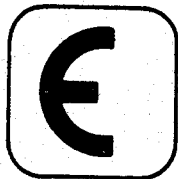


THE EUROPEAN COMMUNITY
RESEARCH PROGRAMME:
THE FACTS



SPOKESMAN'S SERVICE

November 1986

SUMMARY

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TWENTY QUESTIONS AND ANSWERS ON THE RTD PROGRAMME
(1987-1991)

1. This framework programme doesn't have any strategy or strategic objectives; it doesn't hang together

The framework programme reflects the fundamental Community strategy aiming at providing the European economy with the necessary means for international competitiveness in the advanced sectors with high technological added value. On their side, our partners - and competitors - are developing continuously their own efforts in this field. Community Heads of State and government have legitimized the Community dimension of technological cooperation in the Single Act (see Annex III and IV).

At the same time, the RTD framework programme goes hand in hand with the making of the "large frontierless market" by 1992. It is a precondition of this achievement since it contributes decisively to establish the rules of the game on which hinges the smooth functioning of the enlarged market: setting out European technological standards necessary to the free flow of sophisticated goods and services (telecommunications, pharmaceuticals, high definition TV, etc). It makes it possible to get the best results of the enlarged market thanks to the pooling of human and material European resources which is needed to attain the critical mass required to explore and implement the new technologies (thermonuclear fusion, biotechnology, information technology, environment technology, etc...)

The framework programme has thus clearly defined objectives: it concerns only those sectors to which the Community dimension is likely to bring obvious advantages and where other forms of trans-European cooperation such as Eureka do not already exist. Accordingly, the framework programme focuses on eight major topics (see Annex II).

There is therefore no question of its not hanging together. On the contrary, it involves rigorous selection of activities judged on the basis of their scientific quality and the degree to which they are likely to meet the objective of increasing European competitiveness, as well as a strict budget assessment.

2. Community research is characterized by an excessive growth of ill-selected, self-sustaining programmes

Community research activities are proposed only after thorough studies and analyses - especially on cost effectiveness - have been made and all the protagonists, in particular industrialists, have been consulted extensively. This whole range of trans-European and multidisciplinary consultations ensures that Community RTD is not confined to particular preserves in one country or another and that it does not pander simply to one clique of scientists in any given sector.

Once a decision has been taken, research projects are implemented by the Commission, which is assisted by top experts from the Member States in the preparation of calls for proposals and in the selection of the contractors. The internal analyses and evaluations are supplemented by systematic external evaluations. Each programme renewal follows the same process.

In no way, therefore, is such a renewal automatic, nor is there any question of the programmes being "self-sustaining". The reason why so many programmes are renewed is that they are considered worthwhile by the experts, by the European Parliament and by the Council, which adopts them. In other words, they have been well-selected.

Nevertheless, all Community research projects evolve and some are even abandoned purely and simply because they have attained their objective or because they are no longer judged (on the basis of strict criteria) to have priority, as was the case with the hydrogen programme.

3. The framework programme reflects the 'interventionism' of the Community, whose role should be confined to the coordination of Member States' research activities, on the one hand, and the harmonization of regulations and standardization, on the other

Is it not preposterous to speak of Community "interventionism" when its research budget accounts for less than 2% of the total expenditure on RTD in Europe?

Quite apart from the figures, the Commission is aware that technological cooperation is nurtured in Europe under other headings: such as EUREKA, CERN, the European Space Agency, etc, which is why the Community focuses on a few essential sectors which are not receiving attention in other contexts:

- research on a very large scale to which even the biggest Member States cannot afford to devote the necessary funds and personnel: e.g. thermonuclear fusion;
- research vital to the achievement of the large frontierless market: establishment of a "European space" for telecommunications, the RACE programme, high definition television, machine translation, standardization and exchanges of research workers;
- research for which joint projects have obvious advantages from the financial and/or technical points of view: e.g. information technologies (Esprit), metrology, etc.;
- research which - due to complementarity of national activities - can bring about significant results for the Community as a whole: e.g. cancer research.

4. The Community subsidizes large groups which don't need public money and which consequently develop a "handout" mentality. Not only that, but there is no established link between subsidies and market success in industry

Not even large groups are always prepared to go it alone and accept the considerable risks involved in research which requires several years to produce marketable goods. What they need is a little encouragement from the Community to (a) be adventurous, in the first place, and (b) to be adventurous in collaboration with other European firms. If not, acres with rich potential for the future will be left to lie fallow in Europe - to the enhancement of US and Japanese competitors, who display greater daring and receive better support from their own public authorities.

The danger of promoting a "handout" mentality is, in any case, minimal since programmes such as Esprit (information technologies) or Brite (industrial technologies) are, by definition, limited in terms of time and concern only the pre-competitive research phase. Furthermore, although it serves a vital purpose in providing the initial impetus, Community financing represents a small percentage of the research budget of the large firms involved. Subsequently, the cost of perfecting the finished product and putting it onto the market is five to ten times greater than that of pre-competitive research.

Finally, Community technology programmes are generally based on a "shared costs" system, i.e. they imply a significant funding by the participating firms.

There is no question, therefore, of the private sector and, in particular, the big European concerns, "sponging" off the Community for research aid. The same cannot always be said with regard to national programmes.

5. For telecommunications, the strategic responsibility should lie with the PTTs which do not have to be subsidized by Community resources. In this field, the Community can make only a supplementary contribution, limited to drafting of standards

By their nature and owing to the close ties with their "national champions", the PTT administrations of the various European countries are tending to diverge and each follow different paths. The lack of compatible systems, in Europe, for cellular mobile radio is a flagrant illustration of this trend.

Community action helps to redress the balance and encourage the European PTTs to prepare their common future together. Thus, in consultation with the industry, it acts as a catalyst for the development of a basic transeuropean technology, essential to the achievement of a large market without frontiers.

Under the Race programme, the PTTs will assume the strategic responsibility for the telecommunications networks, while the service companies will provide the relevant services.

In this way, Community action relates only to the precompetitive and "pre-standardization" stages, where a common approach is essential to enable open competition on the European market.

The Race programme represents less than 0.2% of the total financial resources that the Community countries will spend on telecommunications in the nineties, i.e. 560 million pounds sterling compared with total expenditure of some 350 billion pounds sterling.

6. The framework programme is only any use to the "lame ducks"

There are no lame ducks, only firms reluctant to change, as opposed to others which are trying to implement advanced technologies to remain competitive in traditional industrial sectors such as textiles, engineering, motor vehicles, etc. which still represent some 30% of Community GNP and jobs.

It is precisely for these firms wishing to innovate that the activities have been conceived under the framework programme - and Brite in particular - on the application of new technologies to the modernization of industry.

7. There is no room for small and medium-sized firms in the Community research and technological development programmes.

Through their modest "token presence" in the Community programmes, small and medium-sized firms have access to research by larger firms and advanced Community laboratories. Even if they do not participate in such or such programme, they indirectly benefit from it thanks to Community standards elaborated by this programme which enable small and medium-sized firms to compete on an equal footing in the "large frontierless market".

Furthermore, Community activities take account in particular of the needs of small and medium-sized firms (e.g. technical assistance from the Commission for the presentation of BRITE projects).

Finally, the figures speak for themselves: small and medium-sized businesses are involved in 64% of ESPRIT projects and 51% of BRITE projects.

8. There is no room for the smaller Member States

Community RTD programmes do not bring together States - small or big - but firms and research centres. Therefore they are not at all designed according to national criteria and do not constitute the exclusive preserve of the larger Member States. On the contrary, they offer the smaller ones a unique chance to take part in advanced research on an equal footing. From the very beginning of the Community, industrialists and scientists of the "smaller" Member States have indeed well understood their interest to participate in this new grouping: it offers them the advantages of the "large market" which they are still more lacking than others and, now, of research and development of European scale.

Moreover, in accordance with the spirit of the Single Act which aims to reduce regional differences in the Community, special efforts are being made to step up participation by the less-favoured areas in advanced technologies. Two Community programmes (STAR for telecommunications and VALOREN for energy), have already been conceived for this specific purpose.

Finally, the strengthening of the scientific potential of the less-developed areas of the Community will be one of the principal objectives of work on a "Research Workers' Europe", a key element of the framework programme. The section on "training and mobility of research workers" within the specific programmes will be tackled in the same spirit.

9. The larger countries can go it alone

In advanced sectors, markets and technologies are world-wide. No Community country on its own can afford projects of sufficient scale to take account of this. The setbacks of the Filière graphite-gaz and the Plan calcul, in France, demonstrate this. Incompatibilities in television broadcasting resulting from the rival PAL and SECAM systems is another illustration. There are similar examples in nearly all Member States which - whatever their size inside the Community - remain "small" seen from a world point of view.

Even bilateral projects - such as Concorde - between two large European countries come up against serious difficulties since, in their conception, technology has not been linked to the market.

Only the whole Community, working in harmony, can achieve critical mass, as regards both the means to be used and the market for technological products developed from research.

In telecommunications, for example, it is agreed that an estimated minimum world market share of 8 to 10% is essential for the viability of the next generation of switches. However, no "national champion" represents more than 6%.

10. It makes more sense to cooperate with the United States and Japan than with the other Community countries

Cooperation with the US and Japan is very fruitful and must be pursued. Nevertheless, to follow only this path as in recent decades, could bring about a greater dependence on the Americans and, increasingly, the Japanese.

An active policy of concerted research at European level, on the other hand, will lead to the development of advanced products and services, along with standards, allowing full benefit to be derived from the large market without frontiers. Only then will Europe be able to compete with the United States and Japan, and cooperate with them on an equal footing.

Finally, in view of the strategic implications of many advanced technologies, there is no guarantee that Europe can even continue to obtain them from its external partners.

11. The need to find at least one partner in a foreign country, and the extra cost of international cooperation, make Community research and technological development programmes less attractive to industry than national programmes

It is a question of attitude and also of cost effectiveness. In the initial stage, transnational cooperation obviously involves extra expenditure of the order of some 25% over and above a purely national operation. However, the most experienced businessmen in the field consider that, in the long term, the added benefits are worth around 400% owing to the time saved, the optimization of human and material resources, savings of duplicated work and duplicated expenditure, the critical mass attained in this way and, finally, the full exploitation of the possibilities of the big European market without frontiers.

12. The juxtaposition of the Community's RTD activities and those of EUREKA is confusing: how are the two linked?

The Community's RTD activities are one step further away from the market than the EUREKA projects. These are aimed at strengthening cooperation between European firms in order to develop new products for marketing.

Community programmes are chiefly concerned with basic (fusion), pre-competitive and pre-normative (ESPRIT, BRITE, RACE, materials, raw materials) research and with the "synergy of brains" (Research Workers' Europe).

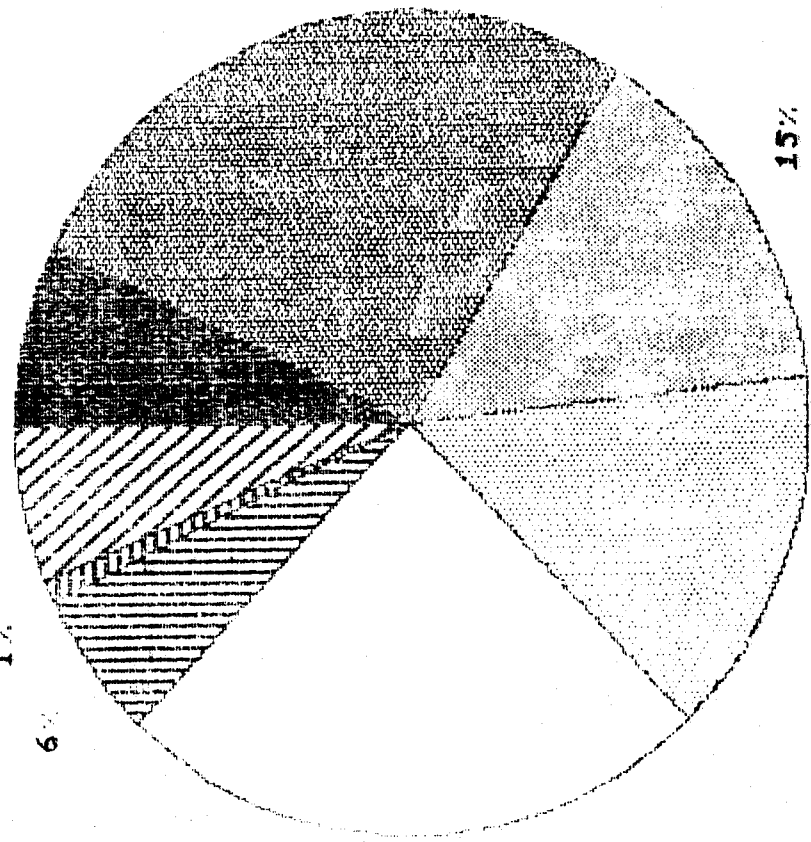
The Commission of the European Communities has actively supported the EUREKA initiative from its inception and it is building bridges between the Community programmes and EUREKA projects and co-financing some of the EUREKA activities. Such contributions would of course be the first to be affected by a reduction of budgetary funds made available to the Commission for implementing the RTD framework programme.

13. Progress on completing the internal market is too slow for industry to be convinced in the short term of what the European dimension means

If that is really the case, why are the multinationals, particularly the American and Japanese ones, so interested in the Community's internal market and why are they expending so much effort to secure a foothold there, both commercially and industrially?

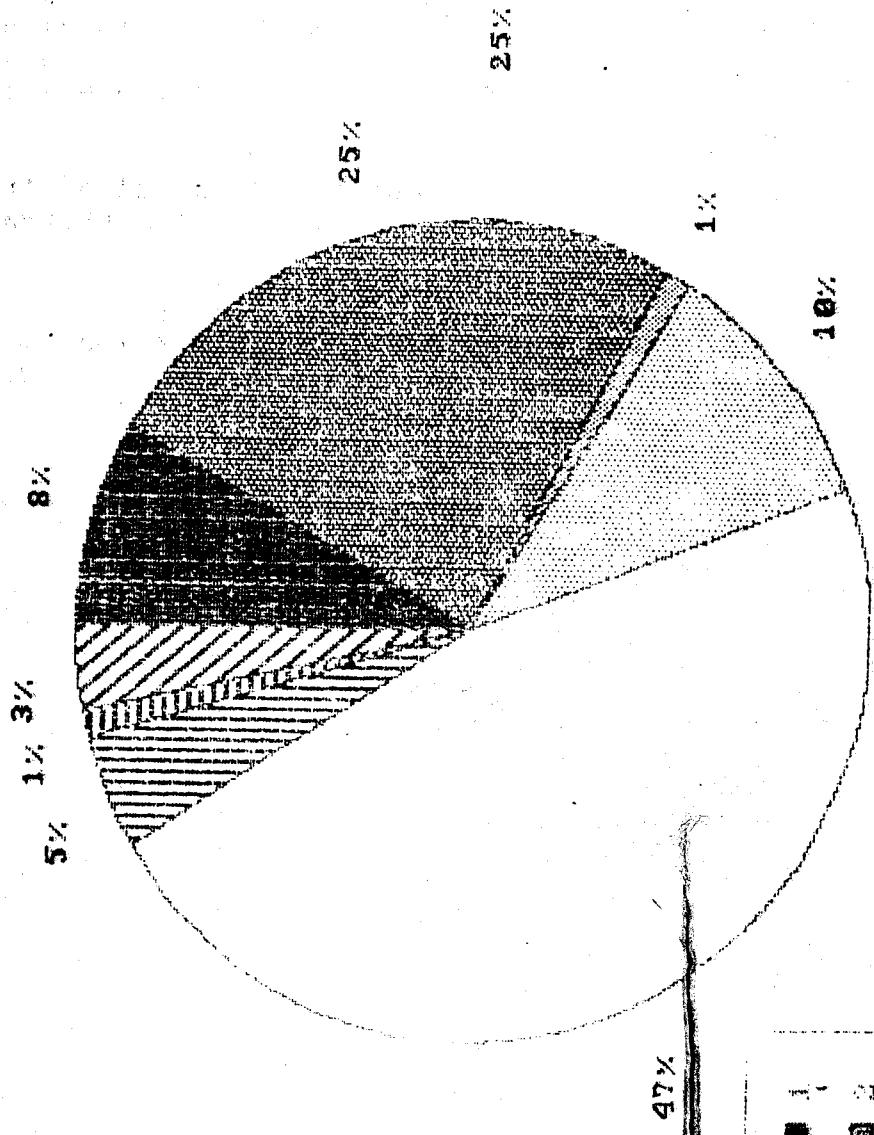
Europeans seem sometimes to be the last ones to grasp the advantages of a united Europe. Community RTD programme encourages researchers from the industry and the university to go beyond national boundaries in order to implement together common projects: therefore, it is also an educational process and it contributes to promote a European consciousness, against a fashionable "Europessimism" of these days.

FRAMEWORK PROGRAMME 1987-1991

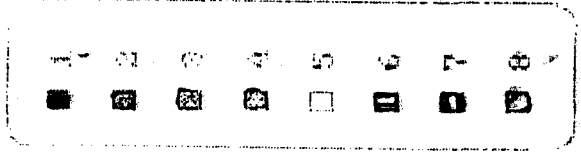


5. Continuation and updating of the energy project
6. Biotechnology : a new focus in technology
7. Exploitation of the seabed and upgrading of marine resources
8. The researchers' Europe

IMPLEMENTATION OF THE FIRST FRAMEWORK PROGRAMME 1984-1987 PRESENTED IN ACCORDANCE WITH THE STRUCTURE OF THE 1987-1991 FRAMEWORK PROGRAMME



1. Quality of life
2. Towards an information society
3. The nerve system of the large market
4. Application of the new technologies to modernize industrial sectors.



14. 7.735 billion ECU (5 400 million pounds sterling) is too much

Let us look at this sum in the right perspective. The first framework programme, which covered only four years (1984 to 1987) for a Community of Ten, amounted to 2 625 million pounds sterling - and in terms of the ECU as it stood then. Considering that the new programme is for a five-year period (1987-1991) and is budgeted in today's ECU, if the amount adopted for the first framework programme is calculated in present-day terms it comes to about 3 850 million pounds sterling. Therefore, the real increase in the budgetary amount is only about 300 million pounds sterling per year during the five year period.

A research budget of 5 400 million pounds sterling for 1987-1991 is in fact very modest. It represents a minimum without which the Community's efforts in the field would not get off the ground. It is a total figure obtained by adding those for different "blocks", one for each major research sector, for which the Commission, aided by a number of experts, has worked out the critical minimum threshold.

In the period 1987-1991 which is covered by the RTD framework programme the United States will be spending about 700 billion pounds sterling on research, Japan 230 billion pounds sterling and the twelve Member States of the Community individually about 320 billion pounds sterling, while the Commission is proposing no more than 5 400 million pounds sterling - not even 2% of what the Twelve are spending on research.

Community RTD spending will increase only from 2.5% of the EEC budget in 1986 to about 4% in 1991.

The Commission's five-year budgetary ambitions for RTD correspond to less than EAGGF spending for just one quarter.

Finally, 5 400 million pounds sterling for five years amounts to only a bit more than 4 pounds per Community citizen and per year.

15. More money for research means less money for structural funds

The Commission is not favouring in any way RTD at the expense of structural funds. Both are political priorities of the same order. In relation to the other so-called "non-compulsory expenditure" Community research is a relatively small item.

In fact, developing the Community's technological resources, especially those of its least developed regions, is also a part of structural policy, conceived in a modern and forward-looking fashion.

16. The sum of 7 735 million ECU takes no account, either in absolute or schedule terms, of the problems of own resources

This amount accords perfectly well with the multiannual budget forecasts: in fact, it falls short of them.

Already in 1984 and without making any reference at all to the development of research spending, the European Council acknowledged the need to raise the maximum VAT levy for the Community budget to 1.6% as from 1 January 1988.

17. An acceptable sum can be found for the framework programme by reducing the "major programme" budgets, particularly in the case of ESPRIT

The overall budget requested by the Commission represents a minimum figure. In order to reduce the apparent amount, it is always conceivable that one of the "major programmes" could be deleted and placed within some other context of European scientific cooperation. Such a ploy, however, would be nothing more than a conjuring trick since, even with a change of label, the programme would still have to be financed from another source.

The complete withdrawal of a "major programme" would represent the easy, but nonetheless inefficient, option. With the exception of nuclear fusion, (where Europe has a lead over all its competitors and where the discontinuance of research would be suicidal for its future), the Community's "major programmes" in the technological R&D sector are directly linked to industrial competitiveness - particularly in the case of ESPRIT, but also in that of BRITE or RACE. To abandon or limit these programmes to the bare minimum would be equally suicidal.

Lastly, it is not possible to defend a proposition and its opposite at the same time: either the aim is to avoid the "dispersal" of resources, in which case priority must be given to the "major programmes", or their allocations are whittled down, so bringing about a dispersal of resources.

18. The management of Community research is cumbersome, bureaucratic and inefficient; procedures are simpler in the Member States

The cost of managing Community programmes is appreciably below that of national programmes; whereas a Community administrator is responsible for the management of 840 000 pounds sterling per programme, his counterpart in the most efficient Member State manages only a quarter of that figure, namely 210 000 pounds sterling.

Moreover, management is being improved and the procedures involved simplified so as to allow the Commission to continue to observe the principle of excellence to which the attraction exerted by Community programmes and the participation therein of the most European experts and scientists bear witness.

19. The framework programme structure is obscure, confused and lacking in precision.

The framework programme is a political document which is intended to outline planned Community action over the next five years and to define the priorities for that action and relative importance of its various elements. It will form the basis for future decisions - adopted in greater detail by a qualified majority - on the specific programmes by means of which this overall policy is to be implemented.

The Commission therefore chose to prepare a short review document giving an overall view of Community research and providing for political discussion of Community goals and priorities in the technological R&D field.

This programme makes it clearer to the companies and research organizations what will be done - and what will not be done - in the Community framework.

20. Research contracts are awarded more on the basis of national criteria (quotas) than with reference to the scientific value of the proposals concerned

Contrary to other international organizations the Community is not working according to a quota system in RTD.

Projects are selected on the basis of evaluation by independent experts. Furthermore, the national origin of proposals is not revealed to the expert assessors, whose only selection criteria are the quality of the proposals submitted, and their relevance to the programme objectives in question.

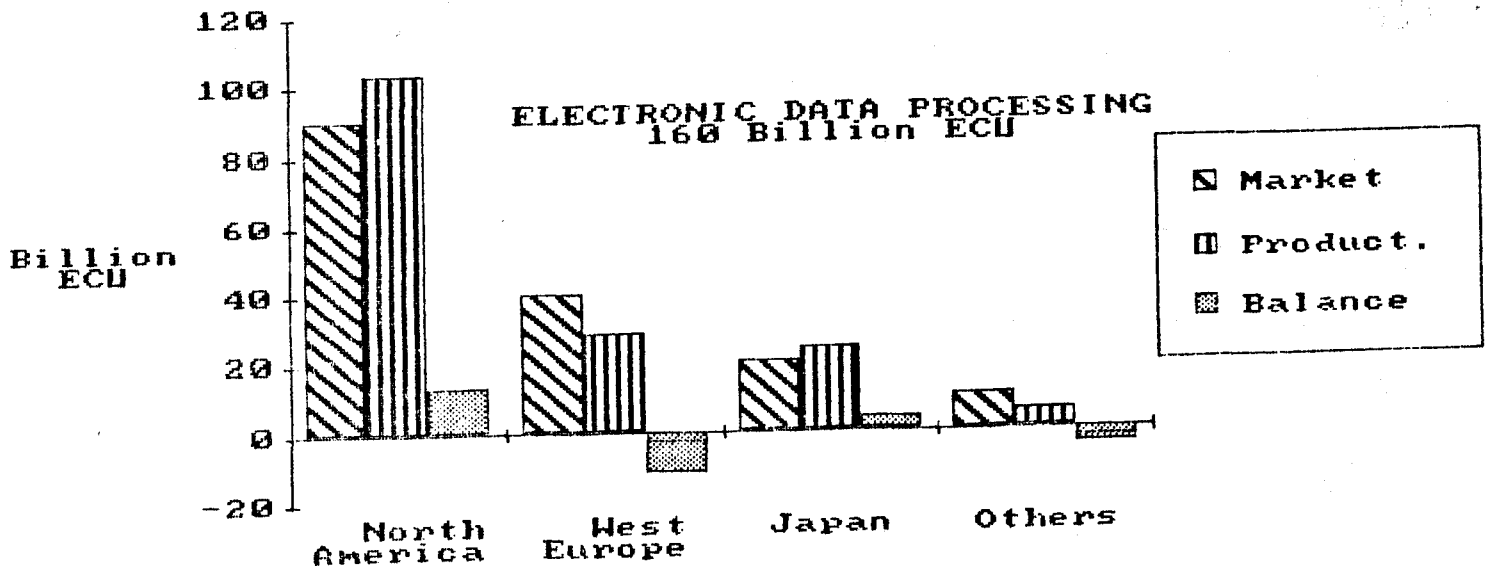
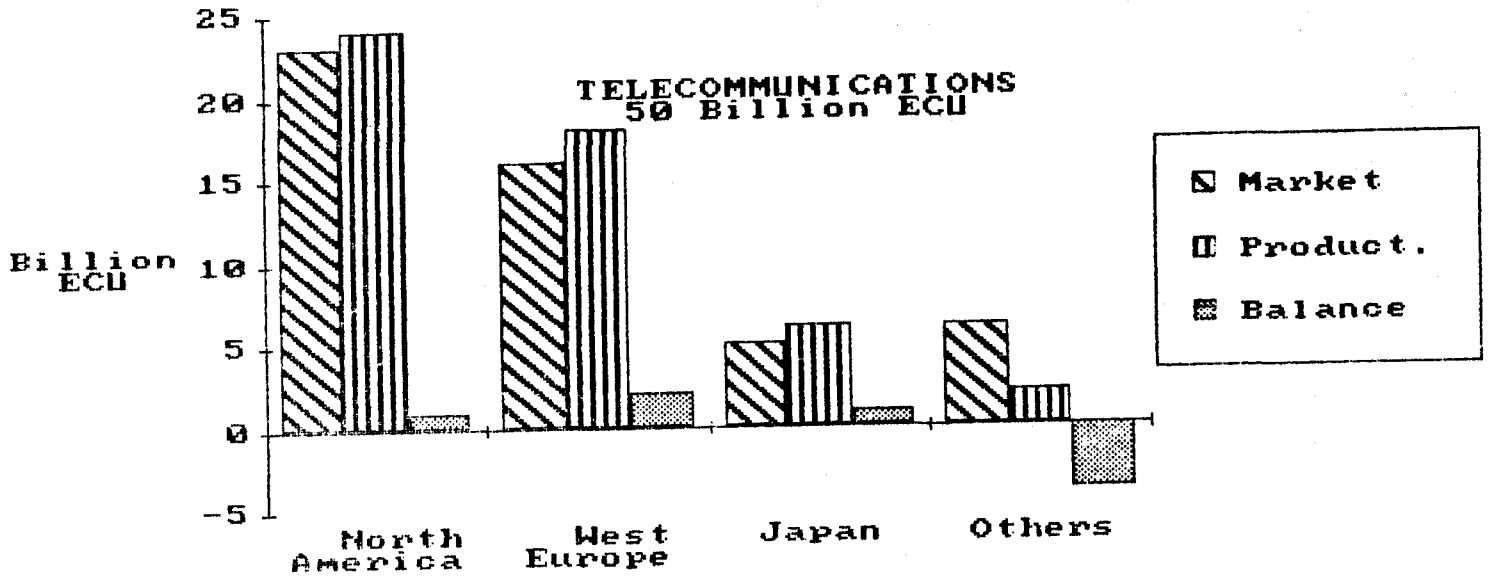
1985 Budget provisions (public) for R-D at current prices and exchange rates, and number of researchers (university degree) in FTE = full-time equivalent

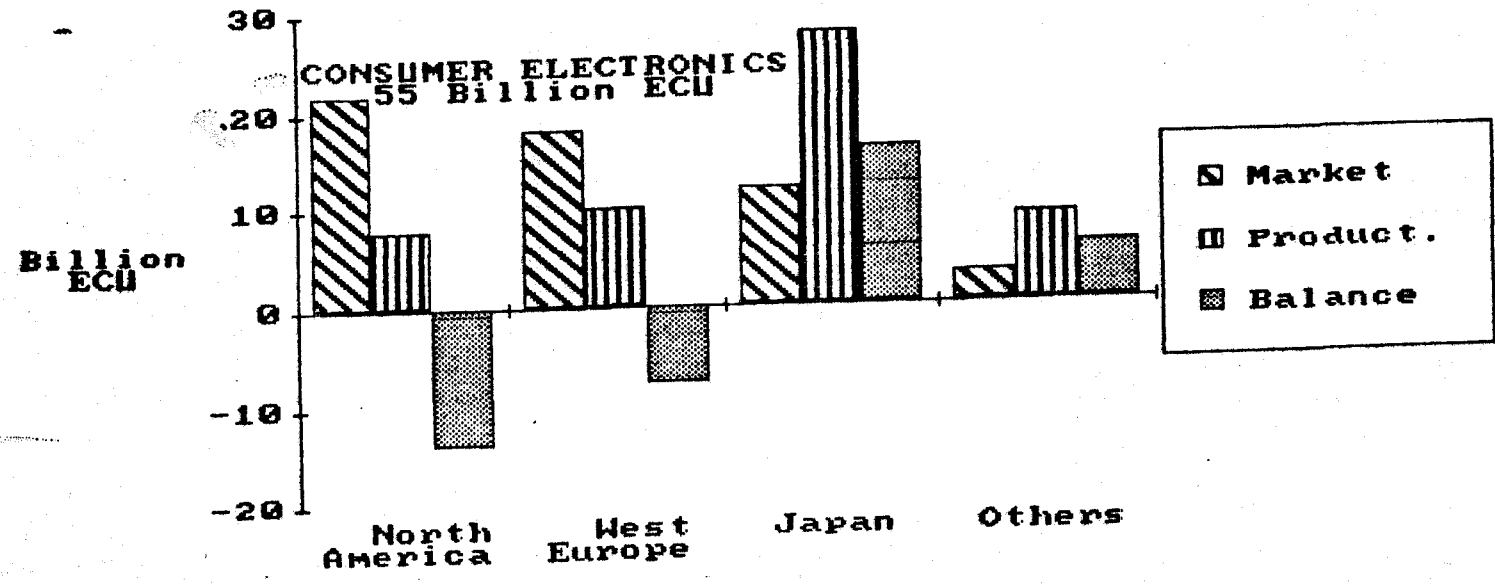
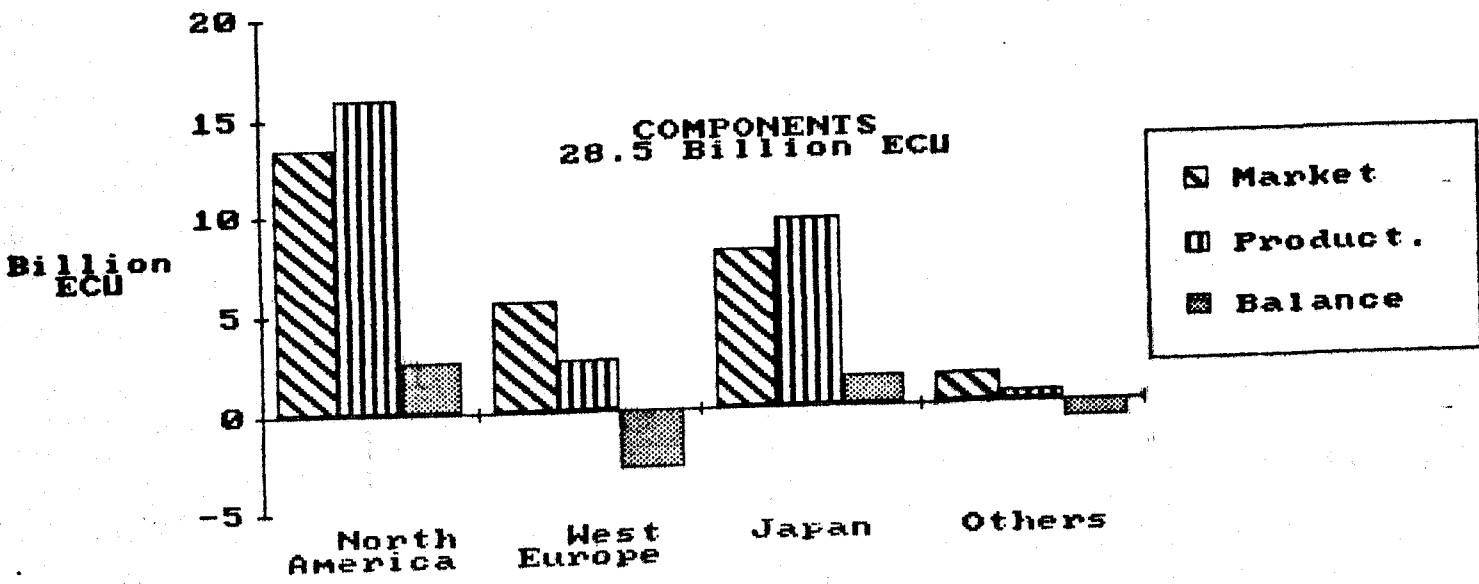
COUNTRY	1985 MioECU	RESEARCHERS FTE	SOURCE
Deutschland.....	9321.30		EUROSTAT
France.....	9875.30		EUROSTAT
Italia.....	3365.90		EUROSTAT
Nederland.....	1538.70		EUROSTAT
Belgique/Belgie.....	631.50		EUROSTAT
United Kingdom.....	7885.30		EUROSTAT
Ireland.....	92.60		EUROSTAT
Denmark.....	424.30		EUROSTAT
Hellas.....	127.60		EUROSTAT
EUR-10.....	33262.50	380000	estimate
U.S.A. Federal Budget	69770.64	790000	O.E.C.D.
Japan	9499.91 (*)	447700 (*)	O.E.C.D.

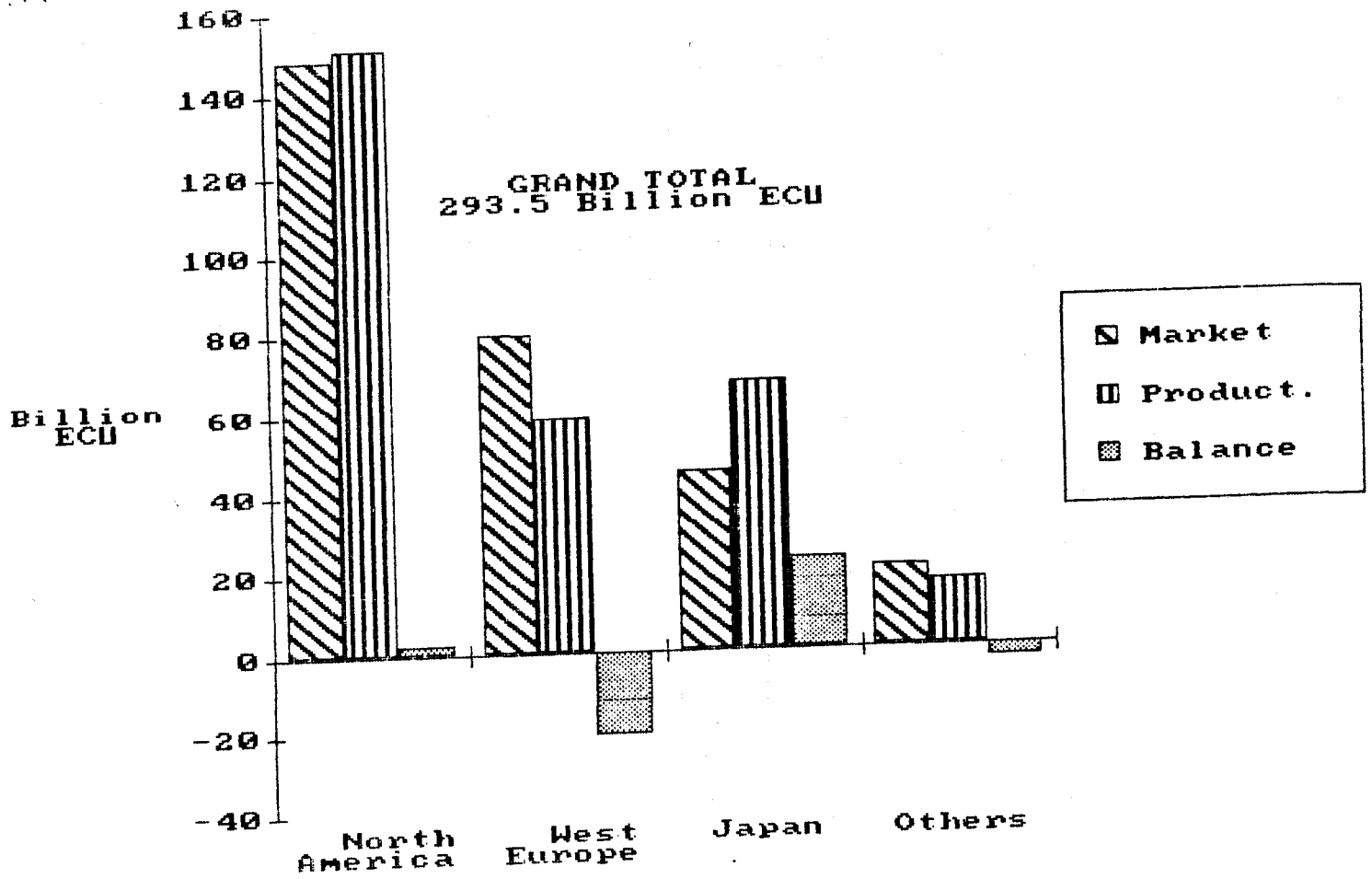
(*) 1984; 1985 figures not yet available.
The number of researchers in Japan is overestimated, as the figures are not given in FTE.

Note: The 1985 value of the ECU was equal to 0.763 US\$ and 180.56 YEN.

1984/85 MARKETS AND PRODUCTION RELATED TO
INTEGRATED BROADBAND COMMUNICATION
DEMONSTRATING THE STRATEGIC IMPORTANCE OF THE RACE PROGRAMME
(Data collected by Commission Services)







**TEN SCIENTIFIC SUCCESS STORIES FROM COMMUNITY RTD
CONTAINING INTERESTING INDUSTRIAL "SPIN-OFFS"
ACHIEVED UNDER THE PREVIOUS FRAMEWORK PROGRAMME (1984-1987)**

1. Optical Computer

In the context of a project under the "stimulation action", eight laboratories from five Member States (UK, D, F, B, I) have developed digital devices and circuits for a future optical computer.

2. Controlled Thermonuclear Fusion

The latest experiments on JET, the largest tokamak (fusion reactor) in the world, have made it possible to achieve temperatures well in excess of 100 million degrees Centigrade, representing a further step towards demonstrating the scientific feasibility of fusion.

3. Biotechnology

In the framework of the biotechnology research programme, research workers from three laboratories (Ghent, Leyden and Cologne) have achieved a world first in transferring foreign genetic information to a class of plants also comprising cereals (monocotyledones).

4. Materials

40 European laboratories, working under the "stimulation action" and the EURAM programme (advanced materials), have joined together to produce permanent supermagnets based on an iron-neodymium-boron alloy. These supermagnets will replace electromagnets in numerous applications.

5. Information Technology

The 201 current ESPRIT projects, recently launched, have already achieved impressive results, such as

- In microelectronics: gallium arsenide chips to be used in the development of the next generation of super-computers; a novel method for designing complex chips much faster and more reliably to be used for the latest high-quality filter in compact disc players;

- In software: the PCTE project is providing engineers with an answer to one of their biggest problems -this is that the tools of their trade often cannot be used with the existing equipment and working methods preferred by software companies, because of incompatibility; the PCTE is a kind of universal joint for software engineers;
- In expert systems, which were only commercially available from the USA when ESPRIT began, there are now at least two in Europe that compare with the world's best or, in the case of the OMEGA project, set new international standards of performance; under ESPRIT, the European inventor of the Prolog language, selected by the Japanese as the programming language for their Fifth Generation Computer project, is working on an expert system for the diagnosis of engine failure;
- In integrated office systems, a new world standard for the mixed voice-text-image electronic document of the future integrated office is emerging and developed by the HERODE project; this office document architecture standard has been adopted by ECMA and taken up as a draft ISO standard, while a number of major European companies are already implementing it under the PODA project.

6. Environment

At the Ispra establishment of the Joint Research Centre a flue gas desulphurization process - known as the MARK XIII A process - has been developed producing industrial grade hydrogen.

7. Geothermal Energy

A successful project under the non-nuclear energy R&D programme consists of pursuing tests to exploit hot dry rocks. The project is situated in Cornwall and the method employed is injection of cold water into the rocks from which it emerges at a high temperature.

8. Tropical Medicine

A Belgian laboratory, working under the programme "science and technology for development", has discovered a sexual reproduction phase in the life-cycle of the trypanosome, the parasite which causes sleeping sickness. This discovery may well be important for the development of a vaccine against this serious illness.

9. Industrial Technologies

Four industrial laboratories belonging to leading motor and aeronautical manufacturers (UK, F, D, I) are working together under the BRITE programme on a project to use lasers to weld sheet metal.

10. Nuclear Fission Energy

Under the research programme on radioactive waste storage some of the world's most advanced in situ tests have been carried out in clay and salt formations in Belgium (Mol) and in Germany (Asse)

**THE DRAFT RESOLUTION OF THE EUROPEAN
PARLIAMENT'S COMMITTEE
ON ENERGY, RESEARCH AND TECHNOLOGY**

19 NOVEMBER 1986

In this draft resolution the Committee, inter alia, suggests the following:

"the Parliament...

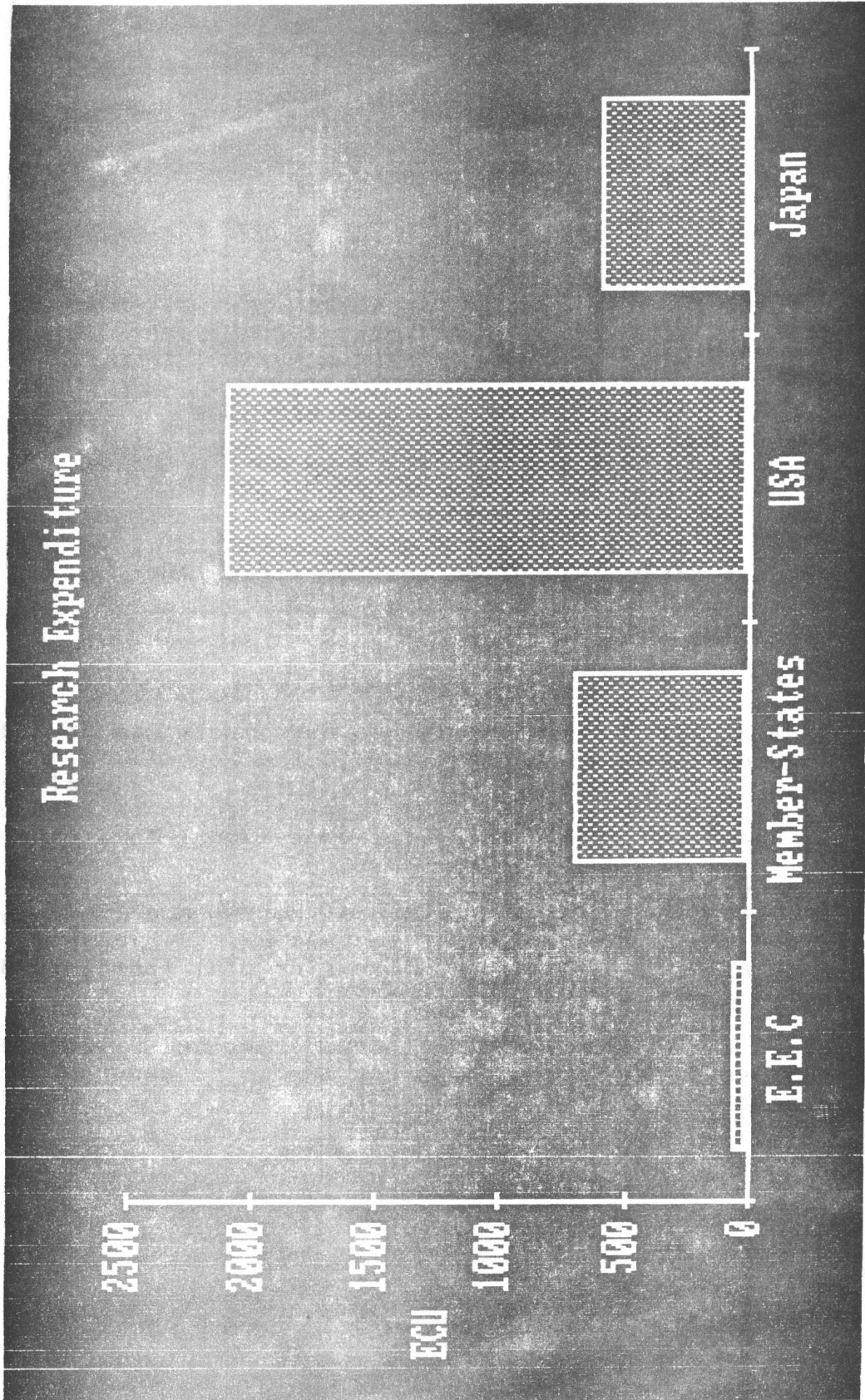
considers it irresponsible and detrimental to the idea of European integration that, while the Council is in favour of the priorities proposed by the Commission, individual Member States oppose the allocation of appropriate funds because of a misconceived view of conflicting national interests;

expects the Council, therefore, to discuss and take a decision on the framework programme proposed by the Commission with all due speed and with the 1992 objectives of the single market in view and, above all, to endorse the financial framework deemed necessary by the Commission;

urges the Commission to withdraw its proposal should the Council propose further cuts in such a way as to endanger the framework programme and its objectives."

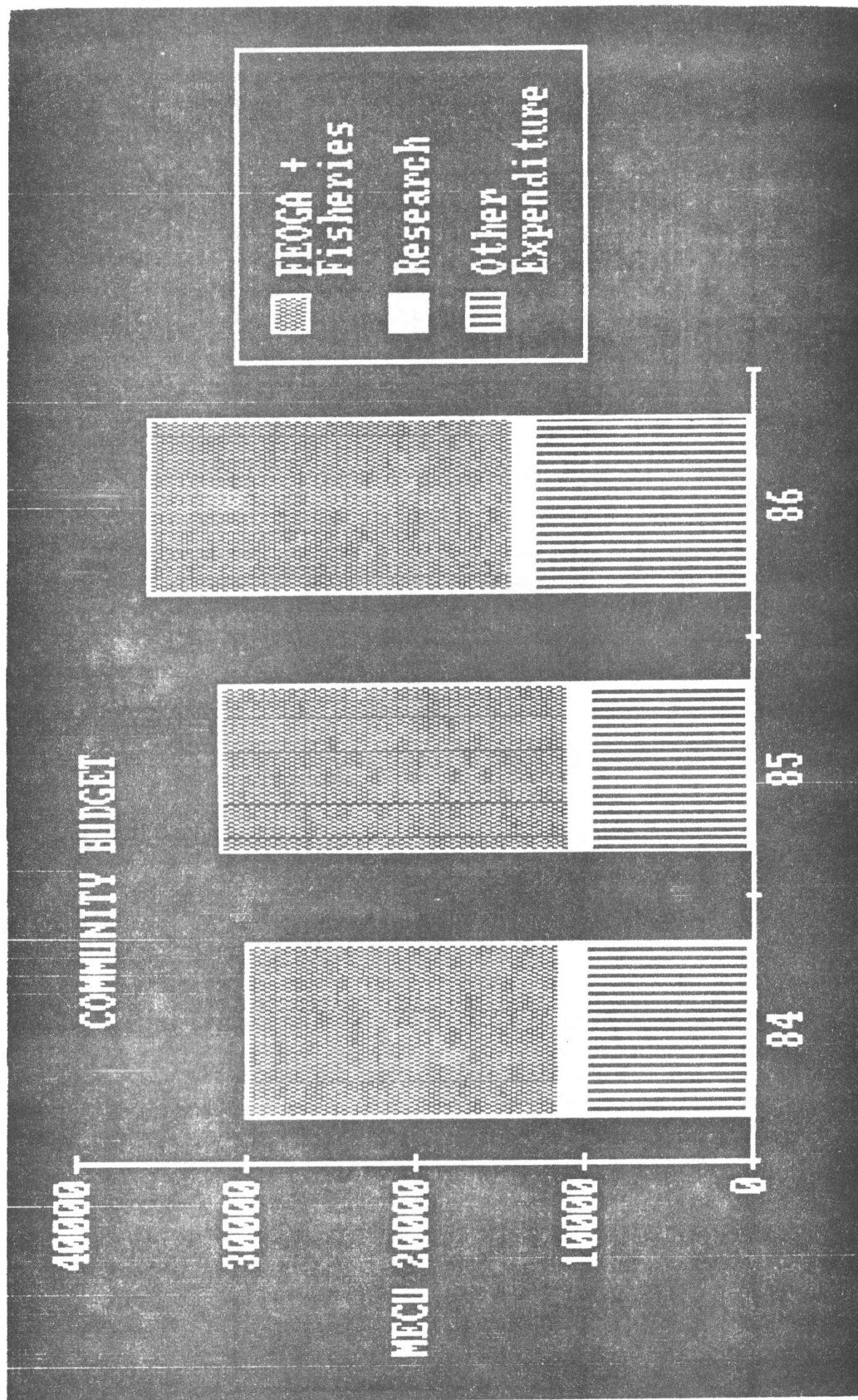
RTD FRAMEWORK PROGRAMME

Estimate of RD public financing per person
Comparison between framework programme, Member States (EUR 12),
USA and Japan for the period 1987-91



RTD FRAMEWORK PROGRAMME 1984-87

Comparison between Community RD budget and Community total budget



AUTHORITATIVE OPINIONS

"In April 1986 UNICE had given its full support on behalf of European industry to the Commission's original guidelines for the R&TD programme. UNICE had stressed in particular the need, in view of the new impetus given to technological policy in the United States and Japan, to intensify the Community's own action in this field (i.e. ESPRIT, RACE and BRITE ...) so as to enhance the competitiveness of its own industry and services.

There is now the danger that actions of industrial interest in the framework programme will be allocated significantly fewer financial resources than those proposed by the Commission. By squeezing the budget in this way, these programmes will be prevented from reaching their critical threshold of effectiveness. Restrictions on industrial R&D would, moreover, hinder the achievement of the internal market; indeed, experience with ESPRIT shows that technological cooperation is a powerful lever for speeding up the integration of markets and industrial structures.

European industry does not understand why the Member States should limit their support for the technologies of the future in order to save an amount that is minute compared with the massive expenditure they agree to for the purposes of the common agricultural policy.

I very much hope that the present appeal will not fall on deaf ears, and that the hopes which European firms pin on the Community will not be dashed."

Letter of Mr. Karl Gustav RATJEN,
President of UNICE (Union of EC
Industry) to Mr Nigel LAWSON,
Chancellor of the Exchequer and
President of the Council of Finance
Ministers (12 November 1986).

"The launching in 1983 of a new phase in the common policy on science and technology has produced promising results. This has led European industry (represented by UNICE) to propose that in producing its 2nd R&TD framework programme, the Community should redouble its efforts to lay the foundations for further progress.

However, industry notes with concern that owing to overall budgetary constraints and the size of agricultural's share of expenditure, this new effort is slow in getting off the ground. It should go hand in hand with the creation of a genuine internal market, but a gap is in fact developing between:

- the clearly positive experience on the one hand which firms are enjoying in the context of cooperation at Community level through programmes such as ESPRIT, RACE and BRITE - collaboration which they feel is vital to meet the technological challenge and facilitate the completion of the internal market;
- and, on the other, the restrictive approach which currently prevails in the handling of Commission budgetary proposals; this is demonstrated by the cut in the budget for the framework programme (from 9-10.5 to 7.7 billion ECUs), and there are plans to reduce it even further.

By reducing the budget, the authorities give the impression that the merits of Community projects are in fact limited and that one can therefore make them less ambitious without seriously harming the Community's technological competitiveness or its political credibility in the eyes of industry.

Such a view would be a fundamental error of judgement.

Industry is well aware that Community action is not the only way to meet the technological challenge. Community efforts are part of a much wider panoply which includes first and foremost national measures, but also international and multi-national measures. Community policy must find its place within this larger spectrum -nothing but its place, but nevertheless its entire place ..."

UNICE opinion on the proposals
submitted by the Commission to
the Council on the second R and TD
Framework Programme 1987-1991
(16 October 1986)

"...The IRDAC (Industrial Research and Development Advisory Committee) considers Community R&D financing justified in two important areas:

- (a) the stimulation of R&D, which is of strategic importance at a time when industry itself has found this to be justified;
- (b) the stimulation of European cooperation both to generate technologies and to put them into practice...

... The IRDAC regrets that the total amount proposed by the Commission is less than the amount indicated initially in the "guidelines". The Committee understands that the Commission's proposal failed to win unanimous support.

In the Committee's view, any further reduction would seriously hamper new Community-level R&D activities, which it sees as being particularly necessary in view of the American and Japanese R&D programmes.

It is not only urgent, but vital to increase Community R&D financing substantially in real terms because the credibility of both the programmes and the Commission itself will be at stake unless the Commission's present minimal proposals are adopted.

The IRDAC is aware that the resources available for R&D at Community and national level are limited; it considers that there should be stricter coordination within the Community. Industry should encourage the governments of the Member States to seek European cooperation in R&D by all appropriate means in order to avoid duplication of effort at national level. This form of cross-border cooperation in R&D could play a significant part in the achievement of the internal market.

The IRDAC greatly appreciates the Commission's efforts to expand and consolidate transnational and trans-sectoral applied research through its various programmes and is of the opinion that such trans-sectoral research should be given special backing over the next few years...

...The IRDAC considers that the framework programme of technological research and development should, as the Commission emphasised when it asked the Council to adopt the programme, be regarded as a great effort which will enable European industry, the European universities and public or private joint research centres to work together..."

Opinion of the IRDAC (Industrial
Research and Development Advisory
Committee) on the Community R&D
Framework Programme (1987-91)
(17 October 1986)

...A collective effort to master the new technologies is essential to keeping Europe competitive. The "signal effect" produced by collaboration forged between European industries with the support of the Community is in itself a sign of newfound strength. Given the importance of these factors and their implications for employment and prosperity, the framework programme for cooperation on research and development which is proposed by the Commission has to be seen as too modest rather than too ambitious. The approach with the most impact is probably that in which a small number of major projects conceived by industry are implemented with a financial contribution from the EEC. Whether these projects will enable us to reverse the trend towards technological dependence on the United States and Japan is questionable. On the other hand, the international press and recent market studies note a resurgence of European dynamism in the advanced technology field in the wake of initiatives such as Esprit.

...Only by pooling its best technical resources in R&D will Europe still have a significant chance of keeping up with world competition. However, time is running short! If we are to achieve this Europe of industrial R&D by 1990, we have a start today."

Speech by Mr W.A. Ledeboer,
representing Philips, to the
European Parliament's Committee
on Energy, Research and
Technology (25 September 1986)

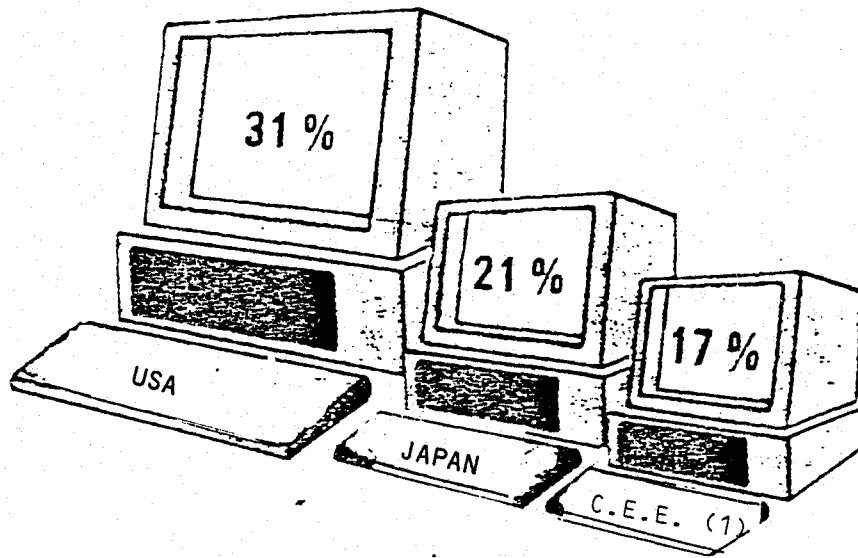
"Technological nationalism is one of Europe's biggest mistakes; Europe would do better to spend more on training more technicians than to multiply the cases of duplicated effort in research and development."

John Marcum
OECD Science Director
("Expansion", special issue on
Europe, October-November 1986)

"In research an enormous amount of money is being wasted for lack of cooperation. Today European research workers are cooperating with each other less than at the time of the Renaissance."

André Danzin,
Scientific adviser to major
international organizations
(Special issue of "Expansion",
October-November 1986)

PERCENTAGE OF HIGH TECHNOLOGY PRODUCTS
IN TOTAL EXPORTS OF MANUFACTURED PRODUCTS
(1984)



¹Intra-Community trade not included

Source: Ramses Report 1986/87 (IFRI)

FRAMEWORK PROGRAMME OF COMMUNITY ACTIVITIES IN THE FIELD OF RESEARCH AND
TECHNOLOGICAL DEVELOPMENT (1987 TO 1991)

BREAKDOWN OF THE AMOUNT DEEMED NECESSARY BETWEEN THE VARIOUS ACTIVITIES ENVISAGED

	<u>Million ECU</u>
1. <u>Quality of Life</u>	575
1.1 Health	150
1.2 Environment	425
2. <u>Towards an Information Society</u>	2050
2.1 Information Technologies	2050
3. <u>The Life Blood of the Large Market</u>	1120
3.1 Telecommunications	800
3.2 Integration of Telecommunications Technologies with Information and Broadcasting Technologies into New Services of Common Interest	300
3.3 Transport	20
4. <u>Application of the New Technologies to the Modernization of Industrial Sectors</u>	1110
4.1 Technologies for Manufacturing Industry	500
4.2 Science and Technology of Materials and Raw Materials	370
4.3 Technical Standards, Measurement Methods and Reference Materials	240
5. <u>Continuation and Updating of Activities in the Energy Sector</u>	1890
5.1 Fission	580
5.2 Fusion	1100
5.3 Non-Nuclear Energies and Rational Use of Energy	210
6. <u>Biotechnology : a New Technological Crossroads</u>	450
6.1 Biotechnology, Management of Agricultural Resources, Agro-Industrial Technologies, Science and Technology for Development	450
7. <u>Exploitation of the Seabed and Use of Marine Resources</u>	80
7.1 Marine Science and Technology	80
8. <u>A Europe for Research Workers</u>	460
8.1 Implementation of a Europe for Research Workers	460

TOTAL :	7735

FRAMEWORK PROGRAMME OF COMMUNITY ACTIVITIES
IN THE FIELD OF RESEARCH AND TECHNOLOGICAL DEVELOPMENT
(1987 TO 1991)

EXPLANATORY MEMORANDUM

A. WHAT JUSTIFICATION IS THERE FOR THE FRAMEWORK PROGRAMME?

Continued European competitiveness and Europe's position in the comity of nations depend on a collective effort to develop the new sciences and technologies.

This is why the European Council, at its meeting in Milan, decided to add a new technological dimension to the Community. For the same reason, the Heads of State or Government, meeting in Luxembourg, inserted in the Single Act provisions covering research and technological development (R&TD).

Community efforts to help strengthen European industry's scientific and technological base are not a new phenomenon. However, the fact that they have been politically recognized and institutionally organized has given them a new boost.

Thus, the Single Act has legitimized, as it were, the Community dimension of technological cooperation by linking it closely with the other objectives geared to the attainment of a genuine European economic area, i.e., mass market without frontiers, economic and social cohesion, European Monetary System and social policy (linked in some of its aspects to working conditions, the environment, etc.). It is against this background that our thinking must henceforth be moulded, both for reasons of coherence and reasons of efficiency.

Needless to say, parallel developments in the field of technological cooperation are also taking place elsewhere: first and foremost in the framework of EUREKA, whose essential complementarity with the Community programmes we shall be examining in detail later, but also in the framework of intergovernmental bodies such as CERN or the European Space Agency.

Within this pluralist environment, characterized by the search for better ways of allocating financial and also human resources and by the constitution of an adequate critical mass, Community policy must find its place, its whole place and nothing but its place.

From this point of view, the possibilities of progress depend, in the first instance, on the attainment of the mass market without frontiers. However, it is clear, as exemplified by the opening-up of public-sector purchases, that the mass market cannot evolve without a common technological base, notably in the field of standards. At the same time, the decompartmentalization of public contracts can open up more promising industrialization prospects for all those investing in research. Accordingly, Community R&TD must seek to promote, directly or indirectly, the attainment of all the objectives laid down in the Single Act.

Nevertheless, Community action must remain selective. Firstly, because of the large number of fields and institutional frameworks already mentioned, but also because Member States pursue national

policies which they believe, rightly or wrongly, must remain cornerstones of their actions. It is the task of Community cooperation to demonstrate its vital character by virtue of the combined energy which it attains, the knowhow which it accumulates, the optimum allocation of resources which it makes possible and the coordination of national policies which this entails.

The framework programme is the instrument by which this selective action is carried out.

In the clearly defined architecture of the Single Act, the first stage consists of the framework programme and the second of the specific programmes.

To sum up (in a multiannual perspective) the whole panoply of Community activities, it may be said that "the framework programme shall lay down the scientific and technical objectives, define their respective priorities, set out the main lines of the activities envisaged and fix the amount deemed necessary, the detailed rules for financial participation by the Community in the programme as a whole and the breakdown of this amount between the various activities envisaged" (Article 130 I).

Implementation of this framework programme will be the subject of specific programmes, to be proposed and drawn up at the appropriate moment according to the procedures laid down for this purpose in the Single Act.

Through the framework programme, the Community is seeking to introduce efficiency, transparency and compatibility with national policies and other measures carried out in an international framework. To this end, it will base the execution of its policy on a simple outline approach consisting of:

- direct action financed in full from the Community budget and executed under the auspices of the Joint Research Centre;
- shared-cost activities jointly financed by the Community and the scientific and industrial partners;
- concerted action involving coordination by the Commission of certain national research activities.

These comprehensive mechanisms are intended for the benefit of the users. They are structured in such a way as to enable manufacturers and research workers better to relate the role of the Community framework to that of other forms of cooperation. These mechanisms provide them with medium-term planning guarantees, on the grounds that what the economic and scientific partners need is clarity and simplicity.

Thus, in relation to the market, Community R&TD activities are further upstream than the EUREKA projects, which seek to strengthen cooperation between European undertakings in respect of new products (goods and services) to be supplied on the market.

In this respect, EUREKA differs from Community programmes geared mainly to basic research (FUSION), precompetitive R&TD or so-called pre-standardization research undertaken to provide the necessary scientific and technical basis for the preparation of standards (ESPRIT, BRITE, RACE).

EUREKA follows a "bottom-up" logic, where the initiative comes from the undertakings and the signals received from the market.

The Community programmes, on the other hand, combine a strategic conception of the "top-down" type with "bottom-up" implementation. Their approach is based on the perception of important future technological issues or on the identification of serious structural weaknesses. On the other hand, the precise definition of the projects and their implementation are prompted by an open, transparent and variable-geometry process promoting cross-fertilization among the industrial and scientific partners involved not only at the level of the projects themselves but also downstream of their implementation.

Conscious of the objective complementarity between its own activities and EUREKA, the Community has already demonstrated an intent to support the harmonious development of this latter initiative. It is prepared to provide the necessary contributions, whether in the form of expertise or funding, e.g., through supplementary programmes provided for in the Single Act.

By the same token, the Community intends not only to cement further its relations with the other parties actively involved on the European technological scene, e.g., the European Space Agency, CERN, the European Science Foundation and the Council of Europe, but also to step up its international cooperation both with our industrialized partners - particularly those within EFTA - and with the developing countries.

A technology Community, open and uninhibited, cannot isolate itself within its geographical or institutional boundaries without the risk of suffocation or decline.

B. ACTIVITIES

In furtherance of the objectives outlined above, Community intervention in the field of R&TD is particularly justified when:

- It serves to affirm and defend the European model within which the social dialogue, living and working conditions and concern for the environment occupy a special place. This is why the Commission is proposing that R&TD should also be placed at the service of social development through the pursuit of ad hoc aims (health, nuclear safety, working conditions, training, etc., and, in more general terms, the environment).
- It is directly linked with the creation of an enlarged and more competitive economic area. The R&TD component determines the size of our markets and the performance of our undertakings. It is therefore important to broaden the common technological base (the

technological humus, as it were), so as to provide European undertakings with a source of support in making the essential qualitative leap forward and developing new markets on a permanent basis.

- It contributes to the harmonious development of the Member States and regions by drawing, for the benefit of all, on the high-quality scientific and technical infrastructure that is the common property of all.
- It permits capitalization on the acknowledged knowhow already accumulated by the Community. The latter has shown that - whether in the case of ESPRIT, BRITE or programmes concerned with thermonuclear fusion - it was capable of:
 - . organizing the combined energy of human and material resources, efforts, skills and disciplines;
 - . creating the critical mass necessary for the execution of certain projects;
 - . ensuring collaboration across frontiers between those undertaking research on the one hand, and between them and research users on the other.

These four objectives have served as a guide in the choice of the eight activities selected by the Commission for inclusion in the framework programme.

These activities are set out below.

1. Quality of life

Although this topic covers a vast area of research, the Commission intends to concentrate Community efforts on health and the environment.

As regards health, the Community's aim is to reinforce the coordination of the manifold efforts implemented in Europe with a view to tackling the following three problems:

- reduction of health-care costs (150 000 million ECU per year) through the development of preventive medicine and early diagnosis;
- consequences of ageing in the population;
- medical research (pre-pharmaceutical) on unexplained diseases (cancer, AIDS).

As regards the environment, the purpose of the research is to promote a better understanding thereof, so as to permit the formulation of preventive policies and thus strike a balance between economic development, environmental protection and the safety of installations and the general public.

2. Towards an information society

The competitiveness of two-thirds of the economy as well as the jobs of 55% of the working population in the EEC depend on information technologies. In pursuing the efforts already successfully embarked on (particularly in the framework of the ESPRIT programme), the Community will broaden its precompetitive research conducted on a transnational basis, with a view to attaining the critical mass needed to enable European industry to recover its competitiveness on world markets by the 1990s. This research will concentrate on the following three areas:

- microelectronics and peripheral technologies;
- data-processing systems;
- applications technologies.

It is imperative that this activity be accompanied by intensified activities in the field of standardization.

3. The life blood of the large market

The productivity and efficiency of the bulk of industrial activities and services depend on the availability of cheap high-performance telecommunications. The task is to establish a common technological base and bring about a convergence in technical and operating specifications, in order to create a Community market covering infrastructures, equipment and services.

This activity will result in the introduction in the Community during the 1990s of integrated broadband services offering a wide range of services based on processing and transmission capacities and the ability to exchange data, text and images.

Community activities in the field of telecommunications will permit the definition and implementation of a coherent common strategy involving all the parties concerned.

It will also provide the necessary links with the other Community policies and, in particular, with the attainment of a standardized market in telecommunications equipment and services.

It will provide preferential support in pursuit of the aim of achieving economic and social cohesion in the Community and its regions.

Lastly, by combining and integrating advanced telecommunications, information and broadcasting services and technologies, it will enable the Community to capitalize on the new equipment and services (education, health and other services of general concern).

Let there be no mistake about it: we are dealing here not merely with an essential parameter governing the success of the large market (provision of faster and cheaper information) but also

with one of the essential issues in the international competitive arena. The Europeans must join forces if they are to emerge victorious. RACE illustrates this determination.

4. Application of the new technologies to the modernization of industrial sectors

If the competitiveness of the so-called traditional industrial sectors is to be guaranteed, steps must be taken to ensure that these sectors have access to top-performance means of production and to the product innovations accruing from the use of new technologies. The sectors that are eligible for this "technological transfusion" are mainly those that have been slow to modernize hitherto (textiles, clothing, building construction, motor industry, etc.). These sectors still employ more than 25 million people in the Community.

This applies, in particular, to the following three areas:

- advanced design and manufacturing techniques. The main requirement here is the extension and broadening of the BRITE programme;
- materials (ceramics, composite materials, etc.);
- techniques for exploiting raw materials.

This action will be accompanied by special research efforts in the field of standardization.

5. Continuation and updating of activities in the energy sector

There can be no disputing that, for a number of years, the area in which most experience has been accumulated is the nuclear sector. The time has now come to concentrate our efforts, so as to take account of new or accentuated priorities:

- Fission: in line with the aims of the Euratom Treaty, this project (transnational by nature) will make it possible to harmonize safety objectives and criteria and to define the common guidelines to be implemented throughout the Community. In particular, the work will be concerned with the safety of reactors, the management of radioactive waste and the safeguarding of fissile materials. The Member States have already affirmed their willingness, following the memorandum presented by the Commission after the Chernobyl accident, to intensify their efforts and step up cooperation in this area.
- Thermonuclear fusion, a classic example of an area where the measures to be carried out are so wide-ranging as to justify their being placed on a Community footing. The framework programme will include work on the scientific and technological feasibility of fusion reactors. For the period 1987-91, the principal objective will be to move forward to the NET conception (Next European Torus).

Community action in the R&TD sector in the area of non-nuclear sources of energy and the rational use of energy was launched in the wake of the crisis of 1973 and has had - and continues to have - a catalytic effect within the Community. The current reduction in oil prices, which is bound to be of an ephemeral nature, should not prompt the Community to relax its efforts in these areas, but rather to intensify them still further.

6. Biotechnology: a new technological crossroads

Among the upheavals resulting from the development of biotechnology, particular attention should be drawn to the creation of a multitude of new relationships between agriculture and industry.

As regards agriculture, the aim should be not so much to increase productivity as to diversify, thanks to biotechnology, towards objectives other than food production.

As regards the chemical industry and the other sectors concerned (pharmaceuticals, energy, etc.), developments in the field of biotechnology open the way to numerous process and product innovations (synthesis of vaccines and medicaments, extraction techniques, etc.).

In formulating the objectives assigned to this project in relation to biotechnology, the Community will not fail to take account of the social, ethical and societal implications of the furtherance of knowledge in this area.

7. Exploitation of the seabed and use of marine resources

Most Community countries have a frontier with the sea, and the marine-activities sector has a special importance, which is increasingly coming to be recognized, for numerous regions in the Community.

Exploitation of the marine environment, representing one of the major economic opportunities over the coming decades, will require a concentrated effort aimed at developing and mastering marine sciences and technologies.

Up to now, the national programmes, covering areas that frequently overlap, have evolved separately. Consequently, Community activities will seek to ensure the convergence of efforts aimed at developing the scientific and technological base necessary for the exploitation, management and protection of marine resources (both mineral and food resources).

8. A Europe for research workers

The Commission is eager to implement a series of measures designed to ensure that Europe continues to maintain its scientific and technical creativity. This will involve the gradual creation for a Europe for research workers, notably through the provision of support for further education and

retraining, encouragement of mobility among research workers, rational use of major scientific and technical installations and creation and maintenance of networks for the circulation and dissemination of knowledge.

C. EFFICIENT MANAGEMENT

Just as the framework programme is not the place to describe, in elaborate detail, the specific research programmes, neither is it appropriate to go into detail as regards management mechanisms. However, the following three points deserve to be stressed:

1. Community R&TD activities must be subjected to independent scientific controls at high level. This is already the case, although improvements are envisaged.

Moreover, the strategic planning and forecasting apparatus is under review. In addition, mechanisms will be set up to permit regular assessment of the relevance and results of each activity.

These mechanisms will prompt the Commission, assisted by advisory committees and working parties responsible for evaluating project quality, to terminate or to refrain from launching programmes:

- . whose aims may already have been achieved;
- . in respect of which assessments show that they will probably never succeed in attaining the objectives set;
- . the priority nature of which is never demonstrated at all, or is insufficiently demonstrated.

These assessment mechanisms have already proved themselves through their application to the existing programmes, representing one of the main achievements in recent years. This explains the attraction of the existing Community programmes and the fact that they enjoy the support of the most eminent experts and scientists.

2. In implementing its programmes, the Community will seek to foster exemplary relations with the various parties actively involved (undertakings, laboratories, universities, users of the research results).

Accordingly, the inevitable constraints associated with the management of public funds should be kept to the minimum necessary to guarantee proper use of these funds and compliance with the priorities laid down.

The Commission, anxious to improve the efficiency of its activities, has now taken steps to review its administrative, regulatory and financial system, with a view to simplifying, accelerating and rendering transparent the management of

programmes. In particular, this review involves a reduction in contractual requirements, notably with regard to the frequency of reports, and also the speeding-up of payments to contractors.

3. As evidenced by the level of participation of small and medium-sized undertakings in programmes such as ESPRIT or BRIT, the Community has already made significant efforts to accommodate SMUs. These efforts will be extended with the implementation of the new framework programme.

An attempt will be made to involve SMUs even more closely in the preparation of programmes, so as to ensure that their special needs are taken into account.

Provision will be made for information networks and for the adoption of appropriate tendering procedures.

In addition, the Commission intends to improve - in conjunction with its overall programme for the development of small and medium-sized undertakings - facilities for the dissemination of information among the SMUs and the commercial exploitation by the latter of the research programme results.

D. FINANCING ON A LEVEL COMPATIBLE WITH THE GENERAL CONSTRAINTS OF THE COMMUNITY BUDGET AND THE NATIONAL BUDGETS

The question of financing is a complex one.

The amounts that the Community is able to allocate to research and technological development are such that drastic choices have to be made.

Against this background, account must be taken of the following two realities:

1. There is a basic minimum below which our efforts cannot get off the ground. This basic minimum could be measured against the yardstick of the General Budget of the European Communities or, alternatively, against the sum of the national efforts devoted by the Member States to the R&TD sector.

However, the amount of 7 735 million ECU, covering the period 1987-91 and considered necessary for the implementation of the framework programme, was not calculated on the basis of this type of comparison. Rather, it is a tangible expression of the finance essential for the implementation of the eight selected activities. It also takes account of the absorption, management and financing capabilities of industry, the Member States, the Community and the Commission. It reflects a reasonable increase in the tempo of measures likely to be administered efficiently.

2. By definition, R&TD covers areas in a constant state of change. Consequently, when a framework programme is adopted for a period of five years, it is necessary to leave the door open to the possibility of reviewing priorities and fields of application, on the assumption that external factors or a mid-term evaluation of results may necessitate such changes. This is why the notion of a

financial reserve of the order of 15% - although disputed by some - is an entirely valid one. Accordingly, the Commission intends to propose a mid-term review of the framework programme, so as to enable it to be adapted to the needs of research and development and to changes in the financial situation.

In addition to financing via the Community budget which, logically, will remain the preferred mode of support for basic and precompetitive research, the Commission has already made known its keenness to implement new financing formulae, whereby private resources could be mobilized in the case of R&TD projects of Community dimensions but much closer to the market.

The formulae envisaged would tend to facilitate the investment of own funds in high-technology projects occupying an intermediate position between precompetitive R&TD and the market.

Apart from the creation of investment companies (Eurotech Capital) operating through shareholdings on the basis of purely private funds, it is planned to establish a guarantee mechanism (Eurotech Insur) backed by a Community contribution. In the case of projects whose commercialization prospects are as yet remote and which are regarded by the financiers as high-risk, this mechanism, by covering in part the losses likely to be sustained on shareholdings, should provide an investment incentive as far as the private sector is concerned.

The objection is heard in some quarters that certain formulae already exist within a national framework. This may well be the case. However, the Commission remains convinced that more financial imagination must be displayed, if one is to adapt to the natural logic of research and development and assist cooperation between undertakings, both in the framework of EUREKA and in a Community framework.

Lastly, the increasing recognition by manufacturers of the advantages of cooperation, as well as the limited availability of Community budget funds, could prompt the Commission to consider reviewing and supplementing the existing procedures for the financing of shared-cost projects:

- by making provision (in addition to financial contributions) for repayable advances;
- by varying the level of financial contributions and advances, e.g., between 20 and 80% of the total cost of the projects, depending on the stature of the partners, the degree of precompetitiveness of the project or the progress of the research.

E. AN IMPORTANT MILESTONE FOR EUROPEAN INTEGRATION

Ambitious but selective, rigorous but flexible, the new framework programme proposed by the Commission represents an important milestone for European integration over the coming years.

Its purpose is to ensure that undertakings, research workers and Member States clearly perceive the advantages they can derive from a Community dimension in the field of science, research and technological development.

The Commission hopes that, in response, they will lend their support first of all to its adoption, and then to its attainment. The decisions to be taken with regard to this framework programme will have profound implications for the economic future of the Community. Time is of the essence. Let us make sure that we do not miss this new opportunity.

POSITIONS TAKEN BY THE EUROPEAN COUNCIL IN FAVOUR OF COMMUNITY RESEARCH AND TECHNOLOGICAL DEVELOPMENT (R&TD)

Since its Fontainebleau session the European Council has continued to develop its position with regard to Community R&TD, as shown in the conclusions listed below:

Fontainebleau (June 1984)

"...The following priority objective will be pursued: development, in close consultation with the Community industries and bodies concerned, of Europe's scientific and technological potential..."

The report of this session specifically refers to the following sectors and programmes: ESPRIT, Telecommunications, Biotechnologies, S/T cooperation and exchanges.

Finally, this report states:

"The European Council agrees on the need to increase the proportion of Community resources devoted to financing priority Community research and development activities."

Dublin (December 1984)

"The European Council agreed that the Council should adopt further measures to strengthen the technological base of the Community and restore competitiveness: to this end, the Commission is asked to submit an appropriate draft action programme to the next European Council."

Brussels (March 1985)

After having reasserted

"the importance of strengthening the technological base and competitiveness of industry",

the European Council renewed

"its commitment to increasing the Community resources earmarked for research and development".

This European Council also emphasized the importance of:

- "...- The better use of human resources, particularly by an increased mobility of students and researchers...
- The encouragement of innovation...
- The achievement of a breakthrough in telecommunications..."

Milan (June 1985)

"The European Council noted a collective effort to master new technology was a condition for maintaining European competitiveness. It therefore decided to give the Community a new technological dimension."

"The European Council approved and endorsed the Commission report on the strengthening of technological cooperation in Europe."

Furthermore the European Council in Milan gave its support to the French EUREKA project by highlighting its complementarity with the

*"Commission's constructive proposals in the same direction"
as well as the importance of the Community dimension.*

Luxembourg (December 1985)

"The Council reaffirms that the achievement of the full internal market by 1992 and increased technological cooperation in Europe will make it possible to lay the foundations for the international competitiveness of the European economies and to meet the challenges of the third industrial revolution."

During the Luxembourg Council the text of the Single Act (especially Title VI) was approved, providing the formal legal basis for Community R&T activities.

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Since the Fontainebleau session, the European Council has thus taken and confirmed three major positions:

- *From now on R&TD must become a priority Community policy;*
- *The financial means for S/T activities must be increased by raising the resources which the Community allocates to them;*
- *Special priority should be given to:*
 - . *the reinforcement of the technological base and the competitiveness of industry (ESPRIT, Biotechnology, Telecommunications, encouragement of innovation, support for EUREKA);*
 - . *the reinforcement of S/T cooperation and exchanges (notably, the mobility of researchers).*

Single European Act

Subsection V – Research and technological development

Article 24

A Title VI shall be added to Part Three of the EEC Treaty, reading as follows:

'Title VI

Research and technological development

Article 130 F

1. The Community's aim shall be to strengthen the scientific and technological basis of European industry and to encourage it to become more competitive at international level.

2. In order to achieve this, it shall encourage undertakings including small and medium-sized undertakings, research centres and universities in their research and technological development activities; it shall support their efforts to cooperate with one another, aiming, in particular, at enabling undertakings to exploit the Community's internal market potential to the full, in particular through the opening up of national public contracts, the definition of common standards and the removal of legal and fiscal barriers to that cooperation.

3. In the achievement of these aims, particular account shall be taken of the connection between the common research and technological development effort, the establishment of the internal market and the implementation of common policies, particularly as regards competition and trade.

Article 130 G

In pursuing these objectives the Community shall carry out the following activities, complementing the activities carried out in the Member States:

(a) implementation of research, technological development and demonstration programmes, by promoting cooperation with undertakings, research centres and universities;

(b) promotion of cooperation with third countries and international organizations in the field of Community research, technological development, and demonstration;

(c) dissemination and optimization of the results of activities in Community research, technological development, and demonstration;

(d) stimulation of the training and mobility of researchers in the Community.

Article 130 H

Member States shall, in liaison with the Commission, coordinate among themselves the policies and programmes carried out at national level. In close contact with the Member States, the Commission may take any useful initiative to promote such coordination.

Article 130 I

1. The Community shall adopt a multiannual framework programme setting out all its activities. The framework programme shall lay down the scientific and technical objectives, define their respective priorities, set out the main lines of the activities envisaged and fix the amount deemed necessary, the detailed rules for financial participation by the Community in the programme as a whole and the breakdown of this amount between the various activities envisaged.

2. The framework programme may be adapted or supplemented, as the situation changes.

Article 130 K

The framework programme shall be implemented through specific programmes developed within each activity. Each specific programme shall define the detailed rules for implementing it, fix its duration and provide for the means deemed necessary.

The Council shall define the detailed arrangements for the dissemination of knowledge resulting from the specific programmes.

Article 130 L

In implementing the multiannual framework programme, supplementary programmes may be decided on involving the participation of certain Member States only, which shall finance them subject to possible Community participation.

The Council shall adopt the rules applicable to supplementary programmes, particularly as regards the dissemination of knowledge and the access of other Member States.

Article 130 M

In implementing the multiannual framework programme, the Community may make provision, with the agreement of the Member States concerned, for participation in research and development programmes undertaken by several Member States, including participation in the structures created for the execution of those programmes.

Article 130 N

In implementing the multiannual framework programme, the Community may make provision for cooperation in Community research, technological development and demonstration with third countries or international organizations.

The detailed arrangements for such cooperation may be the subject of international agreements between the Community and the third parties concerned which shall be negotiated and concluded in accordance with Article 228.

Article 130 O

The Community may set up joint undertakings or any other structure necessary for the efficient execution of programmes of Community research, technological development and demonstration.

Article 130 P

1. The detailed arrangements for financing each programme, including any Community contribution, shall be established at the time of the adoption of the programme.

2. The amount of the Community's annual contribution shall be laid down under the budgetary procedure, without prejudice to other possible methods of Community financing. The estimated cost of the specific programmes must not in aggregate exceed the financial provision in the framework programme.

Article 130 Q

1. The Council shall, acting unanimously on a proposal from the Commission and after consulting the European Parliament and the Economic and Social Committee, adopt the provisions referred to in Articles 130 I and 130 O.

2. The Council shall, acting by a qualified majority on a proposal from the Commission, after consulting the Economic and Social Committee, and in cooperation with the European Parliament, adopt the provisions referred to in Articles 130 K, 130 L, 130 M, 130 N and 130 P(1). The adoption of these supplementary programmes shall also require the agreement of the Member States concerned.'

ACRONYMS IN COMMUNITY RESEARCH AND DEVELOPMENT

- BICEPS : Bioinformatics Collaborative European Programme and Strategy
- BRITE : Basic Research In Industrial Technologies for Europe
- COMETT : Community action programme In Education and Training for Technology
- CODEST : Committee for the European Development of Science and Technology
- COST : European Cooperation on Scientific and Technical Research
- CREST : Scientific and Technical Research Committee
- CUBE : Concertation Unit for Biotechnology In Europe
- DELTA : Developing European Learning through Technical Advance
- DRIVE : Dedicated Road Safety Systems and Intelligent Vehicles In Europe
- ESPRIT : European Strategic Programme for Research and Development In Information Technology
- ESRA : European Safety and Reliability Association
- EURAM : European Research In Advanced Materials
- EUROTRA : Community Research and Development Programme for a Machine Translation System of advanced design
- FAST : Forecasting and Assessment In the field of Science and Technology
- IRDAC : Industrial Research and Development Advisory Committee
- JET : Joint European Torus (Controlled Thermonuclear Fusion Project)
- JRC : Joint Research Centre
- NET : Next European Torus (follow-up to JET)
- RACE : Research and Development In Advanced Communications Technologies for Europe
- SPRINT : Strategic Programme for Innovation and Technology Transfer In Europe

STAR : Development of certain regions of the Community
by improving access to advanced Telecommunications
services

VALOREN : Development of certain regions of the Community
by exploiting Indigenous Energy potential