

*WSSD Type II Partnership – “Science and Technology for Sustainable Development.” The draft of this proposal was reviewed by participants in the Synthesis Workshop on Science and Technology for Sustainable Development (20-23 May 2002, Mexico City) and later revised by ICSU and its partners and officially submitted to the WSSD.*

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**16.8.2002**

**Name of the Partnership/Initiative**

*Science and Technology for Sustainable Development*

**Expected date of initiation:**

2002

**Expected date of completion:**

2012

**Partners Involved:**

***Intergovernmental organizations:***

United Nations Educational, Scientific and Cultural Organization (UNESCO) and possibly others (e.g., UNEP, FAO, WMO, WHO) as appropriate.

***Major group:***

Scientific and Technological (S&T) Community and hopefully Local Authorities, business, NGOs plus others as appropriate

***Other partners:***

The Organizing Partners of the Major Group:

- International Council for Science (ICSU) and
- World Federation of Engineering Organizations (WFEO).

***Other International Organizations:***

- International Initiative on Science and Technology for Sustainable Development (ISTS)
- InterAcademy Panel (IAP)
- Third World Academy of Sciences (TWAS)
- International Social Sciences Council (ISSC)
- Scientific Committee on Problems of the Environment (SCOPE)
- Leadership for Science and Development (LEAD)

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***Global Change research programmes:***

- World Climate Research Programme (WCRP)
- International Geosphere-Biosphere Programme (IGBP)
- International Human Dimension Programme (IHDP)
- DIVERSITAS (an international programme on biodiversity science)

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**Main objectives of the Partnership/Initiative**

The challenge for achieving sustainable development (SD) requires an understanding of the complex interplay of environmental, economic, and social processes at different scales from the local to the global. While scientific understanding of the functioning of these systems is essential in making the transition towards sustainability, it is now clearer than ever that this challenge has thus far outstripped the capacity of any one stakeholder. The S&T community aims to address this challenge in a broad-based, multi-disciplinary, participatory and interactive manner. Thus, nothing less than a new contract between the S&T community and society is required.

Technology is simultaneously a solver and a generator of problems for society. Many aspects that affect the sustainability of social, economic and human development arise from the inadequate application of technologies or the lack of adequate technologies. One objective is to provide the “equivalent” of ISO certification for technological products or methods, as “SD friendly technologies” to allow informed choices from the available technology.

Numerous international organisations, NGOs, governments and academic bodies have launched a variety of indicator initiatives encompassing different dimensions of sustainable development. Our objective is also a rigorous assessment of these indicators

To achieve SD we will pursue actions in support of the Millennium Development goals. S&T priorities must ultimately reflect the “place-based” realities of particular environmental, economic and social systems. This initial decade-long partnership will address the critical challenges of SD in an integrated fashion. We will strive to enable in the long-term, scientific and technological knowledge for locally-initiated actions, and to develop a new generation of

scientists and engineers committed to support research and technology that addresses the three (environmental, economic, and social) pillars of SD.

An important partner should be the Local Authorities Major Group. However, when addressing issues such as sustainable natural resource management, the Farmers and Women major groups should be involved early on in the agenda setting. Sustainable production and consumption must involve consumer organizations and Business and Industry as essential partners. Capacity building must involve priority setting with the Youth Major Group We will optimise the use of scientific and traditional knowledge and facilitate the dialogue between the relevant partners. More specific partnerships will be developed as appropriate.

Technology offers powerful opportunities for developing and disseminating approaches that will help in the transition towards sustainability. Currently, there are many projects (i.e., UNEP’s clean technology programme), and we will work actively to promote the goals of these on-going projects.

Information exchange will have to increase between all major stakeholders, in order for knowledge to be shared among all partners and society at large in an atmosphere of mutual trust. Information and Communication technologies are rapidly becoming available in all parts of the world, even if the digital divide is still a common problem. The S&T community is committed to making its results freely available to all regions and all partners.

In conclusion, this partnership addresses key issues discussed in Agenda 21’s Chapters 31, 34, and Chapter 36 (Promoting education, public awareness and training), and most importantly, Chapter 35 (Science for sustainable development). The core areas of this partnership are consistent with the objectives mentioned in Chapter 35. It is also in accordance with the conclusions of the World Conference on Science arranged by UNESCO and ICSU in 1999. Our objectives are also consistent with the United Nation Millennium Declaration, in particular sections 20 and 23.

### ***Expected results:***

- We will have involved major stakeholders in defining research agendas at the local and regional scales and involved them in the research process in a truly participatory manner. We will have made contributions to empower stakeholders to solve their sustainability related problems.
- We will have advanced the science of indicators that will enable society to mark progress towards or away from sustainable development. We will assist our partners in small business and national and local government with a clearinghouse and access to testing facilities to provide credible technological reviews.
- We will have established networks of research and guidance for locally-initiated actions to solve sustainable development problems.
- We will have undertaken major efforts to adapt proven technologies for local needs for renewable energy, water and sanitation, and pollution control.
- We will accelerate the efforts underway to make scientific and technical knowledge widely available and to exchange information among all partners and

society at large in an atmosphere of mutual trust using the best in communications and information technology.

- We will have trained and enabled young scientists and engineers, along with community leaders, to have the skills to generate knowledge and to blend local beliefs and expectations into a creative fusion in order to carry this mission forward.
- We will have communicated the results and discussed implementation of research findings with our partners, thus ensuring a more rapid transfer of new knowledge to find solutions that will enable various segments of society to contribute substantially to the implementation of Agenda 21.
- We will have made contributions to the analysis of social, intuitional, economic, and political barriers.
- We will have created moves to shape governance at all levels to meet the objectives of sustainable development.

Details and examples follow.

## **1. Participatory approaches to priority setting**

For most sustainable development issues, there are multiple perspectives on the key problems, causes and solutions. Science and technology must justify its selection of problems to focus on, which will require that the agenda setting process pay attention to: (a) agendas should be based on participatory approaches with stakeholders to establish needs, to make the best use of existing knowledge, experience, (b) which sustainability enhancing knowledge is most needed depends on which spatial and temporal scales are adopted in specific agenda setting consultations. Depending on the problem, agendas will be set at global, regional or local scales, (c) The agenda should give priority to a relatively small set of questions that are (i) driven by sustainability development goals outlined in key UN documents, (ii) focused on providing solutions, (iii) synthetic and integrative between the three sustainability pillars. The agenda setting process will in itself be a major product of the partnership.

## **2. Indicators of sustainable development**

S&T will share in providing directions for sustainable development. If SD is to be consistently achieved from the global to the local level, widely accepted indicators must be available to evaluate the ever increasing offer of different technologies. We, in collaboration with the appropriate stakeholders, will have worked to develop indicators of progress towards sustainable development useful to both the private and public sectors at the local, regional and global levels. Such indicators will be carefully selected based on sound theory, complimentary to policy needs and will enable a holistic analysis of change and sustainable development. A rigorous assessment of this effort is proposed, based on broad scientific analysis. Such an assessment will be done by 2006. In order to make SD indicators operational and useful tools, advances will be achieved both in theory and modelling, as well as in the formulation, data collection and creation of usable

knowledge related to key parameters not covered by the current efforts of the natural and social sciences.

This can be accomplished through three specific activities. The first (and immediate) is the careful and disciplined analysis and inventory of existing indicators, organizing and integrating them through a conceptually important and useful framework. The second activity (also immediate) is to develop a full and improved “delivery system”—from data collection to the provision of usable knowledge to stakeholders—for indicators of sustainable development. The third activity (over the long term) is to support a program of research aimed at the testing and validation of existing indicators, and the creation of a new generation of indicators, reflecting the goals of national governments (Millennium declaration), advances in both sustainability sciences and available data, as well as new and emerging stakeholder needs.

### **3. Networks of research and guidance for locally-initiated actions in support of Millennium Development goals**

Given that sustainable development is “place-based”, the challenges faced by different locales will necessarily vary. Over the coming ten years and beyond, the S&T community will participate in the development of networks of people and institutions from the broader stakeholder community and working at the regional and local scales committed to address the Millennium Development goals that will have been prioritised on the basis of participatory processes identified above. These networks will foster the dialogues necessary to identify local and regional problems and possible responses, and bring together the science, technology, and development communities, as well as the private sector, public health expertise, and civil society. Since limited models for such networks exist, attempts will be made to build on existing institutions, while also addressing funding opportunities and the necessary research and development to support local action over the long term

### **4. Clean and appropriate technologies for environment and development**

A transition to sustainability will involve greater and more widespread application of environmentally sound technologies. Proven technologies for such tasks of sustainable development as the provision of renewable energy, water supply and sanitation, and pollution control are increasingly available. But for much of the world these technologies need to be adapted to use indigenous knowledge, experience and materials, to make them appropriate to local circumstances, and thus making them more affordable. Moreover, many countries, local governments and small businesses encounter conflicting claims for various clean and appropriate technologies. We will expand our efforts currently underway (cite examples offered by Lee), engage our worldwide membership in efforts to choose and adapt such technologies and create a clearinghouse and a testing network to provide credible technological reviews.

### **5. Virtual knowledge systems**

As an initial step widespread efforts are underway to provide universal access to the scientific literature with free access to be provided to the poorest nations. Linking information access to capacity building will be one essential component in developing knowledge societies. Through

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participation in the World Summit on the Information Society (2003 and 2005), the partners will ensure that due attention is given to questions related to intellectual property rights, free access to information and data bases, patenting and the increasing proportion of research being funded by the private sector often limiting access to the data.

### **Specific targets of the Partnership/Initiative and timeframe for their achievement:**

To be defined

### **Coordination and Implementation mechanism**

To be discussed

### **Arrangements for funding**

It is clear that contributing to solutions for sustainable development problems, agenda setting at appropriate scales, far-reaching changes to existing S&T systems, demonstrating some early successes and understanding and designing institutions to mobilise S&T will require a reordering of the priorities for and the structures of funding for Science and Technology at levels from local to global. This need for reordering and restructuring illustrates a fundamental mismatch between the emerging S&T agenda and existing funding institutions and mechanisms. One central challenge is to identify and explore pathways to deal with this mismatch.

### **Arrangements for capacity building and technology transfer**

Young scientists should be empowered to participate in developing the S&T agenda, and there should be an increase in their number drawing from traditionally underrepresented groups. This process incorporates joint learning, including learning from real-world situations. Additionally it is required that the S&T community be responsive to requests of civil society for S&T education training will be explicitly interdisciplinary, but rooted in the fundamentals of disciplinary perspectives. It will also embrace integrity of evaluation and communication. An additional skill will be the co-operative engagement in building and creating images or scenarios of future states of society and nature to enable stakeholders to respond to the outcomes that they, in part, design. Young researchers entering this exciting field will require reliable funding, ample scope for publishing their findings, and job opportunities that are secure and valued.

Several capacity building programmes will be launched with various partners. These have been developed during the WSSD process and will jointly in a significant way increase the capacity to address sustainability issues through science and technology. Examples include:

- The challenges we face require an interdisciplinary approach to problem solving; one that involve people representing the Major groups including the private and public sector and the media. Representatives of the different sectors need to bridge their knowledge and understanding of each others' work and be part of a larger network of individuals contributing ton the common goals of sustainable development. The participants should in the first instance be those involved in the

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agenda setting for participants should in the first instance be those involved in the agenda setting for science and technology for sustainable development. The initiative is developed by TWAS and other partners in the “Trieste Complex” and LEAD but also involving various other partners.

- A decadal plan for capacity building for global change science (START/IFS/TWAS) calling for support of a broad-based capacity building programme in global change research for developing countries.

### **Links of Partnership/Initiative with on-going sustainable development activities at the international and/or regional level (if any)**

Please provide a brief description:

List the many meetings leading up to this proposed partnership.

### **Monitoring Arrangements**

Please describe expected arrangements for monitoring of progress in the implementation of Partnerships/Initiative after it will be launched at the WSSD:

(e.g. frequency/modalities of preparation of progress reports; electronic updates, news-letters, etc).

### **Other relevant information:**

The initiative is based on the results from a number of meetings and workshops over the past two years undertaken by the lead partners. Reports from these meetings are listed on the website, and the synthesis document will be published on the ISIT website and in an ICSU Series on Sustainable Development. The initiative will be highlighted during the Forum for Science, Technology and Innovations during WSSD in Johannesburg and following the ICSU General Assembly, it is expected that the partners will start the implementation of the programme.

Web-sites:

[www.icsu.org](http://www.icsu.org), <http://sustainabilityscience.org>

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