

MULTILATERAL COOPERATION IN SCIENCE AND TECHNOLOGY: PAST EXPERIENCES AND FUTURE OPTIONS

Dr. Klaus-Heinrich Standke

INTRODUCTION AND BACKGROUND

We are meeting here in Feldafing, ten years after the United Nations Conference on Science and Technology for Development (UNCSTD), not to celebrate but rather to commemorate. The results of the End-of-Decade Review on the Implementation of the Vienna Programme of Action (VPA) which is in the final state of preparation by the UN Centre for Science and Technology for Development will not cause joy and happiness. And yet, it would be wrong for the World Community to give up. As we have learned from Arnold Toynbee, it is the tension field between Challenge and Response which has marked the history of all generations before us. The

Numerous speculations have been elaborated trying to explain "Why things went wrong."

One of the most convincing reasons was recently advanced by one of the most experienced Third World Leaders, Enrique Iglesias, who, on the occasion of a Symposium in Paris marking the Twenty Fifth Anniversary of the OECD, had this to say: "We have now entered a period of disengagement. In other words, greater reliance is placed on market mechanisms than on the voluntaristic actions of international organizations. This, I believe, is leading to a real crisis in multilateralism. If we are to head off that crisis, we need to reflect on what the rules of cooperation should be in the years ahead". I am pleased

In the own words of the Conference's Secretary-General, a Brazilian, "the fault of the non-achievement of many of the follow-ups of the Conference came from both governments of developed countries, and those of developing countries". But who said this was not the Secretary-General of the Vienna Conference in 1979, but Carlos Chagas, the Secretary General of the first World Conference in 1963 in Geneva.

On three occasions, each time with an interval of eight years, the United Nations system as a whole has made tremendous concerted efforts to focus specifically on science and technology for development.

a) The first event in 1963 was the *United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas, in Geneva*. (UNCSAT) The purpose of the Conference was to explore recent advances in the application of science and technology which would benefit the less developed areas; to provide an opportunity for an assessment of the impact of such applications on the processes of economic and social development; to reveal opportunities for research directed towards producing new scientific and technological advances of special utility to less developed areas, and to stimulate and promote scientific and

economic development; those with special expertise in scientific and technological applications which might accelerate the development of less developed countries, and those concerned with the planning and execution of research programmes in branches of science and technology where further advances might be especially useful to what was then called "less developed countries".

In hindsight it is rather astonishing to note that the United Nations Economic and Social Council (ECOSOC) never meant for this Conference to be empowered to make even the slightest recommendations to Governments or to take any decision regarding policy. It was expected instead that the records of the proceedings at the Conference should "reflect any significant weight of opinion expressed in the discussion as summarized by the rapporteurs of the given proceedings". Indeed the eight- volume Conference report still makes interesting reading today. More than 2,000 papers were submitted touching on all the scientific disciplines and about all aspects of modern society. The participants number 1,665 and 96 governments were represented. UNCSAT had a major flaw: only about 16 per cent of the scientists attending the Conference were from developing countries.

Technology to Development. This Plan of Action was expected to provide a framework for the United Nations and its specialized agencies in which to collaborate and to provide assistance to developing countries for the conception and implementation of action programmes in a number of selected sectors:

1. Science and technology policies and institutions
2. Science and technology education
3. Natural resources
4. Food and agriculture
5. Industry
6. Transport and communications
7. Housing, building and urban development
8. Health
9. Population
10. Relevance and application of new technologies.

ACAST has furthermore identified on a global scale a number of priority *areas to further R&D* as well as priority areas *for the application* of existing knowledge.

Science and Technology to Development was never formally endorsed by ECOSOC or by the General Assembly of the United Nations. Consequently no financial means were set aside by UNDP for its implementation.

c) One of the hidden or not so hidden reasons for this rejection was the argument that the World Plan was an invention of scientists and of UN bureaucrats and did not reflect the real needs of the developing countries. Instead, it was proposed to organize another World Conference which, unlike the Geneva Conference in 1963, should be a Governmental Conference on science and technology for development. Sixteen years after the Geneva Conference and eight years after the publication of the ACAST World Plan of Action, this second United Nations Conference on Science and Technology for Development (UNCSTD) took place in August 1979 in Vienna. It was one of the best prepared and one of the most expensive conferences the UN has ever organized.

Against the background of the above described worldwide efforts in the 60s and 70s and against the findings of the End-of-Decade Review which formally will not be undertaken before the Intergovernmental Committee on Science and Technology for Development will meet in August of this year exactly 10 years after UNCSTD, the following observations are

are receiving a new attention by the General Assembly which will discuss this item this year exceptionally in Plenary Session, do very often not receive the same political support in the priority ranking on the country level. Many examples can be given.

1) The priority areas on Science and Technology for Development defined through multilateral mechanism e.g. issues of concern highlighted at the 1963 Geneva Conference, subject areas chosen for illustrative purposes during the ascending process of UNCSTD, topics presented by the ACAST Colloquium, or being highlighted in Global Development Decades or Development Strategies, are seemingly not being picked up either by the multilateral funding mechanisms, like UNDP, World Bank and Regional Development Banks, nor are they systematically reflected in the bilateral cooperation agreements or, worse of all, are they adequately echoed in the National Development Plans of most developing countries. The same negative experience is being derived from regional similar efforts, i.e. Lagos Plan of Action of the OAU, or more recently the "Special Programme of Assistance to Africa in the fields of Scientific and Technological Research and of Research and Development" launched by CASTAFRICAII in Arusha in July 1987.

2) The science and technology

assistance in science and technology through extra budgetary channels.

3) The priority requests of Member States for multilateral cooperation, if ranked by fields of interest in science and technology, show profound differences, both between the industrialized countries if one compares the group of OECD countries and the group of socialist countries and even more so between the various regional groups of developing countries. In the case of the Science Programme of UNESCO, only two groups of issues, i.e. (1) Environment and Ecology and (2) Training in Science and Technology have received high support from practically all regional groups. The priority interest in other issues was very uneven.

4) Talking about figures, I would like to use this instance to recommend caution on the statistical validity of any comparison of science and technology data used in the North-South debate. In spite of many efforts of the entire United Nations system, including the World Bank, the statistical data base on most Member States is very weak.

FUNDING

The discussion on the ideal level of multilateral funding for science and technology for development is as old as the discussion on the complex issue itself.

ACAST. In 1976, Jan Tinbergen in a report to the Club of Rome suggested the creation of an International Bank for Technological Development. Francisco Sagasti elaborated on the need to design a new international financial mechanism which, according to the Group of 77, could raise 2 billion dollars by 1985 and 4 billion by 1990.

In any event, regardless of the amount pledged, the developing countries had hoped that as a result (and perhaps as the main result) of the Vienna Conference, predictable substantial new Funds would be generated for the purpose of science and technology for development. They had realized that in the "normal" channel of the financial North-South Resources Transfer, long-term issues, like science and technology, would receive a low, if any priority. This dilemma is today as pressing as it was 10 years ago. The end of this sad story is well-known.

The impasse of the funding issue has overshadowed practically all meetings of the Intergovernmental Committee, and consequently, of the Advisory Committee and of the Inter-agency Task Force, since Vienna. The formal termination of the United Nations Financing System for Science and Technology for Development at the end of 1986 has buried the hopes of those who have struggled to give the multilateral cooperation in science and technology for development a solid financial source within the North-South cooperation.

Projects for multilateral cooperation in science and technology are receiving funding from different sources:

(1) Regular Budget of the UN and the specialized agencies.

(2) Extra budgetary sources:

- (a) Grants (UNDP, UNFPA, UNEP, UNICEF, UNFSTD etc.)
- (b) Loans, i.e. usually technical assistance elements of projects funded by the World Bank, or by the Regional Development Banks.
- (c) Funds-in-Trust arrangements, by which a donor country agrees to finance a particular project in favour of a third country (beneficiary) on the understanding that a UN agency will act as the executive manager of the project.
- (d) Self-benefiting Funds, i.e. Funds-in-Trust (FIT) arrangements by which a given Member State entrusts the executing agency with funds on a project specific basis, or as a revolving fund for projects to be implemented for the benefit of the given country.

may be of interest. In the Decade following the Vienna Conference, UNESCO has executed science and technology-related programmes and projects totaling roughly to 0.5 billion US\$. About half of this amount was funded from Regular Programme Resources of the Organization and the other half from Extra budgetary Resources.

The lion's share i.e. 17% was funded by UNDP, 2% from UNEP, 1% from UNICEF and 1% from UNFSSTD. The other 24% came from FIT arrangements, including self-benefiting Arab funds. The Federal Republic of Germany followed by Norway, Japan, Sweden, Switzerland, Australia, Denmark and The Netherlands were the traditional Donor Countries for FIT projects in developing countries. The World Bank and the Regional Development Banks have to a large extent financed UNESCO projects in Education but their contributions to science and technology projects in the period since the Vienna Conference was insignificant.

From the total of 365 projects executed in this period, 283 were executed in 83 different countries. A relatively high amount, i.e. 80 were regional projects and two were interregional.

Asia and the Pacific had the highest number of projects, followed by Africa, the Arab States, Latin America and the Caribbean Regions.

countries". 21% can be described "Endogenous Capacity Building, including Science and Technology Policies and Information Systems".

Although it is impossible to predict with certainty the future funding level for multilateral science and technology cooperation, it can be predicted that the "rules of the game" will change gradually.

A UNDP Policy Paper issued early this year on the Role of the UNDP in the 1990s indicates shifts in the way that multi lateral grant-aid is to be provided, resulting in departures from the classical Agency-UNDP "division of labour" that had prevailed since 1960. Among other new orientations, it is noted that the "general rule will be for projects to be executed and managed by the recipient government". Should the government agency require technical support, a "Cooperating Agency" would be chosen through competitive bidding open to UN agencies, UNDP/OPS, national or international contractors etc."

UNDP is through this mechanism aligning itself more with the established policies and procedures of the World Bank and the Regional Development Banks regarding the role of the UN agencies in furnishing Technical Assistance to Borrowers under loans and credits.

The advisory role of the UN agency...

It is, of course, up to the Member States themselves to judge how high they value the impartial role of the United Nations system in the execution of multilateral technical assistance projects. A stimulating recent report, published by the Research Policy Institute of the University of Lund, which has analyzed in detail the today's role of science and technology for development in the United Nations system has also identified "commercial signals emanating from donor organizations and agencies in the industrialized countries".

As far as the establishment of a multilateral new funding mechanism is concerned, UNCSTD took place at the worst possible time. When Carlos Chagas had said in hindsight that UNCSAT in 1963 was premature (indeed it should be recalled that even the industrialized countries of the OECD had organized their first Science Ministers' Conference the same year), it can be argued that UNCSTD was too late: during the years of the negotiations of the modalities of the Financing System (1980-85), the total ODA has fluctuated around the 1980 level in nominal dollars and has declined in real terms. The leveling off of the total ODA in the first half of the 1980s has been accompanied by a shift in flavor of bilateral **ODA** of the DAC countries and a drastic cutback by OPEC sources in their contributions to multilateral agencies.

To summarize, we agree with the findings of the recent inter-agency meeting in Thailand (5 to 10 Dec. 88): "The role of external aid in scientific and technological development has been, and will remain, important. While bilateral aid will continue to be the much larger component, multilateral aid has been acknowledged to be more flexible, responsive and catalytic".

RECENT INITIATIVES FOR NEW PATTERNS OF INTERNATIONAL COLLABORATION IN SCIENCE AND TECHNOLOGY

There is a vast range of experience over the past quarter of a century in all kinds of cooperative relationships in the field of science and technology on a bilateral, regional or global basis, involving both governmental and non-governmental organizations.

One of the most successful initiatives to foster international cooperation in science and technology was the creation in 1971, under the auspices of the World Bank, UNDP and FAO, of the Consultative Group on International Agricultural Research (CGIAR). Thirteen CGIAR centres were set up in all regions of the world.

Are there any similar initiatives to report since UNCSTD in 1979? A sample (obviously incomplete) of new initiatives

UNEP, and others, as well as NGOs outside the ICSU family are cooperating in this important new initiative.

After the successful model of the International Centre for Theoretical Physics in Trieste, jointly launched by UNESCO and IAEA in 1964, a similar institute, i.e. the International Centre for Biotechnology and Genetic Engineering was set up under UNIDO auspices in Trieste and in New Delhi.

Three additional international centers, all to be hosted in Trieste, are presently being prepared with technical assistance from UNIDO:

- * the International Centre for Earth and Environmental Sciences (ICE);

- * the International Centre for Pure and Applied Chemistry (ICC);

- * the International Centre for High Technology and New Materials (ICTM)

The new centres which are seeking UN sponsorship and which will cooperate with all relevant UN agencies are expected to become

The various developments in Trieste are particularly significant since the Founding Father of ICTP, Nobel Prize Winner Abdus Salam, a former member of ACAST, is also the Founder of the Third World Academy of Sciences (in 1985), which has its Headquarters also in Trieste and is backed up by Regional Academies of Sciences in all major parts of the world and, thus, creating a unique high-level network of scientists in the developing countries.

In the same period, the Committee on Science and Technology for Developing countries (COSTED) of ICSU has developed five regional offices to serve each of the major regions of the world.

In June 1988, with the support of OAU, UNESCO and UNDP, the First Congress of African Scientists was organized in Brazzaville who launched the Pan African Union of Science and Technology.

I just received the first announcement inviting to the Inaugural Symposium of the Federation of African Academies of Sciences to be held in April 1989 in Paris.

There is a proposal for the establishment of a Global Technical Advisory Unit on Cooperative Education (Northeastern University, Boston).

The United Nations Fund for Science and Technology for Development is initiating a programme of Collaborative Research Efforts on Advanced Technologies (CREAT) among developing countries in selected fields of advanced technologies. A similar pattern has been created by the European Community (EC) in the early 70s to offer multilateral cooperation in selected fields of science and technology "a la carte" between interested EC members and non-member states in Western Europe (COST: Cooperation in Science and Technology). More recently, built on the same experience, the EC has launched its successful EUREKA cooperation programme which facilitates multilateral cooperation between companies in 18 participating countries.

On 6 Feb. 1989, the heads of UNESCO, the World Bank, UNDP

is invited to assume the role of Lead Agency (Resolution 42/104).

Early March 1989, the Soviet Academy of Sciences intends to launch in Moscow, under UNESCO auspices, an international energy programme as well as an International Global Energy Council, whose main function would be to "monitor research, development and evaluation of global energy issues".

Mr. E. Shevardnadze, Minister for Foreign Affairs of the USSR, in his address to the last session of the Executive Board of UNESCO, on 2 Oct. 1988 reiterated, in addition to the above proposal, the idea of the creation of an International Energy Council, an earlier suggestion made by Mr. S. Gorbachev to set up, under the UN aegis, a world consultative council comprising the world intellectual elite, i.e. renowned scholars and scientists, politicians and public figures, representatives of international public organizations, cultural workers, men of letters and artists, including Nobel and other prize winners of world acclaim as well as prominent churchmen. UNESCO was asked to help carry this proposal into practice.

environment and Development should be called (Resolution 43/196).

In 1987, the General Assembly decided to designate the 1990s as a decade in which the international community, under the auspices of the United Nations would pay special attention to fostering international cooperation in the field of natural disaster reduction.

All UN agencies, in cooperation with the relevant scientific, technical, academic and other non-governmental organizations, are invited to develop an appropriate framework to attain the stated objective and goals of the decade (Resolution 42/169).

In 1990, a 2nd World Climate conference will be organized by WMO, and cosponsored by UNEP, UNESCO and ICSU. The first one took place in the Year of UNCSTD, 1979. Widely noticed in this context were the conclusions of an International Conference on the changing Atmosphere: Implications for Global Security, held in Toronto in June 1988. The Conference called upon governments, the United Nations and its specialized agencies, industry, educational institutions and individuals to start urgently

which responses to forecast climate changes.

I cannot list here all the numerous regional or interregional scientific networks which have been created in the last 10 years within and outside the United Nations system.

EXPERIENCES GAINED

Are there any lessons to be drawn from the involvement in multilateral science and technology cooperation? Could we spell out what has, in our opinion, worked and what has not worked? Can the success stories be repeated elsewhere? How can the failures be avoided? What are the options, if any, for the future? The following listing of observations is certainly incomplete, and it is not ordered according to the priorities of the various items.

- 1) Within the international relations it is the bilateral and not the multilateral cooperation which is increasing (expressed in \$ terms or in the number of agreements).

- 2) The bilateral arrangements for science and technology cooperation concentrates on a relatively small number of developing countries.

The vast majority of developing countries depend more than ever on multi-lateral science and technology cooperation.

Whereas ACASTs World Plan of Action was meant to constitute one of the main contributions to the Second United Nations Development Decade, and the VPA even more so, for the third Development Decade, the preparations for the Fourth Development Decade have given perhaps less explicit focus to the issue "science and technology". The new emphasis is placed on human resource development, health, education, poverty alleviation, linkages between poverty and environmental degradation, environment and climatic change, social concerns in general, sustainable use of the natural resource base for development. Each of these broad areas of concern has, of course, an important link with science and technology for development but the focus is less apparent.

4) The division of the World into the First, Second and Third World has led to dangerous misunderstandings because it simplifies the complex development process and more particularly the equally complex science and technology enterprise to an extent which makes common conclusions almost meaningless. For example, our host country, the Federal Republic of Germany, devotes at present more money to Research and Development than all developing countries together.

On the other side, more than half of all R&D expenditures are concentrated in

poverty. In this dilemma lies, in my opinion one of the main difficulties to implement any globally negotiated World Plan of Action or Vienna Programme of Action or similar well intended actions.

5) Compared to the situation in the 70s which led ultimately to one of the last UN mega conferences, i.e. to UNCSTD, the issue of science and technology seems to have lost some of the urgency which it used to have on the North-South agenda.

6) In the absence of a multi-lateral Funding System For Science and Technology functioning on a grant scheme, the experience since Vienna demonstrates that the majority of developing countries is not utilizing their scarce IPF Funds for long-term science and technology projects. The same experience can be seen in the utilisation of the ACP-Funds generated by the European Community. In contrast to this are some large scale loan projects for science and technology funded by the World Bank for countries like China and Brazil and to the experience of the Asian Development Bank who has recently undertaken a survey showing the increasing percentage of science and technology issues in Asian loan projects.

7) The widening gap on most science and technology matters not only between North and South but particularly

L982, CASTALAC II in 1985 and CAS-
AFRICA II in 1987. It will be of par-
ticular interest to compare the UNESCO
findings with the results of the End-of-
Decade Review of the VPA. The high
hopes which the World Community has had
in the instrument of TCDC (Technical
Cooperation among Developing
Countries), particularly in the field of
science and technology, are in spite of some
successes much more moderate today than
they used to be at the Buenos Aires Con-
ference on this topic in 1978.

8) Against the sobering picture in
most developing countries (with the
noteworthy exception of the few so-called
newly industrialized countries mostly in
Asia and some partial successes in the
larger countries of Latin America), we are
witnessing the increasing emphasis in all
industrialized countries in science and tech-
nology. In addition, practically all these
countries are still increasing their expendi-
tures on Research and Development. To
show the order of magnitude of the issue at
stake, even a small country like the host
country of the 1979 Conference, Austria, is
spending annually more on R&D than
UNDP has annually available in its disbur-
sements for all developing countries of the
world.

If we look at the Human Resources
situation these frightening figures are
sufficiently not all complete.

9) Global or even Regional Financ-
ing Systems for science and technology
through assessed contributions seem to be
unrealistic. Instead seem to be of increas-
ing interest in multi-lateral science and
technology cooperation, is an approach "a
la carte".

The success of the major inter-
governmental scientific programmes of
UNESCO:

MAB - Man and the Biosphere

IOC - Intergovernmental Oceano-
graphic Commission

IHP - International Hydrological
Programme

IGCP - International Geological Cor-
relation Programme

IIP - Intergovernmental Informatics
Programme

confirm this experience as do, for example,
the increasing number of "a la carte"
cooperative programmes of the EC.

The same "popularity" is enjoyed by
the increasing number of international
scientific and technological networks or-
ganized by NGOs by universities, by in-
dustry and launched with or often without

multilaterally - to foster international scientific and technological cooperation with the developing countries. But there is no systematic approach whatsoever.

The content and degree of bilateral relations is still very often dictated by former colonial dependency patterns and in any event by today's political climatic conditions and economic considerations in which the developing country is usually the weaker partner "who has to adjust". Multilateral cooperation, though being of a much smaller scale, has the advantage that international solidarity aspects come also into play and allows also the weaker and poorer partners of the world community to be connected with the international science and technology system.

As far as international financial aid flows are concerned, donor countries and multilateral donor agencies are meeting with recipient parties within the framework of the Club of Paris or within the round Table meetings of the UNDP and/or within the Consultative group meetings of the world Bank. On the field of international cooperation in science and technology there is, however, no systematic country or regional approach. There have been long inconclusive debates to use the UNDP country programming concept as a framework of reference to coordinate on a country scale the multilateral and bilateral

"Both the report on the case studies on the functions of the operational activities of the United Nations system and Assembly resolution 42/196 have emphasized the need to increase substantive advice to governments on basic development issues. Although it has been recognized that both the variety and overall amount of planning, programming and coordination assistance provided by the United Nations system is considerably greater than commonly perceived, there is a need to improve the channeling of such advice and to make the knowledge and world-wide experience of the various specialized parts of the system better known in recipient countries. CCSQ (OPS) has emphasized the importance of clear and effective linkages between the regular programmes of substantive activities of the specialized and sectoral agencies, and their operational activities in the field".

Ten years after UNCSTD I feel that here is indeed for the United Nations system which attempts to foster multilateral cooperation in science and technology the greatest new challenge:

- 1) A systematic policy advisory role performed by the specialized agencies in scientific and technological matters on this

a need for such independent advice) but also to developed countries and to inter-governmental organizations of the developed countries which do not possess the world-wide experience of the various parts of the United Nations system.

2) The "clear and effective linkages between the regular programmes in science and technology of the specialized and sectoral agencies, and their operational activities in the field" called for in the ACC report should indeed be established as a matter of urgency. I have the impression that this is still one of the weakest points in the multilateral approach of the United Nations system. Any change here would, no doubt, re-orient also the funding pattern of UNDP and other donor agencies.

3) A systematic International Training Programme in all fields of science and technology for citizens of developing countries is urgently called for. Human Resource Development will be one of the most prominent features in the International Development Decade of the 90s. But perhaps this notion is too abstract and lacks a focus. All agencies of the United Nations system together with interested national institutions could perhaps agree on a joint approach within a fixed time frame and with agreed quantitative targets.

The combination of the above three

could make a lasting impact. To put things in a realistic and manageable framework: a concentration of such a new effort on the least developed countries would be an obvious necessity but it would not necessarily be an exclusive approach.

Ten years after UNCSTD the process of Internationalization of science and technology and thus the need for an effective international organization and transmission of knowledge is felt, on a worldwide scale more than ever. The world, in the last decade of this century, is entering into a system of geo-political multipolarity. The UN system in this context, will remain the universal platform (not the sole actor) for multilateral scientific and technological cooperation efforts concerning the increasingly important issues dealing with:

- a) the global commons
- b) the advancement and diffusion of knowledge
- c) the technical assistance on all aspects not covered by the network of bilateral relations

The World Problematique on the eve of the 21st century offers to the World Science and Technology Community unprecedented opportunities for international development.