

IRDAC

**INDUSTRIAL RESEARCH AND DEVELOPMENT ADVISORY COMMITTEE
OF THE EUROPEAN COMMISSION**

IRDAC OPINION

**TOWARDS
FRAMEWORK PROGRAMME V**

14 June 1996





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INDUSTRIAL RESEARCH AND DEVELOPMENT ADVISORY
COMMITTEE OF THE EUROPEAN COMMISSION

Brussels, 14 June 1996

IRDAC Chairman

Mrs E Cresson
Member of the European Commission
200 rue de la Loi
1049 Brussels

Dear Mrs Cresson

Please find attached the IRDAC Opinion "Towards Framework Programme V" which is the result of two Round Table meetings, chaired by myself.

The enclosed opinion starts from the fact that RTD is an important but not a sufficient factor for industrial competitiveness. Amongst the other factors are: education and training, standardisation, legislation, fiscal matters, flexibility of labour and capital, and the organisation and size of markets. IRDAC welcomes that in the Green Paper on Innovation a number of actions in these fields are proposed.

At the moment European industry is going through a period of drastic change, due to the increasing globalisation of production, of science and technology, the continuing concentration on core activities, the development of services, in particular industrial services, and the increasing shortening of product life cycles.

Given these changes in industry, future Community research activities and programmes cannot simply be continued as "business as usual" but should be characterised by a concentration on a limited number of key actions of importance to European industry. In this context, major attention should be given to the adoption, combination and advancement of existing technologies, as well as new or emerging ones. European RTD

programmes should aim at encouraging focused fundamental research, based on the needs of industry.

IRDAC considers Community actions in the field of training and mobility of researchers of great importance, however, participation of industry in any future programme in this field under Framework Programme V should be a prerequisite and industry should be involved in choosing the areas for which actions will be launched.

IRDAC is in favour of opening up Community RTD programmes to the participation of organisations from non-European industrialised countries, provided there is reciprocity and no transfer of funds to non-European participants. To avoid that the opening-up of Community RTD programmes lead to a flow of European know-how to third countries, the European Commission should examine during the evaluation of projects proposals - on a case-by-case basis and on the basis of clear criteria - if the involvement of a non-European partner would really contribute to strengthening Europe's competitiveness.

A special effort should be made to ensure that SMEs are either benefiting from the results of Community research or are truly involved and, in this respect, IRDAC proposes the further development of the CRAFT scheme into a centrally managed action.

With regard to the management of the Community RTD programmes and projects, IRDAC makes a plea for greater transparency and a simplification of procedures.

Finally, a renewed effort should be made on the coordination of national RTD policies and actions, given the fact that financial resources for supporting research in Europe are scarce and there is currently too much duplication of "public research".

In preparation of Framework Programme V, IRDAC is currently organising Round Tables on specific areas (such as Life Sciences, ICT, Energy, Industrial and Materials Technologies).

At the IRDAC Plenum on 24 October 1996, I hope we can have an exchange of views on Framework Programme V with yourself and Commissioner Bangemann.

Yours sincerely

A handwritten signature in black ink, reading "Yves Farge". The signature is written in a cursive style with a large initial "Y" and a distinct flourish at the end.

Yves Farge
IRDAC Chairman

IRDAC

INDUSTRIAL RESEARCH AND DEVELOPMENT ADVISORY
COMMITTEE OF THE EUROPEAN COMMISSION

Bruxelles, le 14 juin 1996

Président de l'IRDAC

Madame le Commissaire Edith Cresson
Membre de la Commission Européenne
200 rue de la Loi
1049 Bruxelles

Madame le Commissaire,

Je vous prie de trouver ci joint l'avis de l'IRDAC sur le cinquième Programme Cadre. Cet avis a été élaboré au cours de deux Tables Rondes que j'ai eu l'honneur de présider.

Notre démarche part du constat que la recherche-développement est un facteur important mais pas suffisant pour la compétitivité industrielle. Parmi les autres facteurs influents, il y a l'éducation et la formation, la normalisation, la réglementation, la fiscalité, les taux de change et les taux d'intérêt, la flexibilité du travail et du capital ainsi que l'organisation et la taille des marchés. A ce propos, l'IRDAC apprécie les différentes pistes de réflexion proposées dans ces domaines par le Livre Vert sur l'Innovation.

A l'heure actuelle, l'industrie européenne connaît une période de changement important en raison de la mondialisation accrue de la production, de la science et des technologies, de la concentration permanente sur les activités essentielles, du développement des services, en particulier industriels, et de la diminution croissante de la durée de vie des produits.

Ces changements affectant l'industrie ne peuvent être ignorés. Les activités et programmes de recherche de la Communauté ne peuvent plus être considérés comme des "affaires courantes" mais devraient être recentrés sur un nombre limité d'actions clés d'importance cruciale pour

l'industrie. En outre, il conviendrait de porter une attention toute particulière à l'adoption, l'association et l'avancement des technologies existantes, nouvelles ou émergentes. Les programmes européens de RDT devraient encourager la recherche fondamentale ciblée sur les besoins de l'industrie.

L'IRDAC considère que les actions communautaires dans le domaine de la formation et de la mobilité des chercheurs sont très importantes, que la participation de l'industrie dans les futurs programmes du 5ème Programme Cadre devrait être une nécessité préalable et que l'industrie devrait être impliquée dans le choix des domaines pour lesquels des actions seront lancées.

L'IRDAC est favorable à l'ouverture des programmes communautaires de RDT à la participation d'organisations de pays industrialisés non-européens, à la condition qu'il y ait réciprocité, et sans transfert de fonds à des participants non-européens. Afin d'éviter que l'ouverture des programmes communautaires de RDT ne mène à une fuite de connaissances européennes au profit des pays-tiers, la Commission européenne devrait examiner lors de l'évaluation des projets - au cas par cas et sur base de critères bien définis - si la participation des partenaires non-européens contribue effectivement à renforcer la compétitivité européenne.

Un effort particulier devrait être fait pour que les PME, soit bénéficient des résultats de la recherche communautaire, soit y participent véritablement et, dans ce contexte, l'IRDAC propose de développer l'expérience CRAFT en une action gérée de façon centrale.

En ce qui concerne la gestion des programmes et projets de RDT communautaires, l'IRDAC plaide en faveur d'une plus grande transparence et d'une simplification des procédures.

Pour terminer, un effort renouvelé devrait être consacré à la coordination des politiques et actions nationales de RDT, tenant compte de la rareté des ressources pour soutenir la recherche en Europe et du fait qu'il y a actuellement trop de "double-emploi" dans la recherche publique.

En vue de la préparation du cinquième Programme cadre, l'IRDAC organise des Tables Rondes sur des thèmes spécifiques (tels que les

Sciences du Vivant, les Technologies de l'information et des communications, l'Energie, les Technologies industrielles et des matériaux). J'espère ainsi qu'à la séance plénière de l'IRDAC du 24 octobre nous aurons un échange de vues fructueux sur le 5ème Programme Cadre avec vous-même et le Commissaire Bangemann.

Veillez agréer, Madame le Commissaire, l'expression de ma très haute considération.

A handwritten signature in black ink, reading "Yves Farge". The signature is written in a cursive style with a large initial "Y" and a flourish under the "e" in "Farge".

Yves Farge
Président de l'IRDAC

IRDAC OPINION

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EXECUTIVE SUMMARY

1. "Suppose that the mechanism of the Framework Programme did not exist, what then should be developed at European level to strengthen the competitiveness of European industry?" According to IRDAC, this should be the key question for discussing possible future Community activities in the field of RTD. The European Commission should launch such an "open debate" on the basis of a clear strategy paper, highlighting the issues to be discussed.

2. Future Community activities in the field of RTD should have, as their main aim, a strengthening of the competitiveness of European industry. To ensure that this main objective is being met, it is essential that policy-makers at European level consult industry in a permanent and structured way. IRDAC is willing to play a key role in this process.

3. Politicians should realise that European industry is currently going through a period of drastic change, due to the increasing globalisation of production, of science and technology, the continuing concentration on core activities and the increasing shortening of product life cycles. The way in which industry is changing at the moment has the character of a "new industrial and social revolution". The progress made in the field of micro-electronics, information and communication technologies is not only resulting in dramatic changes in products and services, but has led to a complete restructuring of the manufacturing process and also of the organisation and management of other economic activities such as transport. Also, in the field of health and agro-food, drastic changes are occurring this time as a result of progress in biotechnology.

4. Given the changes in industry, Community research activities and programmes cannot simply be continued as "business as usual". For this reason, Framework Programme V should be different from the current one, Framework Programme IV. Future Community RTD programmes should be characterised by a concentration on a limited number of key actions of importance for European industry. These programmes should embrace a "challenge-oriented approach" whereby specific and clear objectives are set.

5. Although IRDAC recognises the importance of RTD, it wants to underline that it should not be forgotten that research is an important but not a sufficient condition for industrial competitiveness. There are also other aspects which are important and require special attention at European level such as education and training, standardisation, legislation, fiscal matters, flexibility of labour and capital, and the organisation and size of markets. In the Commission Green Paper on Innovation, these issues are addressed. There should be a good link and complementarity between the different policies of the European Union to avoid conflict.

6. With regard to innovation, experience with science and technology over the last 20 years has shown that the emergence of radical new technologies seldom occurs. On the contrary, it has been and still is the combination of existing technologies that creates innovation and change. For this reason, IRDAC is of the opinion that in the context of Framework Programme V major attention should be given to the adoption, combination and advancement of existing technologies as well as to emerging or new ones.

7. Given the fact that the financial resources in Europe for supporting research are scarce, a special effort should be made on the coordination of national RTD policies and actions. In this context, IRDAC welcomes the Task Forces as a new instrument to cluster projects at European and national level around themes or challenges of interest to European industry which enhance wealth creation and the quality of life simultaneously. The Task Forces can function as a forum for discussion, allowing the different partners to meet and identify technological bottlenecks.

8. Through its RTD policy, the European Commission should not try to "pick the winners, but let the winners pick". The European RTD programmes should aim at encouraging focused fundamental research; research based on the needs of industry. Non-targeted or blue-sky research should not be financed.

9. Since a strong knowledge infrastructure in Europe is essential for industry, Community activities in the field of the training and mobility of researchers should be continued. However, the participation of industry in these activities should be made a prerequisite to prevent

the Community from funding "mere scientific tourism". Furthermore, industry should be involved in choosing the fields and areas for which mobility actions will be launched.

10. IRDAC is in favour of opening up the Community RTD programmes to the participation of organisations from non-European industrialised countries. It should be up to European industry to decide if, in the context of a Community RTD project, it wants to cooperate with a partner from a non-European country. A key condition for this opening up is reciprocity (in particular, from the side of the United States and Japan) and there should be no transfer of funds to non-European participants. A further opening up of the specific RTD programmes will mean that a specific programme on international cooperation under Framework Programme V should be limited in size and either address very specific issues (e.g. nuclear safety in Central and Eastern Europe) or become oriented towards dissemination of results, technology transfer and the creation of networks (a useful tool for developing countries for their industrialisation process).

11. A special effort should be made to ensure that SMEs are either benefiting from the results of Community research or are truly involved by participating in the different RTD projects. In this respect, IRDAC proposes that the CRAFT scheme of cooperative research is further developed into a central bottom-up action (instead of being scattered across different programmes as is currently the case). The diffusion and dissemination of results should be ensured at project level, via the specific RTD programmes.

12. To ensure a successful implementation of future RTD activities at European level, IRDAC believes that an efficient management of programmes and projects is a prerequisite. The key components of such a management should be quality, transparency and rapidity.

I. THE COMPETITIVENESS OF EUROPEAN INDUSTRY

IRDAC believes that the competitiveness of European industry is too low and should be improved. Increasingly, Europe's share of world markets (e.g. in the field of manufacturing) is falling. Besides this, the return on capital investment in Europe is lower than in the United States and Japan. The reasons for this situation are complex. According to IRDAC, much is due to the shortage of real entrepreneurship in Europe, lack of flexibility, and relatively low adoption of new generic technologies (in particular information technologies) in plants in combination with a low rate of innovation. An additional burden for European industry is caused by the heavy and costly structure of the public sector and the level of public debt in Europe.

"Return on capital invested in European firms has remained poor; it averaged 12% in Europe compared with 15% in Japan and 16% in the USA.

Some of the principal causes, but also some of the principal consequences, are:

- **new investment levels have been relatively low**
- **innovation has been relatively limited**
- **European industry's structure has changed relatively less than in other regions**
- **European management practices appear to be less supportive of improvements in competitiveness than those applied in other parts of the world."**

It is clear that this situation must change. Europe's industry should become more competitive. Science and technology cannot provide the answer by themselves; they are important but not sufficient factors of industrial competitiveness. Amongst the other factors are: fiscal matters, the legal framework, education and training, industrial management, flexibility of labour and capital, organisation and size of markets.

"RTD is an important factor for industrial competitiveness, but not a sufficient one".

II. CHANGES IN INDUSTRY

Currently, Europe's industry is going through a period of drastic change, which is largely due to the globalisation of industrial activity, the emerging role of the service sector, privatisation combined with a decrease in public spending.

i. The globalisation of industrial activity

Increasingly, European industry is globalising both its production and RTD activities. There are numerous reasons for this: to reduce costs, to be close to new markets, to have access to new know-how. The globalisation trend will certainly influence the way in which research in Europe is done and the kind of research which is carried out. In formulating an RTD policy, public authorities should take the globalisation issue into consideration.

ii. The emerging role of the service sector

Increasingly, services are becoming an integrated part of industrial production. Amongst the reasons for this are the growing importance of knowledge-based production (whereby external organisations provide knowledge-intensive services) and an increased concentration in industry on core activities (whereby peripheral though necessary parts of production are outsourced to service companies). The growing importance of the services is creating both opportunities and problems. Amongst the opportunities are the possibility to work more efficiently, reduce costs, improve customer satisfaction and react more quickly to fluctuations of the market. The problems are related to a lack of (quality) standards and organisational and management issues (how to control the different actors).

iii. Privatisation and reduced public spending

As a common trend in Europe, Member States are privatising their "state-controlled" industries. In addition, public spending in support of RTD and industrial production is decreasing. These developments will have an impact on industry and its way of working, both as far as production and research are concerned.

III. INNOVATION: THE ROLE OF THE PRIVATE AND PUBLIC SECTORS

Although IRDAC believes that the competitiveness of European industry is primarily a point of concern for industry itself, it strongly urges public authorities at both national and European level to put the issue on the agenda. Governments should create the right climate in which industry can operate. In practice, this means developing a sound knowledge infrastructure, ensuring quality and relevance in the education system, and deregulating or providing consistent regulations which are not merely the result of political considerations.

"For the individual enterprise, technology can be used as a weapon in the competitive battle. Technology is one item in the armoury which gives competitive advantage. It should be viewed alongside cost, product performance, productivity, quality, design, etc. as a contributor to building advantage relative to competition."

To remain competitive, European industry must innovate. There are different ways of realising this. Innovation in industry is mainly the result of the interaction between customers and suppliers.

"Catalysts of innovation:

- 60%: Interaction between customers and suppliers**
- 20%: Competition between industries**
- 20%: Universities."**

Public authorities can influence and stimulate the innovation process by:

- Maintaining a good science base i.e. the flow of highly qualified people, while at the same time helping to add to new knowledge in relevant areas
- Providing mechanisms to allow for the addition to new knowledge in areas for which the market will not work:
 - curiosity-driven research
 - big science (e.g. astronomy, particle physics)
 - areas where no obvious market return exists (e.g. environment, standards)
- Ensuring that mechanisms exist to allow teachers to be available to train the next generation of researchers, whether in industry or academia
- Ensuring that mechanisms and incentives exist in public funding which orient research at universities and public institutions to a larger extent towards the needs of industry, mostly in the form of joint research projects (oriented basic research or focused fundamental research)
- Undertaking research which has a practical outcome but where market mechanisms for the output fail and, hence, there is a need for specific measures:
 - military and defence
 - transportation systems
 - environmental science
- Ensuring that strong intellectual property protection is available for innovative products. This means upholding and improving standards of I.P. protection within the EU and pressing for the implementation of GATT-TRIPs elsewhere

“Basic science contributes to the expansion of knowledge. Technology leads to an ability to develop products or processes which can be sold to customers.”

What according to IRDAC public authorities should certainly not do to promote innovation is:

- Finance projects with an immediate and narrow short-term industrial result (unless there is a clear separate political judgement)
- Support low quality research
- Encourage bureaucracy which is excused by striving for accountability with public funds
- Spend money just "because it is there"

"Government should act like a medieval/renaissance patron: liberal with funds and freedom, but only sponsoring the best."

IRDAC believes that in the context of innovation the European Union has a special role to play by coordinating RTD policies, stimulating standardisation and pulling knowledge by developing European partnerships between industry and academia. For this reason, IRDAC welcomes the European Commission Green Paper on Innovation as it opens a necessary debate. However, the EU programmes in the field of innovation will only be successful if it is realised that industry is operating in a dynamic, constantly changing environment.

IV. THE BOUNDARY CONDITIONS FOR FRAMEWORK PROGRAMME V

The European Union is in a good position to promote innovation in Europe, although it is being realised that the instruments and funds available at European level are limited. For RTD stimulation the funds managed by the European Commission account for only 4% of total public spending for research in Europe. This once again demonstrates the need for the European Union to be selective and focus on key issues.

If the European Union wants to contribute to innovation in Europe via its RTD programmes, it has to adhere to the following boundary conditions:

1. Consult industry
2. Ensure a good link between different EU policies
3. "Let the winners pick"
4. Coordinate national RTD policies

1. Consultations with Industry

To ensure that the Community RTD programmes set the right priorities and really contribute to strengthen the competitiveness of European industry, it is essential that industry is continuously consulted on both their shaping and implementation. Over the years, the different programmes and Directorates of the European Commission have established special consultation networks with industry. The time has come to review these networks to create greater transparency and, where necessary, improve their functioning. IRDAC will give a high priority to advising on the best ways of fixing RTD priorities. It should be avoided that there is a discrepancy between what industry needs and what the Community RTD programmes offer. Certainly, for the preparation of Framework Programme V, the European Commission should develop a clear strategy on how and when the different (industrial) actors will be consulted.

In this context, it has to be realised that "the European industry" as such does not exist and that different industrial sectors have different needs and wishes, although common views and needs can be identified.

2. Ensure a better Link Between Different EU Policies:

IRDAC makes a strong plea for a better link between the different policies of the European Union, in particular between the European industry, competition and research policies. The recent experience of the discussions on state aids for RTD, rules on technology transfer (block exemption) and the directive on biotechnology patenting has made the differences of policies apparent. The net result of these differences on innovation in Europe is negative.

"You can put as much money as you want into research programmes, if the other policies (for instance on legislation) do not follow or support it, the money is wasted."

3. "Let the Winners Pick":

IRDAC believes that the EU should not try to take over the role of industry by picking winners via a dirigiste industrial or research policy. It should develop programmes on generic technologies of interest to different sectors.

"Don't pick the winners, let the winners pick"

Only when a field of strategic importance to Europe is lagging behind, IRDAC feels that more sector-oriented programmes are justified. The ESPRIT programme was an example of this, although this exercise showed the dangers of sectoral programmes and made apparent the importance of focusing both on the suppliers and the end-users of technology.

4. Coordination of RTD Policies:

To ensure an effective allocation of the scarce public funding available in Europe for RTD, IRDAC calls for a continuous action on the

coordination of RTD efforts in Europe (as foreseen in the Maastricht Treaty).

Such coordination should be undertaken at different levels; that of the policy itself and that of its implementation (via RTD programmes). The starting period of coordination should always be how to improve the efficiency and to allocate the limited resources for RTD in a more effective way. With regard to the policy level, IRDAC makes a plea for developing a "European catalogue of common problems" requiring a European approach. At the level of programmes, IRDAC envisages coordination by networking and clustering projects. In this respect, the Task Forces Industry-Research are a useful instrument as they will not only lead to a clustering of projects at national and European level around themes of interest to European industry, but also allow the identification of technological bottlenecks and, hence, the definition of future actions.

To ensure a more structured link between the Community RTD programmes and EUREKA (which is in a way also a form of coordinating national RTD activities), IRDAC proposes to consider that the European Commission assures the secretariat of EUREKA (as is the case for COST).

IRDAC believes that, in particular, the efficiency of the public research system in Europe could be improved through coordination and rationalisation. At present, there is too much duplication of public research in Europe, which is to be regretted, since the available public funding for RTD is scarce.

"Research which adds little to the fundamental knowledge base, or which is not applied in the market place is wasted."

"In the last 10 years, a lot has changed in private research, but little has changed in public research."

IRDAC is strongly in favour of tearing down the walls around the national research councils. In this context, the European Union could play a role of importance via its "Coordination through Cooperation" exercise.

The national research councils could be motivated to put a part of their national budget for competition in a European "basket" to be managed by themselves. The European Union could match these funds.

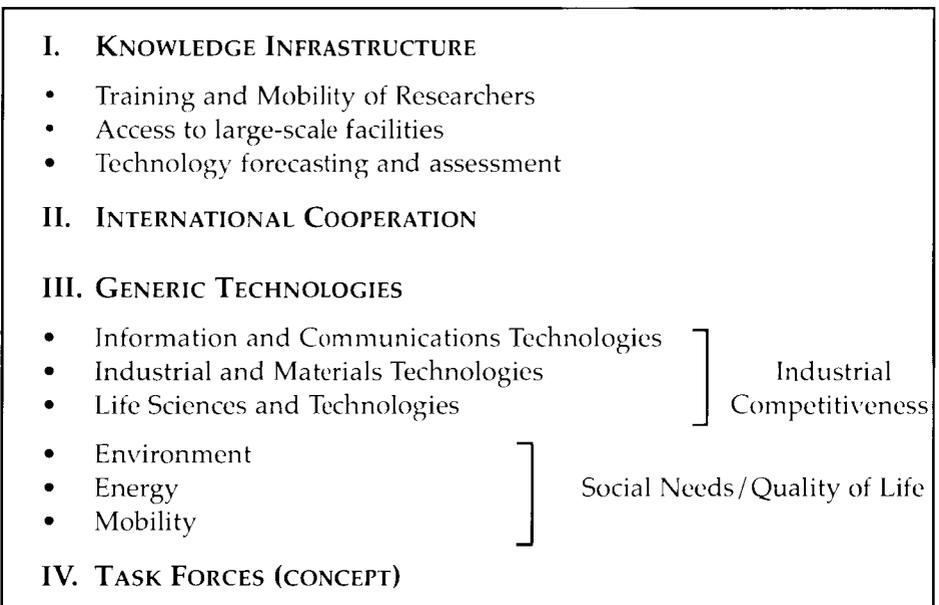
"Good research is necessary to improve and develop the specific technologies our enterprises use to develop the products we sell to customers, these products being the real currency of competition."

V. STRUCTURE AND CONTENTS OF FRAMEWORK PROGRAMME V

IRDAC believes that Framework Programme V must be characterised by concentration and selectivity. It should be realised that, at European level, not everything can and should be done. Financial resources are scarce and, therefore, clear choices have to be made. Framework Programme V should in no way be a shopping list of national priorities; based on the subsidiarity principle, it should present a clear European strategy of key actions in the field of RTD.

i. Structure

With regard to the structure of Framework Programme V, IRDAC is in favour of a limited number of RTD programmes around 4 main themes:



ii. Contents

With regard to the contents of Framework Programme V, IRDAC would like to make the following comments:

I. KNOWLEDGE INFRASTRUCTURE

To ensure a further strengthening of the competitiveness of European industry, it is essential that a sound knowledge infrastructure is maintained. The key features of this infrastructure should be quality and (industrial) relevance. At the moment, there exists in a number of fields a discrepancy between the offer (the knowledge infrastructure) and the demand (what industry needs). IRDAC believes that this discrepancy must be corrected. On this issue, the European Union has an important role to play.

- **Training and Mobility of Researchers**

IRDAC considers education and training of high priority. For this reason, the Committee reaffirms the recommendations of its report "Quality and Relevance" which urges the development of total competence in people, preparing people for a lifetime of learning, adopting quality concepts in education and training, stimulating a learning culture in companies, giving special consideration to the training requirements of SMEs, making RTD investments with appropriate education and training efforts, and developing a truly European education policy. The speed at which science and technology is advancing requires considerably more attention to be paid to "life-time learning", upgrading and "reskilling" of the workforce. The educational systems in the European Union must be encouraged to accommodate these changes.

IRDAC considers cooperation between industry and education bodies essential. The European Commission has an important role to play in order to inform (diffusion of best practices), to go on setting up networks and promoting exchanges.

The training and mobility of researchers should continue to be a main activity under Framework Programme V. However, future Community activities in this field should have a strong industrial involvement to pre-

vent financing mere "scientific tourism" between professors from academia, and also the themes and areas of these activities should be chosen after consultation with industry.

- **Access to large-scale facilities**

Europe possesses a relatively high number of unique large-scale facilities. At the moment, most of these facilities are not fully exploited by the responsible researchers. In other words, there is an over-capacity of large-scale facilities in Europe. It is IRDAC's opinion that in this regard the European Union could play a role of importance by opening up the facilities and assuring access to (industrial) researchers from other countries. Under Framework Programme IV, an action in this field is underway, but IRDAC would like to see it further developed under Framework Programme V.

- **Technology forecasting and assessment**

Technology forecasting and assessment can be a useful mechanism to track future fields of importance and identify possible scenarios. It should not be considered a way to predict the future; it is a mechanism to study options, not to make choices.

IRDAC believes that in the field of technology forecasting and assessment more work is needed at European level to identify possible fields where the EU should become active or more active. In this context, the ETAN initiative is welcomed, as a way to exchange information and coordinate activities. It is, however, crucial that industry is involved in the forecasting and assessment actions at both European and national level to avoid that they become "social sciences-driven". IRDAC applauds the FORESIGHT programme and methodology in the United Kingdom, whereby industry was in the lead. Even if this programme raised more questions than it provided answers, it had the big advantage of bringing the different actors (industry, academia and research centres) together.

"Technology forecasting and assessment helps you to make socio-economic choices, but no direct choices for industry."

II. INTERNATIONAL COOPERATION

IRDAC is of the opinion that the Community RTD programmes should be opened up to the participation of organisations from non-European countries. It should be up to European industry to decide if, in the context of a Community RTD project, it wants to cooperate with a partner from a non-European country. It is clear that in such a case the non-European partner should, in principle, not receive financial support from the Community. To avoid that the opening-up of Community RTD programmes leads to a flow of European know-how to third countries, the European Commission should examine during the evaluation of project proposals — on a case-by-case basis and on the basis of clear criteria — if the involvement of a non-European partner would really contribute to strengthening Europe's competitiveness.

The opening up of the Community RTD programmes should, according to IRDAC, be based on the reciprocity principle which is to be closely monitored. This means that European companies should also have the possibility of participating in the publicly-funded RTD programmes of the United States and Japan (and, in future, of the new Tigers).

If the specific RTD programmes of the European Union are opened up, there is no need for separate initiatives or programmes with the United States and Japan, such as IMS (Intelligent Manufacturing Systems).

A further opening up of the specific RTD programmes will also have consequences for the current specific programme on International Cooperation which should perhaps, in the context of Framework Programme V, become more oriented towards dissemination of results, technology transfer and the creation of networks (in particular, helpful for developing countries for their industrial development). Such a programme might also be used to address very specific issues (e.g. nuclear safety in Central and Eastern Europe).

The specific programme on the Stimulation of the Training and Mobility of Researchers should also take account of the globalisation trend by encouraging international exchanges between academia (on a global level) on themes of interest to European industry.

III. GENERIC TECHNOLOGIES

IRDAC believes that there continues to be a need at Community level for programmes on generic technologies. These programmes should primarily focus on the advancement, integration and combination of existing technologies as well as on the development of new emerging ones.

The past and current programmes in this field (such as BRITE EURAM, FAIR and ESPRIT) have shown their great value. However, in the context of Framework Programme V, there is a need for less compartmentalisation between these programmes. For this reason, IRDAC proposes 6 main RTD programmes on generic technologies.

- **ICT**

Given the rapid convergence of industry, technology and products in the field of Information Technologies, Communication Technologies and Telematics, IRDAC favours the creation of one central programme in this field, which is based on the needs of the end-users.

- **Industrial and Materials Technologies**

IRDAC is of the opinion that the current programme on Industrial and Materials Technologies should be continued with better focusing on main issues for industry (such as the introduction of IT systems in industry).

- **Life Sciences**

To ensure a better uptake by industry of the research results in the field of biotechnology, IRDAC is pleading for a better integration with the agro-industrial and bio-medical research programmes. Hence, in this field also IRDAC makes a plea for the creation of one single programme.

- **Environment**

IRDAC believes that the current Community programme in the field of Environment is too much oriented towards observation, monitoring and data-collection; the Environment programme under Framework Programme V should get to grips with the real problems.

- **Energy**

IRDAC calls for the definition of a clear Community strategy in the field of energy research, which combines nuclear fusion, fission, fossil fuels and renewables in a single coherent action.

- **Mobility**

According to IRDAC, under Framework Programme V a special programme on mobility should be created which is focused on solving problems (instead of on developing new products) and should embrace the integration of existing technologies to tackle these problems.

It should be considered to let these generic programmes contain a "challenge-led approach" whereby specific targets are set which enhance both national wealth creation and the quality of life simultaneously (e.g. improving the water quality of a major European river by a specified amount, eradicating a particular disease or condition).

IRDAC believes that, through the RTD programmes, the European Union can pool knowledge at European level by encouraging cross-border cooperation between industries and academia. In this way, the rusty cooperation machinery — which in the United States and Japan works more smoothly — can be lubricated.

Community RTD programmes should mainly address focused fundamental research i.e. research oriented towards the needs of industry.

In developing the specific RTD programmes at European level, it is crucially important to start from the marketplace and the needs of the user, and avoid programmes designed primarily to help the supplier. Each Community RTD programme should have as the main criterium for selecting projects: industrial or end-user involvement.

Activities of the European Union in the field of RTD should pay special attention to the growing role of the service sector in industrial production. Industry today is characterised by a strong dependence on knowledge provided by specific segments of the service sector. In other words, the service sector should not be looked upon as a separate phenomenon, but as an integrated part of the developing modern knowl-

edge-based industrial society. In this context, it is of particular importance to address in the Community RTD programmes organisational issues such as business process re-engineering.

IRDAC believes that, in the context of the specific RTD programmes under Framework Programme V, special attention should be paid to the issue of pre-normative research.

Standardisation is crucial for the competitiveness of European industry. For this reason, IRDAC believes that Europe should become more active in this field and develop itself into a key actor in international fora. Special actions are required to get rid of the delays of the European standardisation bodies (such as CEN/CENELEC), and a new impetus should be given to pre-normative research i.e. the research to back up legislation. Regulation and standardisation in Europe must always be based on good science and be flexible to allow the introduction of new technologies (e.g. in the field of biochemistry).

“Much environmental legislation has very little basis in science which can increase the divorce already existing between industry and administration on this subject.”

IV. TASK FORCES

IRDAC considers the Task Forces Industry-Research a useful mechanism as a platform for bringing the different actors together for discussion and to ensure selectivity and concentration across the European RTD programmes. With their current activity of clustering projects at national and European level around themes of interest to European industry, the Task Forces will allow an identification of technological bottlenecks and, hence, a definition of future research actions. IRDAC believes that the Task Forces themselves should not be the source of funding but merely provide possible targets for spending by the European Commission. For the Task Forces to be effective, IRDAC believes that they should consult industry more systematically and

focus on the whole production or product cycle, involving both the suppliers and users of technology. IRDAC believes that within the European Commission greater effort should be made to coordinate the different Task Forces and ensure more transparency. At the moment, many questions are still being asked about the objectives of the Task Forces, their working methods and consultative structure. IRDAC is of the opinion that the existing Task Forces should first be tested and assessed before new ones are created

iii. Additional issues

- **Dissemination of RTD results**

Although IRDAC believes the dissemination of RTD results to be an important issue, it is of the opinion that this does not require a special programme, but should be carried out in the context of the specific RTD programmes and the individual RTD projects.

Furthermore, IRDAC is hesitant as far as a possible large-scale Community activity in this field is concerned. Dissemination is a very expensive activity, for which there is a poor cost-benefit ratio.

- **SMEs**

Small and medium sized enterprises are crucial for Europe's economic growth and employment. SMEs should be encouraged to take the opportunities offered by advances in science and technology and to use the fruits of EU research.

IRDAC is of the opinion that the Commission should ensure that SMEs are well represented in the Community RTD programmes. Through the initiation of the Technology Stimulation Measures for SMEs, this is partly ensured, since it supports "newcomer" SMEs with the preparation of project proposals (via the exploratory awards). In addition, the CRAFT scheme — an IRDAC invention — allows medium and low-tech SMEs without their own research facilities facing common problems to group together and assign a third party (eg a research organisation, university or company) to carry out the necessary research to solve these problems. IRDAC welcomes the fact that the CRAFT

scheme is now extended to different areas of Framework Programme IV. Its success will, however, depend on the availability at national, regional and local level of a network of intermediary organisations to inform SMEs and help them in the preparation of proposals and search for partners. Another prerequisite for CRAFT's success is the rapidity in which the Commission selects proposals and funds chosen projects. If there is one thing which discourages SMEs, it is bureaucracy. Since most of the problems faced by SMEs are of a very practical and down to earth nature, the Commission should not, for the selection of CRAFT projects, interpret the pre-competitive principle too strictly, since this will hamper downstream innovation.

On the basis of the experience obtained so far with the CRAFT scheme, IRDAC favours, in the context of Framework Programme V, the creation of one single, central CRAFT action for SMEs, functioning completely bottom-up, via an open call for proposals and more frequent project evaluations (e.g. every 2 months).

Since many SMEs have limited resources to finance innovation, IRDAC believes that new financial instruments (such as fiscal incentives and venture capital) should be explored. The Commission could, in this context, play a role as a clearing house for ideas ("best practices") and provide a platform for discussion where the Member States can exchange information.

"We should not overlook the fact that improvements in quality, productivity, etc. often result from generic technologies applied by SMEs which are in themselves suppliers of equipment and machinery to the company actually selling the final product."

Over the years, the European Commission has created a large number of information and assistance networks to help SMEs (e.g. Innovation Relay Centres, Euro Info Centres, Business Information Centres, CRAFT Focal Points, programme contact points). IRDAC urges for more transparency and rationalisation of these networks and, in this respect, favours the creation of a "first stop shop"

VI. PROCEDURES AND MANAGEMENT

Certainly in the light of the continuous shortening of product life cycles, the procedures of the European Union should be made less complex and less time-consuming.

IRDAC believes that during the Inter-governmental Conference, it should be proposed that the procedures for approving the Framework Programme and the specific RTD programmes are combined into one single decision (no unanimity).

With regard to the number of programmes, IRDAC would favour a strong reduction to 6 or 8, which should focus on specific themes of interest to European industry. These themes do not necessarily have to coincide with the organisational structures of the European Commission.

The technical annexes (workplans) of the specific programmes should not be too detailed in order to ensure flexibility and be updated regularly (every year).

"It is easy to over-manage and under-utilise research".

A special fund should be created to allow support for those projects which are of an inter-disciplinary nature and cut across the areas covered by the specific programmes.

The calls for proposals should be well targeted and organised at regular intervals. The decision of the Commission to publish calls for proposals on fixed dates is welcomed since this offers transparency and ensures equal opportunities for all interested parties. However, the door should be opened for accepting "spontaneous proposals" of high quality and launching special calls for urgent issues.

The Commission should continue simplifying the application material (e.g. the information requested from RTD proposers) and examine new ways for the submission of proposals (e.g. on-line or via diskette).

Special arrangements such as the pre-screening of proposals should be developed (in a delocalised way) to encourage the submission of high-quality proposals.

Oversubscription is still a major problem and requires special measures e.g. by setting clearer priorities for the calls and continuing experiments such as the pre-screening of proposals.

IRDAC considers the current Commission methodologies for evaluating project proposals — anonymous peer review — sound, but would favour more transparency. As an example, IRDAC believes that all evaluation criteria should be published during the launch of the calls for proposals (no hidden criteria!). In addition, the Commission should indicate the relative weight of the different criteria.

IRDAC strongly believes that during a call for proposals, the names of the experts who will evaluate the project proposals should remain confidential. However, it might be considered to publish the experts' names at the end of each programme. In any case, IRDAC favours a frequent rotation of experts and more openness on the ways in which they are chosen (call for experts?). The European Commission should ensure that, during each evaluation, there is a fair balance between experts coming from academia and those coming from industry.

Reaction by the European Commission to proposers should be quick (as a general rule within 2 months after the closing date of the call). The reasons for rejecting proposals should be indicated to the applicants.

Contract negotiation should be less time-consuming (maximum duration of one month) and payments made by the Commission to successful applicants speeded up.

The special measures which the European Union has set up for SMEs are welcomed. In particular, the open call and the two-step evaluation procedure are an improvement. In the context of Framework Programme V, in particular the action of cooperative research (CRAFT), addressing

those SMEs that face technological problems, but do not possess their own research facilities, should be continued in a more centralised way.

Upon the completion of each RTD programme, there should be a thorough evaluation by independent experts, which should provide the basis for the definition of future actions. Also, mid-term evaluations are considered necessary, to allow an assessment of the progress made and to re-direct, cancel or reinforce certain actions. IRDAC believes that programme evaluation can only be successfully carried out if the programmes have clearly-defined and measurable objectives.

“There are three key questions for programme evaluations:

- **Have the defined objectives been achieved?**
- **Have the key players (industry) taken part?**
- **Have new players come in?”**

More attention should be given to informing the broader public of the necessity of research at Community level and on concrete results of RTD projects and programmes.

Finally, IRDAC believes that the experience obtained so far with the co-management of certain RTD programmes by different Commission Directorates General has not been very positive (the problem of shared responsibility). A further concertation under the responsibility of the research directorates would, therefore, seem appropriate.

“To ensure a successful implementation of the RTD activities of the European Union, an efficient management of programmes and projects is a prerequisite. The key components of such a management should be: quality and transparency. Quality to guarantee that taxpayers’ money is allocated in a responsible way. Transparency to show to European industry that the rules of the game are clear, fair and straightforward, and that the RTD activities of the European Union offer equal opportunities to all interested parties.”

GLOSSARY

BRITE	Basic Research in Industrial Technology for Europe
BRITE-EURAM	Basic Research in Industrial Technology for Europe-European Research on Advanced Materials
COST	European Cooperation in the field of Scientific and Technical Research
CRAFT	European Cooperative Research Action for Technology
EC	European Commission
ESPRIT	European Strategic Programme for Research and Development in Information Technologies
ETAN	European Technology Assessment Network
EU	European Union
EUREKA	Intergovernmental Agreement for Industrial and Market Oriented Research
FAIR	Fisheries and agro-industrial Research
GATT	General Agreement of Tariffs and Trade
GATT-TRIPS	GATT-Agreement on Trade Related Aspects of Intellectual Property Rights
ICT	Information and Communications Technologies
IRDAC	Industrial Research and Development Advisory Committee of the European Commission
IPR	Intellectual Property Rights
RTD	Research and Technological Development
SME	Small and Medium-sized Enterprises

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IRDAC OPINION — TOWARDS FRAMEWORK PROGRAMME V

Luxembourg: Office for Official Publications of the European Communities

1996 – 51 pp. – 14.8 x 21.0 cm

ISBN 92-827-7620-4

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