COMMISSION OF THE EUROPEAN COMMUNITIES

SEC(92) 677 final

Brussels, 9 April 1992

COMMUNICATION FROM THE COMMISSION
TO THE COUNCIL AND
THE EUROPEAN PARLIAMENT

Scientific and Technological Cooperation with Developing Countries and its synergistic relations with development funds

Scientific and Technological Cooperation with Developing Countries and its synergistic relations with development funds

I. Introduction

1. Through this communication, the Commission intends to promote discussion on the definition of a medium and long-term Community strategy for scientific and technological cooperation with developing countries (DC's). This would also allow the Commission to propose a reorientation and rationalisation of the existing specific instruments of this cooperation in the context of the R&TD Framework Programme while improving its liaison with the Community's development funds. It is thought that these activities would result in higher cost-effectiveness ratios in scientific and technological cooperation, particularly through the use of the much needed and highly desirable synergies between Community funding for R&TD and for development.

2. In addition, this communication would like to focus on a range of problems faced by DC's, taking into account the complementary nature of "economic cooperation" based on mutual interest and "aid to development" all seen in a scenario of the Community's growing influence in the Third World. This presupposes an intensification of the scientific and technological cooperation with DC's to support "capacity building" and "technological cooperation", based on human capital formation and the promotion of an enabling environment for technologically driven development.

II. The nature of the problem

3. The role of Science and Technology in the development process is universally accepted nowadays. DC's have expressed their awareness of this fact on several occasions (the UN Conference on Science and Technology for Development - UNCSTD, regional conferences in Africa, Latin America and Asia, and during the bilateral negotiations of Agreements for Economic Cooperation with the Community), and also their interest in strengthening their R&TD capacity in the areas of agriculture, health, the environment, energy and natural resources as well as in relation to subjects such as new materials and information and communication technologies (ICT).

4. The well-known problems faced by DC's combine to create a very difficult situation for these countries. These socio-economic problems (economic recession, external debt, demographic growth and population movements, epidemics, natural disasters like drought or floods, malnutrition and environmental degradation), as well as the increasing needs of DC's and unbalanced economic policies, have created increasingly difficult situations in the Third World. This context of "structural emergence", one of the areas which has badly lacked support in development policies of several DC's in the past few decades has been the low importance attached to human capital formation, a determining factor of long-term economic growth, and to the creation of an enabling environment for the use of professional competence. R&TD budget allocations and also those for education are often very restricted and constitute important limiting factors in the development of national scientific and technological capacities. Therefore, human capital formation cannot be dissociated from the process of local scientific and technological production. The rapid development of science and technology threatens to further marginalise DC's.

5. Investment in people constitutes a pre-condition for access to knowledge and technology and promotes high returns from education and rapid growth in productivity.

Sustainable development is dependent upon long-term economic growth. The critical role of knowledge in promoting long-term growth is now recognised and provides a reasonable explanation of why labour and capital are not able by themselves to maintain growth in the absence of technological progress. It is currently accepted that capital and labour account for half or less of the growth in output per unit of all inputs combined. This implies that developing economies have to invest in knowledge in the same way as they invest in production infrastructure in order to generate a positive interaction in which investments spur knowledge and knowledge spurs investment. A good example of the strategic importance of human capital in rapid and equitable economic growth is that recorded in a number of Asian countries which draw upon a well-trained workforce and which realise how much they are dependent for their future growth on sustained technological progress and the continuous investment in their technical and scientific staff to ensure their competitiveness in international markets.

III. The role of the Community: an overview

A. The development funds

6. The EC has always considered solidarity with and aid to DC's as one of its political priorities. The Lomé Convention and the cooperation and association agreements with Mediterranean, Latin American and Asian countries are its foremost examples.

This political will has been reaffirmed and permanently introduced in the Treaty of Maastricht through the integration of the policy for aid to development in the common external relations policy described in its title XVII, Article 130U: "The Community's policy in this area of development cooperation, which is complementary to those effected by the Member States, is to foster sustainable economic and social development in developing countries and more particularly in the poorest of them; to promote their smooth and gradual integration into the world economy and to campaign against poverty in developing countries".

7. Community resources for development aid (European Development Funds (EDF)), Mediterranean financial protocols, financial and technical cooperation with the DC's of Latin America and Asia (ALA) also allow R&TD development aid to be funded.

8. For ACP countries the total amounts to 101.397 MECU between 1965 and 31 December 1991 allocated in the following way.

1965-1985 (Yaoundé Convention and Lomé Conventions I and II). 33.494 MECU of which 6.315 MECU came from national indicative programmes and 27.179 MECU from regional cooperation funds.

1985-1991 (3rd Lomé Convention): 67.903 MECU of which 36.650 MECU came from national indicative programmes and 31.253 MECU from regional cooperation funds. The large increase in the use of national indicative funds is essentially due to two countries, Kenya and Nigeria, which allocated 16 MECU and 17.770 MECU, respectively, to agricultural research.

The projects supported from the EDF mainly concerned plant production (80%) with 20% on livestock production.

The costs covered infrastructure, operation of the research, as well as technical assistance.

Around 47% of funds for regional projects were implemented by international agricultural research institutes based in Africa, mainly those managed by the Consultative Group on International Agricultural Research (CGIAR) (the International Institute for Tropical Agricultural - IITA, the International Livestock Centre for Africa, Ethiopa - ILCA, International Laboratory for Research on Animal Disease, Kenya - ILRAD, West Africa Rice Development Association - WARDA).

As the programming for the regional funds of the 4th Lomé Convention has not yet been completed, it is impossible at this stage to predict the outcome. However, the preparatory documents indicate that agricultural research will almost certainly be retained as one of the significant sectors eligible to benefit from regional funds.

9. 4.6 MECU was attributed to agricultural research in South and East Mediterranean countries. Other research sectors also benefitted from funds provided for in agreements with financial protocols of certain countries, for example, a teledetection project with Morocco - 1.6 MECU, a project on Artemia production for the development of aquaculture and marine research with Egypt - 3.2 MECU.

10. With respect to Latin America and Asia, 95.470 MECU was utilised for agricultural research from a budgetary line open to these regions from 1976 onwards. The major part of this amount (88%) was allocated to the funding of the core budgets of six International Agricultural Research Centres of the CGIAR (International Centre for Tropical Agriculture, Colombia - CIAT, International Maize and Wheat Improvement Centre, Mexico - CIMMYT, International Potato Centre, Peru - CIP, International Crops Research Institute for the Semi-Arid Tropics, India - ICRISAT, International Rice Research Institute, Philippines - IRRI, International Service for National Agricultural Research, Netherlands - ISNAR). For 1991, the Community contribution to the budgets of these six centres amounted to 9 MECU.

B. The funds for research

11. Community activities for R&TD have always paid attention to the needs of DC's. The Community has endeavoured to stimulate the existing research capacities in DC's to promote their association with European research (and at times into international research), oriented towards the solution of global problems such as nutrition, the environment, desertification, deforestation and human health. This orientation stems from the fact that a significant number of problems affecting DC's are in fact world problems which are also of direct concern to Europe. This is why scientific and technological cooperation includes R&TD activities and also "capacity building" (human capital and institutional strengthening) which determine knowledge interactions between the scientific and technological communities of Member States and DC's.

12. These various considerations have led the Community to create two specific instruments for scientific research and technological development with DC's namely, the "Science and Technology for Development" programme (STD) of which the first phase was adopted by the Council of Ministers on 3/12/1982, and the budget line entitled "International Scientific Cooperation"[1] implemented since 1984. These different instruments have evolved independently, even if they are based on the same and original approach to cooperation with the common denominator being the association of these countries' capacities with

---

[1] This line also covers the funding of scientific cooperation with certain developed countries

those of the Community in the areas under consideration through the implementation of joint research activities.

The programme "Science and Technology for Development"

13. This programme, currently in its third phase, involves agriculture and medicine, nutrition and health in tropical and sub-tropical regions, including the environmental conservation and regeneration aspects associated with the above mentioned two areas. The programme is applicable to all DC's without distinction.

14. The first phase of the STD programme (1983-1986) had as its legal base, Article 235 of the EEC Treaty and was approved through Decision 82/637/EEC of 14/12/1982. With a budget of 40 MECU, STD1 aimed at mobilising the European tropical research capacities mainly through: the strengthening of scientific and technological cooperation potential in Member Countries; the improvement in concertation between research institutions in both Member States and DC's; and, exploiting the complementarity in research and methodologies between partners.

15. The second phase of the programme (STD2, 1987-1991) constitutes one of the specific programmes of the 2nd Community Framework Programme for R&TD and refers to Article 130Q, paragraph 2 of the European Single Act. It was approved on 14/12/1987 through Council's Decision 87/590/EEC. With a budget of 85 MECU, it has complemented the objectives of STD1 and introduced new measures such as the creation of or support to cooperative research networks and the inclusion of advanced training for young scientists in joint research projects.

A renewed dynamism in tropical research was noticed as a result, expressed in a wide mobilisation of institutions in Europe and DC's, the strengthening of intra-European cooperation with DC's and also the emergence of a transnational and/or regional cooperation between DC's on common problems. The analysis of the implementation of STD2 between 1988 and 1990 shows that 75% of the 300 research contracts signed during this period have 4 or more partners and have involved the participation of 303 different European research centres, 188 African, 70 in Latin America, 66 in Asia and 3 in Oceania. In addition to the scientific results obtained, this cooperation has contributed towards a qualitative and quantitative increase of research teams in DC's, an essential pre-condition to the implementation of an effective scientific cooperation with the Community Member States as well as between DC's.

16. The third phase of the programme (STD3, 1991-1994), was allocated an initial budget of 111 MECU and is one of the fifteen specific programmes of the third Framework Programme for R&TD. It was approved on 19/07/1991 through Decision 91/366/EEC. Its research content is targeted on mobilising themes

associated to development needs. This allows a concentration of efforts on relevant topics, an improved focus on interfaces between major areas and the adoption of inter and multidisciplinary research approaches resulting in more significant impact. In STD3, there is a continuing interest in benefitting from the involvement of certain research teams mobilised by other specific programmes of the Community's R&TD Framework Programme. This objective is achieved by offering to these teams the possibility of extending their scientific interests to the tropics and participating in certain development activities supported by the Community, within the scope of the financial protocols providing assistance to DC's, in order to create the necessary synergies between Community supported research and development activities.

17. The financial resources allocated between the creation of the programme and the end of 1991 totals 149 MECU and is reflected in the implementation of 797 research contracts and the organisation of 57 scientific expert meetings on themes as varied as the aggravation of the malaria problem, schistosomiasis, research on cassava, resistance to drought and also the creation of cooperative research networks on small ruminants, perennial oil crops and tropical forests and health systems research methodologies.

The activities of "International Scientific Cooperation

18. This action is implemented outside the Framework Programme and its budget is decided each year. It includes activities of preparation and accompanying and support measures (APAS) to scientific and technological cooperation within the scope of bilateral cooperation agreements signed by the Community and DC's in Latin America, Asia and the Mediterranean (ALA-MED). It is open to all scientific domains and follows the procedures defined in economic cooperation agreements between the EC and third countries which make specific mention of S&T cooperation. These procedures also require an annual consultation between the two sides, on the occasion of the Joint Committee Meeting concerning the research proposals received following a call for proposals and evaluated by independent experts.

19. The implementation of these actions is a prerogative of the Commission's power to execute its budget. As such, it follows a procedure different from that of STD. In addition to joint research contracts, International Scientific Cooperation has the possibility of organising seminars and workshops on specific themes and also that of awarding post-doctoral research fellowships to allow DC scientists from ALA-MED countries to work usually for 12 months, in general, at European research institutions. The last two types of action do not constitute an objective by themselves since they aim at facilitating the contact between scientists in order to improve the preparation of high quality joint research projects. In this way, and in addition to advanced training, researchers from DC's have the possibility of designing joint research projects with European institutions, while strengthening the links between scientific communities in a sustained way.

20. The total financial resources spent from 1984 until the end of 1991 amount to 90 MECU, corresponding to 400 research contracts, 26 scientific meetings and 735 post-doctoral fellowships for scientists from ALA-MED DC's. The scientific domains covered may include chemistry of natural products, mining technology, seismology in areas at risk, new materials, biotechnologies and water treatment technologies, according to the scientific capacity and priorities defined by the countries involved.

21. The domain of information and communication technologies has not been absent from this type of cooperation, although its presence is relatively recent. Currently several cooperation activities are being implemented in Asia and particularly in China and India, two countries with whom cooperation memoranda have recently been signed, as sectoral activities of general cooperation agreements. In this context, joint activities were supported in the areas of telecommunications, standardisation, electronics and software development. These activities range from the establishment of a Software Engineering Centre and the rehabilitation of laboratories for quality control to feasibility studies for the creation of a workshop for Surface Mounted Devices or even for long-term training in the areas of Quality Assurance, Quality Control and Quality Management. A similar situation exists with Mediterranean countries where regional cooperation currently exists for the installation of an EDI network to interconnect the main ports and also specific activities are being undertaken, particularly with Tunisia.

In Latin America, the Commission has also participated in several endogenous programmes involving ICT; for instance, in collaboration with UNESCO and the Latin Union, it is contributing to the definition of an information system for the scientific community of Latin American and Caribbean countries; and participates also in the rehabilitation of the Telecommunications National Higher Education Establishment of Mexico.

The total cost of ICT activities was 6.1 MECU in 1991.

22. In synthesis, at the end of 1991, ie. 9 years after its start, 245 MECU had been committed for scientific and technological cooperation with the third world. STD and International Scientific Cooperation have mobilised thousands of European and DC researchers in hundreds of institutions in Member States and DC's. These two instruments have effectively demonstrated the enormous potential that exists for scientific and technological cooperation between the Community and the Third World.

23. In 1992, 46.9 MECU has been allocated to the STD3 budget and around 37 MECU for the activities of International Scientific Cooperation with ALA-MED countries, including cooperation in ICT which accounts for approximately 7 MECU. Furthermore, the European Parliament has created a new budget line (B7-5035) entitled "Programme AVICENNE" (scientific and technical cooperation with Maghreb and other countries in the Mediterranean Basin), endowed currently with 5 MECU.

C. The current coordination between the existing instruments

24. Concertation and coordination between the different actions concerning the implementation of the Community R&TD and external relations policies with DC's take place on a regular basis.

25. In this respect, positive aspects include dual representation in the Commission delegations in meetings of international organisations such as the Consultative Group on International Agricultural Research (CGIAR), Special Programme for African Agricultural Research (SPAAR) and Observatoire du Sahara et du Sahel (OSS), as well as jointly preparing programmes and projects concerning, for example, the provision of financial support under the Lomé Convention appropriations, to the research centre at Nyombé in Cameroun, the IRAZ centre in Burundi, the Centre for regional studies on the improvement of adaptation to drought in Senegal, the regional livestock centres in West Africa. Other examples in the area of health include collaboration for the strengthening of research and development structures in Kenya (National Museums of Kenya and Institute of Primate Research), concertation on the preparation of a health sector plan in Burundi, and the joint identification of centres of excellence for biomedical and health systems research in Zimbabwe.

Future prospects also include the cases of tropical forests, health and production of livestock, coffee research in Africa, and in the area of human health - the creation of a major research network EC/DC on health systems research. Support to research networks, which are in the process of being set up on the initiative of African researchers, are also the subject of a joint appraisal prior to any decision on providing assistance.

New large programmes such as that relating to the Amazonian forest give a new dimension and a new momentum to coordination between actions which are already significant since these are the result of certain activities developed previously by International Scientific Cooperation.

26. Also in the context of coordinating R&TD and development actions, a regional meeting held in Tegucigalpa in June 1991 led to the preparation of a regional programme of technical assistance and development in the sector of telecommunications in Central America for an amount of 17.5 MECU of which 13.8 MECU is managed by the Commission. The corresponding Convention was signed by Foreign Affairs ministries during their San José meeting which took place in Lisbon in February 1992. In essence, the programme aims to strengthen regional and national capacities in the area of telecommunications by simultaneously putting an effort into the organisational framework and the exploitation of these capacities. In a complementary way, emphasis will also be placed on the infrastructure itself with a view to producing a direct impact, and which could be used for demonstration purposes. In this respect, there are six projects on rural telecommunications and the strengthening of transmission infrastructures.

IV. Outline of a future strategy

27. As mentioned in previous paragraphs, the Community has implemented with success, specific R&TD cooperation instruments with DC's which have demonstrated the feasibility and the effectiveness of strengthening EC/DC links in the area of research for development.

With this experience, the increasingly favourable acceptance by European and DC institutions, the new orientations of the Community in its cooperation for development policy, as well as in its research policy, it is now an appropriate time to reorganise the existing scientific cooperation instruments. The Commission considers it appropriate to improve the coherence of the current situation by taking account of the various developments envisaged.

28. The international dimension represents one of the foundations on which the Community research and technological development strategy is based. The Maastricht Treaty is clear on this point. Article 130G mentions the promotion of R&TD collaboration with third countries and international organisations as the second of four actions of a general nature to be developed and implemented by the Community. Article 130F, in turn, states that the Community will also endeavour to "promote research activities considered necessary by virtue of other Treaty provisions". Article 130M states that, "In implementing the multiannual framework programme the Community may make provision for cooperation in Community research, technological development and demonstration with third countries or international organisations. The detailed arrangements for such cooperation may be the subject of agreements between the Community and the third parties concerned, which shall be negotiated and concluded in accordance with Article 228".

In this respect, amongst others, the Commission is still favourable to the opening of certain specific programmes to participation by third country organisations, including those from DC's, naturally according to the level of scientific contribution which they could provide and thus the benefit to European research which could result.

In the light of this and above all the strategic choices indicated both in COM 2000 and in the document ["Research After Maastricht. An Assessment, a Strategy"], it seems necessary as a first step that the R&TD actions within the 4th Framework Programme relevant to the various scientific cooperation activities with DC's should be combined.

29. In this context it is useful to indicate the main instruments and activities around which future scientific cooperation with DC's will be established. This should naturally be fully complementary with activities carried out by the Community in the more general context of its development aid policy. The following may be cited in particular:

a) the implementation of the Lomé IV Convention, and notably the national and regional indicative programmes

b) the current interinstitutional dialogue between the EC and the regional groupings of countries such as ASEAN, Andean Pact, San José Group and more recently the "Rio Group" which emphasises cooperation in liaison with regional integration, international commerce, environmental protection and especially scientific and technological cooperation on a pluriannual basis.

c) the GATT negotiations and their effect on the quality of goods exported by DC's to Europe, which will require DC's to acquire an increasing command of technology.

d) the Council Regulation on financial and technical aid and economic cooperation with the DC's of Latin America and Asia.

e) the revised Mediterranean policy.

30. Scientific cooperation should provide both an efficient complement to the development aid policy and contribute to researching solutions to the major problems concerning DC's as well as associating DC's - albeit at different levels - with the European research effort.

On the basis of the experience acquired, three categories of problems can be identified:

a) global problems such as climatic change, conservation of tropical forests or the control of AIDS, the harmonisation of standards affecting international trade.

b) general problems which affect the majority of DC's, the scope of which is governed by the degree of development of the country in question, for example, public health and nutrition, sustainable utilisation of natural resources, energies for development and their impact on the environment, production activities in the agricultural sector, and linked activities in the industrial and service sectors, the role of communication and information systems in the process of regional economic integration.

c) problems of a local nature, strongly linked to political and economic choices taken at a national level, such as mining and extraction of minerals, efficient utilisation of the energy from fossil fuels and its impact on the environment, new products of biological origin and new materials and associated technologies, information technologies and telecommunications.

31. Whatever the nature of the objectives, scientific research is an activity which concerns the medium or long-term in terms of the generation and dissemination of knowledge. This requires an increased Community effort, also by means of pluriannual planning of resources, and a close coordination between the different actions which should benefit from better targeting. 'Human capital' is a key factor in this respect. Scientific and technological cooperation activities play an important role in the formation of human capital, either directly by means of advanced training of researchers who participate in joint research projects, or indirectly by increasing the quality of universities and research centres. Therefore, it has proved to be very important to exploit the synergy between R&TD cooperation actions and actions financed by Community development funds, particularly those for the training of personnel and for the creation and development of infrastructures, particularly those concerning research/training.

V. Implementation

32. Without prejudice to other actions which could be undertaken on other bases, taking account of the above paragraphs, R&TD cooperation with DC's could, in particular, follow a dual approach in the new framework programme, which will combine the current STD programme and actions outside the new framework programme. This would be completely in line with the articles of the new Treaty on European Union.

a) a thematic approach for dealing with well thought out topics of concern to all DC's. This approach, which corresponds to the existing STD programme, widened to include areas such as, for example, renewable energy and strengthening those concerning natural resources and the environment, would have the same general objectives as this specific Community R&TD programme defined in the Council Regulation. These objectives are in part the same as those defined in the different instruments for development aid.

b) a geographic approach in the context of scientific and technological cooperation adjusted according to the various degrees of development of these countries. In this case, it will be necessary to identify, country by country, or even by region, the scientific and technological priority areas which correspond to national or regional concerns as well as to Community interests. These priorities could be established, for example, after a study of the scientific potential of the centres interested in cooperation in each of the countries with which the EC envisages these arrangements, or at the regional level.

33. Thus, the next framework programme could include two main activity areas:

a) Science and Technology for Development, with the objective of strengthening the scientific and technological basis and by contributing to the identification of solutions to problems related to meeting the basic needs of DC populations, ie. food and health security, energy supply, information systems including telecommunications, improvement in health. In addition, to ensure a sustainable and efficient development the safeguarding of natural resources and the protection of the environment.

b) Science and Technology in the context of Economic Cooperation with the aim of promoting cooperation with ALA-MED DC's on topics of bilateral and mutual interest and identified in the context of economic cooperation and on topics which encourage regional integration for this group of countries.

34. Apart from the natural synergies which result from interactions with other specific Community R&TD programmes, or those which should be encouraged, a number of institutional synergies could therefore be strengthened and consolidated. This would have a considerable impact on the cost effectiveness of Community actions in this sector as well as having a significant effect internationally.

On the one hand, this would consist of a coordination between Community R&TD actions and actions carried out by varius Member States in the context of bilateral cooperation as foreseen by Article 130H of the new Treaty on Political Union, and on the other:

a) coordination of efforts to ensure long term funding of the operation of certain DC research institutions through development funds and by supporting specific research projects.

b) dissemination and valorisation of research results by utilising interface institutions which exist in the Community, such as the Technical Centre for Agricultural and Rural Cooperation (CTA), the Centre for the Development of Industry (CDI) and also regional organisations in DC's.

c) aid for the participation of researchers in activities which are precursors to investment and which utilise new scientific knowledge. These would be associated, in particular, with financial institutions such as the European Investment Bank, the World Bank and the regional Development Banks.