
EUROPEAN PARLIAMENT

Working Documents

1982-1983

10 May 1982

DOCUMENT 1-202/82

REPORT

drawn up on behalf of the Committee on Development and
Cooperation

on the proposal from the Commission of the European
Communities to the Council (Doc. 1-271/81 - COM (81)
212 final) for a Council decision adopting a programme
of research and development in the field of science and
technology for development 1982-1985

Rapporteur: Mrs R.-C. RABBETHGE

By letter of 27 May 1981 the Council requested the European Parliament to deliver an opinion on the proposal from the Commission of the European Communities to the Council (Doc. 1-271/81) for a Council decision adopting a programme of research and development in the field of science and technology for development 1982-1985.

On 5 June 1981 the President of the European Parliament referred this proposal to the Committee on Development and Cooperation as the committee responsible and to the Committee on Energy and Research, the Committee on the Environment, Public Health and Consumer Protection and the Committee on Budgets for their opinions.

On 23 June 1981 the Committee on Development and Cooperation appointed Mrs Rabbethge rapporteur.

The committee discussed the Commission proposal and the draft report at its meetings of 21 October 1981, 18 March 1982, 2 April 1982 and 30 April 1982.

At its meeting of 30 April 1982 the committee decided by 15 votes with 9 abstentions to recommend that Parliament approve the Commission proposal subject to the attached amendments. The Commission informed the committee that it was prepared to accept amendments N°s 1 to 8.

The committee nevertheless decided to reserve the possibility of recommending that Parliament apply Rule 36(2) of the Rules of Procedure.

The committee then adopted the motion for a resolution by 15 votes with 9 abstentions.

The following took part in the vote: Mr Bersani, vice-chairman, Mrs Rabbethge, rapporteur, Mr Cohen, Mr de Courcy Ling, Mrs Dury, Mr Enright, Mr Fellermaier, Mrs Focke, Mr Fuchs, Mr Howell, Mr C. Jackson, Mr Lemmer (deputizing for Mr Lecanuet), Mr Lezzi, Mr Lüster, Mr Michel, Mr Narducci, Mr Pannella, Mr Papantoniou (deputizing for Mr Kühn), Mr Pearce, Mrs Pruvot (deputizing for Mr Sablé), Mr Rinsche (deputizing for Mr Vergeer), Mr Sherlock, Mr Wawrzik, Mr Wedekind.

The opinions of the Committee on Energy and Research, the Committee on the Environment, Public Health and Consumer Protection and the Committee on Budgets are attached.

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The Committee on Development and Cooperation hereby submits to the European Parliament the following amendments and motion for a resolution together with explanatory statement:

TEXT PROPOSED BY PARLIAMENT

COMMISSION TEXT

Proposal for a decision adopting a programme of research and development in the field of science and technology for development 1982-1985 (Doc. 1-271/81)

AMENDMENT N° 1

Seventh recital

Amend this recital to read:

Whereas it is necessary to establish greater cooperation among scientists in the various Member States and the developing countries with a view to facilitating the complementarity of research and methodologies and ensuring easier access to the different networks of scientific relationships established by the Member States with their Third World partners;

AMENDMENT N° 2

Eleventh recital

Amend this recital to read:

Whereas, in view of the object and specificity of this programme, which is carried out in the interest of the developing countries and should be implemented in close cooperation with them, it is consequently advisable to lay down special rules for the dissemination of the results of the programme;

Seventh recital

Whereas it is necessary to establish greater cooperation among scientists in the various Member States with a view to facilitating the complementarity of research and methodologies and ensuring easier access to the different networks of scientific relationships established by the Member States with their Third World partners;

Eleventh recital

Whereas, in view of the object and specificity of this programme, which is carried out in the interest of the developing countries, it is consequently advisable to lay down special rules for the dissemination of the results of the programme;

AMENDMENT N° 3

Article 1

Amend Article 1 to read:

An outline programme of research and development to support and reinforce the scientific activities of the Member States in the field of science and technology for development to help the developing countries, as set out in the annex hereto, is hereby adopted for an initial period of four years commencing 1 January 1982 with clearly defined priorities and should be followed up, after close examination, by a further programme together with additional finance.

AMENDMENT N° 4

Article 1(a)

Add the following:

'Under the overall programme there shall be provision for competent bodies based in the European Community to submit their own proposals for research and development projects, supported by recommendations or requests from developing countries. The general criteria for selecting such projects are given in Annex B. The Commission, in deciding whether such projects are eligible, will also follow the consultation procedures provided for under Article 3 of this Regulation.'

Article 1

A programme of research and development to support and reinforce the scientific activities of the Member States in the field of science and technology for development, as set out in the annex hereto, is hereby adopted for a period of four years commencing 1 January 1982.

AMENDMENT N° 5

Article 2

Amend the first paragraph to read:

The financial requirement for the first phase of the programme is estimated at 40 million ECU and the staff requirement at 9 officials. The ECU is defined in accordance with the financial regulations in force.

AMENDMENT N° 6

Article 3

Add the following to Article 3:

Representatives of the developing countries, who are experts in the relevant research areas, shall have the right to speak in both Advisory Committees on Programme Management and shall be involved in the practical implementation of the various aspects of the programme. In order to ensure optimum coordination between the

Article 2

The financial requirement for the duration of the programme is estimated at 40 million ECU and the staff requirement at 9 officials. The ECU is defined in accordance with the financial regulations in force.

Article 3

The Commission shall be responsible for the execution of the programme. Two Advisory Committees on Programme Management shall be set up, one for the sub-programme 'Tropical Agriculture' and the other for the sub-programme 'Medicine, Health and Nutrition in the Tropics'. The tasks and composition of the committees are defined in the Council resolution of 18 July 1977 on Advisory Committees on Programme Management. Representatives of the Standing Committee on Agricultural Research (SCAR), of the Committee on Medical Research and Public Health (CRM) and of the Technical Centre for Agricultural and Rural Cooperation (CTA) will participate in the work of these ACPMs.

Commission, on the one hand, and the programme management committees on the other, representatives of relevant international organizations may attend these meetings.

AMENDMENT N° 7

Article 4

Amend Article 4 to read:

During the third year of the programme the Commission, with the assistance of competent independent scientists, including a sufficient number from the developing countries, shall evaluate it and, if necessary, propose appropriate modifications.

AMENDMENT N° 8

Article 5

Amend paragraph 3 to read:

The Commission must communicate this information primarily to the developing countries, not only those with which the Community has concluded association or cooperation agreements and to the non-associated developing countries which benefit from financial and technical aid from the Community, but to all developing countries which urgently require it and are in a position to use it; it may also make communication of this information subject to conditions which it shall lay down.

Article 4

During the third year of the programme, the Commission shall evaluate it and, if necessary, propose appropriate modifications.

Article 5

3. The Commission shall communicate the information and inventions which it has the right to transmit to the Member States as well as to persons and undertakings which pursue, on the territory of a Member State or in a developing country, a research or a production activity justifying access to such information. The Commission may also communicate this information to the developing countries, particularly those with which the Community has concluded association or cooperation agreements, and to the non-associated developing countries which benefit from financial and technical aid from the Community; it may also make communication of this information subject to conditions which it shall lay down.

A
MOTION FOR A RESOLUTION

embodying the opinion of the European Parliament on the proposal from the Commission of the European Communities to the Council for a decision adopting a programme of research and development in the field of science and technology for development 1982 - 1985

The European Parliament

- A. having regard to the proposal from the Commission of the European Communities to the Council (COM (81) 212 final) and the relevant working document (SEC(82) 437),
- B. having been consulted by the Council (Doc. 1-271/81),
- C. having regard to the report by the Committee on Development and Cooperation and the opinions of the Committee on Energy and Research, the Committee on the Environment, Public Health and Consumer Protection and the Committee on Budgets, (Doc. 1-202/82)
- D. having regard to the votes on the Commission proposals,
- E. having regard to the resolution on the European Community's contribution to the campaign against world hunger¹ adopted by the European Parliament on 18 September 1980,
- F. having regard to the 'Vienna Action Programme'²,
- G. having regard to the Chasle report on cultural cooperation between the ACP States and the Community³,
- H. having regard to the European Parliament's resolution of 8 May 1981 on the creation of a European Community Foundation for International Technological and Scientific Cooperation⁴,
- 1. Welcomes the fact that the Commission intends to increase cooperation with the developing countries in the area of research and development, especially as the Commission has not put forward any proposals in this connection since 1976;

¹ OJ No. C 265 of 13.10.1980, Doc. 1-341/80

² UN Resolution No. 34/218 of 23.1.1980

³ Doc. ACP/EEC/27/81; resolution in OJ No. C 15 of 20.1.1982

⁴ OJ No. C 144 of 15.6.1981

2. Believes that the programme should make provision for competent bodies based in the European Community to submit their own proposals for research and development projects, supported by recommendations or requests from developing countries;
3. Agrees that priority should be given initially to tropical agriculture and medicine, health and nutrition within the framework of the proposed research programme, as both sectors are of fundamental importance for improving living conditions and the economy in the developing countries;
4. Considers it necessary, in view of the precarious food situation in most developing countries, to give the highest priority to a comprehensive programme of intensive agricultural research, as this is an essential prerequisite for increased agricultural productivity and a greater degree of rural development;
5. Is aware that there is an urgent need for more basic and strategic research to help the developing countries in the field of agriculture by supplementing existing FAO assistance programmes and the work of international agricultural research institutes affiliated to the CGIAR, since the latter are occupied almost exclusively with applied research;

stresses, furthermore, that certain types of basic research cannot be carried out in the developing countries at present because of inadequate infrastructures;
6. Advocates, therefore, the expansion of basic agricultural research in the Community subject to the following conditions:
 - European agricultural research, as defined in the programme, must be geared systematically to the real requirements of the developing countries
 - the criterion for selecting research institutes to undertake problem-oriented basic research should be the standard of excellence and not underuse of available capacity;
7. Regrets in this connection the concentration of the programme exclusively on basic research in the Community and consequently urges the Commission to include field research as an equally valid part of its programme of work subject to the following conditions:

- availability of financial resources to carry out the work on-the-spot;
- direct links in the form of cooperative research contracts or complementary cooperation programmes;
- the complementarity of the work of research centres in the European Community and of related facilities in the developing countries must be intensified by means of research partnerships;
- the distribution of work must be based on the tasks to be performed and the resources of the institutes in terms of staff and technical facilities, with international research institutes being included in the allocation of work;
- the infrastructure which already exists in a number of developing countries should be used and expanded by financial and further training measures;
- promotion of the exchange of scientists from the Community and the developing countries to work together on long-term research projects;
- specific research activities should be carried out on behalf of institutes in the developing countries in centres located in the European Community using the facilities available there, and certain field-related research work should be carried out by institutes in the developing countries on behalf of research centres in the European Community;
- research should be project-based and be closely coordinated with the implementation of projects;
- help must be given to expand or create regional research facilities to cover areas which cannot be tackled by the Consultative Group on International Agricultural Research (CGIAR);
- selective promotion of interdisciplinary research and an increase in the publicity work carried out by research institutes in the developing countries;
- development of test facilities for technologies intended for the developing countries;

8. Considers that many of the proposed research projects in the area of tropical agriculture cannot be carried out with the proposed funds of 30 million ECU or within a period of four years; considers that the proposed topics are extremely important but that, because of the large number of priorities, overriding objectives have not been set, a scale of priorities established or specific research topics evaluated;
9. Considers it necessary, therefore, to review the content of the research programme and, as indicated in detail in the explanatory statement, recommends concentration on a few key areas which are not already covered by other multilateral institutions;
10. Stresses that the research work must be concentrated on the basic needs of the developing countries and that the establishment of a multidisciplinary research programme on problems relating to agricultural production and the development of agricultural technologies and economies, including forestry and fisheries, is of crucial importance;
11. Recommends in this connection an increase in system-oriented and integral research and more intensive examination of interactions, reactions and causal links with reference to cultural identity and the economic, political and socio-cultural environment;
12. Notes that there are substantial gaps in basic research in the area of tropical medicine and consequently supports the expansion of some areas of basic medical research (biochemistry, genetics, immunology and pharmacy) in the Community, as the WHO's current programmes cover only certain aspects and as most developing countries are also not in a position at present to carry out this high technology research themselves for financial reasons and because of the lack of infrastructures; research relating to traditional local medicine should also be included on a scientific basis;
13. Urges that the full support of the Community be given to relevant research in the developing countries as well as to research activities in the Community and that the developing countries be given the

necessary financial and technical assistance to set up their own basic research infrastructures;

14. Draws the Commission's attention to the fact that the costly health service of the industrialized countries cannot simply be transferred to the third world and would therefore like the Commission's proposal to say something about how health services can be most effectively organized and the most common diseases in the developing countries combated at the least cost;
15. Calls also for active support for specialized research centres engaged in the development of medicines for use in tropical countries and vaccines for the mass treatment or prevention of major epidemics;
16. Considers it necessary, given that the resources available are limited to 10 million ECU, to redefine the priorities for research into diseases as proposed in the explanatory statement and, in particular, to delete some research projects which are not geared to the specific needs of the tropics;
17. Hopes, on the other hand, that the subject area 'capacity and fitness of people at work' (ergonomics), particularly in the rural areas of the tropics, will be included in the research programme;
18. Points out that, in addition to basic research, priority must be given to evaluating and applying existing research findings with particular emphasis on:
 - collating, publishing and applying existing programmes and adapting known methods and treatments for use at village level, particularly in the case of undernourishment and malnutrition of mother and child, diarrhoea and tetanus;
 - developing new methods for treating known but as yet unsolved problems such as pneumonia and eye and skin diseases;
 - establishing methods for gathering data on the health situation and developing basic health services which would be suitable for most developing countries;

19. Considers the link between medicine and social science mentioned in the chapter on environmental health to be very important, as the research projects should be established on a multidisciplinary basis where possible from the very outset;
20. Regrets that the Commission document mentions only an effective European research potential and demands therefore that the training of scientists from the developing countries be included in the programme and that account be taken of this in the budget, as it represents a very important long-term investment;
21. Emphasizes that the research programme in the interest of the developing countries can be carried out successfully only if the same weight is attached to training and further training in the developing countries as to the content of the research itself, with such training being geared to the target groups in the developing countries given the need to establish local research teams to carry out development-oriented research;
22. Attaches great importance to further training for teachers in research and advisory services, as there is a great shortage of experts in research administration and management;
23. Considers that it is absolutely essential, particularly in the area of medical training, for the Community to assist medical schools in the developing countries by means of bilateral projects and the provision of experts within the framework of the research programmes, since the teaching of medicine can be geared more closely to real needs if it is provided in the developing countries themselves;
24. Calls for appropriate preparation of doctors from the developing countries trained in the Community for the professional duties they will have to perform in their home countries; given the brain drain problem, consideration should also be given to the possibility of providing reintegration assistance for doctors when they return to their home countries, as is already the case under some of the bilateral agreements concluded by EEC Member States;

25. Regards the promotion of partnerships between institutes and twinning arrangements in the case of similar structures and areas of research as important, and calls for appropriate funding for travel expenses, particularly those of guest researchers from the developing countries visiting the Community;
26. Is aware that the transfer of available research results to developing countries is still inadequately organized and coordinated, although good information systems exist to which the developing countries have access; however, as the use of such systems is a question of cost and level of training, appropriate assistance from the Community is urgently needed;
27. Considers the existing information systems to be adequate, but urges the Commission to study ways of making greater use of the European information network 'Euronet-Diane' in the development policy area;
28. Profoundly regrets in this connection that the Technical Centre for Cooperation in Agriculture and Rural Areas provided for in Lome II has still not begun its work and urges that it do so as soon as possible; considers that one of the tasks of the centre should be to disseminate knowledge, to consider how relevant this knowledge is in practice and to apply it;
29. Stresses the importance of the resolution contained in the Lagos Plan, as it is the first time a declaration by the developing countries of one continent has attached special importance to the promotion of science and technology, and asks the Commission to take account of the Lagos Plan when implementing its programme;
30. Considers that a Community programme need not necessarily lead to duplication of work, provided the projects are designed to fill gaps and are coordinated with those of other organizations;

calls, therefore, on the Commission to set up consultation machinery and to initiate concerted action to improve coordination; considers furthermore that it would be useful to take advantage of the activities and connections of the research networks and centres created by the FAO, WHO and CGIAR to achieve more concentrated and coordinated action;

31. Regards the proposed programme as merely a first step, since most basic research projects require a long-term approach extending well beyond the proposed four-year period, and considers that the programme can fulfil its purpose only if there is a follow-up programme which also covers the important field of energy;
32. Considers that something can be achieved in the first phase with the 40 million ECU available, provided it is concentrated on selected research activities and well-thought-out projects which will have a multiplier effect; proposes, however, that additional finance be made available for other programmes in these areas because of the long-term nature of the research;
33. Regards the proposed allocation of budgetary resources as highly provisional, since detailed priorities in the individual research areas must first be established; points out, furthermore, that this research programme involves non-compulsory expenditure;
34. Stresses that the implementing provisions will determine the real value of the programme for the developing countries; urges, therefore, that detailed rules be laid down for decision-taking, management and supervision, so that the programme objectives can not only be achieved with the desired level of efficiency and flexibility but are also consonant with the real requirements of the developing countries;
35. Considers it important to ensure that, when agreements are concluded and the implementation of the programme is being monitored, officials from DG VIII should be involved as well as those from DG XII;

36. Considers that it is crucial, at all stages of implementation, to avoid giving the impression that European research institutes which previously worked mainly overseas might be interested primarily in pursuing their own research activities with the support of the Community;
37. Stresses that, from the beginning, great care must be taken to ensure that European research institutes do not increase or embark on research which is primarily in their own interest has little or no relevance to the priorities mentioned here or is determined by decisions concerning the needs of the developing countries which take no account of the latter's views;
38. Urges, therefore, that the developing countries should not only have the right to make known their views in the two Advisory Committees on Programme Management (Article 3 of the proposal for a Council decision) planned for the two sub-programmes but should also be represented in the work involved in all the aspects of the programme;
39. Considers, furthermore, that, in order to achieve optimum coordination between the Commission and the programme management committees, it would be useful for representatives of the FAO and the WHO to take part in these meetings;
40. Considers that the programme as a whole will be meaningful only if research institutes in the developing countries are involved in the work from the outset and if the Community at the same time supports research centres in the developing countries in their efforts to expand their own local research and development capacity;
41. Urges that the optional provision contained in Article 5 be made binding, as the Commission must pass on the results of the research to the developing countries, since the programme was conceived primarily to benefit them;
42. Demands that the information be given not only to countries with which the Community has specific association or cooperation agreements but to all developing countries which urgently require such information and are in a position to use it;

43. Calls on the Commission to consider to what extent existing Community instruments and facilities available under the Community development policy could be used for this research programme in the developing countries, particularly with reference to the transfer of scientific knowledge;
44. Stresses, in conclusion, that it can and will endorse the research programme only if the Commission takes account of all the amendments to the proposal for a Council decision and of the demands set out in the resolution.
45. Instructs its President to forward the Commission proposal as amended by the European Parliament, together with the resolution as Parliament's opinion, to the Commission and the Council.

EXPLANATORY STATEMENTINTRODUCTION:Need for science and applied research to be included in the general guidelines on development policy

1. The third development decade must be marked by increased international cooperation between the industrialized and the developing countries if greater progress is to be made with development policy at the end of the current decade than was the case at the close of the first and second decades. There have, undoubtedly, also been some encouraging developments in the past and, indeed, the situation would be even more worrying had it not been for certain aid measures.

Unfortunately, the vicious circle of poverty has not been broken over the past two development decades. The situation of most developing countries is still characterized by subsistence economies, inadequate industrialization, widespread illiteracy, unemployment, epidemics, a high rate of population growth, heavy international borrowing, poor export performance and low foreign exchange revenues, but, above all, by hunger. The European Parliament's report on the European Community's contribution to the campaign against world hunger¹ unequivocally highlights this point. The EAO and the World Food Council continually point out that between 500 million and 1,300 million people are undernourished, over half of them children. A third of all children born in the developing countries die of undernourishment before the age of five. In 1980 alone 50 million people, including 13 million children, died of hunger or associated diseases. Hunger threatens not just individual regions but whole continents. In its 1980 world development report the World Bank states simply that undernourishment is most widespread in Africa and Southern Asia².

2. The developing countries and the industrialized nations must try to work out the future requirements and objectives of development policy and formulate a systematic and coherent development strategy. Development policies must not - as was often the case in the past - consist of a series of individual measures. As the developing countries are primarily responsible for their own economic and social development, they must step up their efforts and put forward their own plans.

The industrialized countries must come up with clear ideas on the whole range of their future economic, financial, political and cultural relations with the developing countries. If assistance is to be meaningful, they must, above all, have a new understanding of how the various third world countries could develop.

¹ FERRERO report, Doc. 1-341/80; resolution adopted on 18 September 1980. OJ No C 265 of 13 October 1980, pp. 37 et seq

² World development report 1980, World Bank, August 1980

3. It is appropriate at this point to consider what the traditional economic doctrines of the industrialized countries mean for the third world. The answer is simple: political economy as taught in the industrialized world and practised in economic policy is not really of much practical use in the third world. Bearing in mind the objectives of a rational development policy, it has not been possible so far to adapt traditional economic theory to suit the circumstances of the developing countries. These countries therefore do not have reliable guidelines on which to base their economic policy. The 'economics of under-development', if we can call it that, is still in its infancy and very few economic strategies are based on the conditions in the least-developed countries. The economic variables of consumption, employment and savings, which are so central to post-keynesian economics, tell us little about the situation in the developing countries, as the emphasis is wrong: the time factor, which is of secondary importance in such models, is particularly important for an analysis of the situation of the developing countries. One need only think of the strong pressure of population growth, which must be curbed if efforts to stimulate economic growth are to be successful.

4. Furthermore, models of this kind do not take account of such important factors as regional imbalances. Far too little attention is paid to the role of agricultural and social structures and little account is taken of the differences in attitude and behaviour between the peoples of the industrialized and developing countries. The economic theorists of the industrialized countries have little need to concern themselves with infrastructures and administrative apparatus. The development economist, who works on the assumption of a given institutional framework, will undoubtedly have some unpleasant surprises in store for him.

The developing countries can simply no longer afford to copy the economic behaviour of the industrialized countries. Time is short. The industrialized countries must also participate in this process in an enlightened way. The sooner the developing countries find an economic structure which suits them, the sooner their economic and social situation will improve.

5. The demand for better quality development aid is not new. However, for such improvements to be made, substantially greater resources than before must be allocated for the preparation of development activities, practical research must be stepped up and projects must be carefully planned.

Generally speaking, the objective of development aid is to provide assistance, but also to introduce innovations; new technologies, new structures and new instruments to promote development. Whether innovations are useful or not depends on the stage at which the historic socio-economic system of the developing countries collapsed or encountered difficulties in adapting to a constantly changing environment. If these

difficulties are to be identified, further information will be necessary and also a willingness to respect what already exists. Any change entails risks for the developing countries. Care must therefore be taken. The industrialized countries, particularly those responsible for development policy, should make greater efforts with regard to technical aid and spend more money on selected aid measures. Furthermore, the credibility of technical aid depends on research being undertaken with a view to introducing changes, as the ill-considered transfer to the developing countries of technical progress, which was the basis of our own development, was one of the greatest faults of development aid in the past. The kind of changes which the developing countries urgently need must, as a rule, be brought about by means of research, for example, into Mexican wheat varieties.

6. One area which must therefore be given more weight in the overall design of development policy is science and applied research. Consideration should also be given to whether the normal forces of competition and the market provide foreign investors and exporters of capital goods and machinery with sufficient incentive to adapt their production technology to the specific conditions of the developing countries. The Member States of the Community and the Community itself should therefore intensify their efforts to develop specific intermediate technologies geared to the needs of the developing countries. There has been too little emphasis to date, within the framework of the Community's development policy, on using the immense potential of the modern research facilities available in the Community to solve the special problems of the developing countries. The success achieved in developing particularly high-yielding rice, wheat and maize seed varieties suited to the conditions of production in the developing countries shows what applied research can achieve.

- A. Greater international cooperation in the field of science and technology
- the Vienna action programme

7. The UN did not really deal with science and technology as a political question during the first two development decades. The United Nations conference of experts on the application of science and technology to help the less-developed areas did lead in 1963 to the creation of a scientific advisory committee on science and technology, which presented a so-called world action plan in 1971. In this plan, research and development were treated for the first time as independent development instruments and the industrialized countries were urged to increase their development aid for this purpose. The United Nations Committee on Science and Technology for Development was set up in 1973 with the aim of eliminating the unequal distribution of scientific and technological facilities between industrialized and developing countries.

Just over 3% of the total funds and 13% of the staff available for research and development are concentrated in the developing countries. 63% of the licences exchanged are between Western industrialized countries, 24% between Socialist countries, 10% between Western and Socialist countries and only 3% between the developing countries and other states. The following questions therefore arise:

- How can the serious imbalance in the distribution of resources be changed?
- How could the difficulties in the way of a fairer distribution be eliminated, at least partially?

8. In recent years the developing countries have become aware of the fundamental importance of science and technology for their development process. This became very clear at the conference on science and technology (UNCSTD) held under the auspices of the United Nations from 20 to 31 August 1979 in Vienna. The main objective of the UNCSTD is to adopt an action programme so that science and technology can be used to create an economically rational international division of labour, which, according to a UN decision, would secure for the developing countries 20% of the world's industrial production by the of the century.

The agreements between the industrialized and developing countries negotiated at the Vienna conference may be regarded as the first step towards the creation of indigenous economic and industrial capacity in the third world. What was actually agreed at the Vienna conference¹? A new financing facility is to provide funds for scientific and technical aid. This fund, to be administered in the meantime by the UN development organization UNDP, will be financed from voluntary contributions from the industrialized countries. The agreement reached at the conference does, however, provide for a minimum of \$250 million in the interim period 1980/1981. What happens after that depends on the outcome of a study in preparation in the UN on the long-term financing of research and development in the third world. In addition to the new fund, the developing countries have also secured an agreement for the setting up within the UN framework of an intergovernmental committee on science and technology in the service of development, open to all countries. This committee will be responsible for the transfer, application and promotion of scientific and technical research in the developing countries and will also have a say in financial matters.

Nevertheless, no solutions were found to the most important problems discussed at the conference: how the developing countries can acquire the technical infrastructure and staff to enable them to make better use of science and technology, and how and in which areas the industrialized countries can best help the third world.

¹ See Vienna action programme for science and technology in: 'Entwicklungspolitik', documents relating to development policy, No. 56, German Ministry for Economic Cooperation, August 1980, p. 40 et seq.

9. The conclusions of the second UNCSTD, the so-called Vienna Programme, were adopted by the UN General Assembly.¹ The two main objectives of the Vienna Programme are:

- to increase the developing countries' scientific and technical resources,
- to organize the current system of international relations in the area of science and technology.

The Vienna Programme focuses on three main points in the area of cooperation between industrialized and developing countries:

- access for the rest of the international community to the findings of research and development work carried out in the rich countries;
- substantially higher research spending by the industrialized countries on solving scientific problems of vital importance to the developing countries;
- support by developed countries and international organizations for the third world countries' efforts to build up their own scientific potential and to train scientists and technicians.

10. As the Commission rightly emphasizes in its proposal, the Community has not taken any initiatives on research for the benefit of the third world in recent years; the same also applies to the transfer of research findings. This is surprising, as cooperation with the developing countries in the area of scientific and technological development was discussed in the Scientific and Technical Research Committee (CREST) as long ago as 1976. CREST event went as far as to set up an ad hoc working party at the suggestion of the Commission to prepare the way for action by the Community in this field. According to the Commission, the work of this ad hoc working party did not lead to any practical results, as a wide-ranging discussion had already begun at international level aimed at investigating this whole problem in connection with ways of speeding up the application of science and technology in the developing countries. These discussions then led to the UNCSTD Conference in Vienna and to the adoption of the above-mentioned action programme.

According to the Commission proposal, the programme is a development of the preparatory work carried out by the CREST ad hoc working party since 1976.² The programme contains the most important recommendations of the

¹UN resolution N° 34/218 of 23 January 1980

²Proposal for a Council decision adopting a programme of research and development in the fields of science and technology for development 1982-1985 (COM(81) 212 final, 4 May 1981, p. 7)

working party's report. As the Commission document stresses that the recommendations of the ad hoc working party did not lead to practical action¹, one wonders why these recommendations were neglected for years and were not apparently revived until the outcome of the Vienna conference was known. Given the importance of science and technology for the economic development of the developing countries, one cannot help but wonder why the Commission's proposal was not presented until May 1981, when the UN conference ended in August 1979 with the adoption of a specific programme.

B. Support for and promotion of areas of research likely to improve the overall economic and social position of the developing countries

11. As the Commission prevents it, the programme lies at the point of intersection of two Community policies, the policy of cooperation with the developing countries and the science and technology policy. The programme is not designed to give a comprehensive answer to the problems of the third world, but to act as an incentive and to supplement national policies.
12. In drawing up its proposal, the Commission's main concern has been to promote in a selective and sustained manner, those areas of research in Europe which could be of most help in providing solutions to the developing countries' economic and social problems.

In selecting priority areas for research, account was taken of the two major principles of the Community's general policy on development, namely:

- promoting cooperation with the poorest countries,
- concentrating on areas which could help satisfy the primary needs of the third world.

On the basis of these principles four priority research areas were identified:

- the problem of nourishment,
- human health,
- diversifying energy sources,
- developing natural and mineral resources.

13. Because of the large amount of funding required, the priorities were further narrowed down and concentrated on certain sectors. It is intended, for example, to concentrate on promoting those areas of direct and indirect interest to tropical regions. The Commission proposal therefore provides for the programme to concentrate on agriculture and health, mainly because

¹ibid. p. 6

the laboratories and research institutes in the Community which specialize in these areas have substantially scaled down their activities in recent years, while the developing countries have increased their efforts in the same areas. This does not mean, however, that research activities in the areas of energy and natural resources and minerals are to be cut back. In these areas it is not so much a question of developing new techniques as of transferring and adapting available knowledge.

14. Instead of developing a whole range of new theories in the Community on rural development, food, energy policy, medical research, etc., of which there are already enough, existing discoveries should be collated, catalogued and evaluated and, above all, efforts should be made to devise ways of carrying out projects that have been successfully tried in other developing countries. If, for example, positive results are obtained from studies in the field of industrial cooperation or from the work of the much-needed Technical Centre for Agricultural and Rural Cooperation provided for in Lomé II, this experience must be passed on by the ACP institutions or the responsible Community bodies to other developing countries, especially the non-associates. Unfortunately, there is still too much experimentation without coordination, which means that money urgently needed elsewhere is wasted and valuable research facilities are unnecessarily committed. To remedy this situation the Commission should be made responsible for gathering the research data produced throughout the world which is of most relevance to the developing countries, comparing it with the data available in the Community and coordinating it with current research activities so as to avoid duplication of effort.

15. Mention must be made of the diversification of sources of energy, an area left out of the Commission's programme for financial reasons. We all know that money is in short supply at present and yet, given the price of oil and the high level of indebtedness of most developing countries, the discovery of alternative and especially cheap sources of energy is of fundamental importance for their economic development¹. The Joint Committee referred to this in its final declaration of 26 February 1981².

Particular attention should be paid to the following areas: Identifying the energy needs and potential of the developing countries, exploiting their energy resources and promoting more rational use of energy, analysing and developing the various renewable sources of energy (solar and wind power, geothermal energy and hydroelectric power and biomass) and training the necessary staff. Specific and systematic action is particularly necessary in the field of energy. As energy research has recently increased substantially in the industrialized countries because of the huge rise in oil prices, the Community must do all it can to acquaint the developing countries with the most recent technological developments in this area. There must be joint efforts in the areas of cooperation and research and technology. The Commission should create a special data bank in which the most important research results could be stored and consulted at any time. The Committee on Development and Cooperation considers that in view of its importance energy cannot be left completely out of the Commission programme.

¹ See report by H.E. Nuri Khalil Siddig on cooperation in the field of energy, drawn up in the context of the work of the Joint Committee (CA/CP/222); See also report by Mr Flänig on cooperation with the developing countries in the field of energy (Doc. 1-74/79)

² ACP-EEC Consultative Assembly, Joint Committee (CA/CP/215 final)

I. Development and adaptation of technologies to the specific requirements of the developing countries

16. The word 'technology' is generally used to refer to all procedures which help to solve a given problem by means of technical, commercial and organizational knowledge and ability. The financial, material and human resources deployed in the context of financial and technical aid can be used effectively only insofar as the technology employed permits.

For the developing countries, the transfer of technology in the context of technical aid occupies a special place. It also includes the secondment of experts and the expansion of the education system in the developing countries. Technical assistance should be seen no more than a limited contribution to the promotion of technology, as the real objective is education in the widest sense. An analysis of many of the studies and projects carried out in the past two development decades unfortunately pointed to the conclusion that many of the technologies used in the developing countries were not only inappropriate to the particular circumstances of the areas but could not even be used as there was no agro-economic planning and appropriate management in about 80% of the cases: what was missing was not so much a highly sophisticated management system, but quite simply people familiar with basic economic concepts. This means that financial assistance alone without the corresponding human investment can not make a fundamental or lasting contribution to the fight against any country's economic underdevelopment.

17. In discussing the inclusion of science and applied research within the overall framework of development policy, a distinction must be made between three types of technology transfer:

- transfer of available knowledge,
- procedures and technologies in the widest sense which could be useful for the developing countries,
- the acquisition of new research findings geared to the specific requirements of the developing countries.

18. The transfer of available knowledge from the industrialized countries has not functioned successfully in the past and has even had adverse effects. If the economic and social situation of the countries of the third world is to be improved, new ways have to be found and appropriate technologies must be used. For this to be successful, the technologies developed in the industrialized countries must be examined from the point of view of their suitability to the specific conditions pertaining in a given developing country and must, if necessary, be modified.

19. Various analyses carried out by the publishers of the 'World Plan of Action', the regional planning staff for science and technology in various UN organizations, and UNESCO have produced lists of areas in which research

and technology for the promotion of growth in the poorest countries are lacking and should therefore be encouraged in the future as a matter of priority.¹ A general feature of the proposals is that they contain recommendations for the development and dissemination of technology on the basis of the following criteria:

- technologies must have a high development value and should strengthen mutual economic linkages between industry and agriculture and between urban and rural areas²;
- technologies must be labour-intensive and take account of the objectives of employment policy in the developing countries;
- know-how and technical knowledge must be geared to the absorption capacity of the recipient countries³.

It was with these demands in mind that the concept of so-called 'applied or intermediate technologies' was developed,⁴ technologies which were primarily labour-intensive and suited to the environment and production conditions in the developing countries and to the technical know-how and creativity of the broad mass of the population⁵.

20. Since the oil price rises the main focus will have to be on basic technologies, as energy-intensive technologies are no longer economically viable. Most of the developing countries with few indigenous raw materials have incurred such a high level of debts in recent years to pay for increasingly expensive oil imports that they must now switch to technologies with low energy consumption requirements. Basic technologies are also more in tune with the lifestyle and facilities of local populations than complicated methods. They help to reduce unemployment and provide an important contribution to the strategy of encouraging self-help.

¹ See United Nations, World Plan of Action for the Application of Science and Technology in Development, New York 1971, p.95 et seq.

² See M.Ghandour, J.Müller: A New Approach to Technological Dualism, Reprint Series of the International Institute of Management, I/73-62, January 1975, second edition.

³ See R.Solo, The Capacity to Assimilate Advanced Technology in: American Economic Review, Vol 56, 1966, p. 91 et seq.

⁴ See G.Jones, The Role of Science and Technology in Developing Countries, London 1971, p 21 et seq. See also E.F.Schumacher, Small is beautiful, a

⁵ Study of Economics as if People Mattered, London 1973

⁵ See G.Jones, op.cit., p.143

21. Community development policy must concentrate on the following aspects of research and technology:

- satisfying the basic needs of the population,
- exploiting natural resources,
- promoting scientific and technological infrastructures in the developing countries.

If these objectives are to be achieved, general research and technology policy must be geared to the requirements of the developing countries, greater use must be made of science and technology in the context of development policy, and development policy must be integrated with the overall research and technology policy. In addition to cooperation in the developing countries themselves, there must be a substantial increase in those areas of research in the Member States which are relevant to the needs of the developing countries. Priority research activities include: improving food production, promoting the production of high protein foods in particular, tropical medicine, rural development, alternative energy sources, exploiting raw material sources, desalination, birth control and the use of satellites for meteorological and other purposes.

22. It is also important to concentrate research spending on a more regional and thematic basis in future with a view to developing interdisciplinary research in certain key areas, as the need for concentration of research spending is not dictated simply by limited resources.

When research in the area of development policy is considered from the point of view of applied development strategies, a certain discrepancy can be noted in that the principles of Community development policy dictate that technical aid should be given according to the level of poverty and need, with the result that the least-developed countries are the main focus of regional objectives.¹ The aim is primarily to secure supplies of foodstuffs for the population by increasing agricultural production and improving storage methods, raising the quality of foodstuffs so that people are better nourished, and promoting small-scale farming. However, research cannot always be determined by a region's degree of need, but depends on whether a proposed research project is feasible in a particular country or not. The main prerequisites are suitable research infrastructures, including staff and technical equipment.

¹See in this connection the report by Mr Cohen on the communication from the Commission of the European Communities to the Council on the UN Conference on the least-developed countries (Paris, 1-14 September 1981), Doc. 1-330/81

23. The guiding principle in seeking suitable technologies for the developing countries should be practical experience with development aid. The technologies available to us and adapted by us must be incorporated in practical development aid, as the dissemination of appropriate labour-intensive technologies is an essential prerequisite for the launching of a genuine broadly-based development process in the developing countries. Isolated pockets of growth in modern settings must give way to broadly-based development which involves the bulk of the population in the growth process. Instead of 'growth first, distribution later' the motto should be 'growth through mass participation in the production process'¹. In addition, any institution which is intended to help the developing countries secure better access to our technological potential must itself have access to this potential - to industry, research centres, universities, data banks, patents and licences.

24. The developing countries need new technologies which, above all, require little capital or energy input. Production methods must be devised which will allow the family and the small village community to satisfy more of their basic requirements themselves. If unemployment, poverty and under-nourishment are to be combated successfully, it is not enough merely to provide more help, i.e. to increase the flow of financial resources from the industrialized to the developing countries. What is required is a different and new form of assistance which, at the same time, offers practical technical alternatives. The emphasis must be on technologies which can be taken over by most developing countries at the least cost.

II. Inclusion of science and technology in the North-South Dialogue - Formulation of a code for the transfer of technology

25. The question of technology transfer has been at the centre of all the world trade conferences held so far (UNCTAD). There are two aspects to this question - a new legal framework for transfers and a programme to increase the developing countries' technological facilities. The developing countries are calling for the introduction of a legally binding code of conduct for the transfer of technology. They are demanding easier and free access to the modern technology of the industrialized countries (patents, licences, production processes) so that they can expand their own facilities.

As these questions will remain in the fore-front during the North-South negotiations, the Committee on Development and Cooperation hopes that the Commission will draft a report drawing conclusions from past experience and setting out the various points of view and proposals.

¹Konrad Leitz: A fundamental change is necessary in the field of development, Frankfurter Allgemeine Zeitung of 15 July 1981, p. 9

26. UNCTAD¹, the United Nations Committee on the Application of Science and Technology to Development, and the International Chamber of Commerce², among others, have drawn up proposals on technology transfer. All the recommendations are aimed at preventing conflict between firms and developing countries by means of multilateral agreements and promoting international technology transfers³. However, as long as the guidelines continue to be applied rigidly rather than flexibly and take no account of special circumstances in individual cases, draft codes of conduct will not only fail to meet the objective of a wide-ranging and comprehensive transfer of technology, but there will also be little chance of developing countries and industrialized countries reaching agreement on them⁴. If the transfer of technology demanded by the developing countries is to be achieved, what is needed above all is a climate of confidence.

27. The Commission proposal states that 'The programme occupies a position in the general context of the gradual redefining of the sharing of know-how and scientific capacity between North and South'⁵. It also states that 'This policy, which has evolved considerably with the passage of time and which co-exists alongside the policies of the Member States, is based on an objective recognition of the close and lasting interdependence of the economies of North and South'⁶.

Scientific and technical cooperation and the transfer of technology are therefore to be regarded as fundamental elements of the North-South Dialogue. The Commission must therefore be urged to draw up constructive proposals for the forthcoming global North-South negotiations which will help contribute to the establishment of a Community policy on science and technology for the benefit of the developing countries, while taking into account and safeguarding the property rights of those transferring the technology and the legitimate interests of the developing countries.

¹See S. Pathel, Transfer of Technology and Developing Countries, in: Technos, April-June 1972, p. 28 et seq

²The transfer of technology for development, publications of the International Chamber of Commerce, No 340, Paris 1979

³See UNCTAD, The Possibility and Feasibility of an international Code of Conduct on Transfer of Technology, TD/B/AC. 11/22, p. 41 et seq

⁴See in this connection Thomas Wälde, New International Economic Order and International Economic Law in Annex to the weekly 'Das Parlament', B20/81, 16 May 1981, p.10

⁵Commission proposal on the adoption of a research and development programme.....,op.cit., p.1

⁶ibid, p.5

C. Assessment of the Commission proposals

28. The proposed research and development programme is designed to support and intensify the research activities of the Member States in selected areas of development aid. Provision is made for promoting research and development activities within the following sub-programmes:

- tropical agriculture,
- medical care, public health and nourishment in tropical areas.

The first of these sub-programmes covers questions relating to the use of water supplies, the maintenance and improvement of the soil and crop protection, as well as the improvement of agricultural production. Also included are efforts to improve the processing and canning of agricultural produce.

The second sub-programme is particularly aimed at combating infectious tropical diseases, investigating the related genetic and hygiene factors and aspects of nourishment and their influence on health.

29. The Committee on Development and Cooperation welcomes the Commission's intention to increase cooperation with the developing countries in the field of research and development, especially as the primordial importance of agricultural and medical research for long-term improvements in agricultural production and fundamental improvements in the health services is generally recognized. As the Commission has failed to put forward any further proposals in this area since 1976, it is both important and proper that a fresh start should at last be made.

It goes without saying that everything possible must be done to avoid creating the impression that European institutes are increasing or embarking on research which particularly furthers their own interests or is based on preconceived ideas of what the developing countries need. Unfortunately, the choice of words in parts of the Commission text, particularly on page 7, has led to different interpretations being placed on the objectives and goals of the proposals. This became abundantly clear during the initial discussions in the Committee on Development and the opinion of the Committee on Energy points in the same direction. It is possible, from a rapid perusal of the Commission's proposals, to conclude that the main emphasis is to be on expanding the Community's research facilities. It should therefore have been made clearer that research must be geared more to the requirements of the developing countries than to the concerns of the industrialized countries.

A supplementary Commission working document¹ does, however, emphasize that the idea is to use some of the Member States' research facilities to tackle

¹SEC(82) 437 of 12 March 1982

high-technology programmes and projects for the solution of urgent problems which the developing countries cannot yet carry out alone. The Commission's communication to the Council on scientific and technical research and the European Community - proposals for the 1980s¹ also points to the importance of scientific cooperation with the third world countries. According to this document, the expansion of the developing countries' national and regional scientific research facilities is the main objective of the research programme. This interpretation is correct and the point should therefore also have been made in the present proposals, which deals with only one key aspect of more wide-ranging action. Quite apart from this, the programme must be extended as soon as possible to include energy and natural raw materials.

30. As the subject of this report is so important, the rapporteur has contacted a number of scientific research institutes in the Community and elsewhere, as well as international organizations active in this field. The outcome of the discussions with scientists and internationally-acknowledged experts was as follows: the Commission proposal is a sound starting point. It contains a number of good suggestions and is important, as there has never been a proposal of this kind before. However, because resources are scarce, priorities must be identified and consideration given to the question of how the entire problem can be solved in the most rational way possible.

¹COM(81) 574 final - this proposal was given broad support at the meeting of the Council of Research Ministers of 9 November 1981.

I. Tropical agriculture

1. Present situation

31. In most developing countries the food situation is extremely worrying. About 500 million people are undernourished or poorly nourished and millions of people die of hunger every year. In view of this situation and the continuing rate of population growth, every effort must be made to raise food production. Agricultural production must increase by at least 20% by the year 2000 even to maintain the present unsatisfactory world food situation. It goes without saying that additional agricultural production must be located primarily in countries where there is a food shortage or where the rate of population increase is particularly high.

The highest priority must therefore be given to extensive and intensive agricultural research, as this is an important prerequisite for any increase in agricultural yields and an improvement of general rural development in the poor countries. Since it is now generally known that living conditions in the developing countries cannot be improved primarily by industrial production, the emphasis is now on rural development. The importance of the agricultural sector becomes clear if we consider that, in many developing countries, between 60% and 90% of the population earn a living from this sector, which accounts for 40% to 60% of GNP. Agricultural research is therefore not only increasingly important from the point of view of the security of food supplies, but also makes a direct contribution to improving the living conditions and incomes of the bulk of the rural population.

32. During the colonial period the colonial powers injected considerable resources into agricultural research. However, research was concentrated at that time on the scientific processing of crops which were of importance for the world economy, notably, coffee, tea, bananas, citrus fruits, plants and sugar cane. It has often been said that the present food problems are a result of concentrating exclusively on crops for export, but this is only partly true or, at any rate, applies to only a few regions. It is nevertheless disquieting that, for a long time, very little if any scientific study was carried out on food crops, which are of great importance as a source of food for people living in the tropical, sub-tropical, arid and semi-arid countries. The products concerned were mainly plants containing protein and starch, such as maize, wheat, rice, pearl millet, barley, pigeon beans, chick peas, lentils, potatoes and manioc.

33. In order to create the basis for future food production with the help of scientific research, it will be necessary both to improve the commercial use of imported energy and to reduce to a great extent the use of non-renewable resources and, in parallel with resource-saving research, to give a new impetus

to the promotion of unconventional scientific work on new agricultural products and production systems, for example, better use of sunlight by increasing research into photosynthesis, the breeding of new plants and animal species by genetic engineering, the use of new production facilities (for example, the extension of aquaculture to oceanoculture) and the closing of the fuel gap.

In recent years agricultural research has undoubtedly progressed but the efforts made have been minimal in relation to the scale of the problem of hunger and the related question of survival. In 1979 a total of only \$4,000 million was spent throughout the world on agricultural research, which is a very small amount given the problems to be solved.

34. In this connection, however, it must be emphasized, in order to give a complete picture, that the food and agricultural problems in the developing countries cannot be solved simply by transfers, trade, education and agricultural research. The problem of world hunger also has political causes: for instance, most developing countries lack effective family planning, a sufficiently high level of capital formation and, consequently, job creation, and, above all, appropriate forms of agricultural policy. Food strategies, millions of dollars for agricultural research and many other totally justified and necessary measures will never lead to a solution of the food problem if the political aspects are not tackled at the same time.

An adequate supply of foodstuffs is therefore not only a problem of production technology, but is dependent above all on national and international policy factors. Agricultural policy considerations play a decisive role in determining whether farmers in the developing countries are able and prepared to use scientific knowledge and new technology to achieve higher production. If pricing policy does not guarantee the farmer a higher income, progress is hardly to be expected in this field.

China, for example, solved its food problem not so much by means of agricultural research and increasing production as by a drastic reduction in the rate of population growth. Japan has a similar success story. In the 18th and 19th centuries, this country was in a similar situation to that of most developing countries today, i.e. it had to feed a rapidly expanding population. It succeeded because it developed its own potential by means of agricultural reforms - particularly by strengthening the small farmer - and incentives created by its agricultural price policy.

35. The economic structure of the developing countries can be improved only by concentrating initially on agriculture and providing better infrastructure in rural areas. It is important that the populous developing countries in particular should achieve self-sufficiency in food supplies so that they can dispense with food aid and the need to buy food on the world market. The Commission proposal is right, therefore, to emphasize development and research in tropical agriculture and related areas.

2. Promotion of agricultural research in the Community countries

36. Agricultural research is central to rural development and must fulfil four main functions:

- production of foodstuffs for an undernourished and steadily increasing population,
- production of raw materials needed by the world economy,
- help in solving the employment problem in the developing countries,
- development of appropriate agro-economic theory for boosting production.

Every time these problems are discussed, it is clear that there is an urgent need for more basic and strategic agricultural research activities in the service of development, a need which is beyond the scope of the existing aid programmes of the FAO or other organizations. The question is whether this need should and can be met by Community research programmes. Some - especially the Committee on Energy in its opinion - regard as problematic the Commission's proposal to promote and expand the research capacity of the industrialized countries instead of helping the developing countries to develop and expand their own facilities.

37. There is no easy answer to this question, as there are different branches of research each with different requirements: basic research, strategic research, applied research and adaptation research. What must be done, therefore, is to promote in Europe those research projects the results of which are urgently needed but which cannot be undertaken in the developing countries because of inadequate infrastructure and excessively high short- and long-term costs, while those research projects such as applied and adaptation research which can be undertaken in the developing countries must be carried out there with increased assistance from the Community.

For the time being, most basic research and strategic research will have to be undertaken in the industrialized countries, as the majority of research facilities in the developing countries are totally unsuitable for this type of activity and will be unable to carry out this work in the future owing to a lack of staff and resources. The

basic research of today has a decisive influence on tomorrow's world, however, and those who accept this notion must also demand greater support for basic research. The much-needed doubling of yields over twenty years can be achieved only if totally new approaches are adopted. There is an urgent need for selective basic research, for example, in the areas of microbiology, genetics and organic chemistry. The necessary infrastructure is available in Europe, as is the essential equipment: what seems to be lacking is a coordinated programme linking the various institutes engaged in basic research. What can be done in the armaments industry can surely also be done when decisions about combating hunger are involved.

38. There is also the question of whether there is any point in a Community research programme for the benefit of the developing countries when there is the Consultative Group on International Agricultural Research (CGIAR) which was set up in May 1971 by the FAO, UNDP and World Bank. It is the responsibility of this group of officials concerned with international agricultural research to provide a secure basis for world food supplies in the medium- and long-term by promoting applied agricultural research. The CGIAR supports 13 centres, not all of which are engaged in research as such, as some provide advice or formulate strategies. Two of the institutes are located in the Community, four in Africa, three in Asia, two in Latin America and one each in Central and North America. All the Member States of the Community except Greece and Luxembourg are members of the CGIAR and the Community itself has been a member since 1975.

As it is not the job of the institutes to pass on the results of the research to those indirectly concerned in the developing countries, the ISNAR (International Service for National Agricultural Research) was set up. It began its work of assisting the developing countries with the planning, organization and implementation of their agricultural research and the formulation of research policies and promotion of national and regional research programmes on 1 September 1980.

39. The efforts of the international agricultural research institutes affiliated to the CGIAR are concentrated on the production of plants and animals for food and the achievement of results which can be put into practice relatively quickly. They can conduct basic research only within a very restricted framework and are involved primarily in applied research. One weakness of the present CGIAR system is that the international centres on a global or continental scale often have no counterparts in the countries of the third world. A report prepared by the CGIAR Review Committee also draws attention to the fact that strategic research into the development of totally new methods is urgently needed in the case of biological problems to enable the international institutes to obtain

sufficient material for their work in the area of applied research. The report states that encouragement should be given to researchers in advance national institutes to extend their field of activities to include aspects related to specific problems faced by tropical countries with a low national income¹. At the Balaggio Conference in 1977 the directors of the research institutes of the developing countries suggested, in connection with developments in international agricultural research, that national research facilities in the industrialized countries should concentrate more in future on tropical and sub-tropical agricultural research.

40. As the agricultural research institutes affiliated to the CGIAR do not carry out any basic research and as most developing countries are unable for the reasons given to undertake this type of research, even though it is of fundamental importance, the Community should lend its support. If European research is to provide substantial help, it must be given the facilities and necessary funds to investigate basic problems in European laboratories. More basic research in agriculture would thus also contribute to the development of agricultural production in the third world. Two conditions must, however, be met:

- there is an even greater need than hitherto for a shift of emphasis in agricultural research carried out in the European industrialized countries towards the problems of the developing countries, i.e. European agricultural research must be systematically geared to the needs of the developing countries (an important step was taken in this direction in the Federal Republic of Germany when in 1977 the Federal Ministry for Food, Agriculture and Forestry and the Ministry for Economic Cooperation set up a working party on tropical and sub-tropical agricultural research under the Senate of Federal Research Institutes),

¹ Report of the Review Committee, CGIAR, September 1981, p. 45 et seq.

- when it comes to selecting research institutes which undertake problem-related basic research (e.g. basic work on resistance physiology, genetic problems such as interspecific hybridization or the improvement of the efficiency of photosynthesis), account should be taken of the fact that certain European institutes are centres of excellence in particular areas i.e. the emphasis should not be on supporting research centres which have spare capacity at present.

41. Applied and adaptation research in the whole area of agriculture and socio-economics should be carried out in the developing countries themselves. Plant-breeding programmes aimed at improving cereal production, for instance, are worth carrying out only in the developing countries themselves, depending on the international agricultural research centres which are active there. In the case of soil science, studies of soil resources must, of course, take place in the field, as must routine chemical, biological and physical tests to identify which soil characteristics determine fertility. The promotion of field research calls for:

- the establishment of suitably equipped laboratories; the equipment should be as robust and easy to use and maintain as possible, as servicing and repair facilities in most developing countries are inadequate and - where available - very expensive;
- the secondment of experts from the industrialized countries to help promote field research;
- the provision of operating materials to allow field work to be carried out;
- the motivation of local scientists by raising research standards.

Special studies and mineralogical studies of soils requiring specialized knowledge and equipment can be carried out in conjunction with suitably equipped institutes.

The Commission proposal lays too much stress on the expansion of research facilities in the Community, i.e. basic research. While it is true that research activities undertaken in the industrialized countries to help the developing countries must concentrate on basic research, it is also necessary to coordinate basic research with applied research in the field. The adaptation of known research findings to the local circumstances in the developing countries must be given priority and this means that the main requirement is problem-related, i.e. applied research, which is more closely geared to the needs of the developing countries than to the conditions in the industrialized countries.

As basic and field research complement one another to some extent, they should have been given equal treatment in the Commission's proposal.

42. The proposed increase in and expansion of research activities undertaken in the European Community to help the developing countries will be meaningful - and this is also true of basic research - only if institutes and scientists in the developing countries are involved in European research work. This applies not only to the training of scientists, but also to the related technical and, possibly, investment aid. This can and must be achieved by means of the following measures:

- direct links in the form of appropriate cooperative research contracts or complementary cooperation programmes involving technical aid from the Community or individual Member States,
- during the preparation and development of individual research programmes the developing countries must be given a proper say not only in advisory programme committees but also when work is being done on the individual sectors and aspects of the programmes,
- complementary work carried out by the Community research centres and related facilities in the developing countries could be increased by means of research 'twinning' arrangements (for example, between the Royal Tropical Institute, Amsterdam and research institutes in Indonesia and Brazil or between IRAT/Montpellier and similar facilities in French-speaking Africa); the allocation of tasks must be based on the particular definition of jobs and the institute's human and technical resources; international research centres should be involved in this allocation of work,
- the infrastructures available in a number of developing countries should be used and developed by means of financing and training measures, as the promotion of existing facilities is more important and more effective than the creation of new facilities,
- promotion of the exchange of scientists between the Community and the developing countries so that they can work jointly on long-term research projects,
- specific research tasks to be undertaken on behalf of institutes in the developing countries by centres within the Community, using available capacity and, in turn, certain research work dependent on field studies to be carried out by institutes in the developing countries on behalf of research centres in the Community,
- research must provide support for projects and must be closely related to the implementation of projects,

- assistance with the creation or expansion of regional research facilities which tackle areas not dealt with by the Consultative Group on International Agricultural Research (CGIAR),
 - promotion of international agricultural research organizations which do not belong to CGIAR and whose activities are in line with the research priorities set by the Community (e.g. International Council for Research in Agro-forestry (ICRAF) in Nairobi),
 - selective promotion of interdisciplinary research and increase in the publicity work of the research institutes in the developing countries,
 - development of testing facilities for technologies designed for the developing countries.
43. Cooperation with European experts and scientific institutes will not be very successful without the active assistance of scientists and scientific and management institutes in the developing countries. Above all, it is the efforts of the developing countries themselves which will guarantee that science and technology can be used for the benefit of the country concerned.

3. Main areas of research

44. The many research projects announced by the Commission cannot be carried out either with the 30m ECU envisaged or within a period of four years. The best idea, therefore, would be to concentrate on a few areas not already dealt with by other multilateral institutions. While the introduction to the programme (points A-D) successfully defines what the transfer of knowledge means and the consequences for research initiatives, training and cooperation strategies, the chapter on tropical agriculture reveals weaknesses in the conception and presentation of the programme. The subjects dealt with are undoubtedly important but, because of the large number of priorities set, no overriding objectives have been laid down, no hierarchy of goals has been established and no specific research areas have been given greater priority. The links between the four proposed programme subjects, particularly research areas 1 and 2, are not sufficiently clear, given that interdisciplinary research is the only meaningful approach. The research content with regard to tropical agriculture must therefore be thoroughly revised in the light of the following points.
45. The subject 'Food and industrial crop' is presented in a misleading fashion and it is not clear what priority it has within the list of objectives. It is unrealistic to separate subsistence and market-oriented production, as the gradual transformation of subsistence economies into market-oriented production is considered to be a permanent and necessary aspect of development policy. Not enough attention is

paid to further development of the agricultural sector with its traditional crops and production methods and its considerable potential to meet the needs of the market, and this could give the impression that only industrial methods of large-scale agricultural production are a worthwhile topic for research. In large areas of Africa and Asia, however, the structure of agriculture is such that this type of research would be impossible.

Fifteen years ago the industrialist Schumacher coined the phrase 'small is beautiful' in his proposals for a development policy which attempts to offer an alternative to the large-scale lines on which Western economic systems operate. According to this theory, any positive change in living conditions and progress will be dictated not by size, speed and scale but by decentralization, suitability to local conditions, manageability and actual needs.

46. The production of animal protein is of great importance in ensuring high-quality food and also plays a significant role in increasing the incomes of smallholders. However, at least as much priority should be given to increasing the production and quality of vegetable protein for direct consumption in order to cover protein needs.

47. The section on stockfarming is too general and scarcely touches on the real research problems in this sector. One potential research area would be the integration of livestock production in smallholdings with a view to using natural resources to create stable eco-systems and the necessary recycling of nutrients to maintain the fertility of the soil. Livestock production (not stockfarming) should concentrate on the use of pure feedstuffs and the development of uses for areas of land suitable only for rearing animals. The fact that the main research priority is the improvement of feedstuff production suggests that the aim is to concentrate on exports.

The same is true of forestry. 'Local exploitation of forestry resources by the establishment of industrial facilities' is the last thing which should be done. In the tropics, 80% of wood is used as fuel. The first priority should therefore be to guarantee the supply of fuel-wood for the future. Above all, wood supplies must be used more rationally; in other words losses during harvest and processing must be reduced. Little-known wood types must also be used. The stable eco-system already mentioned also depends on forestry aspects and tree varieties. Research initiatives in this area have a high priority particularly with regard to maintaining soil fertility and preventing erosion damage. The projects listed under 'forestry products' should therefore not be given such high priority as, for example, the designation of tropical wood varieties or technological development in the area of paper production.

48. Several criticisms can be made of the proposed 'horizontal' subjects. The Commission's proposal has little to say about protecting and regenerating the soil, particularly as regards existing links with production methods and nutrient cycles. A number of very important research initiatives could be undertaken in the areas of soil and soil fertility relating for example, to the return of land to arable use, salting and arable farming methods. The only comment on research into the protection of crops is made in the last sentence of this section, although this is also a broad research area which should be tackled as a matter of priority from the point of view of integrated plant protection.

The following principles should be observed in order to maintain soil productivity in the tropics and sub-tropics:

- the systematic extension of regional research on the basis of agro-ecological zones which have identical or similar conditions for the production of foodstuffs and industrial crops,
- account should be taken of the generally low soil fertility potential of new areas of land which are still available,
- attention should be paid to the dangers caused by soil deterioration in the form of desertification, erosion, salination, degradation, etc., as a result of forest clearance, the ploughing up of natural grass and bushland, land reclamation and changes of use,
- introduction of ecologically appropriate systems of use, taking into account the socio-economic effects,
- avoidance of biased attitudes towards the introduction of modern production methods such as chemical fertilizers, pesticides and use of machinery, as it is often not possible to achieve and maintain a sufficient level of production without these aids, particularly in areas with a high rate of population growth,
- full use of biological aids such as humus, choice of crops to suit local conditions, avoidance of restrictive types of farming such as monoculture and preventing the total transformation of natural landscapes into cultivated areas,
- development of appropriate soil improvement technologies and soil use techniques which take account of ecological factors, require little energy and do not deplete soil resources.

49. Increasing agricultural production, post-harvest technology and clean water must be priority research areas. To achieve this, priority must be given to the further development of integral farming systems, protection of resources and adjustments to suit local conditions. Research programmes dealing with crops should form part of this more systematic approach. Priority should be given among the horizontal subjects to developing farming systems which are geared particularly to small farmers and take more account of ecological factors. The densely populated areas of small farms will be most exposed to ecological damage in future and yet will also have the greatest food needs. Any improvement in farming methods will have to come from improved production techniques aimed at conserving resources in the widest sense of the term.

In particular this means:

- long-term maintenance or improvement of soil fertility,
- watershed management,
- increasing the efficiency of external production inputs to take account of their increasing cost (low-input technologies),
- closer integration of livestock production and arable farming,
- self-sufficiency in wood (agro-forestry use).

Agricultural production within farming units must be increased as much as possible. Further development of traditional mixed fruit systems, which are often superior to pure varieties, seems a particularly promising area, although the question of capacity for work and economic factors must also be taken into account. In any case, the quantity and quality of individual crops are determined by local conditions, with cereals varieties not always having priority. In the case of many tuberous plants in particular, such as manioc and sweet potatoes, there is considerable unused cultivation potential. Priority should be given to the following: wheat, rice, manioc, potatoes, millet, sweet potatoes and a range of corn legumes, coconut and sago palms or plants with a number of uses.

Priority has rightly been given to promoting food crops over the last 20 years. The trend in energy prices, which over the same period has driven many industrial crops not only from the market but also from research, has altered dramatically in recent years. There has as yet been virtually no corresponding response in the field of research on industrial crops. Particular attention should therefore be paid to fibrous, oleaginous and other industrial crops, as they will have a significant role to play in the decentralized development of rural areas once oil-dependent development strategies have to be abandoned because of a lack of resources or foreign exchange.

50. Projects of varying levels of priority are mentioned in connection with production methods. The linking of arable farming and livestock farming, and crop growing on irrigated land, for instance, are important areas of research, as are the socio-economic assessment of modern production methods and the transfer of research results to the developing countries in the context of applied research. The individual topics mentioned are therefore very closely linked from the point of view of content.

Research into agricultural mechanization should be developed in the light of the increasing scarcity of fossil fuels and attention should be paid to appropriate technologies.

51. Post-harvest technology is of very great importance, since 25% of the cereals harvest and almost 25% of imported cereals are currently lost because they are wrongly stored. Inadequate infrastructure also causes further losses. The relevant section in the document is too general and does not clearly define the aim of the proposed research activities.

What is needed most is improvements to conservation and storage methods and protection from parasites. Appropriate technologies for the storage, conservation and preparation of foodstuffs and feed, bearing in mind locally-available materials and energy sources (e.g., solar energy), must be developed in conjunction with food scientists and animal breeding and nutrition experts. It is essential to know the causes of foodstuff losses, bearing in mind their special characteristics, before suitable processes for making them less perishable can be tested. Conservation and storage measures can succeed only if they are adjusted to suit the local infrastructure. Priority should be given to research into ways of stabilizing foodstuffs during transportation.

52. It has already been stressed that research activity must concentrate on the basic requirements of the developing countries. The decisive factor is the creation of an interdisciplinary research programme on problems of agricultural production and the development of agricultural technologies, including those relating to forestry and fisheries. In this connection it is important to increase systematic and integral research and to intensify the study of interactions and chain effects. In addition, the emphasis should be on causal links rather than on isolated projects taking into account cultural identity and the economic, political and socio-cultural environment.¹

4. Training

53. Education and training are now regarded as a fundamental human right and need. If the research programme to help developing countries is to be implemented successfully, as much attention must be paid to training and further training as to the research itself, particularly by the developing countries.

¹See report by R. CHASLE: Cultural cooperation between the ACP States and the EEC. Doc. ACP/EEC/27/81; Resolution in OJ N° C 15 of 20 January 1982, p. 22 et seq.

The present lack of appropriate training and further training establishments in the developing countries must therefore be remedied.

Many of the third world's problems have arisen because efforts were concentrated for a long period on transferring agricultural knowledge from one set of climatic conditions to another. Although the problems involved in this transfer are well known, the training or further training of young scientists from the developing countries still takes place at universities in the industrialized countries, which carry out research under completely different conditions and, above all, for completely different target groups. However, training must be adapted to suit the target groups of the developing countries if research teams are to be set up there to carry out research geared towards real needs. This, of course, presupposes the adoption of development strategies incorporating a forward-looking training policy based on local needs. Research in agriculture is a potential basis for this.

54. The subject of training is of great importance for the agricultural sector. In addition to appropriate technical aid projects, there is a particular need for measures to create structures which will allow the developing countries themselves to provide better training and advice in the field of agriculture and rural development. Training in the so-called intermediate technical area is more significant and more important than in the scientific field. The Commission document merely refers to an effective European scientific potential, but makes no mention of training scientists from the developing countries in the Community's research institutes. However, the Committee on Development feels that this area is very important, especially as far too little was done in the past to train foreign scientists in both the industrialized and the developing countries. These points must therefore be mentioned in the Commission document, as particularly important long-term investments are involved. This sector must therefore be developed and given an appropriate place of the general budget.
55. The development of management expertise in the third world is also a question of training. There is a serious lack of experts in research administration and management. Great emphasis must therefore be placed in research and in the advisory services on the training of instructors. In this connection it would be worth organizing management seminars and giving selective support to priority programmes, as well as providing teaching materials and documentation and library services in the appropriate languages.

The outflow of qualified scientific staff in search of higher salaries poses a serious problem for research in the developing countries. In many countries researchers involved in multi-lateral or bilateral projects are now offered specific financial inducements or more attractive working conditions to keep them in research. The Commission must also provide for such arrangements in its research programme.

56. Also important are research contracts, complementary cooperation programmes, the promotion of cooperation between institutes and 'twinning' arrangements where there are similar structures and tasks, as outlined for example in section I(2). These could include the exchange of information, research and teaching staff and students, and mutual cooperation in selected programme areas, depending on individual circumstances. The financing of travel costs and visits abroad in the context of the proposed cooperation, particularly the costs of accommodation for visiting scientists from the developing countries in the Community, is of particular importance. Furthermore, cooperation agreements with institutes in the developing countries have the additional advantage of allowing experts from both sides to be available for a short time to provide advice without having to break off their research or teaching activities in their home country for a longer period.

Complementary research activity to be undertaken on a reciprocal basis by the centres in the Community and similar institutes in the developing countries and substantial assistance from European researchers will be possible only if the latter receive intensive training in the field in the countries of the third world. Sufficient funds must therefore be made available to cover travel costs for technicians and research staff from European universities. The funds available at present are totally inadequate and, in any case, research centres are often totally dependent on donations from other organizations. A special programme of longer-term exchanges of research staff for the purpose of acquiring specific skills and preparatory courses for groups being sent to developing countries are therefore of great importance.

5. Exchange of research findings, avoidance of duplication

57. Sufficient documentation is generally available on existing research findings, but the transfer of this material to the developing countries is not properly organized and coordinated.

There are some good information systems such as AGRIS, CARIS, ASFIS (designed by the FAO to meet the needs of the developing countries), AGREF, CAB, UNISIT, EURONET and CRIES and the Consultative Group on International Agricultural Research's ISNAR system. The FAO/IBPGR is attempting to establish a world-wide plant seed genetic data bank system along the lines of the individual national data banks, e.g. the Braunschweig-Völkenrode Agricultural Institute in the Federal Republic of Germany.

These facilities, which could provide the developing countries with a great deal of vital information, are made accessible to the developing countries to enable them to obtain the latest information on research in general and specific areas. The expansion and use of these systems, however,

depend on the cost and the level of education of those who wish to apply the available know-how. As many developing countries are very short of foreign exchange and cannot use what little resources they have for such purposes, there is an urgent need for appropriate Community aid. This in itself would not guarantee that the research findings would be put to practical use, as this can be done only with the help of selective investment aid and on the basis of specific projects.

There is no need for funds to be made available for a new global or European information network. The existing systems, which operate in close cooperation, are able to fulfil their specific objectives, although they do need additional funds to enable them to expand their services. It would be worth considering to what extent the Euronet-Diane information network could be used for development policy purposes or be adapted to suit requirements. In principle at least, the developing countries can obtain access to the information or data banks linked to Euronet through information brokers in the Euronet countries or the Centre for Industrial Development (Lomé Convention).

58. No discussion of the exchange of information on research findings can ignore the setting up of the Technical Centre for Cooperation in Agriculture and Rural Development. The Centre, which is to be created pursuant to Article 88 of the Lomé Convention, has unfortunately not yet been set up despite repeated appeals by the European Parliament and the ACP-EEC Joint Committee and Consultative Assembly. The Centre should start work as soon as possible, given the critical food situation in many ACP states. The main purpose of the Centre should be to collect existing data and results, evaluate them and seek ways of implementing in the ACP countries projects already carried out successfully elsewhere. All research findings should be centrally stored and analyses should be carried out into ways of disseminating the existing results as quickly and as efficiently as possible using existing resources. It is alarming, is it not, that farmers living no more than 20 km from an agricultural research centre in Africa are totally ignorant of the results of the research carried out there?

59. Given the increasingly serious economic problems of many developing countries, national scientific and research centres, which are often short of expert staff and money, can increase their effectiveness by cooperating with other institutes. Cooperation of this kind would also facilitate implementation of the Lagos action plan which calls, inter alia, for an improvement in the scientific and technological potential of African countries, improvements in the general standard of living in Africa and independence from the industrialized countries. This resolution is noteworthy in that it is the first time the developing countries of a whole continent have issued a statement which attaches prime importance to promoting science and technology.

There are some research networks in the developing countries which already cooperate successfully, such as the Semi-arid Food Grains Research and Development Network in Africa, the Course Grain Research Network and the Water Buffalo Research Network in Asia and the Red de Investigacion Agraria para la Amazonia in Latin America. There are other examples but, on the whole, scientific and technical coordination in the developing countries is not satisfactory. This applies just as much to research at national and regional level as to coordination between donor countries and the international organizations as to which research projects should be given priority. The Community should therefore create appropriate machinery to help solve this problem.

60. International coordination of research projects does not function satisfactorily. Uncoordinated research and experimental work is still being carried out in many centres, with the result that funds which are urgently needed elsewhere are being wasted. Nevertheless, a Community programme makes sense and need not lead to duplication of work if the projects fill gaps and are coordinated with those of other organizations. The Committee on Energy's demand for consultation machinery and concerted action to improve coordination therefore deserves wholehearted support. The FAO and the CGIAR are involved in numerous ways in promoting agricultural and nutritional research in the developing countries and many joint projects, research networks and institutes have been created. There is an urgent need therefore, in implementing the EEC programme, to use these existing activities and links to make a concentrated and coordinated effort.

II. Medical care, public health and nutrition in tropical areas

1. Aspects of the health situation in the countries of the third world

61. Despite the considerable efforts made in recent years in the area of health, millions of people in the developing countries still suffer from infectious diseases, chronic parasitosis and illnesses caused by malnutrition and undernourishment. One of the main reasons why many children in the developing countries often die of infectious diseases is the fact that the latter occur in combination with malnutrition or undernourishment. According to the WHO, undernourishment is probably partly responsible for one-third to two-thirds of all child deaths.

As nearly all the developing countries are tropical countries and most of the industrialized countries lie in temperate zones, diseases occur in the former which, because of the biology of the carriers, are seldom if ever to be found in more temperate climates. These include filariasis, bilharzia and malaria. At least two hundred million of the world's population have bilharzia or schistosomiasis. In West Africa the disease is responsible for 2.1% of all deaths. In the world as a whole, some 250 million people are infected by one of the variants of filariasis, 122 million of these in India alone. The capacity of the human body is

permanently weakened, in particular by leprosy, tuberculosis, blindness caused by onchocercosis and serious liver and bladder complaints following schistosomiasis. In areas where the environment and the existence of suitable carriers provide the conditions for the transmission of diseases, up to 100% of the population is usually affected by schistosomiasis, onchocercosis, hook worm and malaria.

Other diseases such as measles can cause high-mortality epidemics among undernourished peoples, whereas they are no longer such a significant danger in countries without hygiene and nutrition problems. Epidemics of diseases such as cholera cannot now occur as easily as in previous centuries in the developing countries, since improved drinking water supplies and sewage disposal arrangements have removed the conditions in which such infections thrive. There are repeated outbreaks of malaria, meningitis and other viral diseases, which divert desperately needed medical staff from other duties. It is still quite normal for most people living in the third world to be permanently affected by various types of parasites at the same time. It is easy to see how this, in conjunction with undernourishment, inevitably leads to a serious reduction in working capacity.

62. The medical infrastructure is still inadequate. According to WHO estimates, up to 85% of the population in rural areas of the least-developed countries have no access to suitable health care facilities. Even where health centres staffed by medical auxiliary staff exist, there is usually no supervision, further training or adequate supplies of medicines and other materials.

There is still an urgent need for research into simple and inexpensive ways of preventing and treating widespread debilitating diseases such as malaria, schistosomiasis and the main causes of diarrhoea among children which can be applied in the framework of basic health care facilities. It is impossible to consider the health situation in the developing countries without including research and training.

2. Promotion of tropical medical research in the Community countries

63. There is still an urgent need for increased basic and strategic research in the interests of development in the area of tropical medicine which cannot be met by the existing WHO programmes. Although many research projects are currently being carried out in the area of medical care and health on a bilateral and multilateral basis, particularly by the WHO (including the specific programme dealing with five tropical diseases - malaria, leishmaniosis, schistosomiasis, filariasis, trypanosomiasis - in which the World Bank and the UNDP are involved), the situation is comparable in many respects with that of agricultural research. The WHO programme covers only certain aspects of these diseases and most of the research work is carried out in the developing countries themselves.

64. Contacts with representatives of the Member States involved in expert committees of the WHO, leading representatives of the latter and qualified scientists, have shown that there are still many gaps in the basic research work being carried out in bio-chemistry, genetics, immunology and pharmacy. This highly technical basic research has to be carried out in the industrialized countries at present, as most of the developing countries do not possess the necessary research infrastructure. Even the otherwise highly critical opinion of the Committee on Energy states that it is most economical and effective for many reasons to organize modern basic research at present in the industrialized countries. During a transitional period it is both useful and necessary to carry out research in tropical medicine in these countries. Basic research in parasitology, microbiology and biochemistry is still carried out exclusively in and by the industrialized countries. However, as these fields are of little practical importance for these countries and not very profitable, there is little if any incentive to carry out this work. The Commission proposal, therefore, could well lead to improvements which would benefit the developing countries.

The Committee on Development believes, nonetheless, that there is no point in expanding basic research unless the Community at the same time gives every support to related applied research in the developing countries. The main need in the area of tropical medicine technology is still for applied research. The arguments already listed at length under C/I/2 also apply to the medical field. Above all, within the framework of the planned research programme, European medical research should be geared systematically to the needs of the developing countries. It would be highly desirable to set up a medical facility similar to the successful Working Party on Tropical and Subtropical Agricultural Research in Germany. Unfortunately, there is no central organization to coordinate the tropical institutes' research plans. There is a lack not only of cooperation but, above all, of practical work in the areas of strategic, applied and adaptive research. Expansion of basic research facilities in the Community should not prevent the developing countries from being granted the necessary financial and technical support so that the infrastructure for such basic research can also be provided in the long term in the developing countries themselves.

65. Great care must also be taken to ensure that the expensive health care system of the industrialized countries is not simply imposed on the third world, given the totally different conditions and limited funds available in the latter. Research must first be carried out into the best way of organizing health facilities and the most effective and cheapest ways of combating the most common diseases in the developing countries. This aspect should be explicitly covered in the Commission proposal. Although the WHO has given assistance and encouragement in this direction, there are still few places in the third world where research is being conducted in these important areas.

66. Turning to pharmaceutical research, it is clear that, as pure research in this area is very expensive, it can only be carried out privately, i.e. by the major pharmaceuticals firms. This has extremely adverse implications for tropical medicine, as drugs for tropical countries are generally not very profitable. There are certain medicines which cost so much to research that they have to be sold at a very high price, with the result that the developing countries with their limited foreign exchange facilities can import only small quantities, i.e. drugs to combat certain tropical diseases have been or are being developed and are on sale but cannot be used because of the high cost. It would be appropriate, therefore, to provide financial support for research into tropical medicines or at least to subsidize certain areas of pharmaceuticals production. Active support should be given above all to specialized research establishments working on the development of medicines and vaccines for the large-scale treatment and prevention of major and widespread epidemic diseases such as malaria, schistosomiasis and leprosy.

The third world should not be regarded as a dumping ground for less effective or dangerous medicines. There have been repeated instances of drugs being sold in developing countries which have long been banned in the developed countries because of the dangers involved. In many developing countries medicines are a thorny subject, but one of great importance. The relatively recent contact of these countries with modern medicine has led to an excessive belief in the properties of drugs and because of the poor medical care, there is a desperate struggle to acquire medicines. Widespread poverty makes medicines expensive and hence profitable. As a result there are many cases of fake drugs or inferior quality medicines being sold. Careful attention should therefore be paid during manufacture to the quality and suitability for tropical use of medicines and vaccines.

3. Training

67. The health of people in the developing countries can be improved only if training is made an integral part of the proposed research programme. Although most auxiliary medical staff are now largely trained in the developing countries themselves, most doctors are still trained in the industrialized countries, despite the fact that it has long been common knowledge that this type of training does not cover, or at least largely neglects, the main diseases and health problems of the developing countries. In addition, many doctors prefer not to return to their home countries (brain drain).

68. In the section of the Commission proposal dealing with training it is stated that researchers and technical staff must be trained in the developing countries if the latter are to become genuinely independent. Training is admittedly mentioned, but nothing is said about how and where researchers from the developing countries are to be trained and, above all, no provision is made for financial support. Scientists from the developing countries and young researchers in particular should not only be involved as much as possible in the Community's planned research work, they must be involved as they urgently need European assistance.

All the training measures (including partnerships and sponsorships involving institutes with similar structures and specializations, the exchange of information and research and of teaching staff and students) listed at length under C/I/4 must also be taken into account in this context.

The training of auxiliary medical staff must be one of the priority objectives, as the opinion of the Committee on the Environment, Public Health and Consumer Protection rightly points out. Given that the study of medicine in the developing countries themselves offers more effective training in many respects, as it can be more closely related to the real needs of these countries, the Community should support medical schools in the developing countries by means of bilateral projects and the provision of qualified staff as part of the research programme. Training teachers is also important and the specialized training of decision-makers should not be confined to medical science alone but should also cover the fields of primary health care, nutrition and drinking water supplies. In promoting universities in the developing countries, it should be borne in mind that their tasks often go beyond the traditional aspects of teaching and research and that applied research and the practical usefulness of the results are almost always the first priority: this should be taken into account for the purposes of our scientific cooperation with the developing countries.

If the Community is to promote training and research aid for nationals of the developing countries in the Community, care should be taken to ensure that courses of study for doctors are geared towards their future work in the countries of origin. Since the latter urgently need trained researchers (brain drain), the Community should consider whether it can provide assistance to help these people in the reintegration process when they return to their home countries, as is already the case with regard to bilateral agreements concluded by Member States of the Community.

4. Main research areas

69. Almost all the parasitic, bacteriological and viral diseases mentioned on pages 19 and 20 are important. However, priorities must be laid down, as financial resources are limited.

The order of the parasitic diseases listed among the infectious illnesses should be changed. Research should begin not with malaria but with the study of schistosomiasis, then malaria finlariasis (onchocercosis, Bancroft's disease), Chagas' disease and Leishmaniosis. Malaria is admittedly the most common disease and also the most frequent cause of death in the world, but resources are scarce and there is insufficient time in which to make a significant breakthrough. There is a new medicament for treating schistosomiasis, which means that concentration on this disease could probably bring

results very quickly. Chagas' disease is most common in South America, where there are, however, very good, appropriate research facilities. Should it not therefore be excluded from the European research programme? The infectious diseases of the digestive system are very important, but this is a very wide field which would require massive financial resources (as the rapporteur learned from reliable sources, this area could use up the entire budget of a tropical institute without achieving any concrete results). Individual aspects of this area must therefore be accurately defined. Among the bacteriological diseases, some illnesses have been included which do not belong in this category, as they are not specific to the tropics (e.g. diseases transmitted throughout the world by sexual contact - gonococcus, non-specific ureteritis). Leprosy, on the other hand, is not mentioned¹. Haemorrhagic fever, however, which is listed under viral diseases, is a very rare disease, fewer than five hundred cases of which have been diagnosed in the entire world. Viral hepatitis is known throughout the world, but it is not a typically tropical disease.

70. Illnesses such as tuberculosis, leprosy, infectious disorders of the digestive system, viral hepatitis, health of mothers and children and nutrition are primarily problems of preventive health care and environmental hygiene rather than objectives of ultra-sophisticated isothermal laboratory research. In particular we need: clean water, human waste disposal, supply of basic medicaments such as anti-malaria treatments, antibiotics, vaccines, etc. but above all people who can put the many research findings into practice.

The health of mothers and children is important. In the report on world hunger it was stated that the isolated development of agriculture is pointless. If hunger is to be eliminated, sufficient quantities of food-stuffs must be produced and there must be facilities to transport, market and store them. However, the working capacity of the rural population must not be reduced because everyone living in such areas suffers from around three different types of intestinal disease and has an attack of fever or diarrhoea at least three times a year. Mass examinations have shown that, on average, about one third of the children under five in the developing countries require medical treatment, and, as a result, a considerable proportion of the mothers' strength is used up. As the mother looks after the family's daily food and water requirements, it is understandable that mothers and women in general in the developing countries have far too many burdens to bear. The subject 'Capacity and fitness of human beings at work' (ergonomics), particularly in rural areas of the tropics, should therefore be incorporated in the research programme.

¹Mali, an ACP state, is one of the countries with the highest incidence of leprosy in the world; it is estimated that 153,000 people suffer from this disease. Although research into and measures to combat this disease were considerably advanced by the Marchaux Institute, founded during the colonial period, the leprosy outpatients clinic - 'Service des grandes Endémies' - in Bamako has not even had forms on which to record patients' data for the last five years. Efforts to identify new cases cannot be undertaken because of the lack of funds.

The problems associated with water supplies are illustrated by the fact that 60% of the population of the developing countries do not have access to uncontaminated water. Thousands die every day from diseases contracted from contaminated water. Impure drinking water is the main breeding ground for tropical diseases such as malaria, bilharzia, onchocercosis and finlariasis. The Community should therefore help to gather information on water reserves, to open up water supplies and to supply the local population with uncontaminated water on a continuous and rational basis.

71. The link between the social sciences and medicine mentioned in the chapter on environmental hygiene is very important, as the research projects should be conducted as far as possible on an interdisciplinary basis from the very outset. particular importance should be attributed to the linking of medicine with education and psychology (vital to the success of projects) the biology of parasites and their carriers, sociology, agricultural science, metabolic biochemistry and economics. There is a research facility of this type at the London School (Ross Institute) and the tropical institute in Heidelberg is also involved in this type of research. It would be useful, therefore, to contact these institutes before finalizing the research programme.

In the case of nutrition, the following are the most important areas of research: types of undernourishment (there has been little research so far into the link between nourishment and productivity), causes of undernourishment and measures and programmes in the area of nutrition (agricultural production, supplementary nutrition programmes, enrichment of foodstuffs, and education in matters relating to nutrition). The correct use of existing resources and education in matters of nutrition are important areas which do not, however, require much foreign exchange. In its opinion the Committee on the Environment, Public Health and Consumer Protection states that, in formulating nutrition policy measures, account should be taken of the dietary habits of the various geographical areas and cultural groups. This is only partly true, as a change in certain dietary habits could reduce the incidence of various types of undernourishment in many countries. There are even some relatively advanced developing countries where children die of undernourishment simply because taboos prevent them from eating certain products although they are plentiful. During the discussions which the Joint Committee's Working Party on Hunger had with the Commission delegate in the Ivory Coast in January 1982, reference was made to this very problem, with a request that it be covered in the relevant European Parliament resolutions.

72. In addition to basic research, priority must also be given to applied research, i.e. the evaluation and application of existing research findings. There are three main aspects:

- collation, publication and application of known programmes, development of suitable treatment techniques and implementation measures at village level, particularly in the case of undernourishment and malnutrition of mothers and children, problems of underweight, diarrhoea and tetanus;

- development of new ways of treating known but as yet unsolved problems such as pneumonia, eye infections and skin diseases;
- development of techniques for recording health data and creating basic health services which can be introduced in all developing countries.

5. Exchange of research findings, avoidance of duplication

73. The criteria listed under C/I/5 also apply here, except that coordination agreements must be concluded, notably with the WHO.

One additional factor is that publications in the area of tropical medicine are a special problem. In Germany, for instance, the only journal for tropical medicine and parasitology will probably have to close for financial reasons. Consideration should be given to the question of how and whether to support such publications financially, as the publication of dissemination of research findings is vitally important for improving research in the developing countries themselves. It would also be possible to consider using the translation facilities available in the Community. Would it not also be possible to publish research results regularly in the 'Courrier'? In addition, specialist publications should take more account of work relating to strategic, applied and adaptive research instead of dealing with relatively unimportant technical matters which serve primarily to promote the scientific careers of the authors.

III. Financing and implementation of the programme

74. The appropriations for the tropical agriculture sub-programme total 30 million ECU, while those for medical and health care and nutrition in tropical areas amount to 10 million ECU. It will not be possible to fund all the research projects mentioned by the Commission from the allotted 40 million ECU. Given the four-year cycle and the finance available it will be possible to conduct only specific and limited research projects.

The US \$150 million a year currently spent by international research institutes is a small sum. Around DM 200,000 a year, including indispensable travelling costs, is needed for each medical expert engaged in tropical research. Some DM 100,000 is needed for each home-based member of staff. Between DM 250,000 and DM 300,000 is needed to fund a research programme for six months, assuming that the research facilities are available in Europe.

75. The proposed US \$40 million over four years can therefore be regarded only as a small first step. It must also be remembered that, if most of the basic research projects in the area of tropical agriculture and medicine are to produce results, they must be carried out over a period far in excess of four years. A period of four years without a follow-up programme and further finance is too short, i.e. the planned research programme can fulfil its purpose only if continuity is guaranteed over a long period. Experts are continually pointing out that research projects and the creation of institutes in the developing countries have been successful only in cases where long-term financial support was granted.

Nonetheless, it would not be accurate to claim that almost nothing could be achieved with the 40 million ECU. A lot can be done with this sum if the money is concentrated on a few priority areas which have a multiplier effect (e.g. agro-forestry). A few well-planned projects will undoubtedly have a greater multiplier effect and be more effective than a large number of small ones. In the planning of major projects the period 1982-85 should be regarded merely as a first phase.

The allocation indicated in the proposed budget, notably 45% of the 30 million ECU for improving agricultural production, 20% for 'horizontal' topics and protecting the environment, or 80% of the 10 million ECU for medical and health care, must be regarded at present as a highly provisional estimate, since the priorities in the various areas of research will first have to be more closely defined. It should be left to the Committee on Budgets to decide whether, as the Committee on Energy claims in its opinion, the estimates for staff and administration costs in connection with the programme are too high.

76. The Committee on Development and Cooperation is interested above all in the way in which the programme is implemented. The implementing provisions will largely determine the value of the programme for the developing countries. Implementation requires precise rules on decision-making, management and supervision, so that programme objectives are not only attained with the desired degree of efficiency and flexibility but also meet the real needs of the developing countries. It is also essential at all levels of implementation to avoid creating the impression that some European research institutes which have previously concentrated their activities overseas may be primarily interested in pursuing their work with the support of the European Community. As stated at the beginning, every effort must be made to prevent European research institutes from intensifying or initiating research which is primarily in their own interests or which is determined by a belief that it is what the developing countries need. The developing countries should therefore have the right to participate in the work of the two advisory committees (Article 3 of the proposal for a Council decision) which are planned for the two sub-programmes and to be represented in the practical work on the various aspects of the programme. It would also be useful, in order to ensure maximum coordination between the Commission and the programme committees, to allow representatives of the FAO and the WHO to take part in these meetings. Furthermore, the whole programme can be meaningful only if the research institutes of the developing countries are involved in the work from the very beginning and if the Community provides corresponding support for research centres in the developing countries to set up their own research and development facilities in the field¹, as coordination of basic and applied research is indispensable.

¹See in this connection the European Parliament resolution of 8 May 1981 on the creation of a European Community Foundation for International, Technical and Scientific Cooperation, OJ N° C 144 of 15 June 1981, p. 106 et seq.

77. The optional provision contained in Article 5 should be made binding. The Commission should not simply be able, but rather must, for logical reasons, pass on to the developing countries the results of the research, as the research programme was designed to help them. Furthermore, this knowledge should be passed on not only to countries which have concluded specific association or cooperation agreements with the Community but also to those developing countries which urgently need it and can use it.
78. As the research programme is intended to benefit the developing countries, steps should be taken to ensure that, when contracts are concluded and during implementation of the programme, not only officials of DG XII but also those of DG VIII are involved, as the latter are undoubtedly more competent in matters of development policy. The Commission departments responsible for the Community's development and research policies should also jointly consider to what extent available instruments and resources of the Community's development policy can be used for this research programme in the developing countries, particularly with a view to transferring scientific knowledge to the latter.

OPINION OF THE COMMITTEE ON ENERGY AND RESEARCH

Draftsman: Mr Gerhard SCHMID

At its meeting of 25 June 1981 the Committee on Energy and Research appointed Mr Gerhard SCHMID draftsman of the opinion.

At its meetings of 24 September and 20 October 1981 the Committee on Energy and Research considered the draft opinion and adopted it on 20 October by eleven votes to five.

Present: Mrs Walz, chairman; Mr Gallagher, Mr Normanton, Mrs Ippolito, vice-chairman; Mr Schmid, draftsman; Mr Beazley, Mr Croux, Mrs Ewing (deputizing for Mr Méo), Mr Fuchs, Mr Galland, Mr Lalor (deputizing for Mr Cousté), Mr Linkohr, Mr Moreland, Mr Petersen, Mr Pintat, Mr Rinsche, Mr Rogalla, Mr Seligman, Mr Soussouroyiannis and Mr Veronesi.

'Wanted: desert suitable for mirage'

Karl Kraus, Aphorisms

Summary

The Committee on Energy and Research recommends rejection of the programme in its present form. Clearly there is a need to take action on behalf of developing countries. But the proposed programme does not do justice to the problems. The Commission should submit a new draft taking account of the criticisms made.

Experience shows that the Commission is unlikely to react to polite comments by Parliament. Once Parliament has delivered a basically favourable opinion, the Commission merely concentrates on securing approval from the Council without taking any serious note of requests for substantial changes. The defects in the draft programme are, however, so serious that changes are absolutely essential.

Rejection would not involve any delay. The Commission has submitted its programme so late that it will not be possible to take account of it in the 1982 budget anyway.

EXPLANATORY STATEMENT

I. In accordance with its terms of reference, the committee paid particular attention to the following questions:

1. Is there a need for research in this field?
2. What general conditions need to be satisfied if research findings are to be utilized?
3. Can research in the Community solve the problems of the developing countries?
4. Is there any point in a Community programme in addition to existing projects?
5. Does the programme represent a duplication of effort?
6. Is there adequate financing for the proposed range of projects?
7. Are the proposals in the field of training of practical value?

In most cases the answers to these questions were negative and the examination of programme management also led to very unsatisfactory conclusions (see IV below).

II. Tropical agriculture

1. The need for research

The number of severely undernourished people in the developing world is approaching 500 million men, women and children. The non-oil producing countries of the Third World are spending an ever-increasing amount of their earnings on commercial food imports, offsetting the benefits of the greater part of the Official Development Assistance that they are receiving.

In 1979, 28 countries were facing unfavourable crop conditions. Serious drought prevails in parts of Africa and South Asia as well as in Central Europe. Serious crop pests and animal diseases threaten fifty countries of Africa and Asia as well as a dozen Latin American countries.

That is the situation today. Moreover, if we look ahead, on the basis of FAO's study on 'Agriculture: Toward 2000', we see that developing countries will have to produce or import two and a half times more food by the year 2000. Every aspect of food production will call for vastly increased effort.

2. Factors determining success

Numerous studies show that improving agricultural yields in developing countries simply by the application of scientific knowledge cannot eliminate hunger. The programme makes no attempt to link up with an overall strategy incorporating other crucial factors.

(a) Competition between foodstuffs and products for export

Hunger and malnutrition are often at their worst in those agricultural areas where the majority of the population has employment. More attention has been paid in the past to growing crops for export than growing food. Various governments have deliberately discriminated in favour of the urban population because of its greater political influence.

(b) Competition between human beings and animals

There is a danger that animals may be in direct competition with human beings for food. Vegetable protein fed to animals is converted into animal protein, but a considerable amount is lost in the process because it may require up to 7 kilograms of vegetable protein to produce one kilogram of animal protein.

One expert commented as follows:

'There is often a remarkable connection between securing optimum growth in pigs and the inhibited growth and poor health of children in the same region. This is because the latter have no immediate economic repercussions.'

(Korte, Dr. R: GTZ Health Section, lecture in 1977)

(c) The limits of the 'Green Revolution'

The 'green revolution' has enabled yields to be increased dramatically but has solely concentrated on technological progress, such as the selection of high-yield varieties of cereals and the systematic use of chemical fertilizers and pesticides. Often only an agricultural elite has profited from the 'green revolution'. This has encouraged a form of mechanization in the agricultural sector which has debarred most tenant farmers, smallholders or peasants without land from any progress and forced them to migrate to the cities. Mechanization has also increased capital costs. The 'green revolution' has moreover increased the technological dependence of the developing countries and the large agricultural processing concerns and their dependence on oil, which in many cases has led to an intolerable situation.

(d) Community trade policy

Increasing agricultural export production in developing countries presupposes a willingness to import on the part of the industrial countries. The General Preference System introduced by the Community in accordance with the UNCTAD 1971 recommendations, which grants developing countries special import privileges, has led to an increase in agricultural imports. But all the goods for which a community market organization exists are essentially excluded from the preference system. Moreover there is a safeguards clause which allows the normal customs tariff to be re-introduced at any time. This arrangement makes it a hazardous undertaking for developing countries to gear their production to the Community market. Because of the safeguards clause, this risk is also shared by the countries favoured under the Lomé Convention.

(e) Career structures

Scientists have uncertain career prospects anyway and no guarantee of a long-term future. Specialization in tropical research makes it extraordinarily difficult to become integrated into the national research structures in the Member States.

3. Research in the industrial countries

Most of the subjects proposed in the agricultural sector can only sensibly be studied in situ. It is impossible to simulate fully tropical conditions in hothouses.

The only type of research which can be better carried out in industrial countries are basic studies requiring major laboratory facilities. The programme gives no indication how cooperation with experts in the developing countries is to take place.

4. Is a Community programme necessary

Apart from Greece and Luxembourg, all the Member States of the Community are members of the CGIAR (Consultative Group of International Agricultural Research). Two of the 13 CGIAR centres are located in the Community. The Dutch centre, the International Service for National Agricultural Research (ISNAR) is particularly important in connection with this programme. As an adjunct to the CGIAR research centres, ISNAR meets the demand from developing countries for support in developing their national agricultural research institutes.

The importance of agriculture has led the Member States to accord this sector high priority in bilateral arrangements. In 1975 they spent 100.72 m EUA and in 1976 113.5 m EUA on this sector. This represents 39.8% and 39.6% respectively of their research expenditure for the benefit of developing countries. Community agricultural research documentation (AGREP) shows that currently over 200 agricultural research projects of interest to the developing countries are being pursued in the Member States.

A Community Programme would be useful:

- (a) as concerted action to improve coordination;
- (b) as an indirect action in a narrowly defined field.

There must be coordination with ongoing activities and Community development projects and an overall strategy. In its present form the programme proposed is pointless.

5. Duplication of effort

The CGIAR operates 13 centres, 2 of which are in the Community. The aim of the research is to improve the quantity and quality of food production. In 1980, the CGIAR had 35 paying members who contributed 120 m dollars.

In addition there is a great deal of research being conducted by other international organizations from which - directly or indirectly the developing countries can profit. There are for example: the FAO Cooperative Research Networks (covering, among other things, wheat, maize, soya, sunflowers, olives, pesticides, sheep-rearing), the UN Remote Sensing Programme, the FAO/UNDP Gene Bank Programme, the OECD Agricultural Research Programme in the fields of photosynthesis, nitrogen fixation, cellulose and mycotoxins.

No consultation machinery is proposed to avoid duplication of effort.

6. Range of projects and finances

The Commission proposes 7.125 m EUA per year for a 50% subsidy for research projects. These may be assumed to be estimates of the costs of fieldwork, because the majority of the work has to be carried out in situ.

The costs for one year's field work per man amount to 80,000 EUA, and a trained scientist with a laboratory costs at least double this. This would therefore fund a maximum of 180 researchers who would be distributed over 3 main areas. There does not appear to be any intention of concentrating on a small number of topics to ensure results. There is a grave danger that the financial resources will be too thinly spread over a large number of small projects if the whole range is covered.

7. Training

The Commission only takes account of the experience gained from the research projects by the European researchers involved and their staff. No mention is made of training specialist staff from the developing countries. Nor has any provision been made either in terms of specific measures or financial resources.

III. Tropical medicine

1. The need for research

Despite the advances in medical science, tropical diseases still affect or threaten more than a thousand million people, taking heavy toll in human lives and gravely impeding economic development. Furthermore, rather than coming under control, in many regions some of these diseases are increasing in both prevalence and severity. Not only is development impeded by disease, but some of the development projects, such as manmade lakes and irrigation schemes designed to improve conditions, have in fact altered the ecology and aggravated major public health problems such as malaria and schistosomiasis. In addition, technical problems have significantly reduced the effectiveness of some disease control programmes. A prime example is the increasing resistance of mosquitos to chemical control, the mainstay of the majority of malaria control programmes. In some areas, such insecticide resistance in the vector is combined with chloroquine-resistant strains of the malaria parasite in man, further increasing the severity of the problem. In the case of filarial infections, especially in onchocerciasis, commonly called river blindness, there is still no effective and safe drug which can be relied upon to kill the adult worms in man. No vaccine is available for any of the parasitic infections and no new effective, cheap and safe drugs for the widespread treatment of the diseases have become available in the past three decades.

Clearly there is a need for research to help solve these problems.

2. Factors determining success

An expert study for the Commission observes:

In general, every scientific programme should seek to ensure that the results of research are translated effectively into the public health

systems of the developing countries as they exist; in addition to these programmes, however, one of the main topics, in respect of which European scientific research teams could pool their experience and thinking, is that of providing support for the authorities in the countries concerned in devising appropriate health systems which are not merely models transposed from the developed countries.

(Source: Medical Research in Developing Countries, XII/495/80-EN)

No account has been taken of these well-founded observations. Insufficient attention has been given to other factors crucial to success.

(a) Hygiene

No infectious disease can be eradicated by medicaments alone. Results can only be achieved by an overall strategy which includes measures relating to hygiene, the supply of drinking water and health education.

(b) Environment

Development measures often have repercussions on health. For example the introduction of irrigation into agriculture has led to an increase in malaria and bilharziasis. This aspect is often overlooked.

(c) Prices

The medicaments available cannot be used because the developing countries cannot pay for them. The funds supplied by the World Bank for this purpose are inadequate.

(d) Pharmaceutical industry

The pharmaceutical industry, which produces over 90% of all pharmaceutical products, has increasingly withdrawn from the field of tropical medicine. Practically no new medicaments have been developed in this field over the last 20 years. The reasons for this are: high development costs, little protection for patents and a lack of demand backed by purchasing power (see above).

New marketing strategies (no advertising, bulk sales to governments etc.) show that there is some interest in the markets in developing countries but these methods are generally used to market well-known products. The specialist knowledge and institutions required for screening new substances to combat tropical diseases still exist. But unless the real obstacles are removed the situation is unlikely to change radically.

(e) Career structures

Research into tropical medicine is declining in the Member States. The Commission itself cites the following reasons:

'The pool of specialized scientific personnel has also suffered a certain amount of disruption owing to progressive natural wastage,

aggravated by a scarcity of recruits, a lack of career guarantees, the abolition of training schemes and by diminishing opportunities for in-depth experience in the Third World context.' (Page 5 of the draft programme)

No field of science can survive unless there are jobs and scope for careers.

There is widespread interest in tropical diseases in the European countries because of the infections brought back as a result of international tourism (known as 'travel medicine'). Recognition in European medical circles depends far more on overcoming these problems than making discoveries related to the endemic areas. This has a major influence on the approach to and outcome of research.

The programme proposed contains no suggestions for overcoming these further obstacles. Nor does it propose any strategy or coordination with other programmes to justify its separate existence.

3. Research in the industrialized European countries

The programme seeks to strengthen research facilities in the Community.

The developing countries are calling for greater support for their research and training facilities. There are economic and other specific reasons for this besides overcoming former colonial dependence. It is often difficult for example, to persuade doctors trained in Europe to return to their native countries (brain drain). The problems of technology transfer were recently dealt with in detail in the report by Mr PURVIS, Doc. 1-862/80.

In the field of tropical medicine, epidemiological research and clinical trials can only be carried out on the spot. Scientists from the developing countries can be given guidance and assistance. But only local specialists will be able to influence developments in the country in the long term and ensure that research findings are applied.

For a variety of reasons it is more economical and greater success is achieved if modern basic research in the fields of biochemistry, immunology, pharmacy and genetics is organized in the industrial countries. For a transitional period, therefore, measures in these countries are both sensible and necessary as far as tropical medicine is concerned. But they must be combined with training programmes for specialists from the developing countries.

The programme makes no clear distinction in this respect. There is a reference to training, but no resources have been earmarked for it. Thus the training benefits would only apply to the European researchers directly concerned with the programme. Mention is made of the need for cooperation with local specialists, but no indication is given of how this is to be organized or financed.

4. Is a Community programme necessary?

There is research capacity in some ten institutes of tropical medicine in seven of the Member States. In 1975 some 22 m EUA and in 1976 approximately 27 m EUA were spent on scientific and technological cooperation with developing countries in the field of health. There is also the expenditure on the WHO programmes.

There is some coordination of research. The directors meet annually to exchange experiences in the Council of European Schools and Institutes of Tropical Medicine and Hygiene. The Member States involved are Belgium, Denmark, France, the Netherlands, the United Kingdom and West Germany.

A Community programme would be sensible:

- (a) as concerted action to improve coordination
- (b) as an indirect action in a narrowly defined field. There must be coordination with ongoing activities and Community development projects and an overall strategy.

In its present form, the programme proposed is pointless.

5. Duplication of effort

The World Health Organization (WHO) programmes already cover most of the subjects proposed. For the major tropical parasitic diseases alone, ten times more is spent each year than the amounts suggested in the programme. The Community countries receive almost as much finance for this area as the entire amount allocated in the programme for tropical medicine. From 1978 to June 1979 expenditure by the Community countries for the WHO programme amounted to approximately US \$9 m. But this draft was not discussed with the WHO. No provision has been made for consultation machinery to avoid a duplication of effort.

The Commission justifies its programme as follows:

'There is however need to strengthen the capacity of Member States to contribute effectively to this global effort. While the Programme initially supported much work in Member States, there is now strong pressure to spend in the Third World and Community institutions are being seriously affected.'

This is not true. The relative proportion of research funds in the industrial countries has declined because the WHO, with its growing budget is spending more on training specialists from the Third World. After adjusting for inflation, the absolute level of expenditure has remained approximately the same (see tables in annex).

The Commission calls for genetics and molecular biological technology to be applied. The overlap with its own proposed programme for this area is obvious (if one thinks about it!)

6. Range of programme and finances

The Commission suggests an annual average of 2.2 m EUA for research projects with 50% funding. The costs for one researcher at a university total 40,000 EUA per year, for fieldwork 80,000 EUA per year (including travel expenses). In industry the costs for a trained researcher are estimated at 600,000 EUA per year (toxicological laboratory), 240,000 EUA per year (biological laboratory) or 160,000 EUA (chemical laboratory).

It is quite clear that the financial resources proposed cannot possibly fund research into the entire range of projects. These resources would not even be sufficient to develop one single medicament. This would take ten years to develop and involve development costs of an average 45 m EUA.

7. Training

The Commission briefly summarizes the views of experts on this issue. No resources have been earmarked and no attempt is made to show how the demands from experts can be met simply by awarding research contracts. It is therefore beyond comprehension why this subject appears in the programme at all.

IV Research policy and programme management

1. Priorities

There are four areas of science which are important for the developing countries: nutrition, health, energy and natural resources. The Commission itself observes: 'Even a superficial examination of these sectors quickly reveals that it would be impossible to make a significant contribution in all these areas in view of the extent of the measures required, so that priorities must be defined more clearly in order to limit these sectors further.' (Page 8 of the draft programme)
This is very true.

The decision in favour of agriculture and medicine, however, is not based on the needs of the developing countries. The Commission establishes its priorities differently:

'It must also be pointed out that the specialized laboratories in research institutes of the Member States in these sectors have considerably reduced their activities in recent years..... The situation is different, however, in the sectors of energy and mineral and other natural resources, where the research effort in the industrialized countries has been undiminished.'
(Pages 8 and 9 of the draft programme)

Even the Commission is aware that this research is largely irrelevant to the needs of the developing countries:

'In many cases, admittedly, the techniques are unsuited to the geographical, economic and social context of developing countries.'

But this contradiction is never resolved. No discernible attempt has been made to establish priorities in line with the interests of the developing countries.

The relative importance and financial endowment of the two sectors, agriculture and medicine, vary considerably as do individual areas within these sectors. No justification is given for these differences.

2. Programme range

It is impossible for all the issues to be dealt with satisfactorily. The Commission therefore proposes that priorities should be defined following consultation with the advisory committee. But priorities are a political not a technical issue. Parliamentary control is a dead letter under these circumstances.

3. Publicity

The customary procedure of publishing invitations to tender in the Official Journal limits from the outset the circle of potential candidates for research projects.

4. Selection of projects

As usual, the selection is to be made by a programme committee which 'advises' the Commission. Each Member State appoints three delegates. The Committee on Energy and Research has often voiced its misgivings in the past because as a rule bureaucrats rather than scientists are appointed.

5. Monitoring and assessment of projects

No details are given of who is to assess competently the results of the individual research projects. The rapporteur finds it hard to believe that the Commission intends its own staff to do this.

6. Interim evaluation

It is proposed that the programme should be evaluated by the Commission in the third year. The Commission will then propose amendments 'if necessary'. This means that the Commission, which is responsible for programme management and the selection of projects, will evaluate itself. Under the present schedule, 87% (agriculture) and 92% (medicine) of the funds will have been committed by the end of the third year. It is therefore totally inaccurate to refer to this as an interim evaluation.

7. Dissemination of information

In industrialized countries with a well-functioning economy scientific research findings are applied or used for production either by the market (if there is demand backed by purchasing power) or by the state (in the case of social demand). It is difficult to do either in developing countries. Organizing the transfer from theory to practice is therefore at least equally important as obtaining the research findings. The Commission, however, simply refers to a Technical Centre for Agricultural Rural Cooperation being created within the framework of the Lomé II Convention.

The Commission does on the other hand seek patent safeguards as these are commonly understood in industrial societies. The proposals are inadequate. As there is no protection for patents in most developing countries, there are no restrictions from this quarter on the use made of research findings. Within the Member States however, the restrictions on patent rights (Article 5 of the Council resolution) mean that no industrial laboratory will take part in the programme. The Commission makes no mention whatsoever of the other aspect of patent problems, namely the repayment of research costs or the payment of fees in the event of the commercial exploitation of patents resulting from Community programmes.

8. Staff and administration costs

At 5% (agriculture) and 12% (medicine) of the total costs, these costs are high and the staff requirements of 4A, 2B and 4C posts excessive. It is not clear why a programme with 30 m EUA (agriculture section) and a programme with 10 m EUA (medicine section) involve roughly the same staff and administrative costs.

9. Financial records

This programme involves joint financing. The Community proportion is 50% on average. There is no provision, however for financing from the budgets of individual states or other sectors at the national level (see financial records). The question therefore arises of where the remaining 50% is to come from.

The timetable contains payment appropriations for 1986 and 1987. No staff costs, however, are shown for these years after the programme has expired.

V. A redrafted programme

In view of the defects referred to above, it is absolutely essential for the programme to be redrafted.

In addition to taking account of the criticisms above, the Commission should consider whether the following items can be incorporated:

1. Traditional medicine (medicinal herbs)

- confirmation of the efficacy of medicaments used in traditional medicine using scientific methods
- Promotion of systematic local cultivation of medicinal herbs

2. Appropriate pharmotechnology

- Simple and cheap methods of producing basic medicaments in the developing countries
- Simple diagnostic tests and methods of vector control
- Natural methods of vector control (e.g. ambrosia maritima, of which the leaves and blossoms contain a powerful soluble molluscicide which is effective against the snails carrying bilharziasis)

3. Vaccination

Priority for immunization rather than treatment with drugs.

4. Appropriate agricultural technology

- Compound animal feeds from local materials
- Processing of crops domestically

5. Appropriate management methods

- Cooperatives and marketing
- Training of managers for work in developing countries.

WHO: SPECIAL PROGRAMME FOR RESEARCH AND TRAINING IN TROPICAL DISEASES(Data as of 30 June 1981) (US \$ and number of [projects in brackets])
(almost exclusively carried out in the concerned member states)

	B	DK	F	FRG	Irl	I	NL	UK
Malaria	133,100 1		335,732 8	206,220 2			247,881 4	1,780,063 28
Schistosomiasis	146,000 2	95,000 1	167,500 6	12,500 1		16,000 1	74,500 2	1,145,000 21
African Trypanosomiasis	436,014 7			224,150 6			93,000 1	682,339 16
Leprosy	87,250 5		51,000 3	39,500 2	88,550 1		77,900 2	979,901 17
Biomedical Sciences	745,000 1	80,420 1	20,000 1			79,000 3		40,000 2
Filariasis		1,000 1	223,850 4	788,400 7				1,393,892 19
Vector Biology and Control		5,000 1	187,800 8					1,000 1
Director's Initiative Fund			20,200 3					33,180 6
Chagas' Disease			15,600 1	10,204 1				206,239 3
Leishmaniasis			14,300 2			8,000 1		247,116 8
Social and economic research			82,760 2					1,640 2
Epidemiology								26,485 1
TOTAL	1,547,346 16	181,420 4	1,118,742 38	1,280,974 19	88,550 1	103,000 5	493,281 9	6,536,855 124

Source: UNDP/WORLD BANK/WHO TDR (tropical Disease Research) Profile on Countries in the EEC
The table also indicates which countries are carrying out major research into tropical medicine.

Total WHO expenses on tropical medicine in the relevant EEC member countries (in US \$)

	B	DK	F	FRG	Irl	I	NL	UK	EEC
1975 - 78	998,350	113,420	358,332	525,450	36,550	-	196,702	2,223,918	4,452,722
1979	223,015	32,000	294,730	363,570	26,000	46,000	147,735	1,723,513	2,856,563
1980	239,499	36,000	389,080	365,554	26,000	37,000	132,400	1,886,666	3,112,139

Source: UNDP/WORLD BANK/WHO
TDR Profile on Countries in the EEC

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- Brock, Dr : Behringwerke AG, Marburg
- Burchardt, R.: Bayer AG, Central Research Department, Leverkusen
- Focke, Dr K. : Member of the European Parliament
- Furth, W.W. : WHO, Assistant Director-General, Geneva
- Hanuske-Abel, Dr H.: Johannes-Gutenberg-Universität Mainz, Paediatric Clinic
- D'Hondt, E. : Federal Ministry for Development and Cooperation, Bonn
- Lucas, Dr A.O.: WHO, Director of the special programme for research and training in tropical medicine, Geneva
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- Rosenhammer, W.: Development Assistant, expert on cooperatives, currently in Djibouti
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- Sonnenburg, Dr von : Institute of Tropical Studies, Munich University
- Valentini, Dr G.: Commission of the European Communities, Brussels
- Wilson, Dr R. : WHO, responsible officer, programme management, Geneva

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