

Science and Technology for Sustainable Development

A partnership initiated by the Initiative for Science and Technology for Sustainability (ISTS), the International Council for Science (ICSU), Leadership for Environment and Development (LEAD), the Third World Academy of Sciences (TWAS) and

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Solutions to the major sustainability problems of the 21st century critically require knowledge from scientific research and the use of appropriate technologies. Whatever the cultural, geographical, socio-economic and environmental setting, partnerships between the Science and Technology (S&T) Community and society is a fundamental prerequisite for sustainable development. We propose a decade-long partnership beginning this year to address the critical challenges of sustainable development, to enable long-term scientific and technological knowledge for locally-initiated actions to solve sustainable development problems, and to develop the new generation of scientists and technologists committed to support environmentally sustainable human development around the world.

Critical challenges of sustainable development

Beginning with the vision of sustainable development created by the World Commission on Environment and Development (Brundtland report) in 1989 and reaffirmed with the specific goals and targets for development, poverty eradication, and environmental protection in the United Nations 2000 Millennium Declaration, an international consensus has emerged as to the critical challenges of sustainable development. In a series of analyses and conferences (Insert footnote), the international science and technology community has identified the following critical challenges towards which the knowledge and know-how of the community can be directed. In addition to the original challenges of the WCED: population and urbanization, food security, species and ecosystems, and energy and materials, the list now includes, health, poverty and hunger reduction, and water.

We propose to review each of these critical challenges, to identify the knowledge and know-how the S & T community already has that needs to be translated into action and most important the opportunities for research and development that can substantially address these challenges in the course of a decade. In so doing we draw upon assessments and programs already planned and underway (footnote these e.g. global change programs (GECaFS), the Millennium Assessment, IAC food security, global disease efforts). Between now and 2007, we will initiate or support science and technology-

based action and appropriate international research and development efforts for each of these eight critical challenges with targets to be achieved by 2012.

Long-term regional and place-based knowledge-action collaboratives

Sustainable development is never really global but is regional and place-based, with locales offering different sets of challenges to overcome and problems to solve. The problems of the rapidly growing cities of Africa, Asia and Latin America differ from those of the tropical rain forests or the marginal livelihoods of least-developed nations or the consumption-hungry life-styles of the OECD nations. In these and the many other distinctive settings there is need for long-term scientific and technological knowledge for locally-initiated actions to solve sustainable development problems

It is at such regional and local scales that meaningful dialogue can take place to identify local problems and needed actions, to bring together scientists with environment and development practitioners, to integrate the natural and social sciences with technology and medicine, and to incorporate practice-based knowledge. Limited models for such collaboration and for an infrastructure of long-term study and innovation are already in place. (footnote e.g. LTERS, ARS, Bangladesh health and population etc. START). We propose to build on these existing institutions and arrangements, and through our regional partners, initiate the process of local dialogue, assemble the appropriate science and technology community and bring it into contact with the community working on the ground attempting to solve development problems; create funding opportunities, and undertake the needed research and development to support local action over the long term. We propose to have at least 25 collaborative projects in place by 2007 and to have helped solve targeted problems by 2012.

Scientists and technologists for environment and development

Whether globally or locally, the capacity for scientists and technologists to provide crucial knowledge and know-how to address the challenges of sustainable development depends very much on the new generation of scientists and technologists committed to support environmentally sustainable human development around the world. Around the world, these graduate students, new job seekers, post-docs, and entry-level doctors, engineers, and professors constitute the necessary generation but face a range of obstacles that make commitment difficult. For some, there is the specialized nature of their backgrounds, the compartmentalization of academic and research institutions, and the general lack of acknowledgment and rewards when scientists do get involved with societal matters. For, others, especially in developing countries, it is the paucity of research opportunities, the limited access to publications and scientific infrastructure, and the isolation from a larger like-minded community.

From our joint experience, we find various approaches to address the needs of this new generation. In the first, drawing on the experience of LEAD and TWAS, we will create a STEAD program that will support individual developing country scientists, doctors, and engineers with executive-type training sessions in science and technology for sustainable development using case

studies and participatory methods as well as individualized support to overcome the isolation and limited access to research opportunities and infrastructure, and provide the opportunity for a meaningful dialogue between the S&T and the SD communities. And for young scientists everywhere, we will try to create workshop and course opportunities to expose them to the broad interdisciplinary approaches and cutting edge science and technology using as models the Gordon conferences and NATO science workshops. To provide the opportunity for young scientists, doctors and engineers to interact with senior scientists and technologists, we will try to institute a biennial “Pugwash” style conference that can also serve as a partnership review conference. And to provide access to all we will expand the virtual forum, library, bulletin board of our ISTS partner and its network of individual researchers, program managers, or supporters of science and technology for sustainability. We propose to expand the virtual Forum by 2003, to have 300 STEAD fellows participating by 2007 and 1000 by 2012, and a program of annual courses and workshops in place by 2005, and biennial partnership conferences beginning in 2003.