands on GCR changing?*

There is an increasing demand to focus on regional hotspots of global change, to come away from problem-identification to solution-specification, and for re-engagement with the social agenda for sustainable development in order to meet the needs of a growing population, to reduce hunger and poverty and to sustain earth's life support systems. Furthermore, the understanding of dynamic interactions between nature and society is becoming increasingly important.

- *Why will it be hard to meet these demands?*

The functional complexity of the earth system, multiple causes and scales of global change both in natural and in social processes, enormous uncertainties in results and predictions, and a requirement for co-production of research - the negotiation with society of the questions science pursues - make it hard to cope with the above mentioned problems.

- *What are the implications for institutional support of global change science?*

First of all, the capacity for sustained, self-initiated research in the developing world has to be radically increased. Secondly, an integrated approach co-ordinating global, national and regional institutions has always to be promoted right from the beginning in research planning, implementation, monitoring, and assessment. Furthermore, we have to get away from the bias for disciplinary over interdisciplinary research. The reforms needed in research infrastructure include the creation of collaborative research partnerships (governments, NGOs, private enterprises).

### **Discussion and conclusions**

The lectures described a new approach to global change science. It was recognised that this approach inevitably will have tremendous implications for both the scientific community

and funding agencies. There is a need to build up a scientific community able to deal with the new challenges. The implications for IGFA were summarised as follows:

- IGFA has to be alert of the means for taking first steps towards a framework that facilitates the establishment of this new direction in science.
- IGFA plays a role in transforming the basis for future activities by providing funds and operating structures for the described enterprise.
- IGFA has to stay realistic and continue to do the possible but at the same time have the courage to be advocate for reforms (top-down help is needed) by for example promising extra funds for selected flagship projects as a common move of the Agencies or by funding a world-wide young scholarship-programme for outlining the new direction.

These conclusions along with the other input about new directions and paradigm shifts in GCR were brought forward to the session on the 'Future role of IGFA'.

## **7. FUTURE ROLE OF IGFA**

The aim of this session was to discuss the most relevant challenges and options for IGFA to meet the changing needs in funding of international Global Change Research (GCR). IGFA's main contribution within its first ten years has been to establish a broad and fairly stable funding basis for GCR and to help assure that the International Programmes are well acknowledged as the fundamental scientific enterprise for GCR. The outlook given by the programmes and in the keynote session with the contributions from John Schellnhuber and William Clark and the following discussion provided stimulating input about new directions and paradigm shifts in GCR.

### **Discussion and conclusions**

On the basis of the said input and the agreed mode of operation with regard to support for integration and co-ordination activities, there was a short discussion, which resulted in consensus that IGFA should consider the following as a list of challenges and items for potential future action:

- Review and improve mechanisms and strategies for capacity building in developing countries.
- Improve interaction with other relevant players in the field, e.g. aid agencies, World Bank, relevant UN organisations, conventions.
- Strengthen the north-south dialogue on the research agenda of GCR.
- Extend IGFA's membership, esp. from the Southern hemisphere.
- Help to assure stable co-ordinating structures for the four programmes, especially DIVERSITAS.

- 
- Support the new direction of the programmes towards integration and the emerging agenda of a science of sustainability with appropriate instruments.
  - Assess the relationship between the scientific programmes and technological developments (e.g. technological fixers).
  - Increase emphasis on regional, integrated, and problem-driven research collaborations and on efforts to bring these together on the global scale.
  - Encourage the participation of young scientists in GCR by establishing and providing adequate mechanisms for funding an international network of young scientists.
  - Continuously improve IGFA's internal information exchange, and its relationship with the international programmes and global assessments.
  - Re-assess and consider ways to improve IGFA's internal structure and procedures, e.g., designating rapporteurs and virtual working groups in appropriate areas.

The Steering Committee was charged with addressing these issues, in particular, to evaluate and prioritise the challenges, with assistance from outside experts when appropriate; to prepare an action plan for IGFA, including specific tasks for both IGFA and its members; and to report on its progress to IGFA at the next plenary meeting.

## **8. CLOSING SESSION**

### **Election**

The search committee nominated Hansvolker Ziegler, Germany, as the new Chair of IGFA. The nomination was fully endorsed by the present IGFA members. Carola Röser will act as Secretary of IGFA and Chair of the Staff Group.

Sincere thanks were rendered to Kirsten Broch Mathisen, Terje Mørland and Sissel Berger for their efforts as Chair and Secretariat of IGFA in the past two years.

### **Future meetings**

The 2001 plenary meeting of IGFA will be hosted by Sweden, provisionally in the last week of October. The exact dates are to be announced later. The representatives of NERC, UK, indicated willingness to host a future meeting, either in 2002 or 2003.

### **Closing**

The Chair concluded the meeting by giving a brief summary of major conclusions and expressing her thanks to everyone who had participated in or played a role in organising the meeting.

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## MEETING OF REGIONAL NETWORKS, 8 SEPTEMBER 2000, BRUSSELS -MINUTES

Participants:

APN        Kazuko Watanabe, Gerhard Bruelmann  
IAI        Armando Rabuffetti  
START     Roland Fuchs  
ENRICH    Christian Patermann, Anver Ghazi, Julia Kundermann

On 8 September 2000 for the first time all of the four so-called Regional Networks – APN, IAI, START, and ENRICH - met in order to present their organisation and funding situation to each other in detail and discuss possible means of future co-operation. This meeting had been convened after an informal discussion of representatives of the Regional Networks in Beijing during the last IGFA Plenary meeting resulting in feeling the need for a more intensive communication. As interest in a better co-operation of the Regional Networks was also shown by IGFA, its chair Kirsten Broch Mathisen sent out a request for such a meeting to all regional networks in July this year. Christian Patermann, Director of the 'Energy, environment and sustainable development' Programme at EC - DG RTD had therefore invited the representatives of APN, IAI and START as well as IGFA chair Kirsten Broch Mathisen on 7/8 September to Brussels.

After welcome addresses by Christian Patermann and Kirsten Broch Mathisen every Regional Network gave a presentation on its research programme highlighting the regions and global change topics covered, the modes of operation and the budgetary framework for funding. Each presentation was followed by a discussion in order to get a more in-depth view into the differences and similarities.

Having discussed all of the four Regional Networks the group then tried to identify means of possible future co-operation and co-ordination. The following options were mentioned:

- Inform mutually better on each other's programmes and activities and find better means to do so on a more regular basis
- Examine parallel calls for proposals
- Announcing the calls on all web sites
- Developing a common web site or install links mutually
- Provide information in order to later develop cluster of projects among different funding schemes
- Identify research areas or regions for integrated regional studies of common interest and organise joint workshops (e.g. El Niño, impacts etc.)
- Share information on how to approach potential funding sources (private, industry, public)

- Issue common press releases on research results of cluster projects or joint workshops
- Advice each other on experts for evaluations or even exchange experts or explore expert names in between the different programmes
- The participants of the meeting felt that there was a great value in having discussed all the Regional Networks in great detail and decided to meet along all coming IGFA plenary meetings in which normally representatives of all networks participate.

Julia M. Kundermann

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## REPORT OF THE WORKING GROUP ON OBSERVATIONS AND DATA

### Purpose of the Working Group

At IGFA Plenary 11 in Beijing, the members approved terms of reference for the Working Group on Observations and Data (See Attachment 1). The Working Group was invited to assist IGFA by providing information related to issues of observations and data of importance to the IGFA members and IGFA supported programs.

Issues to be considered by the Working Group include:

- Data availability and accessibility
- Development and implementation of the Integrated Global Observing Strategy (IGOS)
- Other observing systems of relevance to IGFA Members.

### Update on the Working Group

In the months after the Beijing meeting a number of potential members were identified to the Chair of the Working Group. In June, the Chair formally invited these individuals to participate in the activities of the Working Group. Included as attachments to the letter of invitation were: 1) Terms of Reference from IGFA 11; 2) a list of identified candidates for Working Group membership; 3) a draft of the report to the IGFA Steering Group meeting of June 7, 2000; 4) a listing of Internet web sites containing pertinent information relating to global research on observational programs; and 5) an outline of the Working Group report to IGFA 12.

The letter invited the candidates to indicate their willingness to participate in the Working Group. It further invited their assistance to develop a strategy to meet the Terms of Reference and to outline a work plan for the future. Noting that there would be infrequent opportunities to meet in person, the Chair suggested electronic communication to engage the members of the Working Group.

It will be important for the Working Group, as one of its first substantive tasks, to collect and consolidate information regarding the goals, objectives, plans, and status of the various research and observing programs. For this task, it will be essential to have the active involvement of the IGFA-sponsored research programs and the observing systems.

After IGFA 12, the Chair intends to communicate directly with the Working Group members and solicit their participation in developing a work plan for the upcoming year.

The work plan will address such key issues as:

- Establishing liaison to agencies and organisations engaged in observations relevant to global change research programs;
- Representing IGFA at meetings of the IGOS Partnership, the IGOS Partners Liaison Group, and key meetings addressing the selected themes;

- Providing assistance to IGFA Members in responding to opportunities related to global observing systems.

### **Update on Observing Systems**

The Chair has continued to compile information related to the various observing programs. Of particular relevance are the observing activities of the research programs (e.g., WCRP, IGBP, IHDP that will report to the plenary), the global observing programs (GCOS, GOOS, and GTOS), and the Integrated Global Observing Strategy Partnership. Selected components of more operational programs (WWW, GAW, IGOSS, etc.) contribute observations to the IGFA-supported programs, but they operate in compliance with their specific missions.

The global observing systems were reviewed by the sponsoring organisations in June [<http://www.unep.ch/earthw/sgg3os5.htm>]. Each of them continues to develop observational elements that will provide fundamental information of value to the research communities as well as to operational interests.

GCOS [<http://www.wmo.ch/web/gcos/gcoshome.html>] has made very good progress in implementing its Initial Operational System in the 3 domains: atmosphere, ocean, and land surface. Several specific networks have been identified, implemented, and are now operational (e.g., GUAN, GSN, GAW, etc.). In addition, GCOS has initiated regional workshops to develop regionally based action plans that will address important deficiencies in observing systems in the affected regions. The program has had important interactions with the United Nations Framework Convention on Climate Change (UN/FCCC) leading to two major decisions at the Fifth Conference of the Parties (4/CP.5 and 5/CP.5). UN/FCCC is adopting GCOS Guidance for reporting on global climate observing systems.

Similarly, GOOS [<http://ioc.unesco.org/goos>] is progressing well in implementing its activities through international collaborative efforts (e.g., TAO, DBCP, GLOSS, etc.) and through regional groupings of IOC Member States and National GOOS Coordinating Committees (e.g., EuroGOOS, NEAR-GOOS). The new WMO/IOC Joint Technical Commission for Oceanography and Marine Meteorology (J-COMM) will provide access to operational agencies for ocean measurements. GOOS has been invited to accept responsibility for the over-arching implementation of the strategy as an end-to-end process for the IGOS Oceans Theme (see below). Finally, an inventory of services and products is being assembled for the user community [<http://ioc.unesco.org/gpsbulletin/>].

GTOS [[www.fao.org/gtos](http://www.fao.org/gtos)] is accelerating the number and variety of its projects and activities [[http://www.fao.org/gtos/PAGES/Bien\\_rep.pdf](http://www.fao.org/gtos/PAGES/Bien_rep.pdf)]. These now include regional activities (e.g., Central and Eastern Europe, Southern Africa) and thematic networks (e.g., GT-Net, GTN-E, GTN-G, etc.). Work continues in the Terrestrial Ecosystem Monitoring Sites. GTOS has played a major role in the development of a global carbon initiative as part of the IGOS and joint GTOS-GOOS planning continues to focus on coastal issues of mutual interest.

The IGOS [<http://www.unep.ch/earthw/igoshome.htm>] provides a major opportunity to obtain global information in support of the IGFA programs. IGFA is one of the IGOS partners and actively participates in the development of the strategy. The most recent meeting of the IGOS Partnership (IGOS-P) [<http://www.unep.ch/earthw/igosptm5.htm>] addressed the themes currently being implemented -- the Ocean Theme and the Carbon Cycle Theme -- as well as those under consideration.

The Ocean Theme Team aims to provide a number of long-term ocean observations that will address challenges for improving both ocean understanding and observing techniques. Space agencies' commitments were collected through the Committee on Earth Observation Satellites (CEOS), and should be complemented with in situ measurements, and modelling and product generation. Partners were asked to seek approval to participate from their governing bodies.

The initial Carbon Cycle Theme took an integrated approach to terrestrial carbon but the IGOS Partners meeting recommended that the theme be expanded to include ocean carbon issues and thus to become a Global Carbon Cycle Theme. IGBP and GTOS are collaborating on the requirements and observational strategy.

Three potential new themes were introduced: 1) Global Water Cycle; 2) Coral Reefs; and 3) Ozone. WCRP and CEOS were encouraged to develop a proposal and establish guidelines for a strategy for the water cycle. UNEP, with other interested parties, was encouraged to investigate development of an IGOS Coral Reef Activity as the initial phase of a broader Coastal Theme. WMO, with other interested parties, was encouraged to investigate development of a broader Atmospheric Chemistry Theme, taking into account the results of the earlier CEOS Ozone and Upper Air Projects.

The IGOS meeting encouraged the development of all these themes but stressed that they should be comprehensive and long-term in nature, should involve all concerned partners, and should result in an end-to-end process. Commitments for collecting and assimilating information and for product generation and use are essential for a theme to be successful.

Tom Spence  
October 2000

## **Appendix B1: Terms of Reference and membership**

### ***Terms of Reference***

In order to support the objectives of IGFA, the Working Group on Observations and Data is established to address the issues of:

- Data availability and accessibility
- Development and implementation of the Integrated Global Observing Strategy
- Observing systems of relevance to IGFA Members

The tasks of the Working Group are to:

- Serve as liaison to agencies and organisations engaged in observations and/or data relevant to global change research programs at both the national and international levels;
- Represent the views of IGFA at meetings of the IGOS Partnership and through the IGOS Partners Liaison Group;
- Provide assistance to IGFA Members in responding to opportunities related to global observing systems.

The Working Group shall be composed of IGFA representatives with experience and competence in national administration and in observations and data. Membership is open to all IGFA Members. The Working Group will conduct its business mainly through electronic communications, informal contacts, and meetings as appropriate.

The Chair shall be appointed by the IGFA Chair with the approval of the IGFA Plenary. The Chair shall be an ex officio member of the IGFA Steering Group. The Chair shall report regularly to the IGFA Plenary, or to the IGFA Steering Group intersessionally as necessary.

***Members of the Working Group (\* Confirmed June 2000)***

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**Appendix B2: List of Acronyms**

CEOS                      Committee on Earth Observation Satellites

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DBCP	Data Buoy Cooperation Panel (WMO & IOC)
EuroGOOS	European Global Ocean Observing System (GOOS)
GAW	Global Atmosphere Watch (WMO)
GCOS	Global Climate Observing System (WMO, IOC, UNEP, ICSU)
GLOSS	Global Sea Level Observing System (IOC)
GOOS	Global Ocean Observing System (IOC, WMO, UNEP, ICSU)
GTOS	Global Terrestrial Observation System (FAO, WMO, UNESCO, UNEP, ICSU)
GSN	Global Surface Network (GCOS, WWW)
GT-Net	Global Terrestrial Observing Network (GTOS)
GTN-E	Global Terrestrial Network – Ecology (GTOS)
GTN-G	Global Terrestrial Network – Glaciers (GTOS, GCOS)
GUAN	Global Upper Air Network (GCOS, WWW)
ICSU	International Council for Science
IGBP	International Geosphere-Biosphere Program (ICSU)
IGOS	Integrated Global Observing Strategy
IGOS-P	IGOS Partnership (IGFA is a partner)
IGOSS	Integrated Global Ocean Services System (IOC & WMO)
IHDP	International Human Dimensions (of Global Change) Program (ICSU, ISSC)
IOC	Intergovernmental Oceanographic Commission of UNESCO
ISSC	International Social Science Council
IUGG	International Union of Geodesy and Geophysics (ICSU)
J-COMM	Joint Technical Commission for Oceanography and Marine Meteorology (WMO & IOC)
NEAR-GOOS	Northeast Asia Global Ocean Observing System (GOOS)
NASA	National Aeronautics and Space Administration (USA)
TAO	Tropical Atmosphere Ocean array
UNFCCC	United Nations Framework Convention on Climate Change
WCRP	World Climate Research Program (WMO, ICSU, IOC)
WMO	World Meteorological Organization
WWW	World Weather Watch (WMO)

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**Appendix C****REPORT OF THE WORKING GROUP ON HUMAN DIMENSIONS****General background**

During several years IGFA has given attention to the Human Dimensions issues as an important part of the global environmental research agenda. Especially the development of the International Human Dimensions Programme (IHDP) - its conceptual development, the organisational choices and the financial prospects - has been of continued IGFA interest.

After the positive IGFA review, now more than three years ago, the focus from IGFA with regard to IHDP has been the concern about the fairly meagre core support for IHDP in terms of number of countries supporting the activities, as well as in terms of the allocated sums. Especially the German support for the HQ in Bonn has been of utmost importance as well as the few but steady core supports from around ten countries with the US support being the dominant part. The strategic question has been to which extent the sheer limited number of supporting countries may erode the long term willingness of those who do support IHDP to provide substantial and continued efforts on a sustained basis. At the moment there seems to be some stability and the direction of international involvement, especially if you do not only look at financial contributions, seems to be growing. The IHDP has also moved into a close co-operation with the other major programmes in global change as WCRP and IGBP, which is an emerging positive factor.

**IGFA Activity Directions**

For IGFA the key interest has been to expand the number of IHDP donors by selective promotional activities through letters from IGFA during spring 2000. Only a limited number of responses has been the result of these efforts.

*To be discussed:*

Why is it that there seems to be some sort of saturation level of number of countries - despite IGFA efforts - that might be interested in core support of IHDP at the same time as there seems to be a continued and even strong growth in general research activities dealing with human dimensions issues?

In parallel with these core funding activities the establishment of IPOs in countries like Canada, the USA and the Netherlands (and on its way in Belgium) have been a significant and structurally important part of the entire picture. In these cases the linkage to the IHDP programme has been distinct. In some other countries substantial Human Dimensions research support has been provided both in terms of new institutional mechanisms as well as in terms of an expanded project financing of research in these domains without being connected directly to IHDP.

*To be discussed:*

Is it maybe so that the avenue via IPOs is a more viable path to secure international funding for human dimensions activities associated to IHDP rather than direct core funding to IHDP? In support for such a position could be the argument that there always exists some national interest to establish a certain country as 'lead country' and that 'special money' is easier to allocate for such activities rather than just to general international 'service' support. The growing interest for 'centres of excellence' may provide a connected and supportive mechanism for such activities also in the human dimensions field. Is this a correct assumption? Could the centres of excellence tendency internationally in science policy be used for human dimensions purposes? What are the obstacles? If it may emerge as a useful tool what would be the connection between international programme planning and priority setting and on the other hand national priority setting and fund allocation? Is there an IGFA role in this domain?

In fact just for the Human Dimensions field it seems that the overall support internationally has been to a very high extent directed to non-IHDP connected activities. Maybe this is, especially in comparison with the natural science oriented global change programmes, due to the very nature of the topics where it not always is self evident how individual bits and pieces may flow into a larger programme structure. It may also have to do with the particular 'style' in which scientific activities are performed in the 'human dimensions' areas, not always giving preference to large consortia of activities. As a point of judgement this already existing balance between a very small part of IHDP connected activities and a much larger number of basically nationally run non-connected activities opens up for a gradual association to the IHDP cores of 'other' types of research efforts. The strategies for such moves must basically be a matter of concern for IHDP. However in many cases the national funding of all the 'other' human dimensions research activities may not seldom be in the hands of IGFA member responsibilities directly or indirectly. Thus there are also in this regard - and not only in terms of core IHDP or IPO funding - IGFA issues at stake.

*To be discussed:*

What are the possibilities also in the human dimensions field to connect more research projects that at the moment are outside the IHDP realm, to this core structure? Is it possible? What are the paths? Is there an IGFA role? Is it at all desirable?

## **Some Important Trends**

### ***i) The trend of science integration***

The last few years there has been a distinct move within the natural science part of the global change community to look for integration. It is driven by internal science reasons in terms of a certain degree of maturity of the parts that now has paved the ground for the new steps of further and deeper connections. There is also the drive for the creativity that

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emerges from the crossover fields. But there is also an external factor arising from a general policy interest in these domains as exemplified in the climate convention domain and its scientific support. The organisational response to this is already here with regard to e.g. IGBP, WCRP and IHDP in terms of a much closer co-operation than earlier. We also have the expression of this move in the forthcoming world conference in Amsterdam in 2001.

*To be discussed:*

What does this mean for science financing in the field. Are we also merging the funding for these earlier dissociated fields? If so, to which extent are the structures of the funding mechanisms nationally available ready to appreciate and respond to this integrative move? What does it in particular mean for the human dimensions field? Does it mean that there will be more funding available as the IHDP is sharing a very much larger cake? Or does it have repercussions on the style through which this particular research may have to be conducted due to the integrative pressures also framing what could be more easily funded in comparison with that which may not be so easily appreciated?

### ***ii) The policy connection***

Connected to the integration issue - but distinctively separate - is the question of the constant and growing policy interest in these types of topics. In a certain way this should mean that an increased policy interest might mean an increased research funding potentiality. This may or may not be true at a very broad science policy level as public money may be drawn to areas of political concern. However, it may not be so in a more particular field.

*To be discussed:*

Is it a correct interpretation that the policy interest has continued to grow the last few years with regard to global change issues - or are we facing a saturation? What does it mean for human dimensions research which through its objects of study is so close to these processes? Has the high political interest promoted more reflections e.g. on the political process, institutions and underlying societal factors? Or is there some sort of de-coupling?

### ***ii) The movement toward stronger interest in countries earlier labeled 'developing countries'***

Many of the issues that are raised in the human dimensions context are close to issues that matter for developing countries. They concern e.g. local arrangements for natural resources management, incentive structures to handle environmental issues in one way and not in the other, or in a broader sense cultural issues. So it is not surprising that there is a widespread and growing developing country interest for these issues. But the way to pose the questions may be different than in the 'north' and also the scientific approach -

including the way how to handle the normative dimension - may differ. What does this mean for human dimensions funding?

*To be discussed:*

The interest raised early in IGFA about connections to development aid agencies may re-emerge here. However there are specificities in the human dimensions areas of concern that may be needed to draw attention above the fact that the objects of study are in developing countries. One such issue is the handling of a research community that may be radically on contradictory course to the established governmental sphere. What does that mean for science funding of this type of activities?

***iv) The further movement in combining public/governmental funding and private funding***

The issue of an increased human dimensions interest within the developing world also connects to the combination of funding resources of different types. This is though a more general tendency than just related to developing countries issues only.

*To be discussed:*

Is the emergence of non-governmental funding mechanisms similar or dissimilar with regard to developing and developed countries contexts? What does this mean for IGFA as these mechanisms often seem quite outside of conventional IGFA membership networks? Or are they really so distant? Could potential networks that are almost available be mobilised by IGFA? Or is it the task of the research programmes themselves to find out the non-IGFA avenues to fresh funding?

**General Reflections**

Many of the tendencies discussed above are of course common to all kinds of global change research. But the human dimensions field in many instances highlights with intensity the new challenges and maybe also the new options. In many cases what is challenged is also the scope of IGFA itself: the extension to quite different types of actors in the funding domain (private funders, industry etc) as well as the view of what should be promoted and on which grounds. Are the strange contradictions in human dimensions funding (huge interest - limited funding core response) expressions of changing conditions of global change research in general, or is it specific to the human dimensions domain itself?

Stockholm in October 2000  
Uno Svedin

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**Appendix D**

Zurich, 25 October 2000

**STATEMENT ON THE MODE OF OPERATION  
BETWEEN  
FUNDING AGENCIES FOR GLOBAL CHANGE RESEARCH COLLABORATING IN IGFA  
AND  
ICSU AND INTERNATIONAL GLOBAL CHANGE RESEARCH PROGRAMS  
REGARDING  
SUPPORT FOR INTEGRATION AND COORDINATION OF INTERNATIONAL  
COOPERATION IN GLOBAL CHANGE RESEARCH**

Appreciating the importance of global change research for better understanding and prediction of earth system processes and their interaction with humankind;

Recognizing the value of global change research as input to international conventions and for international policy-making;

Acknowledging the importance of integration and coordination of global change research at the international level and the role of the international programs in achieving this objective;

Considering the need to assure adequate stable funding for centralized operations and activities of these programs on an appropriately shared basis,

Emphasizing the importance of a two-track process through which scientific planning for global change research and development of supporting infrastructure takes place in parallel with evaluation of funding needs for such research and infrastructure;

The funding agencies for global change research collaborating in the International Group of Funding Agencies for Global Change Research (IGFA), hereinafter referred to as "the Agencies", the International Council for Science (ICSU), and the organized international global change research programs (WCRP, IGBP, IHDP, and DIVERSITAS), hereinafter referred to as "the Programs", parties to this Statement state as follows:

Article I

1. The Parties shall work together and make their best efforts to assure that appropriate, adequate, and stable funding is available for integration and coordination for the Programs to strengthen and extend scientific coordination and to help realize the full value of the research programs; and
2. Such integration and coordination may include, but are not limited to: establishment or major augmentation of new scientific steering committees, secretariats, and international

project offices (IPOs); activities to add value to existing integrative and coordinating activities, such as major scientific symposia and conferences; syntheses of the Programs and projects within these Programs; involvement of developing country scientists; and establishment of new regional networks;

#### Article II

ICSU and the Programs shall:

1. Inform the Agencies, both individually and through IGFA, well in advance of activities, especially new initiatives, that are likely to require new or additional funding with respect to integration and coordination;
2. Encourage their representatives and participating scientists to explore all possible opportunities to obtain such funding at the national level; and
3. Prepare and submit requests and/or proposals for integration and coordination activities to the Agencies and IGFA in a timely fashion and assure that such requests/proposals meet appropriate review requirements.

#### Article III

The Agencies shall:

1. Ensure that relevant procedures are available for ICSU, the Programs, and participating scientists to submit requests/proposals for international integration and coordination activities;
2. Keep ICSU, the Programs, and participating scientists informed regarding these procedures and any modifications thereof;
3. Identify appropriate points of contact for such requests/proposals; and
4. Exchange information and views and coordinate their policies and procedures regarding the activities defined in Article I.1 through IGFA.

#### Article IV

The Agencies and Programs reconfirm that the procedure for establishment of new IPOs as previously adopted by IGFA in 1996 in Oslo (Appendix A) and amended to include WCRP, IGBP, IHDP, and DIVERSITAS shall be applied to the IPOs of the Programs.

#### Article V

1. Cooperation between the Parties under this Statement shall be subject to the availability of appropriated funds and in accordance with the laws and regulations in the country of each Agency.
2. Any Party may withdraw from this Statement at any time by giving written notice to the others of its intention to withdraw, such notice to be given no less than 90 days in advance of withdrawal;

3. This Statement may be amended upon the initiative of any Party and by agreement of the Parties.

4. An agency or program may join at any time if they agree with all provisions in the document and upon agreement by the Parties.

Signed in ..... this ..... day of ..... , .....  
 (place) (day) (month) (year)

..... , .....  
 (name) (organization)

#### Appendix A

#### IGFA Procedure for Seeking Support for International Project Offices (IPOs)

(Adopted by IGFA in Oslo, 1996)

1. International scientific project offices are traditionally supported through arrangements between international scientific committees and national funding entities. These arrangements should reflect clearly both the expectations and commitments of the parties concerned. These guidelines are intended to assist in achieving this objective.

2. International project offices generally require funding for:

- scientific and support staff;
- office space and equipment;
- staff travel;
- communications; and
- documentation/publication services.

Additional funding may be needed for support of scientific meetings. An overview of the functions and resource requirements for IGBP core project offices is available from the IGBP Secretariat.

3. Draft terms of reference for a project office should be developed by the international scientific committee for the project.

These terms of reference should specify:

- the tasks and responsibilities to be assigned to the office;
- the logistic requirements (in the broad categories listed above); and
- the proposed level of funding.

4. The international scientific committee should identify and approach a potential lead national funding agency. The committee and the agency should decide on an appropriate

host organization for the office and define the office's operational and legal status, e.g., whether the office is to operate independently of; autonomously within; or as a component of its host organization.

5. Agencies which agree to fund or share in funding for a project office should provide such funding on a long-term basis, for at least a three-to five-year period. An agency which has a substantive interest in hosting an IPO but is able to provide only part of the overall funding needed should take the lead in developing the total resources needed through IGFA. Extensions of such arrangements should be considered and agreed well in advance of the end of each operating period.

6. Project offices (should) (often) include a core staff of two scientific professionals, a director and deputy/associate and a staff assistant/secretary. The director generally would focus on scientific activities and the deputy/associate would divide his/her time between science and management, e.g., programming, data management and budgeting. Additional scientific or support staff may be needed for specific purposes.

7. The lead national funding agency should arrange for the office to draw on the host organization's regular administrative services to support management of the office's funds and to deal with issues of staff salaries, fringe benefits etc. In addition, the host organization should assist the IPO in obtaining any governmental approvals and endorsements needed, e.g., visas, work permits, entry of office equipment, publications, etc.

8. Funding levels needed for IPOs are expected to vary, depending on the level of responsibilities and tasks assigned; the location of the office and local salary and overhead costs; currency exchange rates; and the availability of needed services within the host organization.

#### Appendix B

#### Signatories (agencies and programs)

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**Appendix E**
**MEETING AGENDA<sup>3</sup>**
**Sunday 22.10**

**18:00**                      **Registration and buffet reception**

**Monday 23.10**

09:30-10:00              Coffee will be served outside the meeting room

**10:00-10:30**              **Opening**  
*(Chair: Kirsten Broch Mathisen, Norway; Rapporteur: Terje Morland, Norway)*

- Welcome address (*Heidi Diggelmann, President of the Research Council of SNSF*)
- Presentation of draft agenda for review and adoption (*Kirsten Broch Mathisen*)

(ca. 20 min presentations + ca. 10 min questions)

**Cf. Cover Note A**

**National updates**  
*(Chair: Katja Remane, Switzerland; Rapporteur: Hans de Boois, The Netherlands)*

10:30-12:00              Presentations  
 First block: ca. 12 countries 5 min. each + questions

12:00-13:30              Lunch break

13:30-14:15              Presentations  
 Second block: ca. 6 countries 5 min. each + questions

14:15-15:00              Summary of updates incl. presentation of preliminary results from the 'Resource Assessment Light' (*Hans de Boois*).  
 Discussion

15:00-15:30              Coffee break

**Cf. Cover Note B**

**Regional networks**  
*(Chair: Kirsten Broch Mathisen, Norway; Rapporteur: Julia Kundermann, EU)*

15:30-17:00              Regional networks – 'common analysis':

- Brief presentations on regions and global change topics covered by each network, their modes of operation and funding situation
- Discussion with focus on options for better co-operation and possible 'bottlenecks' with regard to funding, regional coverage etc.

Evening:                      Steering Committee / Staff Group meeting

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<sup>3</sup> As distributed to the participants on 19 October. A few minor amendments were made during the course of the meeting.

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**Tuesday 24.10**
**Cf. Cover Note C****Reports from the programmes and working groups***(Chair: John Marks, The Netherlands; Rapporteur: Ian Dwyer, UK)***09:00-10:30**

- IHDP (*Jill Jäger*)
  - WCRP (*David Carson*)
  - IGBP (*Will Steffen*)
- (15+7 min presentation/discussion each)
- GEC Joint Projects (*Will Steffen*)
- (15+9 min presentation/discussion)

10:30-11:00

Coffee break

11:00-12:30

- DIVERSITAS (*José Sarukhán*)
  - WG Observations and Data (*Thomas Spence*)
  - WG Human Dimensions (*Uno Svedin*)
- (30 min each, incl. discussion)

12:30-14:00

Lunch break

**Cf. Cover Note E****Keynotes (Future directions of Global Change Research)***(Chair: Margaret Leinen, USA; Rapporteur: Carola Roeser, Germany)*

14:00-14:40

Topic: Drivers of global change research  
*(William C. Clark, Public Policy And Development, Harvard University)*  
 – **via videoconferencing**

14:40-15:20

Topic: Future science directions of global change research  
*(Hans Joachim Schellnhuber, Potsdam Institute for Climate Impact Research)*

15:20-16:00

Discussion

16:00-16:30

Coffee break

**Cf. Cover Note D****Support for International Integration and Co-ordination in GCR ('Glue money', MoU)***(Chair: Kirsten Broch Mathisen, Norway; Rapporteur: Lou Brown, USA)***16:30-18:30**

- Introduction (*Kirsten Broch Mathisen*):
- 'Glue money' facts – Status report (*Hans de Boois, The Netherlands*)
- What is the 'glue money' problem? (approx. 45 min discussion)
- What can IGFA do to solve the problem? Is the MoU the solution? Comments to the proposed MoU? (approx. 1 hour 'Tour de table' – all members/observers are invited to present their views)

Evening:

Steering Committee / Staff Group meeting

**Wednesday  
25.10**

	<b>Support for International Integration and Co-ordination in GCR ('Glue money', MoU), continued</b> (Chair: Kirsten Broch Mathisen, Norway; Rapporteur: Lou Brown, USA)
<b>09:00-10:30</b>	Discussion (continued from Tuesday)
10:30-11:00	Coffee break
<b>Cf. Cover Note E</b>	<b>Future role of IGFA</b> (Chair: Hansvolker Ziegler, Germany; Rapporteur: Helmut Kuehr, Germany)
11:00-12:30	Discussion with the aim to agree on a <u>process</u> and specific tasks to be done before the next plenary regarding the future of IGFA
12:30-14:00	Lunch break
	<b>Closing</b> (Chair: Kirsten Broch Mathisen, Norway; Rapporteur: Terje Morland, Norway)
14:00-14:10	Chair summary
14:10-14:15	Election of new chair
14:15-15:00	Tour de Table
	<b>Host programme</b>
<b>15:30</b>	Bus to Davos (approx. 2.30 hrs)
18:00	Arrival and check-in at Hotel Cresta Sun
Evening	Dinner by hosts

**Thursday 26.10**

<b>08:30-10:00</b>	Excursion to the <i>World Radiation Center</i> (See next page for detailed programme) (includes coffee break)
10:00-14:00	Excursion to the <i>Swiss Federal Institute for Snow and Avalanche Research</i> (See next page for detailed programme) (includes lunch)
<b>14:00</b>	Bus to Zürich Airport and Hotel Inter-Continental Zürich (approx. 2.30 hrs)

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### Excursion to the World Radiation Center (PMOD/WRC)

8:30 - 9:30 Lectures/demonstrations:

- 30 min (lecture hall)  
Introduction: History and Operational Services of PMOD,  
Research - Presentation of the two related research projects:  
- 'Variability of the Sun and Global Climate'  
- 'PREMOS' (= Precision Monitoring of Solar Variability) our next space experiment.
- Split into two groups: two 10 min presentation of:
  - 1) Past and current space experiments of PMOD/WRC:  
The PMOD/WRC has realized several balloon and space experiments.  
In the PMOD/WRC show cases we display hardware copies of our experiments and we explain the principle of an absolute radiometer
  - 2) The 'ASRB' (Alpine Surface Radiation Budget) network:  
A SNF project to investigate the long-wave radiation in the Alps and in particular, to determine the greenhouse effect (radiation budget) as a function of altitude.

9:30 - 10:00 coffee break

### Excursion to the Swiss Federal Institute for Snow and Avalanche Research (SLF)

ca. 10.15	Welcome address Introduction, SLF overview and goals	Dr. Walter Ammann
10.30	Research Topics <ul style="list-style-type: none"> <li>• Snow cover and climate change</li> <li>• Research in ecology (Artificial snow, tree stability, permafrost)</li> <li>• Wind transport of snow/Snow cover modelling</li> <li>• Decision support tools for avalanche forecasting (RAIFoS, NXD 2000)</li> <li>• Natural hazards event analysis 1999</li> </ul>	Dr. Martin Schneebeli/ Dr. Veronika Stöckli / Christian Rixen Dr. Michael Lehning / Judith Doorschot Bernhard Brabec Dr. Michael Bründl
12.00	Transfer to Lab (2 groups) <ul style="list-style-type: none"> <li>• Numerical simulation and avalanche dynamics (coupled powder-dense flow avalanches, Vallée de la Sionne SLF test-site, entrainment)</li> <li>• Research in snow sports (ski gliding, numerical ski modelling, penetrometer)</li> </ul>	Dr. Perry Bartelt/ Betty Sovilla H.U. Rhyner/ Dr. D. Buhl / Ch. Pielmeier
12.30	Closing remarks, Aperitif (Bauhalle)	Dr. Walter Ammann
12.50	Lunch at SLF cafeteria	

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