

“Draft Working Document”**Science and Technology for Sustainable Development****A. Background**

1. Scientific research and technological development is essential for the functioning of both industrialised and developing countries. The competitiveness of companies and the employment depend to a significant extent on research and technological development as a basis for new knowledge and innovation. It is also essential for the development of effective policies to address the challenges of public health, environmental protection and efficient resource management. However, high level research is increasingly complex, interdisciplinary and costly, requiring a constantly increasing 'critical mass' of financial and human resources and research infrastructure.

2. Sciences and scientists have played in the past and will continue to play in the future the avant-garde in many sustainable development related problems well before they appeared on the political agendas such as for example in the case of climate change. In the majority of the cases, scientists have established at very early stages their own channels of communication which have helped later on in the political rapprochement. It is also top scientists who advise today their governments and international institutions on complex socio-economic and environmental issues.

3. For all these reasons, Agenda 21 has devoted two chapters on sciences and scientists. Unfortunately, not all Agenda 21 objectives have been fulfilled including the objectives laid down about science. A major lesson learnt, however, is that the transition towards sustainability is inconceivable without science and technology, in particular when the objectives reach the implementation stage at local level.

B. The Knowledge Divide

4. Globalisation is characterised by rapid generation and diffusion of knowledge coupled with rapid technological advances affecting all facets of life. But, development processes and globalisation have uneven consequences in different parts of the world in terms of economic growth and social progress. While opportunities for sustainable development have been created by expansion in

investment and trade, growth has also generated social and environmental external costs. In particular, developing countries face new challenges and specific adjustment problems linked to their particular conditions and to emerging far-reaching, interrelated and accelerating changes.

5. Knowledge advancement has helped us to a great extent to understand some of these problems and their socio-economic root causes. Knowledge, technology together with education can offer solutions as well. Research, in particular, can generate knowledge and ideas which can contribute to sustainable development revitalise economic growth, and campaign against poverty. It stimulates a culture of questioning and creates conditions for well-informed development decisions. The knowledge it generates can be site specific or be transferred to other parts of the world.

6. For developing countries, to keep up with these changes, research is vital. There is no doubt that some developing countries are rich in traditional knowledge while some others are doing very well even in the technologically most advanced fields. Both are claiming today to be part of the process which generates knowledge as equal members in a partnership¹.

7. Nevertheless, sustainable development requires continuous efforts of participation in the generation, assessment of and adaptation to the new and emerging technological conditions as much by developed as by developing countries. Catching up with progress requires, research which needs, public and private, financial resources and a sound technical supporting capacity which is not, very frequently the case in many developing countries. Scientists are often hampered in their work by poor infrastructure and governance, limited funds, lack of critical mass of human resources and isolation. On the other hand, scientists are well-placed to identify problems, interact with policy-makers and to contribute to training.

8. In addition, many research problems can only be tackled within developing countries themselves, for example combating the results of climate change, new diseases, preservation of natural resources, fighting against land degradation or limiting the loss of biodiversity. Developing countries are considered as "hot spots" of global research issues related to sustainable development.

9. Investment in knowledge means investment in the institutions required to build modern and effective states and investment in the conditions needed to generate growth in the context of sustainable development. The lack of such investments creates inability to

¹.see UNDP , Human Development Report 1999, Chapter on "New technologies and the global race of knowledge"

integrate in the globalising knowledge-based and information society, may cause new types of North-South exclusion and a new divide which may undermine in the medium term all efforts for convergence and sustainable development. As said in the 1999 Human Development Report of UNDP the global gap between haves and have-nots has hardly closed and is further threatened by the growing gap between **the know and the know-nots**.²

C. The North-North dimension and the need for global S&T partnerships.

10. Sustainable development questions do not only exist within the North-South context. There are several issues that require a global co-operative effort but with the main burden on the technologically most advanced countries: better understanding of the climate change impacts, the functioning of carbon sinks and the development of adaptation methods, the impact of biotechnology on health and the environment and the impact of substances on health and the environment. These are but few characteristic examples of intense research and development work of which the outcome has also animated an intensive political debate.

11. The EU enlargement to Central and Eastern Europe poses also new challenges for the scientific world which is for years now searching in harmony new ways to cope with transition of these countries to political stability, economic soundness, clean environment.

12. Work on more sophisticated integrated assessment techniques of new technologies placed in the market as well as on the integrated assessment of the potential impacts on sustainability of major policy decisions rely, de facto, on initiatives taken by the more technologically advanced countries.

Sound analytical tools for policy integration and coherence are also missing and much effort is still needed. Development of synthetic and more representative indicators, definition of thresholds and trade-offs between the three sustainable development pillars are all very challenging from the scientific point of view.

Scientific work on the above issues could level the policy field by clarifying the outstanding scientific aspects of the various issues.

13. Co-operation and dialogue with all countries is an investment in a shared future.

Combining well-founded and active scientific community and specific expertise on issues of particular relevance to developing countries, provides opportunities for achieving synergies and economies of scale

² See UNDP, Human Development Report 2001, chapter on "Today's technological transformations-creating the network age".

in implementing the conditions needed to generate growth in the context of sustainable development.

14. Scientific & Technological co-operation with third countries is firmly anchored on dialogue for the identification of priorities and partnership in the implementation of joint-research activities. To this end, the Union, for instance, has initiated S&T dialogue, involving the scientific communities and decision makers in several key regions, namely Asia (ASEM), Latin America & Caribbean (ALCUE), Mediterranean (MoCo) and the EU-ACP S&T dialogue. Furthermore, bilateral dialogue is carried out with Candidate Countries, as well as with a limited group of countries with whom the Union has established specific S&T Agreements (e.g. Argentina, Canada, South Africa, China, India, Israel, the USA, Australia) and others who may be in that group in future, such as Brazil, Chile and Mexico.

D. Actions in the EU

15. It is now widely recognised that science and technology are essential elements in ensuring competitiveness as well as sustainable and socially equitable economic development. This was clearly stated at the European Council in Lisbon when full support was given for the development of the European Research Area as a key factor in establishing in Europe the most competitive, knowledge based society in the world.

Technologies and methodologies related to Sustainable Development are well advanced in the EU and there are fields where we maintain a strong comparative advantage viz. other industrialised countries (renewable energies, energy efficiency, tools for integration of externalities). This advantage is an essential part of the international image of the EU and brings further arguments advocating its international leadership.

16. The principal vehicle for the development of scientific and technological knowledge at EU level has been a series of five-year Research Framework Programmes. The current, 5th Framework Programme runs until the end of 2002. Proposals for the **New Framework Programme** (2002-2006) are currently under negotiation within the EU institutions. The major challenge for the new programme is to establish an integrated **European Research Area**, supporting co-operative research, researcher mobility, and more policy-relevant research initiatives. Research on Sustainable development is a pillar of the EU policies and programmes.

17. The experience accumulated through research and technological development constitutes a valuable asset in drawing up the Union's plans for the future. This experience will permeate both the domestic and international dimension of the ERA as well as the ongoing preparation of the New Framework Programme.

18. In the knowledge development domain, Europeans will:

- make research on sustainable development an important pillar of national and international research programmes. This comprises actions in understanding problems, developing technologies and methods and provide research for policy support. Space technologies, for example, can be very effective and important for mapping and monitoring the state of the environment at global and regional level.

- bring scientists and policy makers closer together through scientific and socio-economic and integrated research. Developing new tools for measuring externalities, understanding behaviours, tools for integrating environment into sectoral policies and building socio-economic regional and global scenarios for sustainable development can be part of our agenda.

- stimulate closer co-operation between Member States institutes working on sustainable development and establish networks of excellence.

No country or region alone, however, can cope effectively with sustainability problems. An open and sincere partnership where each group of countries will undertake and implement commitments in the spirit of common but differentiated responsibility, will lead to mutual benefits. Also, all countries should work together on a joint agenda to advance knowledge on our common or interdependent problems. Thus, it is not sufficient to limit our efforts in Europe alone but to extend them beyond its borders.

19. In the domain of international co-operation European research is focused on the following:

- making the European Research Area a world class reference centre for sustainable development. Opening up the European research programmes for participation of all third countries on the basis of mutual interest becomes a major objective.
- enabling European researchers and industrialists to access the knowledge and technology produced outside Europe and also the experimental fields needed for European research and vice versa.
- promoting capacity building for research and provide training for researchers for those who need it most. Specific actions should be foreseen in the context of the new Framework Programme.
- developing scientific and technological activities useful to the implementation of foreign policy and development aid.

- giving research and technology the role it deserves in all political negotiations and encourage collaboration between scientists across borders.

20. Ensuring the adequacy of means of implementation in developing countries is important. This should be backed up with support for technology transfer and capacity and institution building.

Europe should encourage other major countries to adopt similar approaches as regards research on sustainable development and international scientific co-operation.

E. Proposed commitments for the WSSD

The objective

21. To initiate a process at the WSSD with a view to integrating marginalised developing countries into the knowledge based society. This objective should become a structural element of the **Global Deal**.

Specific proposals

22. The proposals below are based on Agenda 21 and are addressed to different actors (developed countries, developing countries, international institutions). Bearing in mind the differences in scientific and technological development also among developing countries (leaders, potential leaders, adapters and marginalised) and the different needs of the various actors, some of the proposals may be suitable for some actors only and some others for the whole international community.

Agenda 21 – key objectives:

To strengthen the scientific basis for sustainable management

To enhance scientific understanding

To improve long-term scientific assessments and scenarios

To build up scientific capacities and capabilities

To ensure the sciences are responsive to emerging policy needs

To strengthen the scientific basis for sustainable management and enhance scientific understanding

- Make scientific, technological, economic and social research on sustainable development main pillars of national and international research programmes and provide for a strong programmatic "push"

for substantial research programme in developing countries as part of "good governance". Work in particular for developing the scientific basis, define thresholds and indicators and develop new integrated tools for policy making.

- Co-operate in global monitoring and systematic observation as far as the state of the environment is concerned as well as in the monitoring of other sustainable development indicators.

To ensure the sciences are responsive to emerging policy needs

- Bring sciences closer to society needs and scientists closer to policy makers. Design research programmes to address specifically the arising research needs of policy making.
- Establish, where necessary, international scientific systems of reference for policy support in particular in areas of political controversy due to scientific uncertainty. The experience gained through the Intergovernmental Panel on Climate Change is valuable in this respect. Prepare an international conduct of good practices for reference systems in order to ensure transparency.
- Clarify the conditions under which science and decision - making interact in the implementation of the Precautionary Principle with the view to increase transparency and improve the sustainability of decisions.

To build up scientific capacities and capabilities

- Promote bilateral and multilateral scientific co-operation, capacity building for research and training of researchers for those countries that currently lack the critical mass of capacity. Focus on key areas as health, environment, clean technologies, safe food, food security. and communications for co-operation.
- Twinning arrangements as well as networking scientific institutes, users and stakeholders from both the North and the South as an effective means of technology development and transfer as well as the selected areas of the East.

23. External co-operation and development policies, research programmes as well as sectoral instruments can fulfil these tasks. The implementation of the above proposals require increased financial resources which, in the case of national programmes should be mobilised domestically from public and private sources.

Bilateral and multilateral co-operation as well as international programmes will require, funding mainly from developed countries. Private funds can play an important role but they are directed mainly to areas with low investment risk, potential economic interest and economic return. Public funding is also needed in particular for those areas ignored by private research.

24. Specific initiative

- An International Scientific Forum on Sustainable Development

As a first step to bring closer world's scientists working on environment and sustainable development the EU can put forward a proposal for holding an International Scientific Forum in parallel with the Johannesburg Summit.

The main objective of this Forum will be the investigation of ways and means to bring scientists closer together and discuss research and technology issues in relation to policy needs including technology transfer and exploitation of research results.

If the initiative is endorsed in principle, a more detailed proposal can be presented to the Group.