

Commission of the European Communities

Evaluation of the R&D Community Programme in primary and secondary Raw Materials (1982-1985) Progress of the Programme (1986-1989)



Acronyms and abbreviations used in the report

A C P M. : Advising Committee on Programme Management

CEC : Commission of the European Community

CGC: Comité de Gestion et de Coordination

CREST : Comité de la Recherche Scientifique et Technique

E C : European Community

E E C : European Economic Community

M S M : Metals and mineral substances

R & D : Research and Development

R D F : Refuse Derived Fuel

R M : Raw Materials

R N F : Recycling of Non-Ferrous metals

R U W : Recycling of Urban and Industrial Waste

RUW: (for the on-going programme 1986-1989)
Recycling and Utilization of Waste

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Glossary of acronyms and abbreviations (see back of front cover)

I. INTRODUCTION

1. Foundation of the authority

The authority for the panel to perform an evaluation is founded on the endorsement by the Council of Ministers of the Commission's communication "A Community Plan of Action relating to the evaluation of Community Research and Development" (OJ No. C 14 of 20.01.1987).

2. <u>Terms of Reference</u> (Details in Annex 4)

On the basis of the Evaluation Plan of Action [COM(86)660 final (J.O. 87/C 14/06)] the panel is to assess the following:

- the scientific and technical achievements of the programme or activity taking into account its original objectives and milestones, and whenever relevant of changed circumstances;
- the quality and practical relevance of the results including (whenever relevant) commercial development and exploitation, and possible spin-offs;
- the effectiveness of management and of the use of resources;
- the programme's or activity's contribution to the development of Community policies and to the social and economic development of the Community;
- the benefits resulting from the implementation of the programme or activity at the Community level (Community added value).

Quantitative indicators will be used whenever appropriate.

3. <u>Composition of the Panel</u>

Mr. K. SANGSTER (Chairman) Consultant Metallurgist RTZ Ltd (United Kingdom - LONDON)

Mr. Y. ACHLIOPTAS Director of Sales Manufacturing, Trading and Mining (Greece - ATHENS)

Mr. M. ARAUS QUILEZ Technical Director of Minerconsult (Spain - MADRID)

Professor P. BRUCK
Professor of Geology - University College (Ireland - CORK)

Mr. L. BUBENICEK Head of Department - Division Mines - SNEAP (France - PAU)

Mr. G. TOMASSETTI Responsible for New Activities on Energy conservation of ENEA (Italy - ROMA)

4. Evaluation Procedure

4.1. Meetings

The panel held five two days meetings and two one day meetings between October 1988 and June 1989 (the organization of the work of the panel from October to February was largely dictated by the production of an Interim Report prepared at the request of the Commission).

4.2. Interviews and Questionnaire

The views of the contractors and the analysis of the impact of the programme were obtained by means of 50 face-to-face interviews with contractors and the mailing of a questionnaire to all contractors. The interviews were conducted by Research Associates (Stone) Ltd from the UK. Their aim was to get a qualitative input from the

contractors about the administration and management of the programme, the extent to which the objectives of the contracts were met and the effects of the EC grant availability on the projects. Interviews were conducted with senior respondents and typically lasted 1½ hours.

In order to have reliable statistics (including the distribution by sub-programme and by country), GMV Conseil from France was asked to send a questionnaire to all contractors. Out of the original group of 218 contracts, 107 contractors (corresponding to 124 contracts) replied. The aim of the survey was to have a statistical description of the contractors, and especially the analysis of the collaborative links created by the programme as well as addressing all the other relevant aspects determined by the terms of reference.

Both teams worked in close connection with the evaluation panel and preliminary results were provided to the panel when drafting the interim report. The detailed findings of both surveys are set out in Annexes 8 and 9.

4.3. Study of Summary Reports and Final Reports

For the 1982 - 1985 phase of the programme in the fields "Metals and Mineral Substances" and "Recycling of Non-ferrous Metals" the panel studied the final summary reports. The panel chose also a sample of 24 full final reports for closer examination of the results of the respective projects.

The Director of DG XII-E appointed Dr. D.V. Jackson from the Warren Spring Laboratory, UK, in order to provide the panel with detailed information on the history, management and result of the programme "Recycling of Urban and Industrial Waste". Dr. Jackson met with the panel and released a detailed report.

5. <u>Presentation of the report</u>

The report is divided into three main sections:

Executive Summary

Evaluation Report

Annexes

The reports of the consultants are included in the Annexes 8 & 9.





II. EXECUTIVE SUMMARY

This executive summary sets out the major issues revealed during the evaluation process and presents these in terms of conclusions and recommendations.

CONCLUSIONS

(3)

1. Need for an R & D Policy in the field of Raw Materials

- There is a need for a properly agreed coherent European R & D policy in the field of Primary and Secondary Raw Materials commensurate with the size of the business to prevent Europe becoming a dematerialised society and to give improved strategic equilibrium between basic and manufacturing industries.
- There would appear to be compelling reasons to consider that the recycling of wastes should be part of an environmental programme as it is unquestionably environmental considerations and socio-economic constraints that are the driving force in such matters. This is in direct contrast to the original concepts in the industrial climate of the mid-seventies when "waste based" resources appeared significant.
- Being an organisation at a supranational level, the CEC has to promote actions which would benefit the Community in securing the social and economic development which will enable it to play a world leading role as it has for the past ten centuries. These actions would be derived from a well defined policy which cannot be a simple aggregate of national considerations. This has to be applied, as far as the raw materials are concerned, to a critical industrial area as, for the major part of its supply, the European countries are relying on foreign countries with the attached dependency and risks. In addition to the general trend

of suppliers becoming more and more involved in downstream activities with subsequent rationalisation of related jobs, the supply situation is directly affected by changing economic and political events. Raw materials in general aspects are analogous to energy and food. The policy which is needed has to respond to the clearly defined objectives of securing the supply to maintain the concerned industries and properly address such issues as 'foreign' projects and third country collaboration including equipment and service supplies.

2. Funding and Scope

- The level of funding is totally inappropriate to the size, benefit and diversity of the raw materials business in Europe which is of the order of 50 billion Ecu. The scope, objectives and the available budget are therefore seen as incompatible. The programmes of the CEC represent partial answers to the industry's problems, by supporting the R & D activities. The 3 pluriannual programmes launched are defined by the years of actual research activities, under the following sub-programmes.

Primary raw materials :

1978 - 1981 for a funding budget of 18 Mio Ecu 1982 - 1985 25 Mio Ecu 1986 - 1989 20 Mio Ecu

Secondary raw materials: (a) Recycling of non ferrous metals

(b) Recycling and utilisation of waste

1979 - 1982 for a funding budget of 9* Mio Ecu

1982 - 1985 6.5 Mio Ecu

1986 - 1989 10 Mio Ecu

* some funds incorporated until 1985.

The budget allocations are not of the order of magnitude to really have an effective impact on the European situation in this industrial domain considering its importance in terms of capital and labour involved and knowing moreover its diversity. This in the perspective that the raw materials industry is mature and has through the very cyclic nature of its economic development become underfunded to the point where its competitiveness is impaired, thereby putting at risk several areas rated by the CEC as crucial for the development of Europe. This is a very different scenario to that pertaining to the recycling of urban wastes in which recycling activity was generated by depression and the energy crisis.

- Although numerous individual projects have been supported, they do not adequately cover the majority of the aspects outlined by the objectives, and furthermore due to splitting are not adequately focused on the critical ones. The strategy adopted to support such numerous projects has led to a majority of projects being related to local or specific subjects. The step taken for the current 1986-1989 programme to favour plurinational projects is definitively in the right direction, but still not enough to create the conditions for answering industry wide problems at the Community level.

Technical Content

- The actual technical content of the programmes to date is of the highest standard. The panel has nothing but praise for the results from the individual projects. There has been a very high level of measurable success, and many projects have led to further work and in some cases to the development of industrial equipment and processes as well as generally improving mineral exploitations.

- A technically based evaluation was conducted on behalf of the CGC in mid-1988 and the present panel agrees entirely with its conclusions. This should not be in fact surprising, as the R & D activities performed in the various European organisations have always been recognised as of top level quality and innovative. But it must also be recognised that the system as applied induces a strong selection which besides the elimination of non precisely fitting projects in the call for tenders, privileges the bodies which are themselves able to perform their R & D activities in a continuous manner.
- The present R & D programme format is seen as only one aspect of the Commission's ideal role and simply spending money on backing winners out of what are generally good project submissions is not seen as sufficient to obtain a return for the investment.
- The provision of relatively small funds for a wide range of activities, as well as being a diffusion of effort, also leads to problems of overlap with national programmes of industrial assistance and individual company obligations. In the sector of RUW the co-ordinated action was the most effective project mechanism.

4. Added Value

- The added value to the Community of the programmes to date is difficult to quantify but is without doubt several orders of magnitude over the cost. The benefit to the Community is still small considering the huge industrial mass involved serving only to highlight the rather narrow targeting and selection exercises brought about by the prevailing budget constraints.
- Added value is a very specific means of appreciation of the use of money. It can be used objectively when the outcome of funding

can be calculated with the same terms. It becomes a more critical exercise when the added value has to be defined in subjective terms. There is no doubt that, due to the quality of the research teams and groups supported, any result is a positive step in knowledge acquisition even if the result closes some doors, or cannot be followed by direct applications.

- Some results have been highly positive for the Community; for example, the discovery of new orebodies, mainly when dealing with highly scarce substances. But it remains questionable if it is the correct role of the CEC to substitute itself for companies in exploration activity unless it is a result of supporting enabling technologies. It has to be recognised that some projects funded in exploration (geology, geophysics, etc) have been probably the most successful at a Community level providing new tools and new concepts for discovering ore deposits.
- In the case of RUW the most significant outcome was the identification of the problems and complexities of managing recycled material and in particular of refuse burning plants.

Relevance to Community

- All the programmes outline general relevant objectives to the Community's interest, in the field of primary and secondary raw materials.
 - The current programme places greater emphasis on multinational cooperation and activities within the EC countries.
- Although the projects can be placed, not without some difficulty in many cases, within the different sections of the programme, many are devoted to too specific objectives and also, in many cases, are directed towards solving situations of immediate economic importance rather than helping to develop more general

and fundamental techniques for long-term benefits to the EC as a whole.

- Probably because of the lack of a precise R & D policy on raw materials, a large amount of projects under consideration could have been developed inside national programmes. In these cases, the projects considered may lose relevance to the EC as a whole.

The above is not of course universally true and, for example, the RUW programme on Refuse Derived Fuels could be said to be truly trans-national and avoided the unjustified proliferation of environmentally damaging plants.

- This current programme contains more general objectives and a considerable effort has been made to reach multinational cooperation.
- The panel was therefore in broad agreement that the work done was relevant to both industry's requirements and Community needs. It was, however, agreed that the programme was very fragmented and covered a wide subject area in a sporadic way, ie dealing with some subjects quite fully while barely addressing issues of equal importance. This is a direct result of the aforementioned incompatibility between scope and funding, which in turn involves the selection of projects from an already selective and incomplete field of proposals.
- Such a situation can only be improved by at least two courses of action:
 - (a) A broadening of activities to encompass more generic and 'common' problems including multi-disciplinary actions. The greater use and generation of data bases thereby becoming a respected reference authority. For example like the highly

successful work done on the coordination programme on composting.

(b) A greatly increased staffing and budget to service (a) and promote worthy projects in a less selective and more interactive manner.

6. Effect of Previous Evaluation

- The previous panel made a clear recommendation for future EC programmes in the field of raw materials R & D .

They recommended to clearly define a <u>coherent and relevant</u> European R & D policy on raw materials so as to enable the Community to design a strategy for <u>long-term</u> Community advantage.

- The current (1986-1989) programme contains more general objectives and considerable effort has been made to reach a multinational cooperation by focusing on some items of interest for various countries although industrial companies are still under-represented (municipal authorities in the case of RUW).
- Of special note was the <u>list</u> of points to be considered in order to develop the previously mentioned recommendation of defining the coherent European R & D policy. In the majority of cases it seems that these points have not been incorporated.
- Although focusing on the necessity of defining such an EC policy, it is found that the rest of the recommendations are still valid, especially those concerning the role of the Community in the sense of acting itself in providing services of cooperation rather than being involved directly in a large number of small projects.

- The panel therefore saw some evidence of the incorporation of recommendations from the previous evaluation, particularly with regard to the multinational project move and to some extent in the publishing of summary reports. With the best will in the world the panel concedes that this is perhaps not surprising, given the level of full time staffing and the prevailing financial constraints, that more progress has not been made.

7. Effectiveness of Management

- The small permanent staff currently bear the considerable load of monitoring initial evaluations and selection, monitoring progress, including site visits and assistance in compilation of the final reports; in addition to maintaining the necessary industrial and governmental contacts as well as the inevitable internal communications.
- Taking account of this, as well as the large number of small projects interesting very different scientific and technical areas involved in the programmes, the management provided must be considered highly professional and effective in strict technical terms. It is clear that an appointed consultation body (industrial based) available to the Commission staff would save much effort particularly in travelling.
- It is found, however, that the effectiveness of management could be increased if the effort of the Community in terms of direct project support, is concentrated on a smaller number of projects of more general interest than on a large amount of small projects on vario-discipline subjects. There is also a need for increased flexibility in order to support embryonic projects on a smaller scale (high potential / risk funding).

- The panel is of the view which is supported by the contractors' interviews conducted, that a more continuous form of project letting would be the preferred route, for both business and technical considerations, for the most effective use of project subsidy funding. The panel further considers that such a methodology is the only practical way of incorporating changing social and economic factors as well as the generally cyclic nature of the Raw Materials business.
- It is quite clear that in view of the very small staff allocation, the current management is impossibly constrained in terms of work load but nevertheless exhibited considerable energy and general technical competence in achieving what they did. The crossboundary co-operation and co-ordination both within the Commission and with third parties which has been achieved is all the more creditable given the small number of individuals involved. It is the unanimous opinion of the panel that the understaffing is not in the best interests of the Community, and that a larger group of permanent officers is required for what is a very important role for Europe.
- Given the proper resolutions of the foregoing considerations, there is no reason why the 12 star badge should not be synonymous whith high quality development and a source of generally accepted standards.

RECOMMENDATIONS

Foreword

- The panel felt it necessary to augment its recommendations beyond the strict limits of the terms of reference to a broader consideration of the needs of the European raw materials industry, and more particularly as to how the Commission could satisfy these and aid the Community as a whole. The panel considered that this could be particularly helpful in defining the future framework programmes.
- There is at present no central focus for the Community's raw materials industry's activities and the panel is of the view that a clearly identifiable central body providing both support for projects and information on general, relevant subject matter could and should provide a much needed avenue for technology transfer and development. In the process of defining an appropriate policy and strategy the actual areas of business also require definition, for example the panel is of the opinion that industrial minerals should be fully incorporated. In addition it is recommended that the types of project work conducted under the RUW subprogramme should be accommodated in other appropriate programmes and as such the following recommendations would be prepared on the basis that this would be done.

2. Role of the Commission

- It is the panel's view that the Commission's role should be modified to be a more prominent pro-active one whereby it operates at a generally higher and more generic level than at present.
- The present role of providing funds for worthy projects should be continued but on a larger unit and more common benefit basis, but with some allocation of funds for smaller innovative projects.

- The Commission should feature prominently in providing an EC basis for information and technology interchange similar to the role of the USBM. This will also require legislation and fiscal components. The Commission must also ensure adequate correlation and cooperation of all associated programmes or similar groups, for example¹, to ensure that sufficient activity is maintained in basic knowledge acquisition and transfer, and to enable industrial development projects to be generated.
- It was felt that the actual execution of technical project work should be left to contractors on the whole. This does not mean that the Community should not develop its own physical resources but the danger in doing so before it becomes a respected and authoritative information and reference unit is that such facilities may be forced to go down-market and become just another competitive contractor in order to survive.
- Whilst it is recognised that the present system is a force for good, it does not have a clear future in isolation and does not, in the panel's view, represent the best added value route for all of the Community funds of R&D.
- It is recommended that an adequately staffed <u>Scientific and Technical Bureau of Raw Materials</u> be set up to conduct the following:
 - (a) A directory.
 - (b) A publishing arm for adequate and rapid dissemination of reports on projects, workshops and seminars.
 - (c) Conduct comprehensive surveys of strategic market areas
 - (d) Hold the necessary conferences to promote technology transfer.
 - (e) Help develop industry standards and norms.

¹ DG III, DG XI, DG XII, DG XIII and DG XVII

- (f) Support general projects on wide applicability subjects on trans/multi national bases and on a rolling continuous evaluation time frame.
- (g) Support innovation.
- A prime aim of the permanent Commission staff should be to produce a comprehensive directory which would detail all ongoing research activities in the raw materials field taking place throughout the EC and in associated countries with whom links exist at present, or may be established in the future. This directory would need to be continuously updated and would include all projects funded by the EC since the first Raw Materials Programme (1978-81), and all EC funded projects of subsequent and current programmes, and as complete information as can be obtained on all other relevant R & D work in the private, semi-private and public sectors. Consideration should also be given to include facilities and equipment. The directory which would form the principal EC raw materials data base, should have a universal distribution, and should be accessible through one of the EC computer networks.
- The panel recommends that proper project priorities require a background of relevant supply/demand information and that the Commission is perhaps the best of all instruments to conduct this role.
- Some attempts have been made over the years to take account of the Community's needs in the raw materials sector both by the permanent Commission staff in charge of the Raw Materials programme and by the Council. It is essential that periodic, continuously updated surveys of the supply and demand of raw materials in the Community be undertaken. These surveys will be assisted by the compilation of the directory. However, in addition detailed quantitative supply and demand data for each Member State will need to be collected.

- The survey should lead to a continuously updated analysis of the strategic implications of variations in supply/demand ratio throughout the EC, and of the short and long term actions to be taken by the Community. In addition, the survey will provide crucial data on EC know-how in the raw materials sector, on the socio-economic effects within the Community, and on the degree of self-sufficiency in raw materials. Such action will also clarify the often misleading scenarios which can develop in the short term given the highly cyclical nature of the Raw Materials business.
- At present R & D proposals emanate from private, semi-private and public bodies of the various Member States and are part funded or not, according to their relevance to the programme. The panel considers that the larger amount of the funding which is currently awarded to a smaller number of transnational projects than was the case with earlier programmes is of much more value to the Community as a whole than was the situation previously. However, if strategic and market surveys are carried out as recommended above, the EC will be in a much stronger position to both define and to direct the nature of the projects to be funded.

Liaison

- The panel strongly recommends that the relationship between the EC and the National bodies responsible for R & D funding be carefully re-examined in the light of the other recommendations herein so that a proper encapsulation within an R & D policy on raw materials can be achieved. In this way definite and differing roles can be most effectively enacted.
- This depends upon the proper actions of the advisory Committee and therefore requires effective communication and understanding between them and the Commission staff. In addition it would be highly desirable that this communication and understanding would be extended to appropriate industrial bodies.

4. Comment on future Programme

- The next programme (proposed 1989-92) follows the general modus operandi of the previous programmes. The panel recommends that this should proceed unhindered on the basis that <u>real</u> consideration is given to revising the framework programme and therefore the role of the Commission's effort in the field of raw materials.
- In terms of future programmes the panel recommends these should incorporate:
 - (a) Clarification of the domain of responsibility so as to adequately represent the "minerals" industry.
 - (b) A greatly increased level of staffing and funding corresponding to the real importance of the "minerals" industry to the Community.
 - (c) A more flexible approach to subprogrammes classification, funding allocation and a more interactive role in project formulation.
 - (d) The awarding of the bulk of the project funding to fewer, larger more generic trans-national projects.
 - (e) A more effective publications system.
 - (f) A steady state of rolling project proposals, evaluation and letting of contracts.
 - (g) The development of a centralised information service on a bureau basis.
 - (h) A more appropriate subdivision of recycling and other appropriate programmes

¹ The term "minerals" covers inorganic natural raw materials.



II. RESUME

Dette resume omfatter de vigtigste spørgsmål, der blev behandlet under evalueringen, i form af konklusioner og anbefalinger.

KONKLUSIONER

1. Behov for en F&U-politik på råstofområdet

- Der er behov for en velovervejet samstemmende europæisk F&U-politik inden for primære og sekundære råstoffer, som står i et rimeligt forhold til markedets størrelse, således at Europa ikke bliver et råstoffattigt samfund, og for at opnå en bedre strategisk balance mellem råstofindustrier og fremstillingsindustrier.
- Der er tvingende grunde til at betragte genbrug af affald som en del af miljøprogrammet, da det unægteligt er miljøbetragtninger og samfundsøkonomiske nødvendigheder, der er den drivende kraft i dette foretagende. Dette står i direkte modstrid med den oprindelige idé i industrikredsene i midten af halvfjerdserne, hvor "affaldsbaserede ressourcer" så ud til at være af væsentlig betydning.
- Som en overnational organisation må EF-Kommissionen fremme foranstaltninger, der gavner Fællesskabet ved at sørge for en samfundsmæssig og økonomisk udvikling, der sætter Europa i stand til at spille den førende verdensrolle, den har haft de sidste tusinde år. Disse foranstaltninger skal udspringe af en velafgrænset politik, som ikke blot kan være et simpelt sammenkog af nationale hensyn. For råstoffernes vedkommende skal denne politik anvendes på et kritisk industriområde, da de europæiske lande må hente hovedparten af deres forsyninger fra tredjelande, med den dermed forbundne afhængighed og risiko. Ud over den generelle tendens til at leverandørerne bliver mere og mere involveret i efterfølgende produktionsled med de rationaliseringsmuligheder dette kan give for relateret virksomhed, påvirkes forsyningssituationen direkte af skiftende økonomiske og politiske begivenheder. Råstoffer har visse generelle lighedspunkter med energi og levnedsmidler.

Den påkrævede politik skal stile mod klart definerede mål med hensyn til forsyningssikkerhed, så de berørte erhvervsvirksomheder kan overleve og uden videre gå i lag med emner som "udenlandske" projekter og samarbejde med tredjelande, herunder forsyninger med udstyr og tjenesteydelser.

2. Finansiering og område

- Finansieringens omfang står slet ikke i rimeligt forhold til størrelsen, gavnen og mangfoldigheden af råstofomsætningen i Europa, der er af en størrelsesorden på 50 mia ECU. Anvendelsesområdet, målsætningerne og det budget, der er til rådighed, må derfor ses som uforenelige.

EF-Kommissionens programmer imødekommer delvis industriens problemer ved at støtte F&U-aktiviteter. De tre flerårige programmer, der er iværksat, er defineret ved de år, hvor der rent faktisk er gennemført forskningsaktiviteter, under følgende delprogrammer.

Primære råstoffer:

1978 - 1981	med et finansieringsbudget på	18 mio ECU
1982 - 1985		25 mio ECU
1986 - 1989		20 mio ECU

Sekundære råstoffer: a) Genanvendelse af non-ferro metaller b) Genanvendelse og nyttiggørelse af affald

1979 - 1982	med et finansieringsbudget på	9*	mio ECU
1982 - 1985		6.5	mio ECU
1986 - 1989		10	mio ECU

^{*} Visse midler medregnet indtil 1985.

Bevillingerne på budgettet er ikke af en sådan størrelse, at de virkelig har effektiv indflydelse på den europæiske situation på dette industriområde i betragtning af områdets vigtighed med hensyn til involveret kapital og arbejdskraft og ydermere på baggrund af dets mangfoldighed. Dette skal ses på baggrund af, at råstofindustrien har en lang udvikling bag sig og gennem den meget cykliske natur i dens økonomiske udvikling er blevet underfinansieret til det punkt, hvor industriens konkurrenceevne er svækket, hvorved flere områder, der af Kommissionen er blevet betegnet som af afgørende betydning for Europas udvikling, kommer i fare. Dette er et helt andet scenario, end det der er forbundet med genanvendelse af byaffald, hvor genbrugsaktiviteten blev fremkaldt af depressionen og energikrisen.

- Selv om der er ydet støtte til talrige enkeltprojekter, dækker de ikke i tilstrækkelig grad flertallet af de aspekter, der er gjort rede for i målsætningerne, og på grund af opsplitning er støtten endvidere ikke blevet tilstrækkeligt koncentreret omkring de vigtigste aspekter. Den vedtagne strategi med at yde støtte til så mange projekter har medført, at de fleste projekter vedrører lokale eller specifikke emner. Det skridt, der i det nuværende program for 1986-1989 er taget til fordel for flernationale projekter, går helt bestemt i den rigtige retning, men det er stadig ikke nok til at skabe de betingelser, der skal til for at imødekomme industriens omfattende problemer på EF-plan.

3. Teknisk indhold

- Det aktuelle tekniske indhold af programmerne til dato er af højeste standard. Panelet har kun ros til resultaterne fra de enkelte projekter. Der har været særdeles mange målelige resultater, og mange projekter har ført til yderligere arbejde og i visse tilfælde til udvikling af industrielt udstyr og industrielle processer samt til generelt bedre malmoparbejdning.

- En teknisk baseret evaluering blev gennemført på CGC's vegne midt på året 1988, og det nuværende panel er fuldstændig enig i udvalgets konklusioner. Dette er ikke mærkeligt, da de forskningsaktiviteter, der gennemføres i de forskellige europæiske organisationer altid har været anset for værende af førsteklasses kvalitet og innovativ. Men det må også erkendes, at systemet, således som det anvendes, medfører en streng udvælgelse, som udover frasiningen af projekter, som ikke helt passer ind i indkaldelsen af forslag, priviligerer organer, som selv er i stand til at gennemføre deres F&U-aktiviteter på et kontinuerligt grundlag.
- Formatet af det nuværende F&U-program ses kun som et aspekt af Kommissionens ideale rolle, og blot at bruge penge på at hjælpe vindere blandt de generelt gode projekter, der forelægges, ses ikke som tilstrækkeligt til at opnå et afkast fra investeringen.
- Tilvejebringelsen af forholdsvis små midler til en lang række forskellige aktiviteter fører, samtidig med en spredning af indsatsen, også til problemer med overlapninger med nationale programmer til støtte for industrien og individuelle selskabers forpligtelser.

I forbindelse med genanvendelse og nyttiggørelse af affald var den samordnede aktion den mest effektive projektmekanisme.

4. Værditilvækst

- Det er vanskeligt at sætte tal på værditilvæksten i Fællesskabet for de hidtidige programmer, men den er utvivlsomt mange gange større end omkostningerne. Den gavn, som Fællesskabet har heraf, er stadig lille, i betragtning af den store industrimasse, der er involveret, hvilket blot understreger den ret smalle mål- og udvælgelsesmargen, som de fremherskende budgetvanskeligheder har givet anledning til.
- Værditilvækst er et meget specifikt middel til vurdering af anvendelsen af pengemidler. Det kan anvendes objektivt, når resultatet af en finansiering kan beregnes på samme grundlag. Det bliver en vanskeligere opgave, når værditilvæksten skal defineres i subjektive vendinger. Der er ingen tvivl om, at ethvert resultat, i betragtning af kvaliteten af de forskerhold og grupper der støttes, er et positivt skridt med hensyn til indhøstet viden, også selv om det resulterer i lukningen af visse døre, eller ikke kan opfølges med direkte anvendelsesformål.
- Visse resultater har været særdeles positive for Fællesskabet. For eksempel opdagelsen af nye malmforekomster, navnlig i forbindelse med meget følsomme stoffer. Men det er fortsat tvivlsomt, om det er den rette opgave for EF-Kommissionen at sætte sig i selskabernes sted ved den aktive efterforskning, medmindre det er et led i støtte til kompetencegivende teknologier. Det må erkendes, at visse finansierede efterforskningsprojekter (geologi, geofysik osv.) sandsynligvis har været de mest effektive på EF-plan og ført til nye redskaber og nye metoder til opdagelse af malmforekomster.
- I forbindelse med genanvendelse og nyttiggørelse af affald var det vigtigste resultat identificeringen af de komplicerede problemer med forvaltningen af genbrugsmaterialer, herunder navnlig affaldsforbrændingsanlæg.

5. Betydning for Fællesskabet

- Alle programmerne indeholder generelle relevante målsætninger af betydning for Fællesskabet inden for primære og sekundære råstoffer.
 I det nuværende program lægges der større vægt på multinationalt samarbeide og aktiviteter inden for EF-landene
- Selv om projekterne, dog i mange tilfælde ikke uden vanskeligheder, kan placeres inden for forskellige afsnit i programmet, er mange rettet mod alt for specifikke mål, og de er også i mange tilfælde rettet mod løsningen af problemer af øjeblikkelig økonomisk betydning frem for at bidrage til udviklingen af mere generelle og grundlæggende teknikker med langsigtede fordele for EF som helhed.
- Sandsynligvis på grund af mangelen på en præcis F&U-politik for råstoffer kunne en lang række af de overvejede projekter være blevet udviklet inden for nationale programmer. I sådanne tilfælde kan de overvejede projekter miste deres relevans for EF som helhed.

De ovennævnte forhold er naturligvis ikke nogen universel sandhed, og for eksempel kunne programmet for forædlet affaldsbrændsel under "genanvendelse og nyttiggørelse af affald" siges at være virkeligt tværnationalt, og det bevirkede, at uberettiget udbredelse af miljøskadelige anlæg blev undgået.

- Det nuværende program indeholder mere generelle målsætninger og der er gjort en betydelig indsats for at nå frem til et multinationalt samarbejde.
- Der var derfor bred enighed i panelet om, at det gennemførte arbejde var relevant både for industriens krav og Fællesskabets behov. Der var imidlertid også enighed om, at programmet var meget fragmentarisk og dækkede et bredt emneområde ret sporadisk, dvs. at det behandlede visse emner i dybden, medens andre emner af samme vigtighed kun blev sparsomt berørt. Dette er en direkte følge af ovennævnte uforenelighed mellem arbejdsområde og finansiering, som igen omfatter udvælgelse af projekter fra et allerede selektivt og ufuldstændigt forslagsområde.
- Dette forhold kan kun forbedres via to aktionslinjer:
- a) En udvidelse af aktiviteterne, så de kommer til at omfatte mere generelle og 'fælles' problemer, inklusive tværfaglige aktioner. Større anvendelse og generering af databaser, hvorved man bliver en respekteret reference-autoritet. For eksempel som det særdeles succesrige arbejde, der blev udført i samordningsprogrammet vedrørende kompostering.
- b) Et kraftigt øget personale og budget til at betjene (a) og fremme værdige projekter på en mindre selektiv og mere interaktiv måde.

6. Virkningen af den foregående evaluering

 Det forrige panel afgav en klar anbefaling for fremtidige EØF-programmer inden for F&U på råstofområdet.

Det anbefalede at fastlægge en klar <u>sammenhængende og relevant</u> europæisk F&U-politik for råstoffer, så Fællesskabet bliver i stand til at udforme en strategi til fordel for Fællesskabet <u>på lang sigt</u>.

- Det nuværende program (1986-1989) indeholder mere generelle målsætninger, og der er gjort en væsentlig indsats for at nå frem til et multinationalt samarbejde ved at fokusere på en række emner af interesse for forskellige lande, selv om erhvervsvirksomhederne stadig er underrepræsenterede (kommunale myndigheder for så vidt angår genanvendelse og nyttiggørelse af affald).
- Særlig bemærkelsesværdig var <u>listen</u> over punkter, der bør overvejes med henblik på videreudviklingen af den tidligere nævnte anbefaling med henblik på at fastlægge en sammenhængende europæisk F&U-politik. Det ser i de fleste tilfælde ud til, at disse punkter ikke er blevet indarbejdet.
- På trods af fokuseringen på behovet for at fastlægge en sådan EF-politik, findes resten af anbefalingerne stadig værdifulde, navnlig de anbefalinger, der vedrører Fællesskabets rolle med hensyn til selv at stille samarbejdstjenester til rådighed frem for direkte at blive involveret i en række små projekter.
- Panelet så derfor visse bekræftelser på, at anbefalingerne fra tidligere evalueringer havde haft indflydelse på programmet, navnlig i forbindelse med tendensen til multinationale projekter og til en vis grad ved offentliggørelsen af sammenfattende rapporter. Panelet må indrømme, at den med den bedste vilje i verden ikke kan finde det overraskende, at der ikke er opnået større fremskridt i betragtning af antallet af fuldtidsansatte og de herskende finansielle begrænsninger.

7. Forvaltningens effektivitet

- Det lille permanente personale bærer for øjeblikket den betydelige arbejdsbyrde med at overvåge de første evalueringer og den første udvælgelse, at overvåge fremskridtene, herunder besøg på stedet med bistand til at samle oplysningerne til de endelige rapporter. Endvidere må de sørge for de fornødne kontakter til industrikredse og ministerier samt de uundgåelige interne kommunikationer.
- I betragtning heraf samt det store antal små projekter vedrørende meget forskellige videnskabelige og tekniske områder, der indgår i programmerne, må den præsterede forvaltning betragtes som meget professionel og effektiv rent teknisk set. Det er klart, at en hertil udpeget konsulentvirksomhed (industribaseret) stillet til Kommissionspersonalets tjeneste kunne spare en stor indsats, navnlig med hensyn til rejser.

- Det er imidlertid opfattelsen, at forvaltningens effektivitet kunne øges, hvis Fællesskabets indsats med hensyn til direkte støtte til projekterne blev koncentreret om et mindre antal projekter af mere generel interesse frem for om et stort antal små projekter spredt på mange discipliner. Der er også behov for øget fleksibilitet med henblik på støtte til vordende projekter i mindre målestok (finansiering af projekter, der indebærer store muligheder i forhold til risikoen).
- Panelet er af den opfattelse, som er blevet understøttet af de interviewer, der har været med kontrahenterne, at en mere kontinuert form for projekt-udbud ville være at foretrække både af forretningsmæssige og tekniske årsager med henblik på at nå den mest effektive udnyttelse af finansiering af de støttede projekter. Panelet er endvidere af den opfattelse, at en sådan fremgangsmåde er det eneste praktiske middel til at inddrage skiftende sociale og økonomiske faktorer, samtidig med at der tages hensyn til råstofsektorens generelle cykliske natur.
- Det er helt klart, at den nuværende forvaltning i betragtning af det meget lille personale, der er tildelt, står over for en næsten umulig opgave med hensyn til arbejdsbyrde, men alligevel har præsteret betydelig energi og generel teknisk kompetence for at nå det, de har. Det tværgående samarbejde og den tværgående samordning både inden for Kommissionen og med tredjeparter, som er opnået, er så meget mere anerkendelsesværdig i betragtning af det lille antal personer, der er involveret. Det er panelets enstemmige opfattelse, at den manglende personaletildeling ikke er i Fællesskabets bedste interesse, og at der kræves en større gruppe af fastansatte tjenestemænd til en opgave, der er meget vigtig for Europa.
- Hvis der findes de rette løsninger på ovenstående betragtninger, er der ingen grund til, at det tolvstjernede flag ikke skulle blive synonymt med udvikling af høj kvalitet og en kilde til generelt accepterede standarder.

ANBEFALINGER

1. Forord

- Panelet har følt det nødvendigt at udvide kredsen af anbefalinger til ikke blot at omfatte panelets mandat i strengeste forstand, men også bredere betragtninger vedrørende den europæiske råstofindustris behov, herunder navnlig hvorledes Kommissionen kunne tilfredsstille disse behov til hjælp for Fællesskabet som helhed. Panelet mener, at dette kunne være særlig nyttigt ved fastlæggelsen af fremtidige rammeprogrammer.
- Der er for øjeblikket ikke nogen central fokusering på aktiviteterne i Fællesskabets råstofindustri, og panelet er af den opfattelse, at et klart identificerbart centralt organ, der både yder støtte til projekter og informerer om generelle, relevante emner, kunne og burde tilvejebringe et stærkt krævet middel til teknologioverførsel og -udvikling. Under fastlæggelsen af en egnet politik og strategi er der også behov for en nærmere definition på de faktiske arbejdsområder. For eksempel er panelet af den opfattelse, at industrimineraler bør medtages fuldt ud. Det anbefales endvidere, at de former for projektarbejde, der udføres under delprogrammet for genanvendelse og nyttiggørelse af affald, bør indpasses i andre egnede programmer, og følgende anbefalinger er udarbejdet under den formodning, at dette sker.

2. Kommissionens rolle

- Det er panelets opfattelse, at Kommissionens rolle bør ændres, så den bliver meget mere fremadvirkende, og derved kommer til at virke på et generelt højere og bredere niveau end for øjeblikket.
- Den nuværende rolle med at stille midler til rådighed for støtteberettigede projekter bør fortsætte, men på grundlag af større enheder og mere alment sigte, dog med en vis tildeling af midler til mindre innovative projekter.
- Kommissionen bør fremhæve sig ved at danne et EF-grundlag for udveksling af oplysninger og teknologi, svarende til den rolle, som USBM (United States Bureau of Mines) spiller. Dette vil også kræve forskriftsmæssige og afgiftsmæssige komponenter. Kommissionen skal også sørge for passende korrelation og samarbejde med alle associerede programmer eller lignende grupper, for eksempel i, så der kan opretholdes et tilstrækkeligt aktivitetsniveau i indsamlingen og overførslen af grundlæggende viden, og for at industrielle udviklingsprojekter kan sættes i gang.
- Panelet mener, at den faktiske gennemførelse af teknisk projektarbejde i det store og hele bør overlades til kontrahenterne. Dette betyder ikke, at Fællesskabet ikke bør udvikle sine egne fysiske ressourcer, men faren ved at gøre dette, inden det bliver en respekteret og autoritativ informations- og referenceenhed, er at sådanne faciliteter kan tvinges til at gå ud på markedet og bare blive endnu en konkurrerende kontrahent for at overleve.

¹ GD III, GD XI, GD XII, GD XIII og GD XVII

- Selv om det erkendes, at det nuværende system er en god ting, har det ikke set isoleret nogen klar fremtid, og det er efter panelets opfattelse ikke det bedste middel til at opnå en merværdi for Fællesskabets samlede finansiering af F&U.
- Det anbefales, at der oprettes et <u>teknisk-videnskabeligt kontor for råstoffer</u> med et tilstrækkeligt stort personale til varetagelse af følgende opgaver:
 - a) Udgivelse af en håndbog.
 - b) En publikationsenhed til passende og hurtig udgivelse af rapporter om projekter, workshops og seminarer.
 - Gennemførelse af omfattende undersøgelser af strategiske markedsområder.
 - d) Afholdelse af de nødvendige konferencer til fremme af teknologioverførsel.
 - e) Hjælp til udvikling af industrinormer og -standarder.
 - f) Støtte til generelle projekter om brede anvendelsesområder på tvær/multinationalt grundlag og med en rullende kontinuert evalueringstidsramme.
 - g) Innovantionsstøtte
- Et hovedmål for Kommissionens faste personale bør være at udarbejde en omfattende håndbog med oplysninger om alle de forskningsaktiviteter på råstofområdet, der er i gang i hele EF og i de associerede lande, hvormed der allerede er forbindelser, og hvormed der i fremtiden måtte blive knyttet forbindelser. Denne håndbog skal hele tiden ajourføres og skal omfatte alle projekter finansieret af EF siden det første råstofprogram (1978-1981), og alle EF-støttede projekter under de følgende og igangværende programmer, og så fuldstændige oplysninger, som der kan opnås, om alt andet relevant F&U-arbejde i den private, den halvprivate og den offentlige sektor. Det bør også overvejes at medtage anlæg og udstyr. Håndbogen der vil kunne blive den vigtigste EF-råstofdatabase, bør opnå almindelig udbredelse, og bør være tilgængelig gennem et af Fællesskabets datanet.
- Panelet anbefaler, at behørige projektprioriteter kræver en baggrund af relevante oplysninger om udbud og efterspørgsel, og at Kommissionen måske er det bedste af alle instrumenter til at udføre denne opgave.
- Der er i årenes løb gjort visse forsøg på at tage hensyn til Fællesskabets behov inden for råstofsektoren - både af Kommissionens faste personale med ansvar for råstofprogrammet og af Rådet. Det er vigtigt, at der regelmæssigt bliver gennemført konstant opdaterede undersøgelser af efterspørgsel og udbud af råstoffer i Fællesskabet. Disse undersøgelser vil blive understøttet med indsamlingen af oplysningerne til håndbogen. Det bliver endvidere nødvendigt også at indsamle detaljerede kvantitative data om udbud og efterspørgsel for hver enkelt medlemsstat.

- Undersøgelsen bør føre til en konstant ajourført analyse af de strategiske virkninger af udsving i forholdet mellem udbud og efterspørgsel i hele EF, og af de kortsigtede og langsigtede aktioner, der gennemføres af Fællesskabet. Undersøgelsen skal endvidere skaffe vitale data om Fællesskabets knowhow i råstofsektoren, om de samfundsøkonomiske virkninger inden for Fællesskabet og om graden af selvforsyning med råstoffer. Dette ville også klarlægge de ofte misvisende scenarier, der kan udvikles på kort sigt i betragtning af råstofsektorens stærkt cykliske natur.
- For øjeblikket fremsættes der forslag fra private, halvprivate og offentlige organer i de forskellige medlemsstater, og en del af disse finansieres, såfremt de er relevante for programmet. Panelet er af den opfattelse, at de større midler, der for øjeblikket tildeles til et mindre antal tværnationale projekter, end det var tilfældet under tidligere programmer, er af meget større værdi for Fællesskabet som helhed end den tidligere situation. Hvis der imidlertid gennemføres strategiske markedsundersøgelser som anbefalet i det ovenstående, vil EF være i en meget stærkere position både til at definere og til at dirigere arten af de projekter, der skal finansieres.

3. Forbindelser

- Panelet anbefaler kraftigt, at forbindelserne mellem EF og de nationale organer, der er ansvarlige for finansieringen af F&U på ny undersøges omhyggeligt i lyset af de andre anbefalinger heri, således at der kan opnås en rimelig indkapsling inden for en F&U-politik for råstoffer. Dette er den mest effektive måde til at spille nøje afgrænsede og forskellige roller på.

 Dette afhænger af det rådgivende udvalgs behørige aktioner og kræver derfor effektiv kommunikation og forståelse mellem dette udvalg og Kommissionens personale. Det ville endvidere være særdeles ønskeligt at denne kommunikation og forståelse blev udbredt til også at omfatte relevante industriorganer.

4. Bemærkninger til det kommende program

- Det næste program (foreslået for 1989-1992) følger de tidligere programmers generelle måde at fungere på. Panelet anbefaler, at dette sker uhindret, og at det reelt overvejes, at ændre rammeprogrammet og dermed den rolle, der tillægges Kommissionens indsats inden for råstoffer.
- Med hensyn til kommende programmer anbefaler panelet, at disse kommer til at omfatte:
 - a) Klarlægning af ansvarsområdet, således at "mineral"-industrien² bliver rimeligt repræsenteret.

² Ved mineraler forstås her uorganiske naturlige råstoffer.

b) Et kraftigt forøget personale- og finansieringsniveau svarende til den reelle betydning af Fællesskabets "mineral"-industri.

c) En mere fleksibel stilling til inddeling i delprogrammer og tildeling af støtte samt en mere interaktiv rolle i projektinformation.

d) Tildele størsteparten af midlerne til finansiering af projekter til færre, større, mere generelle tværnationale projekter.

e) En mere effektiv publikationsordning.

- f) En støt strøm af rullende projektforslag, evaluering og kontraktindgåelse.
- g) Udvikling af en centraliseret informationstjeneste på kontorgrundlag.
- h) En bedre inddeling af genanvendelsesprogrammet og andre relevante programmer.



II. KURZBERICHT

In diesem Kurzbericht werden die wichtigsten Aufgaben, die sich im Verlauf der Bewertung ergeben haben, dargestellt und anhand von Schlußfolgerungen und Empfehlungen erläutert.

SCHLUSSFOLGERUNGEN

1. Notwendigkeit einer FuE-Politik im Bereich Rohstoffe

- Eine kohärente europäische FuE-Politik im Bereich der Primär- und Sekundärrohstoffe ist geboten. Sie muß der Bedeutung dieses Bereichs angemessen sein. Dabei geht es darum, zu vermeiden, daß Europa eine Gesellschaft ohne Rohstoffe wird und darum, ein besseres strategisches Gleichgewicht zwischen Grundstoffindustrien und verarbeitenden Industrien zu fördern.
- Es gibt offensichtlich zwingende Gründe dafür, die Wiederaufbereitung von Abfällen als Teil eines Umweltprogramms zu betrachten, da ökologische Erwägungen und sozioökonomische Zwänge zweifellos die treibenden Kräfte in diesem Zusammenhang sind. Dies steht im Gegensatz zu früheren industriepolitischen Ansätzen Mitte der siebziger Jahre, als Abfälle vor allem zur Rohstoffgewinnung genutzt werden sollten.
- Als supranationale Einrichtung hat die KEG Maßnahmen zu fördern, die Gemeinschaft Sicherung gesellschaftlichen und zur der der wirtschaftlichen Entwicklung zugutekommen, damit vergangenen Jahrtausend eine Führungsrolle in der Welt übernehmen kann. Diese Maßnahmen werden sich aus einer klar festgelegten Politik ableiten, die nicht einfach die Gesamtsumme der nationalen Erwägungen sein kann. Dies muß, soweit es die Rohstoffe betrifft, auf einen schwierigen industriellen Bereich angewendet werden, da die europäischen Länder zum größten Teil auf Lieferungen fremder

Länder, einschließlich der damit zusammenhängenden Abhängigkeit und Risiken, angewiesen sind. Zusätzlich zu der allgemeinen Entwicklung einer verstärkten Beteiligung der Lieferanten an nachgeordneten Tätigkeiten und der daraus folgenden Rationalisierung entsprechenden Arbeitsplätze wirken sich verschiedene politische wirtschaftliche und Ereignisse direkt auf die Liefersituation aus. Ganz allgemein ist die Lage bei den Rohstoffen mit der im Energiesektor und bei den Nahrungsmitteln vergleichbar. Die hier erforderliche Politik muß den eindeutig festgelegten Zielen der Versorgungssicherheit zur Erhaltung der betroffenen Industrien gerecht werden und Aufgaben wie "ausländische" Vorhaben und die Zusammenarbeit mit Drittländern, einschließlich der Lieferung von Ausrüstung und Dienstleistungen, in geeigneter Weise angehen.

2. Finanzielle Unterstützung und Umfang

- Der Grad der finanziellen Unterstützung entspricht keineswegs dem Umfang, dem Nutzen und der Vielfältigkeit des Rohstoffgeschäftes in Europa, dessen Größeordnung etwa 50 Mrd ECU beträgt. Daher werden Umfang, Zielsetzungen und die verfügbaren Finanzmittel als inkompatibel angesehen.

Die Programme der KEG bieten durch Unterstützung von FuE-Tätigkeiten Teilantworten auf die Probleme der Industrie. Die drei eingeleiteten mehrjährigen Forschungsprogramme werden entsprechend den tatsächlichen Forschungstätigkeiten nach folgenden Teilprogrammen unterschieden:

Primärrohstoffe:

1978-81 mit einer finanziellen Unterstützung in Höhe von 18 Mio ECU 1982-85 25 Mio ECU 1986-89 20 Mio ECU

Sekundärrohstoffe:

- a) Wiederaufbereitung von Nichteisenmetallen
- b) Wiederaufbereitung und Nutzung von Abfällen

1979-82 mit einer finanziellen Unterstützung in Höhe von 9⁽¹⁾Mio ECU 1982-85 6,5 Mio ECU 1986-89 10,0 Mio ECU

Berücksichtigt man die Bedeutung dieses Industriezweiges anhand des eingesetzten Kapitals und der hier geleisteten Arbeit und kennt man darüber hinaus die Vielfältigkeit dieses Sektors, so sind die Mittelzuweisungen keineswegs so groß, daß sie tatsächlich bedeutende Auswirkungen auf die Iage dieses Sektors in Europa haben. Hierbei ist zu berückssichtigen, daß die Rohstoffindustrie einen hohen Entwicklungsstand erreicht hat und durch den stark zyklischen Verlauf ihrer wirtschaftlichen Entwicklung jetzt über so wenig Mittel verfügt, daß ihre Wettbewerbsfähigkeit beeinträchtigt ist, wodurch auch einige von der KEG als entscheidend für die Entwicklung Europas eingestufte Bereiche gefährdet werden. Dies ist eine ganz andere Situation als man sie im Bereich der Wiederaufbereitung städtischer Abfälle vorfindet, in dem das Recycling erst durch Wirtschafts- und Energiekrise ausgelöst wurde.

- Obwohl zahlreiche Einzelvorhaben unterstützt werden, decken diese nicht die Mehrheit der in den Zielsetzungen dargestellten Aspekte ab; außerdem sind die Vorhaben aufgrund der Aufteilung der Mittel nicht angemessen auf die kritischen Aspekte konzentriert. Die Strategie, die angenommen wurde, um eine so große Zahl von Vorhaben zu unterstützen, hat dazu geführt, daß die meisten Vorhaben sich mit lokalen oder besonderen Themen befassen. Der Schritt, der im Rahmen des derzeit laufenden Programms 1986-1989 unternommen wurde, um übereinzelstaatliche Vorhaben zu fördern, führt eindeutig in die richtige Richtung, reicht jedoch noch nicht aus, um die Bedingungen zur Lösung übergreifender Probleme der Industrie auf europäischer Ebene zu schaffen.

einschließlich einiger Mittel bis 1985

3. Technischer Inhalt

- Der tatsächliche technische Inhalt der bisherigen Programme genügt höchsten Ansprüchen. Die Sachverständigengruppe kann die Ergebnisse der Einzelvorhaben nur loben. Es ist bereits ein hoher Grad an meßbaren Erfolgen zu verzeichnen und viele Vorhaben haben zu weiteren Arbeiten und in einigen Fällen zur Entwicklung von Industrieanlagen und -verfahren geführt sowie allgemein den Abbau von Bodenschätzen verbessert.
- Mitte 1988 wurde vom Beratenden Verwaltungs- und Koordinierungsausschuß eine Bewertung nach technischen Kriterien durchgeführt, deren Ergebnisse die Sachverständigengruppe voll und ganz billigt. Dies ist keineswegs überraschend, da die von den verschiedenen europäischen Einrichtungen durchgeführten FuE-Tätigkeiten stets als außerordentlich qualifiziert und innovativ anerkannt wurden. Allerdings muß auch festgestellt werden, daß das System in seiner derzeitigen Anwendung eine strenge Auswahl bewirkt, durch die nicht Ausschreibung nicht genau entsprechende Vorhaben ausgeschlossen werden, sondern auch Einrichtungen bevorzugt werden, die selbst in der Lage sind, ihre FuE-Tätigkeiten kontinuierlicher Weise durchzuführen.
- Die Form der derzeitigen Fue-E-Programme wird als lediglich ein Aspekt der Rolle angesehen, die die Kommission im Idealfall spielen sollte, und die einfache Bewilligung finanzieller Mittel zur Unterstützung der "Gewinner" aus den allgemein guten Vorschlägen für Vorhaben erscheint als nicht ausreichend, um eine Gegenleistung für die Investition zu erhalten.
- Die Bereitstellung relativ geringer Mittel für ein breites Spektrum von Tätigkeiten sowie die Aufteilung der Anstrengungen führen auch zu Problemen der Überschneidung mit nationalen Programmen zur Unterstützung der Industrie und Verpflichtungen der einzelnen Unternehmen. Im Bereich des Recycling und der Nutzung von Abfall waren koordinierte Maßnahmem die wirksamste Vorgehenweise im Rahmen der Vorhaben.

4. Wertschöpfung

- Die Wertschöpfung der bisheringen Programme für die Gemeinschaft ist schwer zu quantifizieren, beträgt jedoch ohne Zweifel ein Mehrfaches der Kosten. Der Gewinn für die Gemeinschaft ist noch immer gering, verglichen mit der massiven Beteiligung im Bereich der Industrie, durch die die eher enggefaßten Zielsetzungs- und Auswahlverfahren, die durch die häufig vorkommenden Budgetbeschränkungen begründet sind, nur noch deutlicher werden.
- Die Wertschöpfung ist ein besonderes Mittel zur Bewertung des Einsatzes finanzieller Mittel. Es kann objektiv verwendet werden, wenn das Ergebnis einer Unterstützungsmaßnahme in der gleichen Weise errechnet werden kann. Schwieriger wird das Verfahren, wenn die Wertschöpfung nach subjektiven Kriterien zu ermitteln ist. Aufgrund der hohen Qualifikation der unterstützten Forscherteams und anderer Gruppen, besteht kein Zweifel darüber, daß jedes Ergebnis ein weiterer Schritt zu neuen Erkenntnissen ist, auch wenn das Ergebnis einige Wege verbaut oder nicht direkt in eine praktische Anwendung umgesetzt werden kann.
- Einige Ergebnisse waren von außerordentlicher Bedeutung für die Gemeinschaft; zum Beispiel die Entdeckung neuer natürlicher Erzvorkommen, insbesondere im Zusammenhang mit hochempfindlichen Stoffen. Allerdings bleibt es fraglich, ob es der eigentlichen Rolle der KEG entspricht, bei Explorationstätigkeiten selbst an die Stelle von Unternehmen zu treten, es sei denn, dies wäre ein Ergebnis der Unterstützung neuer Technologien. Hier muß eingeräumt werden, daß einige der im Bereich Exploration (Geologie, Geophysik usw.) unterstützten Vorhaben die wohl erfolgreichsten Gemeinschaftsebene waren und zu neuen Verfahren und Ansätzen für die Entdeckung von Erzlagerstätten geführt haben.
- Im Bereich des Recycling und der Nutzung von Abfall besteht das bedeutendste Ergebnis in der Ermittlung der Probleme und Komplexitäten des Umgangs mit wiederaufbereiteten Stoffen und insbesondere der Millverbrennungsanlagen.

5. Bedeutung für die Gemeinschaft

- Alle Programme beziehen sich auf für die Gemeinschaft allgemein bedeutende Zielsetzungen im Bereich der Primär- und Sekundärrohstoffe. Im derzeitigen Programm werden multinationale Zusammenarbeit und Tätigkeiten innerhalb der EG-Staaten besonders betont.
- Obwohl die Vorhaben wenn auch in einigen Fällen nicht ohne Schwierigkeiten - in die verschiedenen Teilbereiche des Programms eingeordnet werden können, befassen sich viele mit zu spezifischen Zielsetzungen und sind in einigen Fällen eher auf die rasche Lösung wichtiger Ökonomischer Probleme gerichtet als daß sie zur Entwicklung allgemeinerer und grundlegenderer Techniken zum langfristigen Nutzen der EG ingesamt beitragen.
- Möglicherweise aufgrund des Fehlens einer klaren FuE-Politik im Bereich der Rohstoffe konnte eine große Zahl der betreffenden Vorhaben im Rahmen nationaler Programme entwickelt werden. In diesen Fällen könnten die Vorhaben ihre Bedeutung für die EG insgesamt verlieren. Dies läßt sich natürlich nicht verallgemeinern und das Programm "Recycling und Nutzung von Abfall" über Brennstoffgewinnung aus Abfallstoffen kann als transnational im eigentlichen Sinne angesehen werden und hat die ungerechtfertigte Ausbreitung von umweltschädigenden Anlagen verhindert.
- Das derzeit laufende Programm enthält allgemeinere Zielsetzungen, und es wurden bedeutende Anstrengungen unternommen, um zu einer multinationalen Zusammenarbeit zu gelangen.
- Die Sachverständigengruppe ist sich daher weitgehend einig darüber, daß die geleistete Arbeit sowohl den Erfordernissen der Industrie als auch den Gemeinschaftsinteressen Rechnung trägt. Allerdings ist man der Ansicht, daß das Programm sehr zersplittert ist und einen umfassenden Themenbereich nur begrenzt abdeckt, so daß zum Beispiel einige Themen sehr ausführlich behandelt werden, während andere Fragen von gleicher Bedeutung nur kurz angesprochen werden. Dies ist

eine direkte Folge der bereits genannten Unvereinbarkeit zwischen Themenbereich und verfügbaren Mitteln, die ihrerseits wieder die Auswahl von Vorhaben aus einem bereits selektiven und unvollständigen Angebot von Vorschlägen bewirkt.

- Diese Lage kann nur durch mindestens zwei Arten von Maßnahmen verbessert werden:
 - a) Eine Erweiterung des Tätigkeitsbereiches, damit grundlegendere und "allgemeinere" Probleme einschließlich multidisziplinär Tätigkeiten erfaßt werden; Errichtung und verstärkter Einsatz von Datenbanken, um als Anlaufstelle anerkannt zu werden, wie dies beispielsweise die sehr erfolgreichen Arbeiten im Rahmen des Koordinationsprogramms über Kompostierung gezeigt haben.
 - b) Eine bedeutend vergrößerte personelle und finanzielle Ausstattung für die unter a) genannten Leistungen und weniger selektive sondern stärker interaktive Förderung geeigneter Vorhaben.

6. Auswirkungen der vorausgehenden Bewertung

- Die vorige Sachverständigengruppe gab eine klare Empfehlung für künftige EWG-Programme im Bereich der FuE von Rohstoffen ab.

Sie empfahl, eine kohärente und sachdienliche europäische FuE-Politik im Bereich der Rohstoffe eindeutig festzulegen, damit die Gemeinschaft eine Strategie zum langfristigen Nutzen der Gemeinschaft entwerfen kann.

- Das derzeitige Programm (1986-1989) enthält allgemeinere Ziele und es wurden bedeutende Anstrengungen unternommen, um zu einer multinationalen Zusammenarbeit zu gelangen; hierzu wurde der Schwerpunkt auf einige Themen gelegt, an denen mehrere Länder interessiert sind, obwohl Industrieunternehmen weiterhin unterrepräsentiert sind (das gilt für kommunale Behörden im Falle des Recycling und der Nutzung von Abfall).

- Bemerkenswert war das Verzeichnis der Punkte, die zur Umsetzung der oben erwähnten Empfehlung zur Festlegung der kohärenten europäischen FuE-Politik zu berücksichtigen sind. In den meisten Fällen sind diese Punkte offenbar nicht mit einbezogen worden.
- Obwohl der Schwerpunkt auf der Notwendigkeit der Festlegung einer solchen EG-Politik liegt, wird festgestellt, daß die übrigen Empfehlungen weiterhin gültig sind, insbesondere soweit sie die Rolle der Gemeinschaft als selbständig Handelnder bei der Bereitstellung von Dienstleistungen zur Zusammenarbeit und nicht so sehr als direkter Teilnehmer an zahlreichen kleinen Vorhaben betreffen.
- Daher sieht die Sachverständigengruppe einige Anzeichen für die Einbeziehung der Empfehlungen früherer Bewertungen, insbesondere bei der Entwicklung hin zu multinationalen Vorhaben und in gewissem Maße bei der Veröffentlichung von zusammenfassenden Berichten. Die Sachverständigengruppe räumt ein, daß es wohl nicht überrascht, daß aufgrund der Anzahl der Vollzeitbeschäftigten und der finanziellen Beschränkungen auch mit dem besten Willen keine größeren Fortschritte erreicht wurden.

7. Wirksamkeit der Verwaltung

- In der Regel muß eine geringe Zahl fest angestellter Mitarbeiter die enorme Aufgabe bewältigen, die ersten Bewertungen und die Auswahl der Vorhaben zu beobachten, die Fortschritte mitzuverfolgen, einschließlich Besichtigungen vor Ort und der Unterstützung bei der Abfassung der Abschlußberichte; hinzu kommen die Aufrechterhaltung der erforderlichen Kontakte mit der Industrie und den Regierungen sowie die unumgänglichen internen Kontakte.
- Berücksichtigt man dies und die große Anzahl kleiner Vorhaben, die sich auf sehr verschiedene wissenschaftliche und technische Bereiche der Programme beziehen, so muß die angebotene Verwaltung als äußerst kompetent und sehr wirksam im eigentlich technischen Sinne angesehen

werden. Hier liegt es auf der Hand, daß durch ein industrieorientiertes Beratungsgremium, an das sich die Mitarbeiter der Kommission wenden können, bedeutende Aufwendungen, insbesondere bei Dienstreisen, eingespart werden könnten.

- Allerdings ist festgestellt worden, daß die Wirksamkeit der Verwaltung erhöht werden könnte, wenn die Anstrengungen der Gemeinschaft im Bereich der direkten Unterstützung von Vorhaben stärker auf eine geringere Anzahl von Vorhaben von allgemeinerem Interesse konzentriert würden, als sich auf sehr viele kleine Vorhaben mit Themen aus den verschiedensten Disziplinen zu verteilen. Außerdem besteht Bedarf an einer größeren Flexibilität, um Vorhaben, die noch in den Anfängen stecken, in geringerem Ausmaß zu unterstützen (hohes Potential/Risikofinanzierung).
- Die Sachverständigengruppe ist der Ansicht, -die auch von den Vertragspartnern in den durchgeführten Befragungen vertreten wird -, daß eine kontinuierlichere Form der Vergabe von Vorhaben sowohl aus geschäftlichen als auch aus technischen Erwägungen der bessere Weg ist, um zur wirksamsten Ausnutzung der Mittel zur Unterstützung des Vorhabens zu gelangen. Die Sachverständigengruppe ist weiterhin der Auffassung, daß ein solches Vorgehen die einzige praktische Möglichkeit ist, veränderte soziale und wirtschaftliche Faktoren sowie die allgemeinen Schwankungen des Rohstoffgeschäftes zu berücksichtigen.
- Angesichts der sehr geringen Personalausstattung steht eindeutig daß die derzeitige Verwaltung einer unzumutbaren Arbeitsbelastung ausgesetzt ist, jedoch ungeachtet dessen bemerkenswerte Energie und allgemeine Fachkenntnis bei der Bewältigung ihrer Arbeit an den Tag gelegt hat. Die grenzüberschreitende Zusammenarbeit und die Koordination sowohl innerhalb der Kommission als auch mit Dritten, die bisher erreicht wurde, ist, angesichts der geringen Anzahl der beteiligten Mitarbeiter, umso lobenswerter. Er ist die einhellige Ansicht der Sachverständigengruppe, daß die zu geringe personelle Ausstattung nicht im Interesse der Gemeinschaft liegt und daß eine grössere

Gruppe fest angestellter Beamter zur Bewältigung dieser bedeutenden Aufgabe für Europa erforderlich ist.

- Aus den vorangehenden Äußerungen ergibt sich die Schlußfolgerung, daß das EG-symbol der 12 Sterne durchaus ein Synonym für hochqualitizierte Entwicklung und Ausgangspunkt für allgemein anerkannte Normen sein könnte.

EMPFEHLUNGEN

1. Vorwort

- Die Sachverständigengruppe hielt es für notwendig, ihre Empfehlungen über die engen Grenzen des Mandats hinaus zu erweitern und die Erfordernisse der europäischen Rohstoffindustrie sorgfältig abzuwägen sowie insbesondere die Frage zu behandeln, wie die Kommission diesen Erfordernissen Rechnung tragen kann, um die Gemeinschaft insgesamt zu unterstützen. Die Sachverständigengruppe hält dies vor allem bei der Festlegung künftiger Rahmenprogramme für hilfreich.
- Derzeit gibt es keinen zentralen Schwerpunkt im Rahmen der Tätigkeiten der gemeinschaftlichen Rohstoffindustrie, und die Sachverständigengruppe ist der Ansicht, daß eine klar erkennbare zentrale Einrichtung, die sowohl für die Unterstützung von Vorhaben als auch für die Information zu allgemeinen themenbezogenen Fragen zuständig ist, den dringend benötigten Weg zu Technologietransfer und -entwicklung ebnen könnte und sollte. Im Verlauf der Festlegung einer geeigneten Politik und Strategie müssen auch die derzeitigen Tätigkeitsbereiche abgegrenzt werden; so ist die Sachverständigengruppe z.B. der Meinung, daß die nutzbaren Mineralien voll einbezogen werden müssen. Darüber wird empfohlen, daß die Arbeitsformen der Vorhaben, die im Rahmen des Teilprogramms für Recycling und Nutzung von Abfall durchgeführt werden, auch in andere geeignete Programme übernommen werden sollten; die folgenden Empfehlungen wurden unter dieser Voraussetzung erarbeitet.

2. Rolle der Kommission

- Die Sachverständigengruppe ist der Ansicht, daß die Rolle der Kommission herausragender und dynamischer werden sollte, und die Kommission dadurch auf einer insgesamt höheren und allgemeineren Ebene als bisher tätig werden sollte.
- Die derzeitige Rolle der Vergabe von finanziellen Mitteln für geeignete Vorhaben sollte fortgeführt werden, allerdings auf der Grundlage größerer Einheit und des stärkeren gemeinsamen Nutzens; daneben sollten aber auch einige kleinere innovative Vorhaben finanziell unterstützt werden.
- Die Kommission sollte die führende Rolle bei der Bereitstellung einer EG-weiten Grundlage für Informations- und Technologieaustausch übernehmen, ähnlich der Rolle des amerikanischen USBM. Dies wird auch Gesetzgebung und steuerliche Komponenten erfordern. Darüber hinaus muß die Kommission auch für eine angemessene Wechselbeziehung und Zusammenarbeit aller in diesem Zusammenhang relevanten Programme oder beispielsweise ähnlicher Gruppen¹ sorgen, um zu gewährleisten, daß Tätigkeiten im Bereich der Erforschung und des Transfers von Grundlagenkenntnissen in ausreichendem Maße fortgeführt werden und um die Entstehung neuer industrieller Entwicklungsvorhaben zu ermöglichen.
- Es wurde allgemein die Ansicht vertreten, daß die laufende Durchführung der technischen Arbeiten im Rahmen eines Vorhabens insgesamt den Vertragspartnern überlassen werden sollte. Dies bedeutet nicht, daß die Gemeinschaft keine eigenen Organisationsstrukturen entwickeln sollte, aber wenn sie dies tut, bevor sie als Informations- und Referenzgremium anerkannt ist und eine gewisse Autorität erlangt hat, besteht die Gefahr, daß solche Einrichtungen gezwungen sind, sich den Marktgesetzen unterzuordnen und um zu überleben lediglich ein weiterer Vertragspartner im Wettbewerb mit anderen werden.

GD III, GD XI, GD XII, GD XIII und GD XVII

- Zwar wird anerkannt, daß das derzeitige System von Nutzen ist, doch wird es als isoliertes System in Zukunft nicht fortbestehen können, und nach Ansicht der Sachverständigengrupe ist es auch nicht der beste Weg, die Mittel der Gemeinschaft im Bereich FuE optimal anzulegen.
- Es wird empfohlen, ein personell angemessen ausgestattetes <u>Wissenschaftliches und Technisches Burö für Rohstoffe</u> mit folgenden Aufgaben einzusetzen:
 - a) Verwaltung einer Datensammlung
 - b) Veröffentlichungsorgan für die angemessene und rasche Verbreitung von Berichten über Vorhaben, Workshops und Seminare
 - c) Durchführung umfassender Erhebungen über strategische Martkbereiche
 - d) Veranstaltung der erforderlichen Konferenzen zur Förderung des Technologietransfers
 - e) Unterstützung bei der Entwicklung von industriellen Normen und Standards
 - f) Unterstützung allgemeiner Vorhaben über Themen mit einem breiten Anwendungsspektrum auf trans-/multinationaler Grundlage und in einem flexiblen kontinuierlichen Bewertungszeitrahmen
 - g) Unterstützung von Innovationen.
- Ein vorrangiges Ziel der festangestellten Kommissionsmitarbeiter sollte die Erstellung eines umfassenden Verzeichnisses sein, in dem alle laufenden Forschungstätigkeiten im Bereich der Rohstoffe aufgeführt sind, die innerhalb der EG und in assoziierten Ländern durchgeführt werden, und zu denen bereits jetzt Verbindungen bestehen oder in Zukunft geknüpft werden können. Dieses Verzeichnis müßte ständig auf dem neuesten Stand gehalten werden und sollte alle Vorhaben, die seit dem ersten Rohstoffprogramm (1978-1981) von der EG unterstützt wurden sowie alle von der EG unterstützten Vorhaben laufender oder künftiger Programme und so umfassende Informationen wie möglich über alle entsprechenden FuE-Arbeiten im privaten, halbstaatlichen und öffentlichen Bereich umfassen. Es sollte auch daran gedacht werden, entsprechende Einrichtungen und Anlagen

aufzunehmen. Dieses Verzeichnis, das die wichtigste EG-Datenbank über Rohstoffe sein wird, sollte überall verbreitet werden und über eines der EG-Computernetze zugänglich sein.

- Da für die angemessene Festlegung der Prioritäten jedes Vorhabens umfassende Hintergrundinformationen über die entsprechende Angebots-/Nachfragesituation erforderlich sind, weist die Sachverständigengruppe darauf hin, daß die Kommission für diese Aufgabe das geeignetste Instrument sein dürfte.
- Bereits in den vergangenen Jahren wurden sowohl von den ständigen Mitarbeitern der Kommission, die für die Rohstoffprogramme zuständig sind, als auch vom Rat Versuche unternommen, die Erfordernisse der Gemeinschaft im Bereich der Rohstoffe zu berücksichtigen. Hierzu müssen in regelmäßigen Abständen ständig aktualisierte Erhebungen über Angebot und Nachfrage an Rohstoffen in der Gemeinschaft durchgeführt werden. Bei diesen Erhebungen können die Gesamtdaten des genannten Verzeichnisses hilfreich sein. Allerdings wird darüber hinaus auch die Sammlung quantitativer Angebots- und Nachfragedaten für jeden Mitgliedstaat im einzelnen erforderlich sein.
- Die Erhebung sollte zu einer kontinuierlichen aktuellen Analyse der strategischen Auswirkungen von Veränderungen im Angebot/Nachfrage-Verhältnis innerhalb der EG und der kurz- bzw. langfristigen Maßnahmen, die von der Gemeinschaft zu treffen sind, führen. Darüber hinaus wird die Erhebung wesentliche Daten über die Sachkenntnis im Bereich der Rohstoffe innerhalb der EG, über die sozioökonomischen Auswirkungen in der Gemeinschaft und über den Grad der Selbstversorgung bei den Rohstoffen liefern. Ein solches Vorgehen wird auch die häufig irreführenden Szenarien, die sich aufgrund der starken Schwankungen im Rohstoffgeschäft kurzfristig ergeben können, ins rechte Licht rücken.
- Derzeit kommen Vorschläge für FuE von privaten, halbstaatlichen und Öffentlichen Einrichtungen der verschiedenen Mitgliedstaaten und werden je nach ihrer Bedeutung für das Programm unterstützt. Die Sachverständigengruppe ist der Ansicht, daß die höheren finanziellen

Mittel, die derzeit für eine geringere Anzahl transnationaler Vorhaben gewährt werden, als in früheren Programmen, für die Gemeinschaft insgesamt wertvoller sind, als es mit der früheren Praxis der Fall war. Wenn die oben empfohlenen strategischen Untersuchungen und Markterhebungen durchgeführt worden sind, wird sich die EG jedoch in einer weitaus besseren Position befinden, um die Art der zu unterstützenden Vorhaben sowohl festzulegen als auch entsprechenden Einfluß auszuüben.

3. Beziehungen

- Die Sachverständigengruppe empfiehlt nachdrücklich, die Beziehungen zwischen der EG und den für die FuE-Unterstützung verantwortlichen staatlichen Gremien vor dem Hintergrund der bisherigen Empfehlungen sorgfältig zu prüfen, so daß eine angemessene Einbindung in die FuE-Politik im Bereich der Rohstoffe erzielt werden kann. Auf diese Weise können die verschiedenen Rollen am wirksamsten eindeutig festgelegt werden.
- Dies hängt von den geeigneten Maßnahmen des Beratenden Ausschusses ab und erfordert daher eine wirksame Kommunikation und Abstimmung zwischen dem Ausschuß und den Mitarbeitern der Kommission. Darüber hinaus wäre es äußerst wünschenswert, daß die Kommunikation und Abstimmung auch auf entsprechende Gremien im Bereich der Industrie ausgedehnt wird.

4. Bemerkungen zum künftigen Programm

- Das neue Programm (Vorschlag 1989-1992) folgt dem allgemeinen modus operandi der vorangehenden Programme. Die Sachverständigengruppe empfiehlt, daß dieser uneingeschränkt fortgesetzt werden sollte, daß aber eine Überarbeitung des Rahmenprogramms und damit der Rolle der Kommissionsbemühungen im Bereich der Rohstoffe ernsthaft erwogen werden sollte.

- Für künftige Programme gibt die Sachverständigengruppe folgende Empfehlungen:
 - a) eindeutige Klärung der Verantwortlichkeiten, damit die Rohstoff¹Industrie angemessen vertreten wird.
 - b) Bedeutende Erweiterung des Personalbestandes und der finanziellen Mittel entsprechend der tatsächlichen Bedeutung der Rohstoffindustrie für die Gemeinschaft.
 - c) Flexiblerer Ansatz bei der Klassifizierung von Teilprogrammen, der Gewährung von Beihilfen und ein stärker auf Zusammenarbeit eingerichtetes Vorgehen bei der Erstallung von Vorhaben.
 - d) Der Großteil der Mittel für Vorhaben sollte für weiniger und sehr viel allgemeinere transnationale Vorhaben gewährt werden.
 - e) Wirksameres Veröffentlichungssystem.
 - f) Die Vorlage neuer Vorhabensvorschläge, die Bewertung und die Vergabe von Verträgen sollten kontinuierlich und parallel erfolgen.
 - g) Entwicklung eines zentralisierten Informationsdienstes unter Einschaltung eines Büros.
 - h) Angemessere Unterteilung von Recycling- und anderen entsprechenden Programmen.

 $^{^{1}}$ Mit Rohstoffen sind hier anorganische natürliche Rohstoffe gemeint.



ΙΙ. ΣΥΜΠΕΡΑΣΜΑΤΑ ΚΑΙ ΣΥΣΤΑΣΕΙΣ

Σ΄ αυτό το μέρος του εγγράφου εκτίθενται τα κυριότερα θέματα που προέκυψαν στη διάρκεια της διαδικασίας αξιολόγησης και παρουσιάζονται υπό τη μορφή συμπερασμάτων και συστάσεων.

ΣΥΜΠΕΡΑΣΜΑΤΑ

1. Ανάγκη ερευνητικής και αναπτυξιακής πολιτικής στο πεδώο των πρώτων υλών

- Πρέπει να επιτευχθειί κατάλληλη συμφωνιία για μια συνεκτική ευρωπαική ερευνητική και αναπτυξιακή πολιτική στο πεδιίο των πρωτογενών και δευτερογενών πρώτων υλών, ανάλογη με το μέγεθος του εμποριίου πρώτων υλών, έτσι ώστε να μην καταστειί η Ευρώπη "κοινωνιία στερημένη πρώτων υλών" και να βελτιωθειί η στρατηγική ισορροπιία μεταξύ βασικών και μεταποιητικών βιομηχανιών.
- Φαιίνεται ότι υπάρχουν επιτακτικοιί λόγοι για να ληφθειί υπόψη το ότι η ανακύκλωση των αποβλήτων πρέπει να αποτελειί μέρος προγράμματος για το περιβάλλον, εφόσον, αδιαμφισβήτητα, κινητήρια δύναμη σε τέτοια θέματα ειίναι ο προβληματισμός για το περιβάλλον και οι κοινωνικοοικονομικές ανάγκες. Αυτό έρχεται σε άμεση αντιίθεση με τις αρχικές ιδέες του βιομηχανικού κλιίματος των μέσων της δεκαετιίας του 70, όταν οι πόροι που βασιίζονται στα απόβλητα θεωρούνταν σημαντικοί.
- Ως οργανισμός υπερεθνικού επιπέδου, η Επιτροπή των Ε.Κ. πρέπει να προωθήσει δράσεις που θα βοηθούσαν την Κοινότητα να εξασφαλώσει την κοινωνική και οικονομική ανάπτυξη που θα την καταστήσει ικανή να παώξει καθοδηγητικό ρόλο σε παγκόσμια κλώμακα, όπως έκανε η Ευρώπη κατά τους τελευταώους δέκα αιώνες. Αυτές οι δράσεις θα πρέπει να απορρέουν από μια σαφώς καθορισμένη πολιτική που δεν θα εώναι απλώς μώγμα εθνικών

προβληματισμών. Μια τέτοια πολιτική πρέπει να εφαρμοστε, όσον αφορά τις πρώτες ύλες, σε κρίσιμους βιομηχανικούς τομε, εφόσον, για το μεγαλύτερο μέρος των προμηθειών αυτών των τομέων, οι ευρωπαϊκές χώρες βασίζονται σε εκτός Κοινότητας χώρες με αποτέλεσμα τη συνεπαγόμενη εξάρτηση και τους κινδύνους. Εκτός από την γενική τάση των προμηθευτών να αναμιγνύονται όλο και περισσότερο σε δραστηριότητες "στα κατάντη" της διαδικασ, ίας εμποροπο, ίησης με τη συνακόλουθη ορθολογικοπο, ίηση των σχετικών επαγγελμάτων, η κατάσταση της προσφοράς επηρεάζεται άμεσα από οικονομικά και πολιτικά γεγονότα που επιφέρουν αλλαγές. Οι πρώτες ύλες από γενική άποψη ε, ίναι ανάλογης σπουδαιότητας με την ενέργεια και τα τρόφιμα.

Η πολιτική που απαιτείται πρέπει να ανταποκρίνεται στους σαφώς καθορισμένους στόχους της διασφάλισης των προμηθειών για τις βιομηχανίες και του κατάλληλου χειρισμού θεμάτων, όπως "ξένα" σχέδια και συνεργασία με τρίτες χώρες, καθώς και θεμάτων προμήθειας εξοπλισμού και υπηρεσιών.

2. Χρηματοδότηση και πεδώ εφαρμογής

- Το επιίπεδο χρηματοδότησης ειίναι εντελώς ανεπαρκές σε σχέση με το μέγεθος, τα κέρδη και τη διαφοροποιίηση του κύκλου εργασιών των πρώτων υλών στην Ευρώπη, ο οποιίος ειίναι της τάξης των 50.000.000.000 ΕCU. Το πεδιίο εφαρμογής, οι στόχοι και ο διαθέσιμος προϋπολογισμός θεωρούνται επομένως ασυμβιίβαστα.

Τα προγράμματα της Επιτροπής, που υποστηριίζουν ερευνητικές και αναπτυξιακές δραστηριότητες, επιλύουν μόνον εν μέρει τα προβλήματα της βιομηχανίας. Τα τρία πολυετή προγράμματα που προωθήθηκαν καταρτίστηκαν, μετά από χρόνια πραγματικών ερευνητικών δραστηριοτήτων, σύμφωνα με τα ακόλουθα υποπρογράμματα.

Πρωτογενείς πρώτες ύλες:

1978 - 1981 με προϋπολογισμό χρηματοδότησης 18.000.000 ECU. 1982 - 1985 " " 25.000.000 ECU.

1986 - 1989 " " 20.000.000 ECU.

Δευτερογενείς πρώτες ύλες: (α) ανακύκλωση μη σιδηρούχων μετάλλων

> (β) ανακύκλωση και χρησιμοπο, ίηση αποβλήτων.

1979 - 1982 με προϋπολογισμό χρηματοδότησης 9.000.000* ΕΟυ

1982 - 1985 " " 6.500.000 ECU

1986 - 1989 " " 10.000.000 ECU

* μέρος του ποσού αυτού προοριζόταν για χρηματοδότηση προγραμμάτων μέχρι το 1985.

Τα κονδύλια του προϋπολογισμού δεν είναι τάξης μεγέθους ικανής για να επηρεάσουν ουσιαστικά την κατάσταση αυτού βιομηχανικού τομέα λαμβάνοντας στην Ευρώπη, τη σπουδαιότητα του εν λόγω τομέα από άποψη κεφαλαίου ανθρώπινου δυναμικού και γνωρ,ίζοντας επιπλέον τη διαφοροπο,ίησή του. Εξάλλου η βιομηχανία πρώτων υλών είναι ώριμη και λόγω του ότι η οικονομική ανάπτυξή της παρουσιάζει μεγάλες διακυμάνσεις, έχει καταστεί υποχρηματοδοτούμενη σε σημείο που να κλονίζεται η ανταγωνιστικότητά της και επομένως να τιθενται σε κιίνδυνο διάφοροι τομείς που θεωρούνται από την Επιτροπή αποφασιστικοί για την ανάπτυξη της Ευρώπης. Αυτό το σενάριο είναι πολύ διαφορετικό από εκείνο της ανακύκλωσης αστικών αποβλήτων που υπαγορευόταν από την οικονομική και την ενεργητική κρίση.

Παρόλο που πολυάριθμα επώ μέρους σχέδια έχουν υποστηριχθεώ,
 αυτά δεν καλύπτουν επαρκώς την πλειονότητα των θεμάτων που αφορούν οι στόχοι και επιπλέον, λόγω της κατανομής των σχεδώων,
 αυτά δεν συγκεντρώνονται επαρκώς στα κρώσιμα θέματα. Η

στρατηγική που υιοθετήθηκε για την υποστήριξη τέτοιων πολυάριθμων σχεδιίων οδήγησε στο να αφορούν τα περισσότερα σχέδια τοπικά ή ειδικά θέματα. Το βήμα που έγινε για να ευνοηθούν σχέδια πολυεθνικού ενδιαφέροντος με το τρέχον πρόγραμμα 1986 - 1989 έγινε σιίγουρα προς τη σωστή κατεύθυνση, αλλά αυτό δεν αρκειί για τη δημιουργιία συνθηκών που θα επιλύσουν τα εκτεταμένα προβλήματα της βιομηχανιίας σε κοινοτικό επίπεδο.

3. Τεχνικό περιεχόμενο

- Το καθαρά τεχνικό περιεχόμενο των προγραμμάτων μέχρι σήμερα επίναι εξαιρετικά υψηλού επιπέδου. Η ομάδα εργασπίας επιδοκιμάζει τα αποτελέσματα των εππί μέρους σχεδπίων. Σημειώθηκε ουσιαστική επιτυχπία σε μεγάλο βαθμό, ενώ πολλά σχέδια οδήγησαν σε περαιτέρω εργασπία και, σε ορισμένες περιπτώσεις, στην ανάπτυξη βιομηχανικού εξοπλισμού και διαδικαστών, καθώς και γενικά στη βελτπώση εξορυκτικών εκμεταλλεύσεων.
- Διεξάχθηκε αξιολόγηση βασισμένη σε τεχνικά δεδομένα για λογαριασμό της Επιτροπής Διαχειρισης και Συντονισμού (CGC) στα μέσα του 1988 η παρούσα ομάδα εργασιίας συμφωνεί απόλυτα με τα συμπεράσματα αυτής της αξιολόγησης. Αυτό δεν πρέπει πράγματι να προξενειί έκπληξη, εφόσον οι ερευνητικές και αναπτυξιακές δραστηστηριότητες που διεξάχθηκαν στα πλαισια διαφόρων ευρωπαϊκών οργανισμών αναγνωριστηκαν πάντοτε ως υψιστης ποιότητας και καινοτόμοι. Ομως πρέπει επίσης να αναγνωρισθειί ότι το σύστημα, όπως εφαρμόζεται, συνεπάγεται δυναμική επιλογή η οποιία, εκτός του ότι αποκλειίει κατά την πρόσκληση υποβολής προσφορών τα σχέδια που δεν ειίναι ακριβώς κατάλληλα, ευνοεί τους οργανισμούς που είναι ικανοιί να διεξάγουν τις ερευνητικές και αναπτυξιακές δραστηριότητές τους σε συνεχή βάση.
- Το παρόν χρονοδιάγραμμα ερευνητικού και αναπτυξιακού προγράμματος θεωρειίται ότι καλύπτει εν μέρει τον ιδανικό ρόλο της Επιτροπής, ενώ το να δαπανώνται απλώς χρήματα για την ενισχυση επιτυχόντων, εκτός εκειίνων που υποβάλλουν γενικώς καλά σχέδια, δεν θεωρειίται επαρκώς αποδοτική επένδυση.

Η παροχή σχετικά μικρών κεφαλα,ίων για ένα ευρύ φάσμα δραστηριοτήτων, εκτός του ότι συνεπάγεται διασκορπισμό των προσπαθειών, οδηγεί σε προβλήματα αλληλοκάλυψης με εθνικά προγράμματα εν,ίσχυσης της βιομηχαν,ίας και με προγράμματα τα οπο,ία υποχρεούνται να διεξάγουν οι επ,ί μέρους εταιρε,ίες.

Στον τομέα της ανακύκλωσης αστικών αποβλήτων, η συντονισμένη δράση ήταν η πιο αποτελεσματική τακτική.

4. Προστιθέμενη αξία

- Η προστιθέμενη αξιία από τα προγράμματα στην Κοινότητα, μέχρι σήμερα, ειίναι δύσκολο να προσδιοριστειί ποσοτικά αλλά, χωριίς αμφιβολιία, ειίναι κατά πολλές τάξεις μεγέθους ανώτερη από το κόστος. Το κέρδος για την Κοινότητα ειίναι ακόμα μικρό, αν ληφθειί υπόφη η τεράστια βιομηχανική μάζα του τομέα αυτού και αυτό ειίναι αποτέλεσμα της μάλλον στενής συγκέντρωσης σε ειδικά θέματα και της επιλογής που επιβάλλεται λόγω του ότι ο προϋπολογισμός ειίναι περιορισμένος.
- Η προστιθέμενη αξιία αποτελειί πολύ ειδικό μέσο εκτιίμησης της χρήσης του χρήματος. Μπορειί να χρησιμοποιηθειί αντικειμενικά εφόσον το αποτέλεσμα της χρηματοδότησης μπορειί να υπολογιστειί με τους ιίδιους όρους. Καθιίσταται δυσκολότερο έργο εφόσον η προστιθέμενη αξιία πρέπει να καθοριστειί με υποκειμενικούς όρους. Δεν υπάρχει αμφιβολιία ότι, λόγω της ποιότητας των ερευνητικών ομάδων που τυγχάνουν υποστήριξης, κάθε αποτέλεσμα αποτελειί θετικό βήμα προς την απόκτηση γνώσεων, έστω και αν το αποτέλεσμα αυτό αποκλειίει ορισμένες δυνατότητες ή δεν μπορειί να έχει άμεσες εφαρμογές.
- Ορισμένα αποτελέσματα υπήρξαν άκρως θετικά για την Κοινότητα, όπως για παράδειγμα η ανακάλυψη νέων μεταλλευμάτων, κυριίως όσον αφορά ουσιίες που ειίναι σε υψηλό βαθμό ευαισθητες. Εξακολουθειί όμως να ειίναι αμφισβητήσιμο αν ειίναι σωστός ο ρόλος της Επιτροπής να υποκαθιστά τις εταιρειίες κατά τις εξερευνητικές δραστηριότητες, εκτός από τις περιπτώσεις που αυτό γιίνεται στα

πλαιίσια υποστήριξης τεχνολογιών, οι οποιίες επιτρέπουν τις εν λόγω δραστηριότητες. Πρέπει να αναγνωρισθειί ότι ορισμένα εξερευνητικά σχέδια (γεωλογιίας, γεωφυσικής, κλπ.) που χρηματοδοτήθηκαν απέβησαν ιίσως τα πλέον επιτυχή σε κοινοτικό επιίπεδο, καθόσον απέδωσαν νέα μέσα και νέες ιδέες για την ανακάλυψη νέων μεταλλευμάτων.

- Στην περίπτωση της ανακύκλωσης αστικών αποβλήτων, το σημαντικότερο αποτέλεσμα ήταν ο εντοπισμός των προβλημάτων και των δυσχερειών κατά τη διαχείριση των ανακυκλωμένων υλικών και ιδιαίτερα των προβλημάτων των εγκαταστάσεων καύσης απορριμμάτων.

5. Σημασμα για την Κοινότητα

- :΄Ολα τα προγράμματα προβλέπουν γενικούς στόχους, που έχουν σημασιία για το συμφέρον της Κοινότητας, στο πεδιίο των πρωτογενών και δευτερογενών πρώτων υλών.

Το τρέχον πρόγραμμα δίνει μεγαλύτερη έμφαση στην πολυεθνική συνεργασία και τις δραστηριότητες μεταξύ των χωρών των ΕΚ.

- Παρόλο που τα σχέδια μπορούν να συνδυαστούν όχι χωρίς κάποια δυσκολία σε πολλές περιπτώσεις με διάφορα τμήματα του προγράμματος, πολλά είναι αφιερωμένα σε πολύ ειδικούς στόχους και επιπλέον συχνά αποβλέπουν μάλλον στην επίλυση προβλημάτων άμεσης οικονομικής σημασίας παρά στην ανάπτυξη γενικότερων και θεμελιωδών τεχνικών με μακροπρόθεσμα οφέλη για τις ΕΚ ως σύνολο.
- Πιθανόν λόγω έλλειψης ακριβούς ερευνητικής και αναπτυξιακής πολιτικής για τις πρώτες ύλες, μεγάλος αριθμός μελετώμενων σχεδιών θα μπορούσε να αναπτυχθεί στα πλαίσια εθνικών προγραμμάτων. Στις περιπτώσεις αυτές, τα εν λόγω σχέδια ενδέχεται να χάσουν τη σημασία τους για τις ΕΚ ως σύνολο.

Τα παραπάνω, βέβαια, δεν ισχύουν για όλες τις περιπτώσεις για παράδειγμα, το πρόγραμμα για τα καύσιμα που παράγονται από τα απόβλητα, στα πλαίσια της ανακύκλωσης αστικών αποβλήτων, μπορούσε να θεωρηθεί πραγματικά διεθνούς ενδιαφέροντος, εφόσον με αυτό αποφεύχθηκε η αδικαιολόγητη εξάπλωση εγκαταστάσεων που βλάπτουν το περιβάλλον.

- Αυτό το τρέχον πρόγραμμα περιέχει γενικότερους στόχους και γι, αυτό έχει γιίνει σημαντική προσπάθεια για την επιίτευξη πολυεθνικής συνεργασιίας.
- Η ομάδα εργασιίας συμφώνησε κατι αρχήν ότι η εργασιία που έγινε ειίναι σημαντική τόσο για τις απαιτήσεις της βιομηχανιίας όσο και για τις ανάγκες της Κοινότητας. Εντούτοις έγινε παραδεκτό ότι το πρόγραμμα ειίχε πολύ αποσπασματικό χαρακτήρα και κάλυπτε ένα ευρύ φάσμα θεμάτων σποραδικά αυτό σημαιίνει ότι το πρόγραμμα ενώ κάλυπτε ορισμένα θέματα διεξοδικά, μόλις που αναφερόταν σε άλλα ιίσης σημασιίας. Αυτό ειίναι άμεσο αποτέλεσμα της παραπάνω αναφερόμενης έλλειψης αντιστοιχίας μεταξύ πεδιίου εφαρμογής και χρηματοδότησης, η οποιία συνεπάγεται επιλογή ανάμεσα σε σχέδια που προέρχονται από ένα πεδιίο προτάσεων με ήδη μερικό και ατελή χαρακτήρα.

Μια τέτοια κατάσταση μπορεί να βελτιωθεί μόνο με δύο τουλάχιστον σειρές ενεργειών:

(α) Διεύρυνση των δραστηριοτήτων, έτσι ώστε να συμπεριληφθούν γενικότερα και "κοινά" προβλήματα, καθώς και πολυκλαδικές δράσεις. Ευρύτερη χρήση και δημιουργία νέων βάσεων δεδομένων που θα καταστούν, κατίαυτό τον τρόπο, σεβαστή πηγή πληροφοριών. Ως παράδειγμα αναφέρεται η άκρως επιτυχής εργασία που έγινε για το πρόγραμμα συντονισμού σχετικά με τη χώνευση των αποβλήτων.

(β) Σημαντική βελτίωση της επάνδρωσης και του προϋπολογισμού της υπηρεσίας που διεξάγει τις παραπάνω δραστηριότητες και προώθηση αξιόλογων σχεδίων, με λιγότερο ειδικά κριτήρια και με ποιο διαλογικό τρόπο.

6. Αποτελέσματα προηγούμενων αξιολογήσεων

- Η προηγούμενη ομάδα εργασίας διατύπωσε σαφή σύσταση για μελλοντικά ερευνητικά και αναπτυξιακά προγράμματα ΕΟΚ στον τομέα των πρώτων υλών.

Η παραπάνω ομάδα εργασιίας συνέστησε σαφή καθορισμό μιας συνεκτικής συναφούς ευρωπαϊκής πολιτικής για την έρευνα και την ανάπτυξη στον τομέα των πρώτων υλών, έτσι ώστε να καταστεί ικανή η Κοινότητα να χαράξει στρατηγική με μακροπρόθεσμα πλεονεκτήματα γι΄ αυτήν.

Το τρέχον πρόγραμμα (1986-1989) περιέχει γενικότερους στόχους ενώ έχει καταβληθεί σημαντική προσπάθεια για την επίτευξη πολυεθνικής συνεργασίας με τη συγκέντρωση σε ορισμένα θέματα που ενδιαφέρουν διάψορες χώρες, παρόλο που οι βιομηχανικές επιχειρήσεις εξακολουθούν να εκπροσωπούνται ανεπαρκώς (δημοτικές αρχές στην περίπτωση της ανακύκλωσης αστικών αποβλήτων).

- Αξιοσημείωτος ήταν ο κατάλογος θεμάτων που πρέπει να ληφθούν υπόψη κατά την εφαρμογή της παραπάνω σύστασης για τον καθορισμό συνεκτικής, ευρωπαικής πολιτικής για έρευνα και ανάπτυξη. Στις περισσότερες περιπτώσεις φαίνεται ότι τα θέματα αυτά δεν είχαν ληφθεί υπόψη.
- Πέρα από τη σημασιία της συγκέντρωσης στην αναγκαιότητα καθορισμού της παραπάνω αναφερόμενης κοινοτικής πολιτικής, παρατηρειίται ότι οι υπόλοιπες συστάσεις που απορρέουν από προγενέστερες αξιολογήσεις ισχύουν ακόμη, ιδίως εκείνες που

αφορούν το ρόλο της Κοινότητας να φροντίζει για την οργάνωση της συνεργασίας μάλλον, παρά να ασχολείται άμεσα με μεγάλο αριθμό μικρών σχεδίων.

- Κατά συνέπεια η ομάδα εργασιίας θεμρησε σκόπιμη την ενσωμάτωση συστάσεων από προηγούμενες αξιολογήσεις, ιδιαιίτερα όσον αφορά την πρόταση για σχέδια πολυεθνικού ενδιαφέροντος και σε ορισμένο βαθμό τη δημοσιίευση συνοπτικών εκθέσεων. Η ομάδα εργασιίας παραδέχεται ότι, λόγω της ανεπάρκειας της επάνδρωσης με προσωπικό πλήρους απασχόλησης και των οικονομικών δυσχερειών, δεν ειίναι ιίσως εκπληκτικό το ότι δεν σημειώθηκε μεγαλύτερη πρόοδος.

7. Αποτελεσματικότητα της διαχεμρισης

- Το ολιγάριθμο μόνιμο προσωπικό φέρει σήμερα το σημαντικό βάρος του ελέγχου των αρχικών αξιολογήσεων και της επιλογής, της παρακολούθησης της προρόδου, καθώς και της οργάνωσης επισκέψεων σε εργοτάξια για τη σύνταξη των τελικών εκθέσεων επιπλέον το εν λόγω προσωπικό φροντίζει για τη διατήρηση των απαραίτητων επαφών με βιομηχανικούς και κυβερνητικούς παράγοντες και των απαραίτητων εσωτερικών επικοινωνιών.
- Λαμβάνοντας υπόψη τα παραπάνω, καθώς και το μεγάλο αριθμό σχεδιίων μικρής κλιίμακας, που αφορούν πολύ διαφορετικούς επιστημονικούς και τεχνικούς τομειίς, οι οποιίοι υπεισέρχονται στα προγράμματα, η διαχειίριση που παρέχεται πρέπει να θεωρηθειί σε μεγάλο βαθμό επαγγελματική και αποτελεσματική υπό τη στενή τεχνική έννοια των όρων. Ειίναι φανερό ότι η σύσταση μιας συμβουλευτικής επιτροπής (με βιομηχανικό υπόβαθρο) που να ειίναι στη διάθεση του προσωπικού της Επιτροπής θα εξοικονομούσε πολύ κόπο ιδιίως από ταξιίδια.
- θεωρείται εν τούτοις ότι η αποτελεσματικότητα της διαχείρισης θα μπορούσε να αυξηθεί, αν η προσπάθεια της Κοινότητας, όσον αφορά την άμεση υποστήριξη σχεδίων, συγκεντρωθεί σε μικρότερο αριθμό σχεδίων γενικότερου ενδιαφέροντος παρά σε μεγάλο αριθμό

σχεδιίων μικρής κλιίμακας σχετικών με θέματα διαφόρων κλάδων. Υπάρχει επιίσης ανάγκη για περισσότερη ευελιξιία, με σκοπό την υποστήριξη εμβρυακών σχεδιίων μικρότερης κλιίμακας (με υψηλές δυνατότητες και με κιίνδυνο για τη χρηματοδότηση).

Η ομάδα εργασμίας εμίναι της γνώμης που υποστηρμίζεται από τους αναδόχους συμβάσεων σε συνεντεύξεις που διεξάχθηκαν, ότι θα ήταν προτιμότερος ένας περισσότερο συνεχής τρόπος ανάθεσης των σχεδμών, τόσο για εμπορικούς όσο και για τεχνικούς λόγους, με σκοπό την πιο αποτελεσματική χρήση της χρηματοδοτικής ενμίσχυσης των σχεδμών. Η ομάδα εργασμίας πιστεύει ακόμη, ότι ένας τέτοιος τρόπος ενέργειας εμίναι ο μόνος πρακτικός τρόπος για να ληφθούν υπόψη οι μεταβαλλόμενοι κοινωνικού και οικονομικού παράγοντες, καθώς και η φύση του τομέα των πρώτων υλών η οποία γενικά παρουσιάζει διακυμάνσεις.

- Είναι απολύτως σαφές, ότι λόγω του πολύ μικρού αριθμού διαθέσιμου προσωπικού, η τρέχουσα διαχειίριση παρεμποδιίζεται σε πολύ μεγάλο βαθμό λόγω φόρτου εργασιίας αλλά, παρόλα αυτά, κατι αυτήν το προσωπικό επέδειξε σημαντική ενεργητικότητα και γενική τεχνική ικανότητα προς επιτυχιία του έργου του. Η επίτευξη συνεργασιίας και συντονισμού, τόσο στα πλαιίσια της Επιτροπής όσο και με τριίτους, ειίναι περισσότερο αξιέπαινη λόγω του μικρού αριθμού των ατόμων που απασχολήθηκαν. Αποτελειί ομόφωνη γνώμη της ομάδας εργασιίας, ότι η έλλειψη προσωπικού δεν ειίναι προς το συμφέρον της Κοινότητας και ότι απαιτειίται μια μεγαλύτερη ομάδα μόνιμων υπαλλήλων γιιαυτό το ρόλο που ειίναι τόσο σημαντικός για την Ευρώπη.
- Εφόσον ληφθούν κατάλληλες αποφάσεις σε συνέχεια των παραπάνω εκτιμήσεων, δεν υπάρχει λόγος να μη θεωρηθεί το έμβλημα των 12 αστέρων ως έμβλημα ανάπτυξης υψηλής ποιότητας και ως πηγή γενικά αποδεκτών προτύπων.

1. Εισαγωγή

- Η ομάδα εργασιίας έκρινε αναγκαιίο να επεκτειίνει τις συστάσεις της πέρα από τα αυστηρά όρια της εντολής της, σε μιία ευρύτερη θεμόρηση των αναγκών της ευρωπαϊκής βιομηχανιίας πρώτων υλών και ειδικότερα στον τρόπο με τον οποιίο η Επιτροπή θα μπορούσε να ικανοποιήσει τις ανάγκες της αυτές και να βοηθήσει την Κοινότητα ως σύνολο. Η ομάδα εργασιίας έκρινε ότι αυτό θα μπορούσε να βοηθήσει ιδιαιίτερα στον καθορισμό μελλοντικών προγραμμάτων πλαισιίων.
- Δεν υπάρχει προς το παρόν κεντρική εστήα για τις δραστηριότητες της βιομηχανίας πρώτων υλών στην Κοινότητα η ομάδα εργασίας πιστεύει ότι μια σαφώς καθορισμένη κεντρική υπηρεσμα, που θα φροντιίζει για την υποστήριξη των σχεδιίων και την πληροφόρηση σχετικά με γενικά συναφή θέματα, θα μπορούσε και πρέπει να καταστεί το ρργανο που είναι τρσο απαραίτητο για τη διάδοση της τεχνολογιίας και την ανάπτυξη. Κατά τη διαδικασμία του καθορισμού κατάλληλης πολιτικής και στρατηγικής, πρέπει καθοριστούν πραγματικοί χώροι 01 επιχειρηματικής δραστηριότητας" για παράδειγμα η ομάδα εργασμάς πιστεύει ότι πρέπει να ενσωματωθούν πλήρως τα βιομηχανικά ορυκτά. Επιπλέον συνιστά να προσαρμοσθούν τα σχέδια, που εκπονήθηκαν στα πλαίσια του υποπρογράμματος για την ανακύκλωση αστικών αποβλήτων, σε άλλα κατάλληλα προγράμματα και οι μεταγενέστερες συστάσεις να διατυπωθούν με βάση το ότι αυτό θα πραγματοποιηθεί.

2. Ρόλος της Επιτροπής

- Η ομάδα εργασίας υποστηρίζει την άποψη ότι ο ρόλος της Επιτροπής θα πρέπει να τροποποιηθεί, ώστε να γίνει περισσότερο πρωτεύον και προκαταρκτικός, με αποτέλεσμα να ενεργεί αυτή σε κατά κανόνα υψηλότερο και γενικότερο επίπεδο από ότι σήμερα.

- Ο σημερινός ρόλος της χορήγησης κεφαλακών για αξιόλογα σχέδια θα πρέπει να συνεχιστεκί αλλά σε βάση μεγαλύτερης μονάδας και γενικότερου οφέλους, με την εξακίρεση της χορήγησης κεφαλακών για μικρότερα νεωτεριστικά σχέδια.
- Η Επιτροπή πρέπει να εξετάσει κυρώως τη δυνατότητα για τη δημιουργάα μιας κοινοτικής βάσης ανταλλαγής πληροφοριών και τεχνολογάας, παρόμοιας με την υπηρεσάα ορυχεώων των Ηνωμένων Πολιτειών (USBM). Αυτό θα απαιτήσει νομοθετικές και δημοσιονομικές προσαρμογές. Η Επιτροπή πρέπει επώσης να εξασφαλώσει κατάλληλο συσχετισμό και συνεργασώα όλων των σχετικών προγραμμάτων ή ομάδων, για παράδειγμα ΓΔ ΙΙΙ, ΓΔ ΧΙ, ΓΔ ΧΙΙ, ΓΔ ΧΙΙΙ και ΓΔ ΧVII, για να διασφαλώσει τη διεξαγωγή επαρκών δραστηριοτήτων για την απόκτηση και τη διάδοση βασικών γνώσεων και να καταστήσει δυνατή την κατάρτιση σχεδών
- Πιστεύεται ότι η εκτέλεση του καθαρά τεχνικού μέρους των σχεδιών πρέπει να ανατιθεται γενικά σε αναδόχους συμβάσεων. Αυτό δεν σημαινει ότι η Κοινότητα δεν πρέπει να αναπτύξει το δικό της δυναμικό σε προσωπικό, αλλά στην περιπτωση αυτή, πριν αυτό το δυναμικό εξελιχθεί σε σεβαστή και έγκυρη μονάδα πληροφόρησης και αναφοράς, υπάρχει κιίνδυνος να μειώσει το αντιστοιχο εξωτερικό δυναμικό την ποιότητα της εργασιας του και να γιίνει απλώς ένας ακόμη ανταγωνιστής με σκοπό να επιβιώσει.
- Παρόλο που αναγνωριίζεται ότι το σημερινό σύστημα επίναι αξιόλογο, αυτό έχει αμφπίβολο μέλλον με την απομόνωση και, κατά την άποψη της ομάδας εργασπίας, δεν αντιπροσωπεύει την καλύτερη λύση για την εξέλιξη της προστιθέμενης αξπίας όλων των κεφαλαπίων που διαθέτει η Κοινότητα για την έρευνα και την ανάπτυξη.
- Η ομάδα εργασμίας συνιστά την μίδρυση ενός επαρκώς επανδρωμένου Επιστημονικού και Τεχνικού Γραφεμίου Πρώτων Υλών με τα ακόλουθα καθήκοντα:

- (α) Την κατάρτιση καταλόγου.
- (β) Τη σύσταση μιας υπηρεσμας δημοσμέσυσης για την επαρκή και ταχεμία γνωστοπομίηση εκθέσεων για σχέδια, μαθημάτων και σεμιναρμών.
- (γ) Τη διεξαγωγή εμπεριστατωμένων μελετών σχετικά με στραγητικούς τομεώς της αγοράς.
- (δ) Τη διεξαγωγή συνεδριίων που απαιτούνται για την προώθηση της διάδοσης της τεχνολογιίας.
- (ε) Την παροχή βοήθειας για την ανάπτυξη βιομηχανικών προτύπων και κανόνων.
- (στ) Την υποστήριξη γενικών σχεδώων σχετικών με θέματα ευρεώας εφαρμογής σε διεθνή ή πολυεθνική βάση και με διαρκές χρονοδιάγραμμα συνεχούς αξιολόγησης.
- (ζ) Καινοτομία στην υποστήριξη σχεδίων.
- Πρωταρχικός σκοπός του μόνιμου προσωπικού της Επιτροπής πρέπει να είναι η κατάρτιση λεπτομερούς καταλόγου, στον οποίο θα αναφέρονται όλες οι διεξαγόμενες δραστηριότητες έρευνας στον τομέα των πρώτων υλών, που λαμβάνουν χώρα σε όλη την επικράτεια της Κοινότητας και σε συνδεδεμένες χώρες, με τις οποίες υπάρχουν δεσμοιί προς το παρόν ή πρόκειται να αποκατασταθούν στο μέλλον. Αυτός ο κατάλογος θα πρέπει να ενημερώνεται διαρκώς και να περιλαμβάνει όλα τα σχέδια που χρηματοδοτούνται από τις ΕΚ, αρχίζοντας από το πρώτο πρόγραμμα πρώτων υλών (1978-81) και όλα τα σχέδια που χρηματοδοτούνται από τις ΕΚ, στα πλαίσια μεταγενέστερων και τρεχόντων προγραμμάτων, καθώς και όσο το δυνατόν πληρέστερες πληροφορίες σχετικά με κάθε άλλη συναφή εργασώα έρευνας και ανάπτυξης στον ιδιωτικό, ημι-ιδιωτικό και δημόσιο τομέα. Επίσης πρέπει να γίνει σκέψη να περιληφθούν στον κατάλογο εγκαταστάσεις και εξοπλισμός. Ο εν λόγω κατάλογος, ο

οποιίος πρέπει να αποτελειί την κύρια βάση δεδομένων πρώτων υλών των ΕΚ, πρέπει να διανέμεται σε καθολική κλιίμακα και να ειίναι προσβατός μέσω ενός πληροφορικού δικτύου των ΕΚ.

- Η ομάδα εργασιίας υποστηριίζει ότι, για την κατάρτιση κατάλληλων σχεδιίων, απαιτειίται κατά προτεραιότητα ένα υπόβαθρο συναφούς πληροφόρησης σχετικά με την προσφορά και τη ζήτηση και ότι η Επιτροπή ειίναι ιίσως το πλέον κατάλληλο όργανο για το ρόλο αυτό.
- Ορισμένες προσπάθειες καταβλήθηκαν κατά καιρούς για να προσδιοριστούν οι ανάγκες της Κοινότητας στον τομέα των πρώτων υλών, τόσο από το μόνιμο προσωπικό της Επιτροπής που επίναι επιφορτισμένο με το πρόγραμμα για τις πρώτες ύλες, όσο και από το Συμβούλιο. Επίναι απαραπίτητο να διεξαχθούν περιοδικές έρευνες, που να ενημερώνονται διαρκώς, σχετικά με την προσφορά και τη ζήτηση πρώτων υλών στην Κοινότητα. Αυτές οι έρευνες θα συμπληρώνονται με τη σύνταξη του καταλόγου. Επιπλέον θα πρέπει να συλλέγονται λεπτομερή ποσοτικά δεδομένα για την προσφορά και τη ζήτηση σε κάθε κράτος μέλος.
- Κάθε έρευνα θα πρέπε: να οδηγεί σε μία ανάλυση, που θα ενημερώνεται διαρκώς, σχετικά με τις στρατηγικής σημασίας συνέπειες των μεταβολών στη σχέση προσφοράς και ζήτησης σε όλη την Κοινότητα και σχετικά με τη βραχυπρόθεσμη και μακροπρόθεσμη δράση που πρέπει να αναλάβει η Κοινότητα. Επιπλέον η έρευνα πρέπει να παρέχει κρίσιμα στοιχεία σχετικά με τις τεχνικές γνώσεις στον τομέα των πρώτων υλών στην Κοινότητα, τις κοινωνικοοικονομικές συνέπειες μέσα στην Κοινότητα και το βαθμό αυτάρκειας σε πρώτες ύλες. Μια τέτοια τακτική θα διαλευκάνει επίσης τις συχνά παραπλανητικές εικόνες που μπορεί να αναπτυχθούν βραχυπρόθεσμα, λόγω του ότι το εμπόριο πρώτων υλών παρουσιάζει μεγάλες διακυμάνσεις.
- Προς το παρόν οι προτάσεις σχεδιίων έρευνας και ανάπτυξης προέρχονται από ιδιωτικούς, ημι-ιδιωτικούς και δημόσιους οργανισμούς των διαφόρων κρατών μελών και χρηματοδοτούνται εφόσον έχουν σχέση με το πρόγραμμα. Η ομάδα εργασίας

πιστεύει, ότι η σημερινή τακτική της χορήγησης μεγαλύτερου ποσού της χρηματοδότησης σε αριθμό σχεδώνν διεθνούς ενδιαφέροντος μικρότερο από εκεώνο των σχεδώνν στα πλαώσια προηγούμενων προγραμμάτων έχει πολύ μεγαλύτερη αξώα για την Κοινότητα ως σύνολο από ότι η προηγούμενη κατάσταση. Εντούτοις, αν διεξάγονται έρευνες στρατηγικής και αγοράς όπως συνιστάται παραπάνω, η Κοινότητα θα εώναι σε πολύ ισχυρότερη θέση τόσο να καθορώζει όσο και να κατευθύνει τη φύση των σχεδώνν που πρέπει να χρηματοδοτηθούν.

3. Επαφές μεταξύ αρμόδιων παραγόντων

- Η ομάδα εργασιίας αποδιίδει τεράστια σημασιία στην προσεκτική επανεξέταση των σχέσεων μεταξύ των ΕΚ και των εθνικών οργανισμών που ειίναι υπεύθυνοι για τη χρηματοδότηση ερευνητικών και αναπτυξιακών σχεδιίων, υπό το πριίσμα των συστάσεων που περιέχονται στο παρόν έγγραφο, έτσι ώστε να επιτευχθειί κατάλληλος συντονισμός δραστηριοτήτων στα πλαιίσια μιας ερευνητικής και αναπτυξιακής πολιτικής για τις πρώτες ύλες. Με τον τρόπο αυτό, καθορισμένα και διακεκριμμένα καθήκοντα θα μπορούν να ασκηθούν με τον ποιρ αποτελεσματικό τρόπο.
- Αυτό εξαρτάται από τις κατάλληλες δράσεις της Συμβουλευτικής Επιτροπής και επομένως απαιτεί ουσιαστική επικοινωνία και κατανόηση μεταξύ της εν λόγω επιτροπής και του προσωπικού της Επιτροπής. Επιπλέον θα ήταν ευκταίο να επεκταθεί αυτή η επικοινωνία και κατανόηση και στις σχέσεις με τις βιομηχανίες.

4. Σχόλιο για το επόμενο πρόγραμμα

- Το επόμενο πρόγραμμα (που έχει προταθειί για την περιίοδο 1989-92) ακολουθειί τον τρόπο ενέργειας των προηγούμενων προγραμμάτων. Η ομάδα εργασιίας συνιστά την απρόσκοπτη συνέχισή του, υπό τον όρο να αντιμετωπισθειί σοβαρά η αναθεώρηση του προγράμματος-πλαισιίου και επομένως του ρόλου της Επιτροπής στον τομέα των πρώτων υλών.

- , Όσον αφορά μελλοντικά προγράμματα η ομάδα εργασμίας συνιστά ότι αυτά πρέπει να προβλέπουν τα εξής:
 - (α) Καθορισμό του τομέα ευθύνης για την κατάλληλη εκπροσώπηση της εξορυκτικής βιομηχανώας 1.
 - (β) Βελτιίωση του επιπέδου επάνδρωσης και χρηματοδότησης που να αντιστοιχειί στην πραγματική σημασιία της εξορυκτικής βιομηχανιίας στην Κοινότητα.
 - (γ) Ποιο ευέλικτη τακτική κατά την κατάταξη υποπρογραμμάτων και τη χορήγηση κεφαλαίων, καθώς και περισσότερο διαλογικό ρόλο κατά την πληροφόρηση που αφορά τα σχέδια.
 - (δ) Χορήγηση του μεγαλύτερου μέρους της χρηματοδότησης για τα σχέδια σε λιγότερα, ευρύτερα και γενικότερα σχέδια διεθνούς εφαρμογής.
 - (ε) Αποτελεσματικότερο σύστημα δημοσίευσης.
 - (στ) Καθορισμένες διαδικασμές σχετικά με προτάσεις σχεδμίων διαρκούς εφαρμογής, αξιολόγηση και σύναψη συμβάσεων.
 - (ζ) Σύσταση υπηρεσιίας πληροφοριών με συγκεντρωτική οργάνωση.
 - (η) Ποιρ κατάλληλη υποδιαμίρεση των προγραμμάτων ανακύκλωσης και άλλων.

¹ Ως "ορυκτά" νοούνται ανόργανες φυσικές πρώτες ύλες.

Este resumen señala los resultados más importantes que se desprenden de la evaluación y los presenta en forma de conclusiones y recomendaciones.

CONCLUSIONES

1. Necesidad de una política de I+D en el campo de las materias primas

- Es necesaria una política europea de I+D coherente y consensuada en el campo de las materias primas primarias y secundarias proporcional a la importancia del sector, para impedir que Europa se convierta en una sociedad desmaterializada y para obtener un equilibrio estratégico entre las industrias básica y manufacturera.
- Existen razones de peso que inducen a pensar que el reciclado de residuos debería formar parte de un programa de protección del medio ambiente ya que, sin duda alguna, la protección del medio ambiente y determinados imperativos socioeconómicos constituyen la fuerza motriz en este tema. Ello contrasta con la idea original predominante en el clima industrial de mediados de la década de los 70 cuando cobraron una importancia significativa los recursos "basados en el aprovechamiento de los residuos".
- El carácter supranacional de la CCE la obliga a fomentar iniciativas que podrían beneficiar a la Comunidad, contribuyendo a que ésta alcance el grado de desarrollo económico y social que le permitirá mantenerse en el puesto de líder mundial que ha ocupado durante 10 siglos. Estas iniciativas surgirían como consecuencia de una política perfectamente definida que no puede ser una simple suma de intereses nacionales. Por lo que se refiere a las materias primas, dicha política afectaría a un sector industrial de importancia crucial puesto que los países europeos dependen de países

extranjeros para la mayor parte de sus suministros, con la subordinación y los riesgos que ello comporta. Además de por la tendencia general de los suministradores a participar cada vez más en la cadena de actividades industriales de transformación, con la consiguiente racionalización del proceso, los suministros se ven afectados directamente por los cambios de la coyuntura económica y los acontecimientos políticos. En general, puede decirse que las materias primas presentan aspectos análogos a la energía y a la alimentación.

En este sector se necesita una política que responda claramente al objetivo de asegurar los suministros necesarios a las industrias afectadas así como al de enfrentarse de manera adecuada a acciones tales como los proyectos "en el extranjero" y la colaboración con terceros países, incluyendo el suministro de equipos y servicios.

2. Financiación y alcance

- El nivel de financiación es totalmente inadecuado al tamaño, importancia y diversidad del sector de las materias primas en Europa que es del orden de 50 mil millones de ecus. Por tanto, el presupuesto disponible es incompatible con el alcance y con los objetivos.
- Los programas de apoyo a actividades de I+D que patrocina la CCE representan una respuesta parcial a los problemas de la industria. Los tres programas plurianuales lanzados hasta el momento han servido para llevar a cabo actividades de investigación de acuerdo con el siguiente reparto por subprogramas.

Materias primas primarias :

1978-1981 con un presupuesto de 18 millones de ecus

1982-1985 25 millones de ecus

1986-1989 20 millones de ecus

Materias primas secundarias :

- a) Reciclado de metales no ferrosos
- b) Reciclado y utilización de residuos

1979-1982 con un presupuesto de 9⁽¹⁾millones de ecus 1982-1985 6,5 millones de ecus 1986-1989 10,0 millones de ecus

Las dotaciones presupuestarias no son de una magnitud suficiente como para tener una repercusión realmente efectiva en la situación europea en este sector industrial teniendo en cuenta su importancia en términos del capital y el trabajo implicados y, además, su diversidad. Hay que señalar, además, que la industria de las materias primas ha alcanzado la fase de madurez y, debido a la naturaleza cíclica de su desarrollo económico, se ha descapitalizado de tal manera que su competitividad ha quedado disminuida, por lo que están en peligro numerosos sectores que la CCE considera de importancia crucial para el desarrollo de Europa. La situación es muy diferente de la del reciclado de desechos urbanos generada por la depresión y la crisis energética.

- Si bien se ha concedido apoyo a numerosos proyectos individuales, éstos no cubren de manera adecuada la mayoría de los aspectos perfilados por los objectivos, y, además, su dispersión no permite enfocar adecuadamente los aspectos cruciales. La estrategia consistente en apoyar el mayor número posible de proyectos ha sido la causa de que la mayoría de éstos se hayan referido a temas locales o específicos. La decisión de apoyar proyectos plurinacionales que se ha tomado durante el programa actual 1986-1989, va encaminada en la dirección correcta, pero no constituye aún la respuesta necesaria a los problemas que afectan al sector en toda la Comunidad.

¹ una parte incorporada hasta 1985.

3. Contenido técnico

- Hasta la fecha, el contenido técnico de los programas es de óptima calidad. Este Comité alaba sin reservas los resultados de los distintos proyectos. El nivel de éxito mensurable ha sido muy alto y numerosos proyectos han dado pie, tras su finalización, a la continuación de los trabajos y, en algunos casos, al desarrollo de equipos y procedimientos industriales, contribuyendo así mismo, en general, a mejorar las explotaciones mineras.
- A mediados de 1988 se llevó a cabo un estudio de evaluación técnica encomendado por el CGC con cuyas conclusiones el presente Comité se muestra totalmente de acuerdo. De hecho, ello no debería sorprender porque las actividades de I+D realizadas en las distintas organizaciones europeas siempre se han reconocido, tanto por su alto nivel de calidad como por su carácter innovador. No obstante, hay que admitir también que, tal como se aplica el sistema, se produce una dura selección, eliminándose los proyectos que no se ajustan exactamente a la convocatoria de ofertas y favoreciendo a los organismos que son capaces de realizar sus actividades de I+D de forma continuada.
- Con el formato actual de los programas de I+D queda cubierto únicamente uno de los distintos aspectos de la función ideal de la Comisión. Limitarse a gastar dinero financiando los proyectos ganadores seleccionados de entre otros cuyo nivel general es bueno, no se considera suficiente para obtener un rendimiento de la inversión.
- La provisión de fondos relativamente limitados para una amplia gama de actividades, además de diseminar el esfuerzo, crea también problemas de solapamiento con programas nacionales de apoyo a la industria y con compromisos concretos de las empresas. En el sector del reciclado de residuos urbanos, las acciones coordinadas resultaron ser el mecanismo más efectivo para la

realización de proyectos.

4. Valor añadido

- El valor añadido que representan los programas para la Comunidad, hasta la fecha, es difícil de cuantificar pero, sin ninguna duda, es varias veces mayor que el coste. El beneficio para la Comunidad es todavía pequeño si se tiene en cuenta la enormidad de la masa industrial afectada, aunque pone de manifiesto la insuficiencia de los objetivos y el efecto negativo de la selección que obligan a realizar los límites presupuestarios imperantes.
- El valor añadido es una forma muy específica de valorar el uso del dinero. Puede utilizarse de forma objetiva cuando el resultado de una financiación se puede calcular en esos mismos términos. Esta labor resulta mucho más difícil cuando el valor añadido tiene que definirse de manera subjetiva. No cabe ninguna duda de que, gracias a la calidad de los equipos y grupos de investigación que reciben las ayudas económicas, cualquier resultado será un paso positivo para la mejora y adquisición del conocimiento, incluso si se demuestra que es una vía incorrecta, o cuando el resultado obtenido no tenga aplicación directa alguna.
- Algunos resultados han sido altamente positivos para la Comunidad. Por ejemplo, el descubrimiento de nuevos yacimientos minerales, especialmente de algunas substancias altamente vulnerables. Pero cabe preguntarse si la función correcta de la CCE es sustituir a la empresa privada en actividades de exploración, a no ser que dichas actividades se lleven a cabo como parte de un programa de apoyo a las nuevas tecnologías. Debe señalarse que algunos proyectos de exploración (geología, geofísica, etc.) financiados con fondos comunitarios han sido probablemente los que han obtenido mejores resultados para toda la Comunidad, proporcionando nuevas herramientas e ideas para el descubrimiento de yacimientos minerales.
- En el caso del reciclado de residuos urbanos, el resultado más significativo fue la identificación de los problemas y las complejidades que entraña la gestión del material reciclado y, particularmente, de las plantas incineradoras de basuras.

5. Importancia para la Comunidad

- Todos los programas señalan objetivos generales acordes con los intereses Comunitarios en el campo específico de las materias primas primarias y secundarias.
 - El programa actual hace mayor hincapié en la cooperación y en las actividades multinacionales entre los países de la CE.
- Aunque los proyectos se pueden situar, no sin alguna dificultad en muchos casos, en las diferentes secciones del programa, muchos de ellos persiguen objetivos demasiado concretos y, también con frecuencia, están orientados a la solución de problemas de importancia económica inmediata más que a la obtención de técnicas más generales y básicas que puedan ser más beneficiosas a largo plazo para la CE.
- Debido, probablemente, a la ausencia de una política clara de I+D sobre materias primas, un elevado número de proyectos se podían haber llevado a cabo en el marco de programas nacionales. En estos casos, los proyectos pueden perder interés para el conjunto de la CE. Esto no siempre es así y, por ejemplo, el programa de reciclado de residuos urbanos para la producción de combustibles puede considerarse merecidamente como verdaderamente transnacional ya que evitó la proliferación injustificada de instalaciones contaminantes.
- El programa actual contiene objetivos más generales y revela el considerable esfuerzo realizado para lograr la cooperación multinacional.
- Por tanto, el Comité expresó su acuerdo general con el trabajo realizado y con el interés que éste presenta, tanto para la industria como para la Comunidad en general. No obstante, el Comité estuvo de acuerdo en que el programa estaba muy fragmentado y en que abarcaba temas muy amplios tratados de forma muy esporádica; es decir, ciertos temas se trataron en profundidad mientras que otros de igual importancia se pasaron prácticamente por alto. Esto es el resultado

directo de la incompatibilidad entre el alcance del programa y la financiación disponible, como se ha mencionado anteriormente. Asímismo, ello obliga a seleccionar proyectos de entre una serie de propuestas que ya es de por sí selectiva e incompleta.

- Una situación tal, únicamente se puede mejorar siguiendo, por lo menos, dos líneas de actuación:
 - a) Ampliando las actividades de forma que abarquen problemas más genéricos y "comunes" que incluyan acciones multidisciplinares. De ese modo, el mayor uso y la generación de bases de datos se convertirían en un respetado órgano de referencia. Un ejemplo sería el magnífico trabajo realizado en el programa de coordinación sobre "compost".
 - b) Aumentando de manera significativa el personal y el presupuesto para cumplimentar a) y promover proyectos válidos de forma menos selectiva y más interactiva.

6. Efecto de la evaluación anterior

- El Comité anterior emitió una clara recomendación para los futuros programas de la CE en el campo de la I+D sobre materias primas.

Dicha recomendación sugería que se definiera claramente una política europea de I+D sobre materias primas <u>coherente y pertinente</u> que permitiera a la Comunidad diseñar una estrategia <u>a largo plazo</u>.

- El programa actual (1986-1989) contiene objetivos más generales y se ha realizado un considerable esfuerzo para lograr una cooperación multinacional concentrándose en determinados temas de interés común para varios países, pero las empresas privadas siguen adoleciendo de escasa representación (en el caso del reciclado de residuos urbanos, los organismos responsables son las autoridades municipales).
- Vale la pena señalar que, de la <u>lista</u> de puntos a tener en cuenta para seguir la recomendación mencionada anteriormente en el sentido

de definir una política europea de I+D coherente, la immensa mayoría no han sido incorporados.

- Aparte de la necesidad de concentrarse en la determinación de la política comunitaria mencionada en el punto anterior, el resto de las recomendaciones siguen siendo válidas, especialmente las que se refieren al papel de la Comunidad, que debería proporcionar servicios de cooperación en lugar de participar directamente en un elevado número de proyectos de pequeña envergadura.
- El Comité detectó la incorporación parcial de las recomendaciones de evaluaciones anteriores, en particular por lo que respecta a la realización de proyectos multinacionales y, en alguna medida, a la publicación de informes de síntesis. Con la mejor voluntad del mundo, este Comité declara no sentirse sorprendido de que no se haya realizado un mayor progreso, teniendo en cuenta los escasos efectivos de personal fijo y las limitaciones presupuestarias.

7. Efectividad de la gestión

- La pequeña plantilla de personal permanente soporta en la actualidad el considerable peso de la labor que supone controlar las evaluaciones iniciales y la selección, el seguimiento de los proyectos, incluyendo visitas a instalaciones, y la colaboración para la redacción de los informes finales. Además, este mismo personal tiene que ocuparse de mantener los contactos necesarios con las empresas y las administraciones públicas así como de asegurar la imprescindible comunicación interna.
- Teniendo en cuenta todo esto, así como el elevado número de pequeños proyectos que interesan a áreas científicas y técnicas muy diferentes, la labor de gestión realizada merece la calificación de altamente profesional y efectiva en términos estrictamente técnicos. Dicho esto, resulta evidente que la creación de un organismo consultivo (con participación empresarial) al que pudiera recurrir el personal de la Comisión, ahorraría mucho esfuerzo y desplazamientos.

- No obstante, se considera que se podría aumentar la efectividad de la gestión si la Comunidad concentrara sus esfuerzos de apoyo directo en un número menor de proyectos de interés más general en lugar de un número elevado de proyectos de pequeña envergadura en disciplinas muy variadas. Hay que aumentar también la flexibilidad de manera que sea posible prestar apoyo a proyectos embrionarios a escala menor (de elevado potencial y riesgo).
- El Comité es de la opinión, corroborada por las opiniones de los contratistas entrevistados, que la vía preferida para conseguir un uso más efectivo del sistema de subvención de proyectos, tanto desde el punto de vista económico como del técnico, sería una forma de adjudicación más continua. Además, el Comité considera que ese método es la única manera práctica de incorporar los factores sociales y económicos en evolución continua así como la naturaleza generalmente cíclica en el sector de las materias primas.
- Resulta evidente que, considerando la limitación de la plantilla, la gestión se ve obstaculizada por la ingente carga de trabajo. No obstante, la citada plantilla ha demostrado una considerable energía y, en general, una elevada competencia en todo lo que ha realizado. El nivel de cooperación y coordinación alcanzado tanto dentro de la Comisión como en las relaciones con terceros resulta tanto más encomiable cuando se tiene en cuenta el pequeño número de personas responsables de la tarea. La opinión unánime del Comité es que la penuria de personal va en detrimento de los intereses de la Comunidad y que es necesario un número mayor de funcionarios permanentes que garanticen la realización de lo que es una función muy importante para Europa.
- Una vez resueltos los problemas mencionados hasta aquí, no habrá ninguna razón para que la insignia de las doce estrellas no sea sinónimo de alta calidad y de fiabilidad.

RECOMENDACIONES

1. Introducción

- El Comité consideró necesario formular unas recomendaciones que superaran los límites estrictos de los términos de referencia y que tomaran en consideración las necesidades globales de la industria europea de materias primas y, en concreto, la manera en que la Comisión podría contribuir a satisfacer dichas necesidades. En opinión del Comité, ello podría resultar especialmente útil a la hora de definir los futuros programas marco.
- En la actualidad, no existe ningún foco central para las actividades de la industria comunitaria de materias primas. El Comité opina que es necesario un órgano central claramente definido que proporcione, a la apoyo a los proyectos e información general sobre temas pertinentes ya que, de esta forma, se dispondría de un canal para la transferencia de tecnología y para el desarrollo cuya necesidad se está dejando sentir. En el proceso de definición de una política y una estrategia adecuadas, es necesario definir y concretar los diferentes sectores industriales de aplicación; así, por ejemplo, el Comité opina deberían incluir en toda su extensión los minerales se industriales. Además, se recomienda que los proyectos del tipo de los realizados en virtud del subprograma de reciclado de residuos urbanos deberían encontrar cabida en otros programas adecuados. Las siquientes recomendaciones se han redactado sobre la base de que esto va a ser así.

2. Función de la Comisión

- En opinión del Comité, la Comisión debería realizar una función más prominente y activa a un nivel general más elevado y más genérico que el actual.
- La Comisión debería continuar proporcionando los fondos necesarios para llevar a cabo proyectos válidos, pero procurando que éstos sean de mayor envergadura y de interés general comunitario, sin que por ello

deje de asignar fondos a proyectos pequeños innovadores.

- La Comisión debería emplearse a fondo en el suministro de una base comunitaria para información y promoción del intercambio de tecnología a escala comunitaria de funcionamiento análogo al USEM. Ello implica también medidas legislativas y fiscales. La Comisión debería también asegurar la adecuada cooperación y correlación entre todos los programas asociados o grupos similares, por ejemplo¹, para asegurar un suficiente nivel de actividad en la adquisición y transferencia de conocimientos básicos y para permitir la generación de proyectos de desarrollo industrial.
- La realización del trabajo técnico de los proyectos debería encomendarse, en su totalidad, a las contratistas. Esto no significa que la Comunidad no deba desarrollar sus propios recursos físicos, pero si lo hace antes de haberse establecido en órgano respetado y fiable de información y referencia, corre el riesgo de convertirse en un contratista más, luchando por sobrevivir en el mercado.
- Si bien se reconoce que el sistema actual está ya establecido, la opinión del comité es que no tiene claro su futuro si continúa aislado y, además, no representa la mejor forma de obtener valor añadido de los fondos que la Comunidad invierte en I+D.
- Se recomienda la creación de una <u>Oficina Científica y Técnica para las</u>
 <u>Materias Primas</u> dotada de un equipo de personal adecuado para llevar a cabo lo siguiente:
 - a) Elaboración de un directorio.
 - b) La edición y la difusión rápida de informes sobre proyectos, reuniones de trabajo y seminarios.
 - c) Realización de análisis de mercados completos de los sectores estratégicos.
 - d) La celebración de las conferencias necesarias para fomentar la transferencia de tecnología.

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- e) Contribuir a la elaboración de estándares y normas para la industria.
- f) Apoyar proyectos generales con amplio campo de aplicación e interés multinacional que estén sujetos a una evaluación periódica continua.
- g) Apoyar la innovación.
- Un primer objetivo del personal fijo de la Comisión debería ser la elaboración de un directorio completo en el que se detallaran todas las actividades de investigación en curso en el campo de las materias primas tanto en la CE como en los países asociados con los que existan acuerdos en la actualidad o con los que se concierten acuerdos en el futuro. Este directorio debería ponerse al día continuamente e incluiría todos los proyectos subvencionados por la CE desde el primer programa de materias primas (1978-81), y todos los proyectos subvencionados por la CE en virtud de programas subsiguientes o en curso, así como una información tan completa como fuera posible sobre cualquier otro trabajo sobresaliente de I+D que se estuviera llevando a cabo en el sector privado, semiprivado o público. En él debería también incluirse información sobre instalaciones y equipos. Este directorio constituiría la principal base de datos de la CE sobre materias primas, tendría difusión universal y sería accesible a través de alguna de la redes informáticas de la CE.
- El Comité recomienda que las prioridades para la selección de proyectos se fijen a partir de la información pertinente sobre la oferta y la demanda y que la labor de recopilación de dicha información corra a cargo de la Comisión.
- A lo largo de los años se han realizado algunas tentativas para tener en cuenta las necesidades de la Comunidad en el sector de las materias primas, tanto por parte del personal fijo de la Comisión que se ocupa de los programas sobre materias primas como por el propio Consejo. Es fundamental la elaboración de estudios sobre la situación de la oferta y la demanda de materias primas en la Comunidad, puestos además al día constantemente. La realización de dichos estudios se apoyará en el directorio mencionado anteriormente. No obstante, será necesario obtener datos cuantitativos adicionales sobre la oferta y la demanda de

cada uno de los Estados miembros.

- Dicho estudio conduciría a un análisis permanentemente actualizado de las implicaciones estratégicas de las variaciones en la relación oferta/demanda en la CE, así como de las acciones a corto y largo plazo que hayan de emprenderse por parte de la Comunidad. Además, el estudio proporcionará datos básicos sobre el estado del conocimiento y de sus aplicaciones en el sector de las materias primas en la CE, los efectos socioeconómicos en el interior de la Comunidad y, finalmente, sobre el grado de autosuficiencia en materias primas. El estudio también arrojará luz sobre extraños o atípicos escenarios que pueden desarrollarse a corto plazo, dada la naturaleza altamente cíclica de la industria de las materias primas.
- En la actualidad, las propuestas sobre I+D proceden de entidades privadas, semiprivadas y públicas de los diferentes Estados miembros y se financian parcialmente o no de acuerdo con su adecuación al programa. El Comité considera que la mayor proporción de fondos que se la actualidad a un número menor de transnacionales que en programas anteriores tiene mucho más valor para la Comunidad que la situación anterior. No obstante, si, tal como se recomienda, se llevan a cabo los estudios estratégicos y de mercado mencionados anteriormente, la CE estará en una situación mucho mejor para definir y establecer la naturaleza de los proyectos que se financien.

Coordinación

- El Comité recomienda con especial énfasis que se reexamine cuidadosamente la relación entre la CE y las entidades nacionales responsables de la financiación de I+D a la luz de las recomendaciones mencionadas anteriormente, para conseguir una actuación coherente en I+D sobre materias primas. De esta manera, aumentaría la eficacia que proporcionan funciones bien definidas y delimitadas.
- Ello depende de la realización de acciones adecuadas por parte del Comité consultivo y, por tanto, requiere la comunicación y el

entendimiento efectivos entre dicho Comité y el personal de la Comisión. Además sería de desear que esta comunicación y este entendimiento se ampliaran a los entes empresariales adecuados.

4. Comentarios sobre el futuro programa

- El próximo programa (propuesto para 1989-1992) sigue, en general, el mismo "modus operandi" de los programas anteriores. El Comité recomienda que éste siga su curso normal ya que está en <u>vías de estudio</u> la revisión del programa marco y, por tanto, también la función de las actividades de la Comisión en el campo de las materias primas.
- Para programas posteriores, el Comité recomienda la incorporación de los siguientes puntos :
 - a) Definición del ámbito de responsabilidad de manera que esté adecuadamente representada la industria de los "minerales".
 - b) Un aumento considerable de los efectivos de personal y de la financiación que se corresponda con la importancia real de la industria de los "minerales" para la Comunidad.
 - c) Un enfoque más flexible para la clasificación de los subprogramas, la asignación de fondos y un proceso más interactivo de formulación de los proyectos.
 - d) Que el grueso de la financiación se conceda a un número más reducido de proyectos de gran envergadura, más genéricos y de carácter transnacional.
 - e) Un sistema más efectivo de publicaciones.
 - f) Un flujo continuo de propuestas, evaluaciones y adjudicación de contratos.
 - g) Desarrollo de un servicio de información centralizado en una oficina.
 - h) Una subdivisión más adecuada de determinados programas como el de reciclado.

Por "minerales" entendemos materias primas naturales inorgánicas.

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II. RESUME

Ce résumé reprend les principales questions apparues lors de l'évaluation et les présente en termes de conclusions et de recommandations.

CONCLUSIONS

- 1. <u>Nécessité d'une politique de recherche et de développement dans le</u> domaine des matières premières
 - Le domaine des matières premières primaires et secondaires exige une politique européenne de R & D cohérente et convenablement définie. Cette politique doit avoir une ampleur compatible avec la dimension de ce secteur d'activité pour éviter à l'Europe d'évoluer vers une société dépourvue de matériaux industriels et pour améliorer l'équilibre stratégique entre industries de base et industries de transformation.
 - Il semble que des raisons impératives plaident pour le rattachement du recyclage des déchets au programme de protection de l'environnement; pour ce type de problème, ce sont en effet, indubitablement, les considérations écologiques et les contraintes socio-économiques qui constituent l'axe directeur. On est exactement à l'opposé de la philosophie adoptée initialement, dans le climat industriel du milieu des années soixante-dix, lorsque l'on misait sur les <u>ressources</u> provenant des déchets.
 - En tant qu'organisation supranationale, la CCE doit promouvoir des actions qui seront bénéfiques pour la Communauté en assurant le développement social et économique qui lui permettra de continuer à jouer dans le monde le rôle qui est le sien depuis dix siècles. Ces actions doivent dériver d'une politique bien définie, qui ne saurait consister en une simple addition de considérations nationales. Cela s'applique, en ce qui concerne les matières premières, à un secteur industriel critique dans la mesure où les pays européens dépendent

pour la plus grande part de leur approvisionnement de pays étrangers, avec les risques que cela comporte. D'une part, les fournisseurs ont tendance à participer de plus en plus aux activités en aval, ce qui entraîne une rationalisation des tâches et, d'autre part, la situation en matière d'approvisionnement est directement affectée par le cours des événements économiques et politiques. Les aspects généraux du problème des matières premières s'apparentent à ceux de l'énergie et de l'alimentation.

La politique recherchée doit répondre à des objectifs clairement définis : garantir l'approvisionnement pour permettre le fonctionnement des industries concernées et apporter des solutions satisfaisantes en ce qui concerne, par exemple, les projets "étrangers" et la collaboration avec des pays tiers, y compris pour la fourniture d'équipements et de services.

2. Financement et domaine d'action

- Le niveau de financement est totalement inapproprié à la dimension, au chiffre d'affaires et à la diversité du secteur des matières premières en Europe, qui représente quelque 50 milliards d'écus. Le domaine d'action souhaité, les objectifs et le budget accordé semblent donc incompatibles.

Les programmes d'aide aux activités de recherche et de développement de la CE constituent des réponses partielles aux problèmes de cette industrie. Les trois programmes pluriannuels qui ont été lancés sont définis par la date des activités de recherche, dans le cadre des sous-programmes suivants :

Matières premières primaires :

1978-1981 pour un budget de financement de 18 millions d'écus 1982-1985 " " 25 millions d'écus

1986-1989 " " 20 millions d'écus.

Matières premières secondaires :

- a) Recyclage des métaux non ferreurx
- b) Recyclage et utilisation des déchets

1979-1982 pour un budget de financement de 9¹ millions d'écus 1982-1985 " " 6,5 millions d'écus 1986-1989 " " 10 millions d'écus

- Les crédits alloués ne sont pas suffisants pour exercer une réelle influence sur la situation européenne dans ce secteur industriel, si l'on considère son importance en termes de capitaux et de maind'oeuvre et, qui plus est, sa diversité. Il faut savoir que l'industrie des matières premières a atteint un seuil de maturité et que, du fait du caractère cyclique de son évolution économique, elle souffre d'un tel manque de capitaux que sa compétitivité s'en trouve compromise, et met ainsi en danger plusieurs secteurs considérés par la CE comme cruciaux pour le développement de l'Europe. C'est là un scénario très différent de celui que l'on a observé pour le recyclage des déchets urbains, activité née de la dépression et de la crise énergétique.
- Bien que de nombreux projets aient pu être financés, ils ne couvrent pas parfaitement les différents aspects des objectifs; en outre, du fait de leur dispersion, ils ne sont pas convenablement centrés sur les aspects principaux. La stratégie adoptée pour soutenir des projets aussi nombreux a conduit à un regroupement de la plupart d'entre eux autour de thèmes locaux ou spécifiques. Les mesures prises dans le programme actuel 1986-1989 pour favoriser des projets plurinationaux vont assurément dans le bon sens mais ne sont pas suffisantes pour répondre à des problèmes touchant l'ensemble de ce secteur dans la Communauté.

¹ Certains crédits ont été prolongés jusqu'en 1985

3. Contenu technique

- Le contenu technique des programmes à ce jour est, à dire vrai, tout à fait remarquable; le groupe ne peut que louer les résultats de chaque projet. Le pourcentage de réussite mesurable est très élevé; un grand nombre de projets ont donné lieu à d'autres travaux et, dans certains cas, à la mise au point de matériels et de procédés industriels, ainsi qu'à des progrès généraux dans l'exploitation des minerais.

Une évaluation technique a été effectuée pour le compte du CGC au milieu de l'année 1988 et le présent groupe d'évaluation se rallie entièrement à ses conclusions. En réalité, cela ne devrait pas surprendre, l'excellente qualité et le caractère novateur des activités de recherche et de développement menées dans les diverses organisations européennes ayant toujours été reconnus. Mais il faut également admettre que le système, tel qu'il est appliqué, oblige à une sélection sévère, qui non seulement élimine des projets incomplètement adaptés lors de l'appel d'offres, mais privilégie les organismes qui sont capables en eux-mêmes de mener leurs activités de recherche et de développement de façon continue.

- Le programme de recherche et de développement dans ses dimensions actuelles est considéré comme un simple aspect du rôle idéal de la Commission et le seul fait de dépenser de l'argent pour soutenir certains projets gagnants parmi des soumissions généralement bonnes ne semble pas suffisant pour assurer le rendement des investissements.
- Le fait de fournir des fonds relativement modestes à toute une gamme d'activités conduit non seulement à une dispersion des efforts, mais aussi à des problèmes de double emploi avec les programmes nationaux d'aide à l'industrie et les obligations individuelles des sociétés. Dans le secteur du recyclage et de l'utilisation des déchets, c'est l'action coordonnée qui a constitué le mécanisme le plus efficace.

4. Valeur ajoutée

- La valeur ajoutée des programmes pour la Communauté est difficile à quantifier, mais elle est sans aucun doute supérieure de plusieurs ordres de grandeurs à leur coût. Malgré tout, l'avantage est faible pour la Communauté si l'on considère l'ampleur du secteur industriel en jeu. Ceci vient ainsi mettre en relief les exercices de ciblage et de sélection découlant des contraintes budgétaires.
- La valeur ajoutée constitue un moyen très spécifique d'apprécier l'utilisation de l'argent. C'est une donnée objective lorsque le financement et son résultat se calculent dans les mêmes termes. L'exercice devient plus délicat lorsque la valeur ajoutée doit être définie dans des termes subjectifs. Il ne fait aucun doute que, étant donné la qualité des équipes et des groupes de recherche financés, tout résultat est un apport positif à l'acquisition des connaissances, même si ce résultat ferme certaines issues ou ne peut donner lieu à des applications directes.
- Certains résultats ont été très positifs pour la Communauté, notamment la découverte de nouveaux gisements de minerai, surtout lorsqu'il s'agit de substances très vulnérables. Mais il reste à déterminer si la CE a effectivement pour fonction de se substituer aux sociétés dans l'activité d'exploration en dehors des cas où cela découle des technologies diffusantes. Il faut reconnaître que ce sont certains projets financés en matière d'exploration (géologie, géophysique) etc.) qui ont constitué les plus grandes réussites sur le plan communautaire en fournissant de nouveaux outils et de nouveaux concepts pour la découverte de gisements de minerais.
- Dans le cas du recyclage et de l'utilisation des déchets, le résultat principal a été l'identification des problèmes et des complexités qui caractérisent la gestion des matériaux recyclés et notamment des usines d'incinération des ordures ménagères.

5. Utilité pour la Communauté

- Tous les programmes vont dans le sens des objectifs généraux qui intéressent la Communauté dans le domaine des matières premières primaires et secondaires.

Le programme actuel est davantage axé sur la coopération et les activités multinationales au sein des pays de la Communauté européenne.

- Si les projets s'inscrivent, bien souvent non sans difficulté, dans les différentes sections du programme, un grand nombre d'entre eux visent des objectifs trop spécifiques et s'attachent en outre souvent à résoudre des difficultés dont l'importance économique est immédiate plutôt qu'à favoriser la mise au point de techniques plus générales et fondamentales qui, à long terme, seraient bénéfiques pour l'ensemble de la Communauté européenne.
- Sans doute, en raison de l'absence d'une politique précise de recherche et de développement dans les domaines des matières premières, une grande partie des projets considérés aurait pu, en fait, être exécutée dans le cadre de programmes nationaux. Ce type de projet présente peut-être moins d'intérêt pour l'ensemble de la Communauté.

Cette dernière remarque n'est cependant pas universelle et, par exemple, le programme sur les combustibles dérivés des déchets peut être considéré comme véritablement transnational et a permis d'éviter la prolifération injustifiée d'usines représentant une nuisance pour l'environnement.

 Le programme en cours a des objectifs plus généraux et un effort considérable a été fait pour parvenir à une coopération multinationale.

- Le groupe d'évaluation était par conséquent d'accord, dans l'ensemble, pour juger le travail effectué comme adapté aux besoins tant de l'industrie que de la Communauté. Il a convenu cependant que le programme était très fragmenté et couvrait un vaste domaine de façon sporadique, c'est-à-dire qu'il traitait certains sujets de façon très complète, mais en négligeant presque totalement d'autres questions d'égale importance. C'est là un résultat direct de l'incompatibilité déjà évoquée entre le domaine d'action fixé et le financement, qui oblige à sélectionner des projets à partir d'une gamme de propositions déjà incomplète.
- On ne peut améliorer une telle situation qu'en agissant au moins sur deux plans :
 - a) un élargissment des activités, de façon à couvrir des problèmes plus génériques et plus "communs" (avec notamment des actions multidisciplinaires); l'utilisation et la production accrues de bases de données peuvent faire de la Commission une autorité de référence respectée. (On pense notamment au travail très réussi effectué dans le cadre du programme de coordination sur le compostage.);
 - b) une augmentation importante des effectifs et du budget pour satisfaire au point a) précédent et pour permettre une promotion de projets intéressants moins sélective et plus interactive.

6. Effet des évaluations précédentes

- Le groupe d'évaluation précédent a fait des recommandations claires concernant les futurs programmes de la Commission des Communautés européennes dans le domaine de la recherche et du développement des matières premières.

Il a recommandé de définir avec précision une politique européenne cohérente et pertinente de recherche et de développement dans le domaine des matières premières, de façon à ce que la Communauté établisse une stratégie lui assurant un avantage à <u>long terme</u>.

- Le programme actuel (1986-1989) comporte des objectifs plus généraux et un effort considérable a été fait pour parvenir à une coopération multinationale en mettant l'accent sur certains sujets intéressant divers pays, même si les entreprises (dans le cas du recyclage des déchets, les autorités municipales) demeurent sous-représentées.
- On relevait en particulier dans l'évaluation précédente une <u>liste</u> de points à examiner pour pouvoir mettre en œuvre la recommandation mentionnée plus haut, visant à définir une politique européenne cohérente de recherche et de développement. Dans la plupart des cas, il semble qu'on n'ait pas tenu compte de ces points.
- La nécessité de définir cette politique européenne constituait l'axe principal, mais il semble que le reste des recommandations soient toujours valables, notamment celles qui insistent sur le fait que la Communauté doit offrir des services de coopération plutôt que participer directement à un grand nombre de petits projets.
- Certains éléments attestent cependant de l'application des recommandations des évaluations précédentes, notamment l'évolution vers des projets multinationaux et, dans une certaine mesure, la publication de rapports de synthèse. Le groupe d'évaluation reconnaît que, même avec la meilleure volonté du monde, il n'est guère surprenant qu'on n'ait pas davantage progressé, étant donné le manque de personnel à plein temps et les contraintes financières imposées.

7. Efficacité de la gestion

- La petite équipe de personnel permanent doit actuellement assumer la tâche considérable qui consiste à suivre les évaluations et la sélection initiales, à surveiller l'avancement des projets, y compris par des visites sur le terrain et une aide à la rédaction des rapports finaux, ainsi qu'à entretenir les contacts industriels et gouvernementaux nécessaires, et les indispensables communications internes.

- Compte tenu de tout cela, ainsi que du grand nombre de petits projets relevant de domaines scientifiques et techniques très différents qui sont inclus dans les programmes, la gestion fournie doit être considérée comme étant d'un haut niveau professionnel et d'une efficacité rigoureuse sur le plan technique. Il est évident qu'on pourrait décharger le personnel de la Commission d'un certain nombre de tâches et notamment de déplacements en nommant un organe de consultation (essentiellement composé de représentants de l'industrie).
- On estime, cependant, que la gestion pourrait être plus efficace si l'on faisait porter l'effort de la Communauté, en termes de soutien direct à des projets, sur un plus petit nombre de projets relevant de disciplines très diverses. Une souplesse plus grande est aussi nécessaire pour soutenir des projets à l'état embryonnaire à plus petite échelle (potentiel élevé/risque des investissements).
- Le groupe d'évaluation estime, avec les organismes contractants interrogés, que c'est en adoptant une forme continue d'attribution des projets que l'on obtiendrait, d'un point de vue commercial et technique, la gestion la plus efficace des subventions. Il considère en outre que seule cette méthode permet de tenir compte de façon concrète de l'évolution des facteurs sociaux et économiques, ainsi que du caractère cyclique général de l'industrie des matières premières.
- Il est évident, étant donné ses très faibles effectifs, que l'équipe de gestion actuelle est soumise à une charge de travail excessive. Elle a néanmoins fait preuve d'une énergie et d'une compétence technique générale considérable dans le travail accompli; la coopération et la coordination mises en place aussi bien à l'intérieur de la Commission qu'avec de tierces parties témoignent

d'autant plus en sa faveur que ses effectifs sont plus réduits. Le groupe d'évaluation estime unanimement que l'insuffisance du personnel nuit aux intérêts de la Communauté et qu'il faut affecter un groupe plus important de fonctionnaires permanents à une mission qui revêt une grande importance pour l'Europe.

- Si des solutions satisfaisantes sont apportées aux problèmes ci-dessus, il n'y a aucune raison que les douze étoiles ne soient pas synonymes d'un développement de haute qualité et d'une source de standards généralement acceptés.

RECOMMANDATIONS

1. Remarques préliminaires

- Le groupe d'évaluation a senti la nécessité de formuler des recommandations qui dépassent les strictes limites de son mandat en tenant compte des besoins de l'industrie européenne des matières premières, et notamment de la façon dont la Commission pourrait les satisfaire et aider la Communauté dans son ensemble. Cela a semblé au groupe particulièrement utile pour la définition des futurs programmes-cadres.
- Il n'y a pas, jusqu'à présent, de centre directeur des activités de l'industrie des matières premières dans la Communauté et le groupe d'évaluation estime utile et même nécessaire de créer un organe central clairement identifié, qui serait chargé à la fois de soutenir des projets et de faire un travail d'information sur les principaux thèmes concernés et qui définirait les orientations principales en matière de transfert de technologies et de développement. Ce processus d'orientation politique et stratégique implique aussi une redéfinition des secteurs d'activité et notamment, de l'avis du groupe d'évaluation, une prise en ligne de compte totale des minéraux industriels. Il est recommandé en outre

de replacer dans d'autres programmes plus appropriés les types de projets menés dans le cadre du sous-programme de recyclage des déchets urbains et les recommandations qui suivent sont faites dans cette hypothèse.

2. Rôle de la Commission

- Le groupe d'évaluation considère que la Commission devrait jouer un rôle moteur plus marqué, en agissant à un niveau plus élevé et plus général qu'à présent.
- La politique de subventions en faveur de projets utiles doit être maintenue, mais dans le cadre d'entreprises plus vastes et en tenant compte davantage des intérêts communs, tout en subventionnant aussi quelques projets novateurs à plus petite échelle.
- La Commission doit jouer un rôle décisif dans la création d'un système européen d'échange d'informations et de technologies analogue à celui proposé par l'USEM. Cela implique aussi des mesures législatives et fiscales. La Commission doit aussi veiller à une bonne corrélation et coopération entre tous les programmes connexes ou groupements analogues, par exemple¹, pour garantir une activité suffisante en matière d'acquisition et de transfert des connaissances de base, et pour favoriser la conception de projets de développement industriel.
- Le groupe d'évaluation juge que l'exécution même de la partie technique des projets doit être placée, d'une façon générale, sous la responsabilité des contractants. Cela ne signifie pas que la Communauté ne doive pas développer ses propres ressources physiques, mais qu'elle risque, en le faisant avant d'être devenue une autorité d'information et de référence respectée, de se trouver soumise aux

DG III, DG XI, DG XII, DG XIII et DG XVII

lois du marché, et d'avoir à assurer sa survie comme n'importe quel autre organisme de recherche contractant.

- Le présent système est, certes, une base réelle de progrès, mais il ne suffit pas à garantir l'avenir et ne constitue pas, de l'avis du groupe d'évaluation, le meilleur moyen de faire fructifier tous les investissements de la Communauté en matière de recherche et de développement.
- Il est recommandé de créer un <u>bureau scientifique et technique des</u> <u>matières premières</u>, doté d'un personnel suffisant pour remplir les fonctions suivantes :
 - a) constitution d'une base de données (répertoire);
 - b) service de publication se chargeant de la diffusion appropriée et rapide de rapports sur les projets, les colloques et les séminaires;
 - c) exécution d'enquêtes approfondies sur des secteurs stratégiques du marché;
 - d) organisation des conférences nécessaires pour promouvoir les transferts de technologies;
 - e) aide à la mise au point des normes industrielles;
 - f) soutien à des projets d'ordre général sur des sujets à application large et sur une base trans- ou multinationale, avec un système d'évaluation périodique;
 - g) encouragement à l'innovation.
- Le personnel permanent de la Commission devrait s'attacher en premier lieu à la production d'un répertoire complet exposant toutes les activités de recherche en cours dans le domaine des matières premières, dans toute la Communauté européenne et dans les pays tiers avec lesquels des liens existent déjà ou vont être établis. Ce répertoire, régulièrement mis à jour, recenserait tous les projets financés par la Communauté européenne depuis le premier programme concernant les matières premières (1978-1981), et tous les autres

projets financés par la Communauté européenne dans le cadre de programmes ultérieurs et actuels, et contiendrait des informations aussi complètes que possible sur tous les autres travaux de recherche et de développement réalisés dans les secteurs privé, semi-public et public. Il faudrait également recenser les installations et équipements. Ce répertoire, qui constituerait la principale base de données des Communautés européennes sur les matières premières, serait diffusé universellement et serait accessible au moyen de l'un des réseaux télématiques de la Communauté européenne.

- Le groupe d'évaluation souligne que, pour déterminer les projets prioritaires, il faut disposer d'un bon système d'information sur l'offre et la demande et que la Commission est peut-être la plus apte à fournir ce type de service.
- Le personnel permanent de la Commission chargé du programme sur les matières premières et le Conseil avaient déjà tenté dans le passé de prendre la mesure des besoins de la Communauté dans le secteur des matières premières. Il est essentiel d'effectuer régulièrement des enquêtes sur l'offre et la demande de matières premières dans la Communauté, avec l'aide du répertoire, mais en recueillant en outre des données quantitatives détaillées sur l'offre et la demande dans chacun des Etats membres.
- Ce type d'enquête doit permettre une analyse sans cesse remise à jour des conséquences stratégiques des fluctuations du rapport entre l'offre et la demande dans toute la Communauté européenne, et des actions à court et à long terme qui doivent être lancées par la Communauté. En outre, cette enquête fournira des données indispensables sur le savoir-faire européen dans le secteur des matières premières, sur les conséquences socio-économiques à l'intérieur de la Communauté et sur le degré d'autonomie dans le domaine des matières premières. Cela permettra également d'améliorer les prévisions, jusqu'ici souvent erronées en raison du caractère

très cyclique de ce secteur, sur l'évolution à court terme de l'industrie des matières premières.

- Actuellement, les propositions en matière de recherche et de développement émanent d'organismes privés, semi-publics et publics des divers Etats membres et sont en partie subventionnées ou non subventionnées, en fonction de leur utilité pour le programme. De l'avis du groupe d'évaluation, la politique actuelle consistant à financer plus généreusement un plus petit nombre de projets transnationaux donne de bien meilleurs résultats pour l'ensemble de la Communauté que ne le faisaient les programmes de subvention antérieurs. Toutefois, les études stratégiques et de marché recommandées ci-dessus donneraient à la Communauté européenne beaucoup plus de moyens pour définir et pour imposer le type de projets qu'elle veut financer.

3. Liaison

- Le groupe d'évaluation recommande fortement de réexaminer de près, à la lumière de ses autres recommandations, le lien entre la Communauté européenne et les organismes nationaux qui financent la recherche et le développement, de façon à mettre en place une politique cohérente de recherche et de développement dans le domaine des matières premières. On pourra ainsi départager et définir au mieux les rôles de chacun.
- La réponse à cette question dépend de l'action que mène de son côté le comité consultatif; aussi est-il indispensable d'établir entre ce comité et le personnel de la Commission une communication et une compréhension réelles. Il serait en outre très souhaitable que cette communication et cette compréhension soient étendues aux organismes industriels concernés.

4. Observations sur le futur programme

- Le prochain programme (proposé pour 1989 à 1992) est conçu selon un schéma analogue à celui des programmes précédents. Le groupe d'évaluation recommande de continuer à suivre ce schéma dans la mesure où l'on s'attache réellement à redéfinir le programme-cadre et par conséquent le rôle de la Commission dans le domaine des matières premières.
- En ce qui concerne les futurs programmes, le groupe recommande de prévoir :
 - a) une clarification dans le domaine de la responsabilité, de façon à mieux représenter l'industrie des "minerais"¹
 - b) une dotation en personnel et un financement beaucoup plus importants, correspondant à l'importance réelle de l'industrie des "minéraux" pour la Communauté;
 - c) un système de classification des sous-programmes et de distribution du financement plus souple, et une démarche plus interactive pour la définition des projets;
 - d) la répartition de la majeure partie du financement entre des projets transnationaux moins nombreux, mais plus vastes et à caractère plus général;
 - e) un système de publication plus efficace;
 - f) une formule garantissant la continuité en matière de propositions de projets, d'évaluation et d'attribution des contrats;

Par "minerais" nous entendons ici des matières premières naturelles inorganiques.

- g) la création d'un service centralisé d'information, sous la forme d'un bureau;
- h) une subdivision plus appropriée des programmes de recyclage et autres programmes.

II. SOMMARIO

Il presente sommario riprende i punti principali emersi durante la valutazione e li presenta in termini di conclusioni e raccomandazioni.

CONCLUSIONI

- 1. <u>Necessità di una politica di ricerca e sviluppo nel settore delle materie</u> prime
 - E' necessaria una politica europea di ricerca e sviluppo debitamente concordata e coerente nel campo delle materie prime primarie e secondarie; tale politica deve essere adeguata all'importanza commerciale del settore per evitare che l'Europa non abbia più materie prime e per raggiungere un migliore equilibrio strategico tra industria di base ed industrie manifatturiere.
 - Sembra esistano motivi impellenti per ritenere che il riciclaggio dei rifiuti debba rientrare in un programma sull'ambiente considerato che la forza motrice in tali questioni proviene indiscutibilmente da considerazioni ambientali e da esigenze socio-economiche. Questo in diretto contrasto con i criteri sviluppatisi nel clima industriale della metà degli anni '70 quando divennero significative le risorse "basate sui rifiuti".
 - In quanto organizzazione sovranazionale, la Commissione delle Comunità europee deve promuovere azioni che consentano alla Comunità quello sviluppo economico e sociale di cui ha bisogno per continuare a svolgere a livello mondiale lo stesso ruolo guida avuto negli ultimi 10 secoli. Queste azioni devono essere il risultato di una politica ben definita che non può essere un semplice aggregato di considerazioni nazionali. Per quanto riguarda le materie prime ciò deve applicarsi ad un settore industriale critico dato che, per la maggior parte del loro approvvigionamento, i paesi europei dipendono da paesi terzi, con i relativi rischi associati. Alla tendenza generale dei fornitori ad intensificare la loro partecipazione alle operazioni a valle con conseguente razionalizzazione delle attività corrispondenti si aggiunge

il fatto che la situazione dell' approvvigionamento risente direttamente dei mutamenti economici e politici. La situazione generale delle materie prime è analoga a quella dei settori energetico e alimentare.

Occorre una politica che risponda agli obiettivi chiaramente definiti volti a garantire l'approvvigionamento indispensabile per mantenere vitali le industrie interessate e affronti adeguatamente problemi quali i progetti "stranieri" e la collaborazione con i paesi terzi, incluso l'approvvigionamento di servizi ed impianti.

2. Finanziamento e portata

- Il livello del finanziamento è del tutto inadeguato alla dimensione, al volume degli utili e alla diversità del mercato europeo delle materie prime, valutabile a circa 50 Mrd di ECU. La portata, gli obiettivi ed il bilancio disponibile risultano quindi incompatibili. I programmi della CEE di sostegno alle attività di ricerca e sviluppo rappresentano una risposta parziale ai problemi dell'industria. I tre programmi pluriennali lanciati sono definiti in base agli anni di effettiva attività di ricerca secondo i seguenti sottoprogrammi.

Materie prime primarie:

1978-1981	con un finanziamento di	18 Mio di ECU
1982-1985		25 Mio di ECU
1986-1989		20 Mio di ECU

Materie prime secondarie:

- a) Riciclaggio dei metalli non ferrosi
- b) Riciclaggio e utilizzazione dei rifiuti

1979-1982	con un	finanziamento di	(1)و	Mio di ECU
1982-1985			6,5	Mio di ECU
1986-1989			10	Mio di ECU

in parte riportati fino al 1985.

Il volume di tali stanziamenti non è tale da incidere effettivamente sulla situazione europea in questo settore industriale, consideratane l'importanza in termini di capitale e manodopera implicata e conoscendone inoltre la diversità. Tutto questo visto dalla prospettiva che l'industria delle materie prime è matura e che, per la natura ciclica del suo sviluppo economico, riceve stanziamenti sempre più insufficienti, al punto da comprometterne la competitività con gravi rischi per numerosi settori giudicati cruciali dalla CCE per lo sviluppo dell'Europa. Si tratta di un quadro ben diverso da quello del riciclaggio io dei rifiuti urbani, imposto dalla recessione e dalla crisi energetica.

- Benchè siano stati sostenuti finanziariamente diversi progetti, questi ultimi non coprono adeguatamente molti degli aspetti indicati dagli obiettivi nè, per la loro frammentazione, si concentrano sugli aspetti critici. La strategia adottata di sostenere un numero così elevato di progetti ha condotto a finanziare progetti riguardanti nella maggior parte dei casi problemi locali o specifici. Il criterio scelto per l'attuale programma 1986-1989 di dare la preferenza a progetti plurinazionali è senz'altro un passo nella giusta direzione ma non è ancora sufficiente per creare condizioni che permettano di risolvere i problemi dell'industria a livello comunitario.

3. Contenuto tecnico

- Il contenuto tecnico dei programmi attuali è del massimo livello. Il gruppo non puo' che felicitarsi dei risultati dei singoli progetti. Vi è stato un livello estremamente elevato di successi quantificabili e molti progetti hanno generato nuove attività e in alcuni casi hanno determinato lo sviluppo di attrezzature e processi industriali e un miglioramento generale delle tecniche di estrazione minerarie.
- Verso la metà del 1988 è stata effettuata una valutazione tecnica per conto del CGC i cui risultati sono interamente condivisi dal presente gruppo. La cosa non sorprende giacchè le attività di ricerca e sviluppo svolte nelle varie organizzazioni europee sono sempre state apprezzate per il loro alto livello di qualità ed innovazione.

Va tuttavia detto che il sistema così come viene applicato provoca una forte selezione che oltre ad eliminare progetti non esattamente rispondenti alle condizioni dell'invito a presentare proposte favorisce gli organismi in grado di svolgere le loro attività di ricerca e sviluppo in maniera continuativa.

- La formula dell'attuale programma di ricerca e sviluppo è soltanto un aspetto del ruolo ideale della Commissione e il semplice fatto di spendere soldi per sostenere i progetti prescelti tra una una serie generalmente valida di proposte non appare sufficiente per garantire un ritorno degli investimenti.
- Lo stanziamento di fondi relativamente modesti per una vasta gamma di attività, oltre a risultare in una dispersione degli sforzi, crea anche problemi di sovrapposizione con gli aiuti di programmi nazionali di assistenza industriale nonchè con gli obblighi delle singole società. Nel settore del Riciclaggio dei Rifiuti Urbani, l'azione coordinata si è risultato il meccanismo più efficace di realizzazione dei progetti.

4. Valore aggiunto

- Il valore aggiunto rappresentato per la Comunità dai programmi finora svolti è difficile da quantificare ma è senz'altro di vari ordini di grandezza superiore ai costi. Tuttavia i benefici sono ancora scarsi se si tiene conto dell'enorme massa industriale interessata e non servono altro che ad evidenziare la modestia delle procedure di definizione degli obiettivi e di selezione imputabile alle restrizioni di bilancio.
- Il valore aggiunto è uno strumento molto specifico di valutazione dell'impiego del denaro. Tuttavia esso puo' essere usato obiettivamente soltanto se il risultato di un finanziamento si puo' calcolare negli stessi termini. La valutazione diventa invece difficile quando il valore aggiunto deve essere definito in termini soggettivi. Non vi è dubbio che, data la qualità dei gruppi di ricerca finanziati, qualsiasi risultato è un passo in avanti verso l'acquisizione di conoscenza anche se chiude alcune porte o non può essere seguito da applicazioni dirette.

- Alcuni risultati sono stati altamente positivi per la Comunità; ad esempio, la scoperta di nuovi corpi minerali, soprattutto nel caso di sostanze particolarmente "critiche". C'è tuttavia da chiedersi se spetti alla CEE sostituirsi alle società nell'attività esplorativa, a meno che non si tratti del finanziamento di tecnologie di sostegno. Si deve ammettere che alcuni dei progetti di esplorazione finanziati (geologia, geofisica, ecc.) sono stati probabilmente quelli che hanno riscosso maggior successo a livello comunitario in quanto hanno fornito nuovi strumenti e nuove idee per scoprire depositi minerari.
- Nel caso del Riciclaggio dei Rifiuti Urbani, l'esito più significativo è stata l'individuazione dei problemi e delle difficoltà concernenti la gestione di materiale riciclato ed in particolare quelli relativi agli impianti per la combustione di rifiuti.

5. Interesse per la Comunità

- Tutti i programmi si prefiggono obiettivi generali di interesse per la Comunità nel campo delle materie prime, sia primarie che secondarie. Il programma attuale attribuisce maggiore importanza alla cooperazione e alle attività multinazionali nei paesi CEE.
- Sebbene i progetti possano essere inseriti, non senza difficoltà in molti casi, in una delle sezioni del programma, molti riguardano obiettivi troppo specifici e sovente sono destinati a risolvere situazioni d'importanza economica immediata anzichè a contribuire a sviluppare tecniche più generali e fondamentali che producano vantaggi a lungo termine alla CEE nel suo insieme.
- Probabilmente a causa della mancanza di una precisa politica di ricerca e sviluppo sulle materie prime, molti dei progetti attualmente all'esame avrebbero potuto essere sviluppati nell'ambito di programmi nazionali. In questi casi può darsi che i progetti esaminati risultino meno interessanti per la CEE nel suo insieme.
- Questa considerazione ovviamente non è sempre valida e, ad esempio, il programma Riciclaggio dei Rifiuti Urbani sui combustibili derivati dai rifiuti potrebbe essere definito come un programma autenticamente

transnazionale che evita la ingiustificata proliferazione di impianti dannosi per l'ambiente.

- Il programma in corso contiene obiettivi più generali ed è stato fatto un notevole sforzo per promuovere la cooperazione multinazionale.
- Il gruppo ha pertanto raggiunto un ampio consenso sul fatto che il lavoro svolto soddisfa sia le esigenze dell'industria che le esigenze della Comunità. Tuttavia ha anche ammesso che il programma è molto frammentario e copre in modo sporadico una materia vasta, vale a dire tratta esaurientemente alcuni argomenti mentre altre questioni di pari importanza sono esaminate superficialmente. Questo è il risultato diretto della summenzionata sproporzione tra portata del programma e volume di finanziamento, da cui deriva che la selezione viene effettuata su una gamma già molto ristretta e incompleta di proposte.
- Si può migliorare tale situazione con almeno due tipi di azione :
 - a) Ampliando le attività per estenderle a problemi più generici e "più comuni", ivi incluse azioni multidisciplinari. Attraverso un maggior uso e una maggiore produzione di base di dati, che diventerebbero un termine di riferimento attendibile, ad esempio come il lavoro, che ha riportato enorme successo, svolto per il programma di coordinamento sul compostaggio.
 - b) Aumentando considerevolmente il personale e il bilancio per realizzare quanto in (a) e per promuovere progetti validi in maniera meno selettiva e più interattiva.

6. Effetti della valutazione precedente

 Il gruppo precedente aveva formulato una chiara raccomandazione per i futuri programmi CEE nel campo della ricerca e sviluppo sulle materie prime.

Aveva raccomandato di definire chiaramente una politica di ricerca e sviluppo europea coerente e pertinente per le materie prime al fine di permettere alla Comunità di elaborare una strategia di cui possa beneficiare a lungo termine.

- L'attuale programma (1986-1989) contiene obiettivi più generali ed è stato fatto uno sforzo notevole per realizzare una cooperazione multinazionale concentrando le iniziative su alcuni aspetti che interessano vari paesi, benché le imprese industriali (le autorità municipali nel caso del riciclaggio dei rifiuti urbani) siano tuttora poco rappresentate.
- Particolarmente interessante è l'elenco di punti da considerare al fine di porre in atto la suddetta raccomandazione di definizione di una politica di ricerca e sviluppo europea coerente. Sembra che nella maggior parte dei casi tali punti non siano stati invece considerati.
- Oltre all'accento sulla necessità di definire una simile politica CEE, anche gli altri aspetti della raccomandazione sono ancora validi, soprattutto quelli riguardanti il ruolo della Comunità come fornitrice di servizi di cooperazione piuttosto che come partecipante attiva ad un numero elevato di piccoli progetti.
- Il gruppo ha quindi constatato che in alcuni casi si è tenuto conto di raccomandazioni di valutazioni precedenti, soprattutto per quanto riguarda la preferenza a progetti multinazionali e in una certa misura la pubblicazione di rapporti riepilogativi. Non sorprende che non si siano fatti maggiori progressi date l'esiguità del personale a tempo pieno e le restrizioni finanziarie.

7. Efficacia della gestione

- Il poco personale fisso sostiene attualmente il pesante onere di controllare le valutationi iniziali e la selezione, di sorvegliare i progressi compiuti, incluse visite in loco e l'assistenza nella redazione dei rapporti definitivi, oltre a quello di mantenere i necessari contatti con l'industria e i governi e di assicurare le indispensabili comunicazioni interne.
- Tenendo conto di quanto sopra, oltre che del gran numero di piccoli progetti che interessano campi scientifici e tecnici molto diversi, si

puo'affermare che sotto il profilo puramente tecnico la gestione è stata svolta in molto estremamente professionale ed efficace. E'chiaro che la costituzione di un organo di consulenza (formato da rappresentanti dell'industria) a disposizione dal personale della Commissione eviterebbe notevoli sforzi soprattutto per quanto riguarda gli spostamenti.

- Si è tuttavia constatato che l'efficacia della gestione potrebbe essere migliorata se lo sforzo della Comunità in termini di sostegno diretto ai progetti si concentrasse su un numero più limitato di progetti di maggiore interesse generale anzichè su un gran numero di piccoli progetti riguardanti argomenti che interessano varie discipline. Vi è inoltre la necessità di aumentare la flessibilità al fine di sostenere progetti embrionici su una scala più piccola (elevato potenziale/finanziamento a rischio).
- Il gruppo ha espresso il parere, confermato dalle interviste svolte con i contraenti, che una maggiore continuità nell'appalto dei progetti sia il metodo da preferire, per motivi tecnici e commerciali, volendo sfruttare in modo ottimale i fondi assegnati al progetto. Il gruppo ritiene inoltre che sia questo l'unico modo pratico di tener conto di fattori economici e sociali mutevoli e della natura generalmente ciclica del mercato delle materie prime.
- E' del tutto chiaro che il personale incaricato, pur esiguo, ha gestito il programma sotto il peso di un enorme carico di lavoro ma dando prova allo stesso tempo di grande energia e competenza tecnica generale nel raggiungimento dei risultati. Il livello di cooperazione e coordinamento transfrontalieri raggiunti, sia all'interno della Comunità che con paesi terzi, è ancora più meritorio visto l'esiguo numero di persone impegnate. Il gruppo è unanime nel ritenere che la scarsezza di personale non sia nell'interesse della Comunità e che occorre un gruppo più ampio di funzionari fissi per svolgere quello che è considerato un ruolo estremamente importante per l'Europa.
- Con una adeguata soluzione dei problemi precedenti, non vi è alcun motivo per cui lo stemma a 12 stelle non debba essere sinonimo di sviluppo di alta qualità e all'origine di norme ampiamente accettate.

RACCOMANDAZIONI

1. Premessa

- Il gruppo ha ritenuto necessario non limitare le sue raccommandazioni ai soli obiettivi ma estenderle al quadro più ampio delle esigenze dell'industria europea delle materie prime e, più particolarmente, al modo in cui la Commissione potrebbe soddisfarle ed aiutare la Comunità nel suo insieme. A parere del gruppo tali raccomandazioni dovrebbero risultare particolarmente utili nella definizione dei futuri programmi quadro.
- Poichè non esiste attualmente alcun punto di riferimento per le attività dell'industria comunitaria delle materie prime, il gruppo ritiene che un organo centrale dalle caratteristiche ben definite individuabile che fornisca sia sostegno ai progetti che informazioni su questioni generali dovrebbe e potrebbe svolgere quell'indispensabile azione di promozione del trasferimento e dello sviluppo di tecnologie. Nel definire una strategia ed una politica appropriata, occorre anche precisare i settori di attività; a parere del il gruppo si dovrebbero per esempio inserire nel programma anche i minerali industriali. Viene inoltre raccomandato di riprendere i tipi di attività svolte nel quadro del sottoprogramma Riciclaggio dei Rifiuti Urbani in altri programmi opportuni; le raccomandazioni seguenti partono da questa ipotesi.

2. Ruolo della Commissione

- Il gruppo ritiene che la Commissione dovrebbe essere assumere un ruolo decisamente più attivo ad un livello più elevato e più generale di quanto succeda attualmente.
- Il ruolo attuale che consiste nel formire fondi per progetti validi dovrebbe essere mantenuto ma orientato maggiormente al finanziamento di moduli di maggiore consistenza e all'ottenimento di benefici comuni, pur continuando a sostenere progetti innovativi più piccoli.
- La Commissione dovrebbe svolgere un ruolo di rilievo come base comunitaria di informazione e interscambio tecnologico quale quello

dell'USBM. A tal fine saranno richieste disposizioni legislative e fiscali. La Commissione inoltre deve garantire un'adequata interrelazione e cooperazione tra tutti i programmi associati e tra le attività di gruppi analoghi, ad esempio¹ onde garantire che si continui a svolgere un'attività sufficiente nel campo dell'acquisizione e trasferimento di conoscenze di base nonchè per favorire il lancio di progetti di sviluppo industriale.

- E' stato osservato che l'esecuzione effettiva del lavoro dei progetti tecnici dovrebbe essere affidata a terzi. Ciò non significa che la Comunità non debba sviluppare risorse fisiche proprie ma il pericolo che lo faccia prima di diventare un'unità di informazione e di riferimento riconosciuta e autorevole è che simili risorse siano obbligate a sottostare alle leggi di mercato e a entrare in concorrenza con terzi per poter sopravvivere.
- Il sistema attuale è valido, tuttavia non avrà un futuro chiaro se rimarrà isolato e, secondo il parere del gruppo, non rappresenta la migliore via a valore aggiunto per tutti i finanziamenti comunitari della ricerca e sviluppo.
- Si raccomanda di istituire un <u>Ufficio scientifico e tecnico delle materie</u> prime, dotato di personale sufficiente, con l'incarico di:
 - a) Costituire una banca dati
 - b) Fungere da organo editoriale per la diffusione rapida ed adeguata di rapporti concernenti progetti, seminari, gruppi di studio
 - c) Svolgere indagini esaurienti sulle aree strategiche di mercato
 - d) Organizzare le conferenze necessarie per promuovere il trasferimento di tecnologia
 - e) Contribuire a sviluppare standard e norme industriali
 - f) Sostenere progetti di carattere generale riguardanti argomenti di vasta applicabilità su una base trans-multinazionale procedendo ad una loro valutazione continua
 - g) Sostenere l'innovazione.

DG III, DG XI, DGXII, DG XIII e DG XVII

- Un obiettivo prioritario del personale permanente della Commissione dovrebbe essere quello di preparare una banca dati esauriente che indichi dettagliatamente tutte le attività di ricerca svolte attualmente sulle materie prime nella CE e in altri paesi con i quali già esistano o esisteranno in futuro dei legami; tale banca dati dovrebbe essere continuamente aggiornato e comprendere tutti i progetti finanziati dalla CEE nel quadro del 1º Programma sulle materie prime (1978-81), dei programmi successivi e di quelli attuali nonché tutti i dati possibili sugli altri pertinenti lavori di ricerca e sviluppo svolti nel settore privato, semiprivato e pubblico. Si dovrebbe inoltre prevedere di includervi anche attrezzature e gli impianti. Essa dovrebbe costituire la principale base di dati CEE nel campo delle materie prime, ricevere ampia diffusione ed essere accessibile tramite una delle reti di computer CEE.
- Il gruppo ritiene che per fissare adeguatamente le priorità dei progetti siano necessarie adeguate informazioni sulla domanda/offerta e che la Commissione è forse la più adatta a svolgere tale ruolo.
- In passato sono stati fatti alcuni tentativi per tener conto delle esigenze della Comunità nel settore delle materie prime - sia da parte dei funzionari della Commissione reponsabili del programma sulle materie prime che da parte del Consiglio. E' essenziale che siano svolte e continuamente aggiornate indagini periodiche sulla domanda e l'offerta di materie prime nella Comunità. Tali inchieste saranno condotte con l'ausilio della banda dati di cui sopra. Tuttavia occorrerà raccogliere anche dati quantitativi dettagliati sull'offerta e la domanda in ciascuno Stato membro.
- L'indagine dovrebbe consentire un'analisi continuamente aggiornata delle implicazioni strategiche delle variazioni nel rapporto domanda/offerta in tutta la CEE e delle azioni a breve e lungo termine che la Comunità dovrebbe intraprendere. Inoltre, l'indagine formirà dati cruciali sui know-how della CEE nel settore delle materie prime, sugli effetti socio-economici nella Comunità nonché sui grado di autosufficienza di materie prime. Una simile iniziativa chiarirà inoltre le alternative spesso ingannevoli che si sviluppano nel breve periodo data la natura altamente ciclica del mercato delle materie prime.

- Attualmente le proposte di ricerca e sviluppo provengono da enti privati, semiprivati e pubblici dei vari Stati membri e sono in parte o meno finanziate a seconda della loro importanza ai fini del programma. Il gruppo ritiene l'accresciuta entità dei finanziamenti attualmente concessi ad un numero di progetti transnazionali ridotto rispetto ai precedenti programmi riveste per l'intera Comunità molta più importanza che in precedenza. Tuttavia, se verranno effettuate le indagini strategiche e di mercato più sopra raccomandate, la CEE si troverà in una situazione molto più solida per definire e per orientare la natura dei progetti da finanziare.

3. Relazioni

- Il gruppo raccomanda vivamente di riesaminare attentamente i rapporti tra la CEE e gli organismi nazionali responsabili del finanziamento R & S alla luce delle altre raccomandazioni formulate nel presente documento in modo da assicurarne il giusto inserimento in una politica di ricerca e sviluppo sulle materie prime. In tal modo si potranno svolgere nella massima efficacia ruoli definiti e diversi.
- Quanto sopra dipende da una serie di opportune azioni del comitato consultivo e quindi richiede una comunicazione ed un'intesa efficaci tra i membri di detto comitato ed i funzionari della Commissione.

Inoltre, sarebbe particolarmente auspicabile che tale comunicazione e intesa fossero estese agli opportuni organismi industriali.

4. Commenti sul programma futuro

- Il programma proposto (1989-92) ricalca in generale il modus operandi dei precedenti programmi. Il gruppo raccomanda di procedere lungo questa direzione a condizione che si consideri realmente l'opportunità di rivedere il programma quadro e quindi il ruolo dello sforzo della Commissione nel campo delle materie prime.
- Per quanto riguarda i programmi futuri il gruppo propone:

- a) Una definizione chiara delle sfere di responsabilità in modo che l'industria dei "minerali" sia adequatamente rappresentata.
- b) Un aumento sostanziale di personale e fondi che rifletta l'importanza reale che riveste l'industria dei minerali per la Comunità.
- c) Un approccio più flessibile alla classificazione dei sottoprogrammi e all'attribuzione dei fondi ed un ruolo più interattivo in materia di formulazione dei progetti.
- d) L'assegnazione della parte più importante dei finanziamenti ad un numero ridotto di progetti transnazionali di più grandi dimensioni e di portata più generale.
- e) Un sistema di pubblicazioni più efficace.
- f) Una continuità nella presentazione di progetti, nella loro valutazione e e nell'assegnazione di appalti.
- g) La creazione di un ufficio che fornisca un servizio centralizzato d'informazione.
- h) Un più adeguato inglobamento dei programmi sul riciclaggio e di altri opportuni programmi.

¹ Il termine "minerali" indica materie prime naturali inorganiche



In deze beknopte samenvatting worden in de vorm van conclusies en aanbevelingen de belangrijkste punten behandeld die tijdens de evaluatieprocedure naar voren zijn gekomen.

CONCLUSIES

1. Noodzaak van een beleid voor 0 & 0 op het gebied van grondstoffen.

- Er is een samenhangend Europees beleid voor 0 & 0 op het gebied van primaire en secundaire grondstoffen nodig, waarover de nodige consensus bestaat en dat in overeenstemming is met de omvang van deze sector, om te voorkomen dat Europa een maatschappij zonder grondstoffen wordt en om te zorgen voor een beter strategisch evenwicht tussen fundamentele industriesectoren en de industriële fabricage.
- Er lijken dwingende redenen te zijn om ervan uit te gaan dat de recycling van afval dient te worden beschouwd als onderdeeel van een milieuprogramma, aangezien de impuls voor dergelijke processen ongetwijfeld voortkomt uit milieu-overwegingen en sociaaleconomische beperkingen. Dit vormt een duidelijke contrast met de oorspronkelijke ideeën in het industriële klimaat halverwege de jaren zeventig, toen "op afval gebaseerde" hulpbronnen belangrijk leken.
- Aangezien CEG een organisatie op supranationaal niveau is, moet zij werkzaamheden stimuleren waarvan de Gemeenschap gebruik kan maken om te zorgen voor de sociale en economische ontwikkeling waardoor zij in de wereld een leidende rol kan spelen zoals dit de afgelopen duizend jaar het geval is geweest. Deze werkzaamheden moeten zijn gebaseerd op een duidelijk omschreven beleid dat meer moet zijn dan alleen een conglomeraat van nationale overwegingen. Hierbij moet

worden bedacht dat de sector grondstoffen een industriële sector van cruciaal belang is, aangezien de Europese landen hierbij voor het grootste deel afhankelijk zijn van het buitenland, hetgeen een zekere afhankelijkheid en de nodige risico's met zich meebrengt. Niet alleen is er een algemene tendens dat leveranciers zich steeds meer gaan bezighouden met verwerking, hetgeen leidt tot een rationalisatie van de daarmee samenhangende werkgelegenheid, maar ook wordt de toevoersituatie direct beïnvloed door economisch en politieke veranderingen. Globaal bezien kunnen de grondstoffen worden vergeleken met energie en levensmiddelen.

Het beleid dat moet worden uitgestippeld moet beantwoorden aan de duidelijk omschreven doelstelling dat de toevoer moet worden gegarandeerd teneinde de daarvan afhankelijke industrie in stand te houden en er moet voldoende aandacht worden geschonken aan aspecten als "buitenlandse" projecten en samenwerking met derde landen, ook voor de levering van apparatuur en diensten.

2. Financiële middelen en werkgebied

- Het financieringsniveau is totaal niet in overstemming met de omvang van de sector grondstoffen in Europa, ongeveer 50 miljard ecu, en het profijt en de diversiteit van deze sector. Het werkgebied en de doelstellingen worden derhalve onverenigbaar geacht met het beschikbare budget.

De programma's van de CEG dienen ter ondersteuning van de O & O-werkzaamheden en vormen derhalve een gedeeltelijk antwoord op de problemen van de industrie. Er zijn drie meerjarenprogramma's gestart, elk voor een aantal jaren waarin het onderzoek is uitgevoerd, gesplitst in de volgende deelprogramma's:

Primaire grondstoffen:

1978-1981 met een budget van 18 miljoen ecu

1982-1985 25 miljoen ecu

1986-1989 20 miljoen ecu

Secundaire grondstoffen:

- a) recycling van non-ferrometalen
- b) recycling en gebruik van afval (RGA)

1979-1982 met een budget van 9 ¹ miljoen ecu 1982-1985 6,5 miljoen ecu 1986-1989 10 miljoen ecu.

Het hiervoor uitgetrokken budget is niet zodanig dat het een wezenlijke invloed kan hebben op de Europese situatie in deze industriële sector, wanneer men in aanmerking neemt hoeveel kapitaal en werkgelegenheid hierin omgaat en bovendien bedenkt hoe divers sector is. Hierbij moet worden aangetekend dat deze grondstoffenindustrie een volgroeide sector is waarvan de economische ontwikkeling in hoge mate cyclisch is verlopen; daardoor financiering zodaniq achtergebleven is concurrentievermogen is aangetast, zodat verschillende gebieden die door de CEG als cruciaal voor de ontwikkkeling van Europa worden beschouwd in gevaar zijn gebracht. Dit is een heel ander scenario dan dat voor de recycling van stedelijk afval, waarbij de depressie en de energiecrisis de drijvende krachten waren.

- Hoewel veel verschillende projecten zijn gesteund, bestrijken deze de meeste in de doelstellingen genoemde aspecten niet voldoende en zijn ze zodanig versnipperd dat de kritieke punten niet voldoende aandacht krijgen. De ondersteuning van zoveel projecten is een strategie die ertoe heeft geleid dat de meeste projecten betrekking hebben op lokale of specifieke onderwerpen. In het huidige programma voor 1986 tot 1989 is de voorkeur gegeven aan internationale projecten en dit is zeker een stap in de goede richting, maar het is nog niet voldoende om problemen die zich in de hele industrie voordoen op communautair niveau te kunnen oplossen.

hierin is een gedeelte van het budget tot 1985 opgenomen

3. Technische inhoud

- De technische inhoud van de programma's is tot op heden van het hoogste niveau. De werkgroep kan alleen maar zijn waardering uitspreken voor de resultaten van de afzonderlijke projecten. In zeer veel gevallen waren er meetbare successen en veel projecten hebben geleid tot verdere werkzaamheden en in sommige gevallen tot de ontwikkeling van industriële apparatuur en procédés, terwijl ook de ontginning van delfstoffen in het algemeen verbeterd is.
- Midden 1988 is in opdracht van het CGC een technische evaluatie uitgevoerd en deze werkgroep is het volledig eens met de conclusies daarvan. Dit behoeft ook geen verbazing te wekken, aangezien altijd al wordt erkend dat de bij de verschillende Europese organisaties uitgevoerde O & O-werkzaamheden van de hoogste kwaliteit en innoverend zijn. Tevens moet echter worden ingezien dat het toegepaste systeem leidt tot een strenge selectie, waarbij niet alleen projecten die niet exact aansluiten bij de uitnodiging tot het indienen van voorstellen worden geëlimineerd, maar ook de instellingen worden bevoordeeld die zelf kunnen zorgen voor de nodige continuïteit bij hun O & O-werkzaamheden.
- Het 0 & O-Programma in zijn huidige vorm wordt beschouwd als slechts één aspect van de rol die de Commissie in het ideale geval zou kunnen spelen en om rendement uit de investeringen te halen wordt meer nodig geacht dan eenvoudigweg geld uitgeven aan steun voor de beste van de in het algemeen goede projectvoorstellen.
- Besteding van betrekkelijk kleine bedragen aan een brede scala van werkzaamheden leidt niet alleen tot versnippering, maar levert ook problemen op in verband met de overlapping van nationale programma's voor steun aan de industrie en verplichtingen van individuele bedrijven. In het deelgebied RGA was coördinatie van de werkzaamheden de meest effectieve projectvorm.

4. Toegevoegde waarde

- De toegevoegde waarde van de programma's voor de Gemeenschap is momenteel moeilijk te kwantificeren, maar deze is ongetwijfeld vele malen groter dan de kosten. De enorme omvang van de betrokken industrie in aanmerking genomen, zijn de baten voor de Gemeenschap nog gering en hierdoor wordt eens te meer benadrukt dat de beperkingen van het huidige budget aanleiding geven to vrij smalle doelgebieden en strenge selecties.
- Toegevoegde waarde is een zeer specifieke methode om het gebruik van geld te evalueren. Deze kan objectief worden gebruikt als de resultaten van een investering in dezelfde eenheden kunnen worden berekend. Dit wordt een stuk minder eenvoudig wanneer de toegevoegde waarde subjectief moet worden beoordeeld. Gezien de kwaliteit van de gesteunde onderzoekteams en -groepen is het ongetwijfeld zo, dat elk resultaat ten aanzien van kennisverwerving een stap in de goede richting is, zelfs als door het resultaat bepaalde mogelijkheden worden uitgesloten of een vervolg in de zin van direte toepassingen onmogelijk is.
- Sommige resultaten zijn voor de Gemeenschap zeer positief geweest, bijvoorbeeld de ontdekking van nieuwe ertslichamen, vooral als het gaat om zeer kwetsbare stoffen. Het blijft echter de vraag of het wel de taak is van de CEG om bij exploitatiewerkzaamheden in de plaats te treden van bedrijven, tenzij dit een resultaat is van ondersteunende technologie die nieuwe mogelijkheden schept. Vastgesteld moet worden dat bepaalde projecten, die hun basis hadden op het gebied van exploratie (geologie, geofysica enz.) waarschijnlijk op communautair niveau succesvol zijn geweest; deze projecten hebben nieuwe gereedschappen en nieuwe concepten opgeleverd voor de ontdekking van ertsafzettingen.
- Bij de recycling van stedelijk afval was het belangrijkste resultaat dat is vastgesteld wat de problemen en complicaties zijn bij het

beheer van gerecycleerd materiaal en vooral van afvalverbrandingsinstallaties.

5. Betekenis voor de Gemeenschap

- In alle programma's worden algemene doelstellingen geschetst die op het gebied van primaire en secundaire grondstoffen voor de Gemeenschap van belang zijn. In het huidige programma wordt meer nadruk gelegd op internationale samenwerking en activiteiten binnen de EG-Landen.
- Hoewel de projecten, in veel gevallen niet geheel probleemloos, kunnen worden ondergebracht in de verschillende delen van het programma, zijn er veel met te specifieke doelstellingen en zijn ze vaak ook eerder gericht op de oplossing van situaties van onmiddellijk economisch belang dan dat ze bijdragen tot de ontwikkeling van meer algemene en fundamentele technieken die voor de EG als geheel op lange termijn voordelen kunnen opleveren.
- Waarschijnlijk omdat er geen duidelijk omschreven beleid voor 0 & 0 op het gebied van grondstoffen is, zou een groot deel van de projekten waar het hier om gaat, ook binnen nationale programma's kunnen zijn opgezet. In dat geval zijn deze projecten voor de EG als geheel waarschijnlijk minder van betekenis.

Dit gaat uiteraard niet altijd op en van het RGA-Programma voor Brandstof uit Afval kan bijvoorbeeld worden gezegd, dat het werkelijk internationaal is en dat daardoor een onnodige toename van het aantal milieu-onvriendelijke installaties is voorkomen.

- Het huidige programma bevat meer algemene doelstellingen en er is veel aan gedaan om te komen tot internationale samenwerking.
- De werkgroep was het er derhalve in het algemeen over eens dat de uitgevoerde werkzaamheden zowel voor de eisen van de industrie als

voor de behoeften van de Gemeenschap van betekenis waren. Er werd echter ook vastgesteld dat het programma zeer versnipperd was en dat een groot werkgebied op onregelmatige wijze werd bestreken, zodat sommige onderwerpen zeer volledig werden behandeld, terwijl even belangrijke aspecten nauwelijks aan de orde kwamen. Dit is een rechtstreeks gevolg van de reeds genoemde incompatibiliteit tussen werkgebied en financiële middelen, die er dan weer toe leidt dat er projecten moeten worden gekozen uit een verzameling voorstellen die al selectief en onvolledig is.

- Een dergelijke situatie kan alleen worden verholpen door ten minste twee soorten maatregelen:
 - a) een ruimere opzet van de werkzaamheden zodat ook meer algemene en "gemeenschappelijke" problemen hieronder vallen, met inbegrip van multidisciplinaire projecten. Veelvuldiger gebruik en opbouw van databases die daardoor een waardevol "naslagwerk" gaan vormen. Een voorbeeld hiervan is het zeer succesvolle programma voor compostering;
 - b) een forse toename van de personeelssterkte en het budget om de onder a) genoemde maatregelen mogelijk te maken en om in aanmerking komende projecten minder selectief en op een meer interactieve wijze te stimuleren.

6. Het effect van de voorgaande evaluatie

- De vorige werkgroep heeft een duidelijke aanbeveling gedaan voor toekomstige EEG-Programma's voor 0 & 0 op het gebied van grondstoffen. Deze stelde voor een duidelijke beschrijving te geven van een <u>samenhangend en relevant</u> Europees beleid voor 0 & 0 op het gebied van grondstoffen, zodat de Gemeenschap een strategie zou kunnen opzetten die <u>op lange termijn</u> voordelen voor de Gemeenschap oplevert.

- Het huidige programma (1986-1989) bevat meer algemene doelstellingen en er is veel aan gedaan om te komen tot multinationale samenwerking door de nadruk te leggen op bepaalde aspecten die voor verschillende landen van belang zijn, hoewel industriële bedrijven (en in het geval van RGA de gemeenteoverheid) nog steeds ondervertegenwoordigd zijn.
- Van speciale betekenis was de <u>lijst</u> van punten die in aanmerking moeten worden genomen om de hierboven genoemde aanbeveling tot vaststelling van een samenhangend Europees O & O-beleid uit te werken. Het lijkt erop dat in de meeste gevallen geen rekening is gehouden met deze punten.
- Hoewel de nadruk ligt op de noodzaak om een dergelijke EG-beleid vast te stellen, blijkt dat ook de overige aanbevelingen nog steeds geldig zijn, vooral degene die betrekking hebben op de rol van de Gemeenschap, waarbij zij veeleer fungeert als dienstverlener ten behoeve van samenwerking dan rechtstreeks betrokken is bij een groot aantal kleine projecten.
- De werkgroep ziet derhalve enige aanwijzingen dat rekening is gehouden met de aanbevelingen van eerdere evaluaties, vooral bij de verschuiving naar multinationale projecten en tot op zekere hoogte bij de publikatie van overzichtsrapporten. Met de beste wil van de wereld geeft de werkgroep toe dat het, gezien de personeelsbezetting en de huidige financiële beperkingen, wellicht niet verrassend is dat er nier meer vooruitgang is geboekt.

7. Doelmatigheid van het beheer

- Op de kleine groep personeelsleden in vaste dienst rust momenteel de niet geringe taak om toezicht te houden op aanvankelijke beoordelingen en selectie en op de vooruitgang, waarbij ook hoort de ondersteuning van bezoeken ter plaatse bij de samenstelling van het eindrapport; verder moet ook nog worden gezorgd voor de nodige contacten met de industrie en met overheidsinstanties en tevens voor de onvermijdelijke interne communicatie.

- Rekening houdend met deze omstandigheden en tevens met het grote aantal kleine projecten op zeer verschillende wetenschappelijke en technische gebieden, dat deel uitmaakte van de programma's, moet worden geconcludeerd dat het beheer strikt technisch gezien op een zeer professsionele en efficiënte wijze is uitgevoerd. Het is duidelijk dat de instelling van een (uit de industrie gerecruteerd) adviesorgaan het personeel van de Commissie aanzienlijk zou ontlasten, vooral wat de af te leggen reizen betreft.
- De conclusie is echter dat het beheer effectiever zou kunnen zijn als de directe ondersteuning van projecten door de Gemeenschap zou worden geconcentreerd op een kleiner aantal projecten in uiteenlopende disciplines. Tevens moet de flexibiliteit worden vergroot, zodat ook projecten in het prille beginstadium op kleinere schaal kunnen worden gesteund (grote mogelijkheden/ risicofinanciering).
- De werkgroep is van mening, en wordt daarin gesteund door de resultaten van de interviews met de contractanten, dat het voor een zo effectief mogelijke subsidiëring van projecten vanuit zowel zakelijk als technisch oogpunt de voorkeur zou verdienen, als de gunning van projecten op een meer continue wijze zou gebeuren. Verder is de werkgroep van mening dat een dergelijke methodologie de enige uitvoerbare manier is om rekening te houden met veranderde sociale en economische factoren en met de cyclische aard waardoor de sector grondstoffen in het algemeen wordt gekenmerkt.
- Het is heel duidelijk dat de zeer geringe personeelssterkte gezien de werklast ommogelijke beperkingen oplegt aan het huidige beheer, maar dat de werkzaamheden desalniettemin met veel energie en algemeen technisch inzicht zijn uitgevoerd. De grensoverschrijdende samenwerking en coördinatie die zowel binnen de Commissie als met

derden is bereikt, verdient alle lof gezien het kleine aantal personen dat hierbij betrokken was. De werkgroep is unaniem van mening dat het personeelstekort niet in het belang van de Gemeenschap is en dat een groter aantal functionarissen in vaste dienst nodig is voor deze voor Europa zeer belangrijke werkzaamheden.

- Wanneer bovenstaande problemen afdoende worden opgelost, zijn er geen redenen waarom het embleem met de twaalf sterren niet synoniem zou zijn met ontwikkeling van hoge kwaliteit en niet een bron zou zijn van algemene aanvaarde standaards.

AANBEVELINGEN

1. Voorwoord

- De werkgroep heeft het noodzakelijk geacht in haar aanbevelingen verder te gaan dan de strikte grenzen van haar opdracht en tevens in een ruimere context aandacht te besteden aan de behoeften van de Europese grondstofindustrie, meer in het bijzonder aan de wijze waarop de Commissie deze behoeften zou kunnen vervullen en de Gemeenschap als geheel zou kunnen helpen. De werkgroep is van mening dat dit bijzonder nuttig zou kunnen zijn bij de vaststelling van de toekomstige kaderprogramma's.
- Er is momenteel geen kernpunt dat centraal staat bij de werkzaamheden van de grondstoffenindustrie in de Gemeenschap en de werkgroep is van mening dat een duidelijk herkenbare centrale instantie die projecten steunt en informatie geeft over algemene relevante zaken zou kunnen en moeten zorgen voor een route voor technologieoverdracht en ontwikkeling, waaraan zoveel behoefte bestaat. Bij het uitzetten van de nodige beleidslijnen en een afdoende strategie moet ook duidelijk worden afgegeven om welke sectoren het gaat; de werkgroep is bijvoorbeeld van mening dat industriële delfstoffen hierin volledig moeten worden opgenomen.

Daarnaast wordt aanbevolen dat de projectwerkzaamheden in het kader van het Deelprogramma RGA in andere daarvoor in aanmerking komende programma's moeten worden opgenomen en, aannemende dat dit gebeurt, zouden de volgende aanbevelingen worden opgesteld.

2. De rol van de Commissie

- De werkgroep is van mening dat de Commissie in de toekomst meer een studerende rol moet gaan spelen, die zich afspeelt op een niveau dat in het algemeen hoger ligt en algemener is dan momenteel het geval is.
- De huidige rol, waarbij financiële middelen ter beschikking worden gesteld van projecten die daardoor in aanmerking komen, moet worden voortgezet, maar hierbij moet het gaan om grotere eenheden en meer gemeenschappelijke voordelen; financiële ondersteuning van kleinere innoverende projecten moet echter tot op zekere hoogte mogelijk blijven.
- De Commissie moet een belangrijke rol spelen bij het streven naar een communautaire basis voor de uitwisseling van informatie en technologie, waarbij het USBM als voorbeeld kan dienen. Ook wetgeving en fiscale maatregelen zijn hierbij nodig. De Commissie moet tevens zorgen voor de nodige correlatie en samenwerking van alle verwante programma's of soortgelijke groepen, bij voorbeeld DG III, DG XI, DG XII, DG XIII en DG XVII, om ervoor te zorgen dat voldoende aandacht wordt besteed aan de verwerving en overdracht van fundamentele kennis en om het mogelijk te maken dat industriële ontwikkelingsprojecten van de grond komen.
- De werkgroep is van oordeel dat de feitelijke uitvoering van technische projektwerkzaamheden volledig aan contractanten moet worden overgelaten. Dit betekent niet dat de Gemeenschap niet haar eigen fysieke middelen verder moet ontwikkelen, maar wanneer dit gebeurt voordat zij is uitgegroeid tot een gerespecteerde en

gezaghebbende informatie- en referentie-instantie, bestaat het gevaar dat dergelijke installaties hun exclusiviteit niet kunnen handhaven en om te kunnen overleven moeten gaan concurreren met alle andere contractanten.

- Hoewel niet wordt ontkend dat het huidige systeem positieve effecten heeft, heeft het als geïsoleerd systeem geen duidelijke toekomst en vormt het naar het oordeel van de werkgroep niet de beste weg naar een toegevoegde waarde voor alle middelen voor 0 & 0 van de Gemeenschap.
- Aanbevolen wordt dat er een voldoende bemand <u>Wetenschappelijk en</u> <u>Technisch Bureau voor Grondstoffen</u> wordt ingesteld met de volgende taken:
 - a) een informatiebestand;
 - b) publikatieactiviteiten voor een afdoende en snelle verspreiding van rapporten over projecten, workshops en seminars;
 - c) samenstelling van uitgebreide overzichten van strategische marktgebieden;
 - d) organisatie van de nodige congressen voor de bevordering van technologieoverdracht;
 - e) ondersteuning van de ontwikkeling van industriële standaards en normen;
 - f) ondersteuning van algemene projecten met op grote schaal toepasbare onderwerpen op een trans-/multinationale grondslag en met een flexibel tijdschema met continue evaluatie;
 - g) ondersteuning van innovatie.
- Het personeel van de Commissie in vaste dienst moet zich in belangrijke mate richten op de samenstelling van een informatiebestand, waarin alle lopende onderzoekwerkzaamheden op het gebied van grondstoffen worden beschreven die worden uitgevoerd in de hele EG en in landen waarmee relaties momenteel bestaan of in de toekomst kunnen worden opgebouwd. Dit bestand zou voortdurend moeten

worden bijgewerkt en zou alle projecten moeten bevatten die sinds het Eerste Programma voor Grondstoffen (1978-1981) door de EG zijn gefinancierd, alle door de EG gefinancierde projecten van latere en nog lopende programma's en zo volledig mogelijke informatie over alle andere relevante 0 & O-werkzaamheden in de particuliere, de semi-particuliere en de overheidssector. Tevens moet worden overwogen installaties en apparatuur in dit bestand op te nemen. Dit bestand zou de belangrijkste database van de EG voor grondstoffen zijn, zou overal moeten worden verspreid en zou via een van de computernetwerken van de EG toegankelijk moeten zijn.

- De werkgroep is van mening dat om aan een project de juiste prioriteit toe te kennen achtergrondinformatie over vraag en aanbod op dat gebied nodig is en dat de Commissie wellicht het meest in aanmerking komt om deze taak te vervullen.
- In de loop der jaren zijn er enkele pogingen gedaan zowel door het personeel van de Commissie in vaste dienst dat is belast met het Programma voor Grondstoffen als door de Raad om aandacht te schenken aan de behoeften van de Gemeenschap in de sector grondstoffen. Het is van essentieel belang dat er periodieke overzichten worden samengesteld van vraag en aanbod op het gebied van grondstoffen in de Gemeenschap en dat deze overzichten continu worden bijgewerkt. Bij de samenstelling van deze overzichten kan het informatiebestand goede diensten bewijzen. Daarnaast moeten echter ook voor elke Lid-Staat gedetailleerde kwantitatieve gegevens over vraag en aanbod worden verzameld.
- Met behulp van dit overzicht moet een voortdurend bijgewerkte analyse worden gemaakt van de strategische gevolgen van variaties in de verhouding tussen vraag en aanbod in de hele EG en van de door de Gemeenschap genomen maatregelen op korte en lange termijn. Daarnaast zal het overzicht cruciale gegevens opleveren over de know-how in de sector grondstoffen in de EG, over de sociaal-economische effecten binnen de Gemeenschap en over de mate van onafhankelijkheid van de

grondstoffenvoorziening. Op deze manier kan ook duidelijkheid worden gecreëerd over de vaak misleidende scenario's die zich op korte termijn kunnen ontwikkelen, gezien het feit dat de handel in grondstoffen een in hoge mate cyclisch fenomeen is.

- Momenteel zijn de voorstellen voor 0 & 0 afkomstig van particuliere, semi-particuliere en overheidsinstanties van de verschillende Lid-Staten en worden deze afhankelijk van hun relevantie voor het programma gedeeltelijk gefinancierd of niet. De werkgroep is van mening dat de huidige situatie, waarin een groter deel van de financiële middelen wordt besteed aan een kleiner aantal internationale projecten dan in eerdere programma's het geval was, voor de Gemeenschap als geheel veel gunstiger is. Als echter, zoals hier is aanbevolen, strategische en marktoverzichten worden geproduceerd, zal de EG veel beter in staat zijn de aard van de te financieren projecten aan te geven en te sturen.

3. Samenwerking

- De werkgroep beveelt ten sterkste aan dat de relatie tussen de EG en de nationale voor financiering van 0 & 0 verantwoordelijke instanties in het licht van de overige aanbevelingen zorgvuldig opnieuw wordt bezien, zodat er kan worden gezorgd voor een afdoende taakverdeling binnen een beleid voor 0 & 0 op het gebied van grondstoffen. Dit is de meest doelmatige manier voor de uitvoering van duidelijk omschreven en verschillende taken.
- Hiervoor moet het Raadgevend Comité de nodige maatregelen nemen en de communicatie tussen dit comité en het personeel van de Commissie en het onderling begrip moeten derhalve goed zijn. Daarnaast zou het zeer wenselijk zijn dat deze communicatie en dit begrip tevens zou gelden voor de daarvoor in aanmerking komende industriële organisaties.

4. Opmerkingen over toekomstige programma's

- In het volgende programma (voorgesteld voor 1989-1992) wordt in het algemeen dezelfde werkwijze gevolgd als in de vorige programma's. De werkgroep is van mening dat dit ongehinderd moet gebeuren op voorwaarde dat <u>ernstig wordt overwogen</u> het kaderprogramma en derhalve de rol van de werkzaamheden van de Commissie op het gebied van grondstoffen te herzien.
- De werkgroep beveelt aan dat in de toekomstige programma's de volgende aspecten worden opgenomen:
 - a) duidelijke afbakening van de verantwoordelijkheden, zodat de "delfstoffen"-industrie¹ afdoende wordt vertegenwoordigd;
 - b) een forse uitbreiding van de personeelssterkte en de financiële middelen die in overeenstemming is met de werkelijke betekenis van de "delfstoffen"-industrie voor de Gemeenschap;
 - c) een flexibeler aanpak bij de indeling in deelprogramma's en de toewijzing van financiële middelen en meer interactie bij het definiëren van projecten;
 - d) toewijzing van het grootste deel van de projectfinanciering aan een kleiner aantal grotere meer algemene transnationale projecten;
 - e) een doelmatiger systeem voor publikatie;
 - f) en stationaire situatie, waarbij indiening van projectvoorstellen, evaluatie en gunning van contracten continu gebeurt;
 - g) instelling van een bureau als een gecentraliseerde informatiedienst;
 - h) een betere onderverdeling van recycling en andere daarvoor in aanmerking komende programma's.

Met "delfstoffen wordt hier bedoeld anorganische natuurlijke grondstoffen.



O presente resumo de execução apresenta os pontos principais resultantes do processo de avaliação sob a forma de conclusões e recomendações.

CONCLUSOES

1. Necessidade de uma política de I & D no domínio das matérias-primas

- É necessária uma política europeia de I & D coerente e convenientemente definida no domínio das matérias-primas primárias e secundárias, que corresponda à dimensão do sector, para evitar que a Europa se torne uma sociedade desmaterializada e para obter um melhor equilíbrio estratégico entre indústrias de base e indústrias transformadoras.
- Parecem existir razões suficientes para considerar que a reciclagem de resíduos se deverá integrar num programa de ambiente visto as questões de ambiente e as limitações socioeconómicas constituirem inquestionavelmente as linhas mestras neste domínio. Esta situação está em contraste directo com os conceitos iniciais do ambiente industrial de meados da década de 70, quando os recursos "baseados em resíduos" pareciam assumir importância.
- Sendo um organismo supranacional, a CCE deve promover acções que ajudem a Comunidade a assegurar o desenvolvimento social e económico que lhe permita desempenhar um papel dominante à escala mundial, tal como tem acontecido nos dez séculos passados. Essas acções decorrerão de uma política bem definida que não pode ser constituída por um simples conjunto de considerações nacionais e que tem de ser aplicada, no que respeita às matérias-primas, a uma área industrial crítica já que a maior parte dos fornecimentos dos países europeus provém de países terceiros, com a dependência e os riscos inerentes a tal situação. Para além da tendência geral no que se refere ao facto de os fornecedores se encontrarem cada vez mais envolvidos em actividades situadas a jusante, com a consequente racionalização dos

postos de trabalho, a situação de fornecimento é directamente afectada pela evolução das circunstâncias económicas e políticas. Em termos genéricos, a situação das matérias-primas é análoga à da energia e dos produtos alimentares. A política necessária tem de corresponder aos objectivos claramente definidos no que respeita a garantir o fornecimento das indústrias em questão e dar um tratamento adequado a questões tais como projectos "do estrangeiro" ou colaboração com países terceiros, incluindo os fornecimentos de equipamento e de serviços.

2. Financiamento e âmbito

O grau de financiamento é totalmente inadequado atendendo à dimensão, benefícios e diversidade do sector das matérias-primas na Europa, cujo peso económico é da ordem de 50 000 milhões de ECU. Consideram-se, por conseguinte, incompatíveis o âmbito, objectivos e o orçamento disponível. Os programas da CCE de apoio a actividades de I & D representam uma resposta parcial aos problemas da indústria. Os 3 programas multianuais levados a efeito são definidos em função dos anos de actividades efectivas de investigação, repartindo-se pelos seguintes sub-programas:

Matérias-primas primárias

1978–1981	para	um	orçamento	de	financiamento	de	18	milhões	de	ECU
1982-1985							25	milhões	de	ECU
1986-1989							20	milhões	de	ECU

Matérias-primas secundárias :

- a) Reciclagem de metais não ferrosos
- b) Reciclagem e utilização de resíduos

1979–1982	para	um	orçamento	de	financiamento	de	9(1	milhões	de	ECU
1982-1985							6,5	milhões	de	ECU
1986-1989						1	10,0	milhões	de	ECU

parte do financiamento integrado até 1985.

A dimensão das dotações orçamentais é insuficiente para ter efectivamente um verdadeiro impacte na situação desde sector industrial na Europa, tendo em conta a sua importância em termos do capital e mão-de-obra envolvidos e conhecendo-se, além disso, a sua diversidade. Esta situação é entendida de acordo com a perspectiva de que a indústria de matérias-primas é uma indústria amadurecida e que, ao longo de natureza altamente cíclica do seu desenvolvimento económico, se tem tornado numa indústria deficientemente financiada ao ponto de a sua competitividade se encontrar prejudicada, pondo, portanto, em risco vários domínios considerados fundamentais pela CCE para o desenvolvimento da Europa. Este panorama apresenta grandes diferenças em relação ao panorama referente à reciclagem de resíduos urbanos, em que a actividade de reciclagem foi originada pela depressão e pela crise de energia.

- Apesar de terem sido apoiados numerosos projectos individuais, estes não cobrem de forma adequada a maior parte dos aspectos salientados nos objectivos, não incidindo, para além do mais, nos aspectos críticos devido à sua fragmentação. A estratégia adoptada para o apoio destes numerosos projectos levou a que a maioria deles incidisse em temas de carácter local ou específico. A orientação adoptada no actual programa de 1986-1989 no sentido de favorecer projectos multinacionais encontra-se definitivamente na direcção correcta, embora não seja ainda suficiente para criar condições de modo a dar resposta, à escala comunitária, aos grandes problemas da indústria.

Conteúdo técnico

- Até à data, o conteúdo técnico real dos programas situa-se ao mais elevado nível. O painel só tem elogios a fazer aos resultados dos vários projectos. Tem-se registado um nível elevado de sucesso mensurável, tendo muitos projectos dado origem a trabalho adicional e, em alguns casos, ao desenvolvimento de equipamento e processos industriais, bem como ao aperfeiçoamento, em geral, da exploração de minerais.

- Em meados de 1988, foi efectuada uma avaliação de natureza técnica em nome do CGC cujas conclusões merecem o pleno acordo do presente painel. Tal facto, com efeito, não deve constituir surpresa já que o elevado nível de qualidade e o carácter inovador das actividades de I & D realizadas pelas diversas organizações europeias têm sido sempre reconhecidos. No entanto, deve também reconhecer-se que o sistema, tal como é aplicado, dá origem a uma forte selecção que, para além de eliminar projectos deficientemente enquadrados no convite para apresentação de propostas, privilegia os organismos capazes de realizar por si só as suas actividades de I & D de forma continuada.
- Considera-se que o formato actual do programa de I & D é apenas um dos aspectos do papel desejàvel da Comissão e que o facto de se dispenderem recursos no apoio a projectos vencedores a partir de propostas de projectos, em geral de boa qualidade, não é suficiente para obter contrapartidas do investimento efectuado.
- A concessão de financiamentos relativamente reduzidos a uma grande diversidade de actividades constitui não só dispersão de esforços, como dá também origem a problemas de duplicação com programas nacionais de apoio à indústria e com as obrigações das várias empresas. No sector da RUR, a acção coordenada constituiu o mecanismo de projecto mais eficaz.

4. Valor acrescentado

- Até ao momento é difícil quantificar o valor acrescentado dos programas para a Comunidade, embora não subsistam dúvidas de que se situa, a níveis várias vezes, acima do custo. Os benefícios para a Comunidade são ainda reduzidos, tendo em conta a enorme massa industrial envolvida que apenas põe em evidência a limitação dos objectivos e do trabalho de selecção em consequência das restrições orçamentais dominantes.

- O valor acrescentado constitui uma forma muito específica de apreciação da utilização de recursos financeiros. Pode ser utilizado com objectividade quando o resultado de um financiamento é susceptível de ser calculado nos mesmos termos. A sua utilização torna-se mais crítica quando o valor acrescentado tem de ser definido em termos subjectivos. Não existem dúvidas que, dada a qualidade das equipas de investigação e dos grupos apoiados, qualquer resultado constitui um passo positivo em termos de aquisição de conhecimentos mesmo que os resultados bloqueiem algumas vias ou não possam ter por sequência aplicações directas.
- Alguns dos resultados têm sido altamente positivos para a Comunidade, como por exemplo a descoberta de novos jazigos minerais, principalmente no caso de substâncias altamente vulneráveis. No entanto, continua a ser de questionar se se revela adequado que a CCE se substitua a si própria por empresas na actividade de exploração, a não ser que essa substituição venha na sequência do apoio a tecnologias de acesso. Deve reconhecer-se que alguns projectos financiados no domínio da exploração (geologia, geofísica, etc.) têm provavelmente constituído os de maior sucesso a nível comunitário, proporcionando novos instrumentos e conceitos para descobrir jazigos de minério.
- No caso da RUR, o resultado mais significativo foi a identificação dos problemas e complexidades da gestão de matéria reciclada e, em especial, de instalações de queima de lixo.

5. Importância para a Comunidade

- Todos os programas apontam para objectivos gerais importantes para o interesse da Comunidade no domínio das matérias-primas primárias e secundárias. O actual programa atribui uma maior importância à cooperação e às actividades multinacionais entre os países da Comunidade.
- Apesar de ser possível enquadrar os projectos nas diferentes secções do programa, não sem algumas dificuldades em muitos casos, muitos

deles são consagrados a objectivos demasiado específicos, sendo igualmente, em muitos casos, preferencialmente orientados para a resolução de situações de importância económica imediata e não para apoiar o desenvolvimento de técnicas mais gerais e fundamentais em termos de benefícios a longo prazo para o conjunto da Comunidade.

- Devido, provavelmente, à inexistência de uma política de I & D bem definida no domínio das matérias-primas, uma grande parte dos projectos em apreciação poderia ter sido desenvolvida no âmbito de programas nacionais. Nestes casos, os projectos em questão poderão perder importância para o conjunto da Comunidade.
- É evidente que as observações anteriores não são universalmente verdadeiras e, por exemplo, o programa RUR no domínio de combustíveis derivados de resíduos pode considerar-se verdadeiramente transnacional, tendo evitado a profileração injustificada de instalações prejudiciais para o ambiente.
- O actual programa contém objectivos mais gerais, tendo sido efectuado um esforço considerável no sentido de se estabelecer cooperação multinacional.
- Registou-se, por conseguinte, entre o painel, um amplo consenso quanto ao facto de o trabalho realizado se revelar importante tanto para os requisitos da indústria como para as necessidades da Comunidade, concordando-se embora que o programa era muito fragmentado e abrangia de forma esporádica uma área temática vasta, ou seja, fazendo uma abordagem bastante completa de alguns temas, e mal tocando outras questões de igual importância. Tal facto constitui o resultado directo da referida inadequação entre âmbito e financiamento, inadequação essa que, por sua vez, implica a selecção de projectos a partir de um campo de propostas já selectivo e incompleto.
- Esta situação só poderá ser melhorada através de, pelo menos, dois tipos de acção:

- a) Um alargamento de actividades para abarcar problemas mais genéricos e "comuns", incluindo acções multidisciplinares. A decorrente maior utilização e criação de bases de dados tornar-seá, desse modo, uma referência respeitada, como aconteceu por exemplo, com o excelente trabalho realizado no programa de coordenação sobre compostagem.
- b) Um aumento considerável do pessoal e do orçamento para prestar apoio à acção enunciada em a) e para promover projectos válidos de uma forma menos selectiva e mais inter-activa.

6. Efeitos das avaliações precedentes

 O anterior painel de avaliação apresentou uma recomendação clara no que respeita a futuros programas comunitários no domínio da I & D de matérias-primas.

O painel recomendou que se definisse claramente uma política europeia de I & D <u>coerente e apropriada</u> no domínio das matérias-primas de forma a permitir à Comunidade estabelecer uma estratégia a <u>longo prazo</u> em seu proveito.

- O actual programa (1986-1989) contém objectivos mais gerais, tendo sido efectuado um esforço considerável no sentido de estabelecer uma cooperação multinacional por via da focalização em alguns tópicos de interesse para vários países, apesar de as empresas industriais se encontrarem ainda pouco representadas (no caso de RUR, as autoridades municipais).
- É digna de especial referência a lista de pontos a considerar para prosseguir a recomendação anteriormente referida relativa à definição de uma política europeia de I & D coerente. Na maioria dos casos, estes pontos não terão sido integrados.
- Apesar da atenção atribuída à necessidade de definição de uma tal política comunitária, verifica-se que as restantes recomendações são ainda válidas, especialmente as que dizem respeito ao papel da

Comunidade em termos de a sua acção se dever encontrar mais centrada no fornecimento de serviços de cooperação do que na participação directa num elevado número de pequenos projectos.

- Por conseguinte, o painel de avaliação verificou existirem indicações de que recomendações das avaliações anteriores foram integradas, em especial no que diz respeito à orientação para projectos multinacionais e, em certa medida, no que se refere à publicação de relatórios de síntese. Animado da melhor boa vontade, o painel admite que talvez não seja surpreendente o facto de não se terem registado mais progressos, tendo em conta o efectivo de pessoal ocupado a tempo inteiro e as limitações financeiras dominantes.

7. Eficácia da gestão

- O reduzido efectivo permanente tem actualmente a seu cargo um volume considerável de trabalho de acompanhamento das avaliações e selecções iniciais, de acompanhamento dos trabalhos, incluindo assistência por meio de visitas às instalações para a compilação dos relatórios finais, a que se acrescenta o trabalho de assegurar os contactos necessários a nível industrial e governamental, bem como as inevitáveis comunicações internas.
- Tendo em conta a situação acima referida, bem como o elevado número de pequenos projectos que envolvem áreas científicas e técnicas muito diferentes integradas nos programas, a gestão realizada deve ser considerada como altamente profissional e eficaz em termos estritamente técnicos. É evidente que a nomeação de um orgão consultivo (com uma base industrial), à disposição do pessoal da Comissão, pouparia grandes esforços, sobretudo no que se refere a deslocações.
- Considera-se, porém, que a eficácia da gestão poderia ser melhorada se o esforço da Comunidade em termos de apoio directo a projectos fosse mais concentrado num menor número de projectos de interesse mais geral que numa grande quantidade de pequenos projectos sobre temas de várias disciplinas. É também necessária uma maior

flexibilidade a fim de apoiar projectos embrionários a uma escala mais reduzida (potencial elevado/financiamento de risco).

- A opinião do painel, que é corroborada pelas entrevistas realizadas com contratantes, é de que é preferivel a aprovação de projectos de uma forma mais contínua, tanto por razões de funcionamento como técnicas, a fim de utilizar do modo mais eficaz possível o financiamento aos projectos. Além disso, o painel considera que tal metodologia constitui o único meio prático de integrar os factores socioeconómicos em transformação, assim como a natureza geralmente cíclica do sector das matérias-primas.
- Parece bastante evidente que, tendo em conta o reduzido efectivo de pessoal disponível, os actuais serviços de gestão se encontram severamente afectados em termos de carga de trabalho, embora tenham demonstrado, no entanto, capacidade de trabalho e competência técnica geral consideráveis para vir a obter os resultados tal como se nos apresentam. A cooperação e coordenação inter-sectores realizadas tanto no interior da Comissão como com terceiros são tanto mais dignas de louvor quanto se tiver em conta o pequeno número de pessoas envolvido. É opinião unânime do painel que a insuficiência de pessoal não serve os melhores interesses da Comunidade e que é necessário um maior grupo de funcionários permanentes que se ocupe desta importante tarefa para a Europa.
- Tendo em conta as conclusões proprias às observações precedentes, não existem razões para que o símbolo de 12 estrelas não seja sinónimo de desenvolvimento de elevada qualidade e fonte de normas de aceitação geral.

RECOMENDAÇÕES

1. Introdução

- O painel sentiu necessidade de estender as suas recomendações para além dos limites estritos das suas atribuições e considerar de uma forma mais alargada as necessidades da indústria europeia de matérias-primas e, mais especificamente, o modo como a Comissão lhes poderá dar resposta e beneficiar o conjunto da Comunidade. O painel é de opinião que tal se revelará particularmente útil para a definição dos futuros programas-quadro.
- Actualmente, as actividades da indústria comunitária de matériasprimas não dispõem de qualquer núcleo central, considerando o painel
 que a existência de um orgão central claramente identificável, que
 forneça quer apoio a projectos, quer informações, em geral, sobre
 questões temáticas importantes, poderá e deverá proporcionar uma via
 francamente necessária para a transferência e desenvolvimento de
 tecnologia. No processo de definição de uma política e estratégia
 adequadas, é igualmente necessário definir as áreas actuais do sector
 por exemplo, o painel é de opinião que os minérios industriais
 deveriam ser totalmente integrados. Além disso, recomenda-se que os
 tipos de trabalho de projecto realizados no âmbito do subprograma RUR
 sejam integrados noutros programas adequados, preparando-se, desta
 forma, as recomendações seguintes, partindo do princípio que tal será
 concretizado.

2. Papel da Comissão

- O painel considera que o papel da Comissão deve ser alterado para passar a ser nitidamente mais activo, situando-se assim a sua actuação num plano normalmente mais elevado e mais genérico que actualmente.
- Deve ser mantido o actual papel de financiador de projectos válidos, embora assentando em estruturas unitárias mais alargadas e numa base de benefício mais generalizada, embora com a concessão de alguns fundos a projectos inovadores de menores dimensões.

- A acção da Comissão deve caracterizar-se acentuadamente pelo fornecimento de uma base comunitária de intercâmbio de informações e tecnologia semelhante ao papel desempenhado pelo USBM, o que exigirá igualmente disposições legislativas e fiscais. A Comissão deve também assegurar a co-relação e a cooperação adequadas entre todos os programas ou grupos similares implicados¹ para garantir que é mantida uma actividade suficiente no domínio da aquisição e transferência de conhecimentos de base e para permitir a realização de projectos de desenvolvimento industrial.
- Considera-se que a execução concreta do trabalho técnico de projecto deveria ser globalmente deixada aos contratantes. Tal não significa que a Comunidade não deva desenvolver os seus próprios recursos físicos, mas o perigo de o fazer antes de se tornar uma unidade de informação e de referência respeitada e digna de crédito está em que tais instalações poderão ser forçadas a colocar-se ao nível do mercado e converter-se em mais um contratante concorrente para poder subsistir.
- Embora se reconheça que o actual sistema constitui uma força positiva, o seu futuro, isoladamente, não se afigura muito claro e, na opinião do painel, não representa a melhor via em termos de valor acrescentado para todos os fundos comunitários de I & D.
- Recomenda-se a criação de um <u>Serviço Científico e Técnico no domínio das Matérias-Primas</u>, dotado do pessoal adequado, para efectuar os seguintes trabalhos:
 - a) Um directório.
 - b) Um mecanismo de publicação para a divulgação adequada e rápida de relatórios de projectos, sessões de trabalho e seminários.
 - c) Elaboração de análises globais sobre áreas estratégicas de mercado.
 - d) Realização das conferências necessárias para promover a transferência de tecnologia.

¹ Por exemplo de entre as DG III, DG XI, DG XII, DG XIII e DG XVII

- e) Apoio ao desenvolvimento de normas e regras industriais.
- f) Apoio a projectos relativos a temas de ampla aplicação em bases trans/multinacionais e com sucessivos momentos de avaliação.
- q) Apoio à inovação.
- O pessoal permanente da Comissão deve ter por objectivo principal a elaboração de um directório geral de todas as actividades de investigação em curso no domínio das matérias-primas, levadas a efeito na Comunidade e em países associados com os quais existem actualmente ligações ou poderão vir a existir futuramente. Será necessário actualizar constantemente este directório que incluirá todos os projectos financiados pela Comunidade desde o primeiro programa no domínio das matérias-primas (1978-81), bem como informações completas, na medida em que puderem ser obtidas, sobre todos os outros trabalhos importantes de I & D realizados nos sectores privado, semiprivado e público. Atenção deve ser dada à inclusão de instalações e equipamentos. O directório, que constituirá a principal base de dados comunitária sobre matérias-primas, deve ser objecto de distribuição geral e acessível através de uma das redes informáticas da Comunidade.
- O painel considera que o estabelecimento adequado das prioridades do projecto exige uma estrutura de informações pertinentes em termos de oferta/procura e que a Comissão apresenta talvez o melhor dos mecanismos para levar a efeito esta acção.
- Têm-se feito, desde há anos, algumas tentativas para determinar as necessidades do sector das matérias-primas da Comunidade tanto pelo pessoal permanente da Comissão responsável pelo programa no domínio das matérias-primas como pelo Conselho. É essencial efectuar inquéritos periódicos, constantemente actualizados, sobre a oferta e a procura de matérias-primas na Comunidade. Estes inquéritos serão apoiados pela compilação do directório. No entanto, será necessário recolher, além disso, dados quantitativos pormenorizados sobre a oferta e a procura para cada Estado-membro.

- Esse inquérito deve dar origem a uma análise constantemente actualizada das implicações estratégicas das variações da relação oferta/procura na Comunidade e das acções a curto e longo prazo a empreender pela Comunidade. Além disso, o inquérito fornecerá dados essenciais sobre o "saber-fazer" comunitário no sector das matérias-primas, sobre os efeitos socioeconómicos na Comunidade e sobre o grau de auto-suficiência em termos de matérias-primas. Esta acção clarificará igualmente as situações muitas vezes enganosas, que se poderão vir a desenvolver a curto prazo, dada a natureza altamente cíclica do sector das matérias-primas.
- Actualmente, as propostas de I & D provêm de organismos privados, semi-privados e públicos dos vários Estados-membros e são parcialmente financiadas ou não consoante a sua importância para o programa. O painel considera que grande parte do financiamento actualmente concedido a um número de projectos transnacionais mais reduzido que em anteriores programas se revela bastante mais válido para o conjunto da Comunidade que a situação anterior. Contudo, se os estudos estratégicos e de mercado forem efectuados em conformidade com as recomendações anteriores, a Comunidade estará numa posição bastante melhor quer para definir, quer para orientar a natureza dos projectos a financiar.

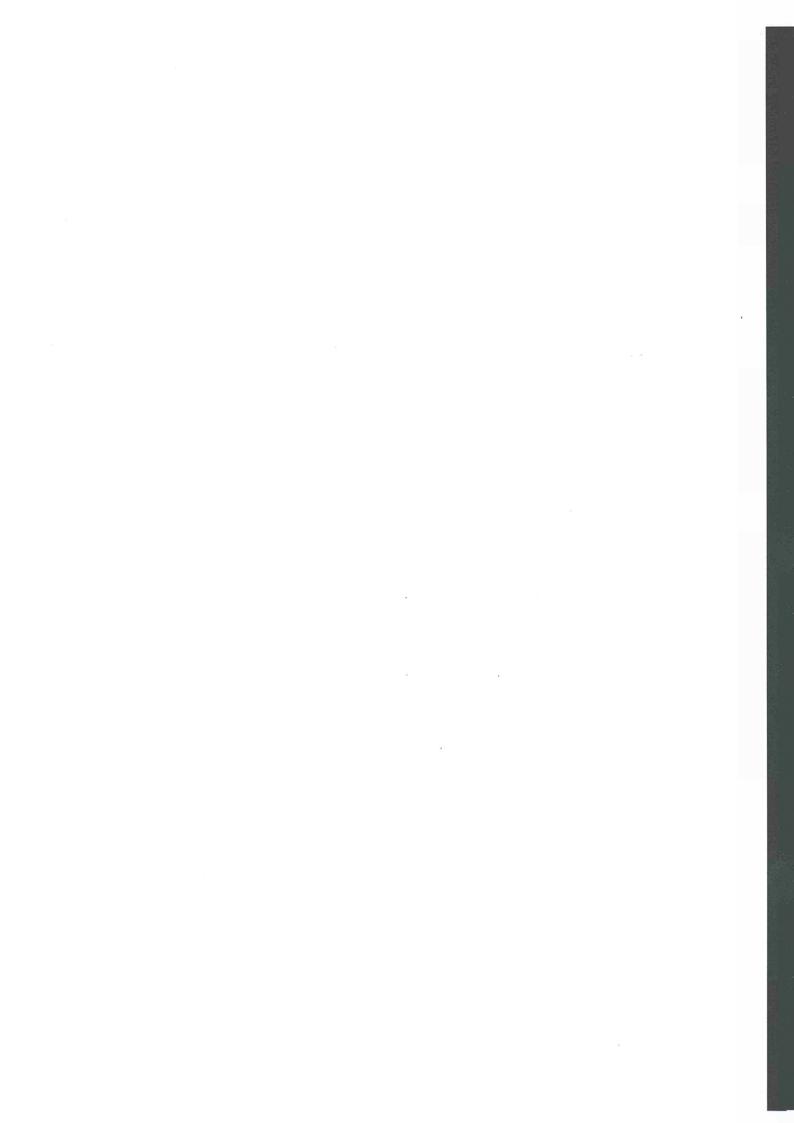
Ligação

- O painel recomenda vivamente que a relação entre a Comunidade e os organismos nacionais responsáveis pelo financiamento de I & D seja cuidadosamente reexaminada com base nas outras recomendações efectuadas, de modo a poder ser obtido um enquadramento adequado no âmbito de uma política de I & D no domínio das matérias-primas e, desta forma, estabelecer efectivamente papéis precisos e distintos.
- Tal depende das acções adequadas do Comité Consultivo e, por conseguinte, requer uma comunicação e compreensão efectivas entre o referido Comité e o pessoal da Comissão. Além disso, seria altamente desejável alargar aos organismos industriais apropriados tal comunicabilidade.

4. Observações sobre o futuro programa

- O próximo programa (proposto para 1989-92) segue o modus operandi geral dos programas anteriores. O painel recomenda que não sejam levantados obstáculos a esta orientação desde que a revisão do programa-quadro e, portanto, o papel da acção da Comissão no domínio das matérias-primas, sejam <u>realmente ponderados</u>.
- No que respeita a futuros programas, o painel recomenda que nestes se integrem os seguintes elementos:
 - a) Clarificação do domínio de responsabilidade de modo a que a indústria de "minerais" seja cabalmente representada.
 - b) Um nível bastante mais elevado de pessoal e de financiamento que corresponda à importância real da indústria de "minerais" para a Comunidade.
 - c) Uma abordagem mais flexível da classificação de subprogramas, da concessão de financiamento e um papel mais inter-activo em termos de formulação de projectos.
 - d) Concessão da maior parte do financiamento para projectos a um maior número de projectos transnacionais mais genéricos.
 - e) Um sistema de publicação mais eficaz.
 - f) Um esquema contínuo de apresentação de propostas de projecto, de avaliação e de conclusão de contratos.
 - g) Desenvolvimento de um serviço centralizado de informação sob forma de gabinete.
 - h) Uma subdivisão mais adequada de programas de reciclagem e de outros programas adequados.

Entende-se por "minerais" matérias-primas inorgânicas naturais.



III. EVALUATION

III-1: INTRODUCTION

The reasons for conducting this evaluation which has been annunciated in the previous sections assume that the post hoc review will be part of an interactive process that can modify future actions for the benefit of the Community.

- The Evaluation Panel of Experts

It is important to realise that the very mechanism which calls for a small panel of independent experts to review any given programme is subject to the same sampling risks as any canvassed opinion. This is ameliorated to some degree at least by the disparate disciplines of the panel members and the fact that they are drawn from industry and academia. The fact that the accumulated experience of such panels is very large and broad ranging also ensures a degree of maturity in their recommendations.

There is no doubt that such a panel is capable of providing both meaningful and useful input into the programme formulations of the Community, but because it is a highly experienced vario-discipline group it is also capable of expressing views in an equally meaningful and useful manner on the broader politico-socio-economic factors which have such an overwhelming bearing on the formulation process.

- The Timing of the Evaluation Process

Under the present system evaluations are carried out after the fact and this results in two associated problems:

* In order to fully assess the technical results of any given programme the final reports must be available and even preferably (as had been done in the case of the 1982-85 MSM projects) compiled into a summary document. This required a reasonable period of time following the notional completion of the actual work. At this point it can be 5 years from the outset of the programme when many of the political, social and economic conditions that engendered the programme may have

shifted radically. This is particularly true in the case of raw materials, where the field is so large and the funds so limited, in that the 'relevant' projects are almost by definition selective.

The inescapable conclusion is that evaluations will be unsatisfactory in that they will conclude relevances dictated by the terms of reference which are of little value due to the changed circumstances 5 years on. This will be particularly true with regard to the direct conclusions and recommendations on the specific technical content of any given programme, and important though this is, it is most unlikely that this aspect will be contentious given the degree of selection involved and the proven competence of the Commission staff and the contractors. In any case, this area is almost self reviewing through the process of seminars and workshops that take place during the active periods of any programme. The only weakness in this is that it is introspective and involves only closely interested parties, which means it is divorced from all but the closest external influences.

* In order to fully appreciate and incorporate any significant recommendation made by such an evaluation panel as the unit configured to produce this report, requires a further period of time and this in turn delays the procedure, which is also time consuming, in commencing future formulations.

This effect is amply demonstrated by the fact that the compiling of final reports in the MSM section was only just available at the commencement of this present exercise in October 1988, while the review report on the RUW section was only available in March 1989. This means that the evaluation process could not have commenced at an earlier date as the key documentation was not available, and yet the proposals for the next programme were already well advanced. CREST was consulted in February 1989 and the Parliament gave its opinion in First Reading in May 1989. This time factor is almost an irreconcilable one, in that to wait long enough to have sufficient

results to conduct a scientific and valid assessment it is already too late to have an impact on the formulation of the next Programme. It is too far removed from the circumstances which may exist at the time of the formulation of some future programme.

- Other issues

It is abundantly clear that the current evaluation is showing that there are many areas whereby meaningful improvements can be made, and yet these findings will have little bearing on the next Programme which will be completed some 10 years after the commencement of the Programme covered by this report.

Specific recommendations are made addressing this issue, but it is a fact that has had to be taken into account while conducting this exercise, and one which panel members felt was particularly frustrating and given the decision making timescale within the EC this situation was probably a fact of life.

That being said, it was also realised that evaluations of this type are a very necessary part of a control system for long term consideration and as such should play a key role when used in conjunction with continuous in-house appraisals.

III-2: GENERAL ISSUES

FINDINGS

COMMODITIES

As far as commodities are concerned, it appears that they can be qualified by the intensity of their indispensability, and due to their geographical and political localization on the earth, to be more or less sensitive to events external to the Community. This leads to the definition in each case of a particular situation and therefore of the vulnerability of supply. This concerns an immense world of substances composed not only of the nearly hundred elements of Mendeleiev's table, but also natural compounds of these elements included in the category of industrial minerals.

Another critical point relates to the supply of commodities which are in demand to the EC industries, the vulnerability of which has to be reappraised on a continuous basis. Europe has to be ready to assure the supply in any event at least for the strategic metals and minerals.

Even if the majority of known and long since mined metal deposits of Europe are now depleted, no one is authorised to make conclusions as to the lack of hidden resources. As examples we can mention at least for the last ten years the significant discoveries of copper at Neves Corvo (P), lignite at Mezos (F), platinum in Greenland.

Wastes are potential sources of commodities. But the problem is of a complex nature: wastes are the end result of human activities and usually unsorted mixtures of variable products including metal, organic materials, used goods etc. In general terms, the recovery of the commodities contained in wastes is non economical as compared to fresh supply. The economy becomes different if the cost incurred by a proper disposal of these materials is included as they are sources of pollution and hazards.

INDUSTRY

Industry involved in raw materials business, besides its extreme diversity and complexity, is to be regarded as the link, the fragility of which is responsible for the fragility of the whole industrial chain.

It has to exist in any case as the guarantee of supply, but it is also the main domain of innovation to respond to more and more demanding downstream users for better quality and higher variety products. The key role played by industry has to be considered when defining policies as per its capacity to maintain competency to cope with new problems in every technical aspect: exploration, mining, metal and material processing and recycling.

ECONOMY

To postulate that any operation has to be economical is a truism, as far as the environment is of the type of open market we experience at present. It means that the price to be paid for a service or product is the fair one evolving from competition including that from outside the Community. Some events could lead to a physical shortage of supply: if this product is still indispensable, the price to pay will become the one necessary for access to the product. What would happen if there would be no alternative solution either for the physical presence of the commodity or for the human and technical potential to mine, process, transform it? In any case, if more than one solution is applicable, once more the best one will be the most economical one.

NEED FOR SUPPORT

There is a need for the whole industry to be activated, for it to preserve its hegemony in science and technology. This is and always has been a major asset for EC industry when acting outside European boundaries.

The activities related to these domains cannot be relegated to third countries, and mainly developing ones, as has been proposed by some irresponsible lobbies. This results in a considerable loss of knowledge, know-how, and interactions with other scientific and technical fields.

R & D is one of the means to permit the realization of the objectives of having a top-quality primary raw materials industry. The effort has to be supported by all participants, including the EC, considering the diversity and importance of this field and the collective ambition brought by such actions.

WASTE

RUW is now a growing business in the EC, under the pressure of reducing the environmental problems of waste disposal. However it is unproductive to stress too much the environmental aspects because in that case the disposal problems will be the controlling parameter.

The waste problem is one of the cases of application where any community will have to pay more for any recovered product, the question being who will have to pay? The proper solution will be the least expensive to the community.

RUW have strong connections with market regulations, good life specifications, fiscal and fixed charges and the organisation of commercial distribution. In this framework the technologies already available may find conditions for expanding in small local waste collectors, voluntary organisations, mandatory consortium for specific refuse and with municipal authorities.

THE ROLE OF INDUSTRIAL COMPANIES

Industry is reluctant to be engaged in long term programmes; companies may not believe R & D is the main way. It is questionable to ask if the collection of data inside a given plant and tuning the operations to get better results or adapt to changing quality of feed is a research type of work. But what could be ascertained is that if these normal control and regulating operations are performed in good collaboration with scientific teams, it will lead to better results based on better understanding of the various aspects governing all the factors pertaining to any given ore. Industry is also concerned with the potential risks evolving from external diffusion of information. Confidentiality is a permanent concern for it. This point should be clearly pointed out and satisfaction given. Industry should be attracted to participate even in non economical long term programmes as its approach to problems will give more pertinence to the results in any given situation.

Many European companies operate in countries outside the EC, but here also the economy remains the key point of the operations. Their results, as a contribution to the EC, are critical as they play an important role in various aspects:

- maintaining competency training of people
- supplying the Community
- being a route of export and import for know-how and technology.

It appears therefore that projects led by European companies should be supported even if they are concerned with operations situated in foreign countries.

III-2-A : THE ROLE AND POSITION OF NON-RENEWABLE RAW MATERIALS

The primary raw materials are the primary elements (metals, metalloids, minerals) man is extracting from the earth to cover his needs for the various invaluable products which are some of the basic components of his way of life.

At various times they have been classified depending on their degree of use and on their general stage of development: solid fuel, ferrous metals, non-ferrous metals, industrial minerals, building stones... All the activities involved in these fields are carried out by the same type of specialists, under the same mode of thinking and training.

In the aggregate, the demand has always been growing, but not without strong irregularities due to changing patterns in the downstream needs, technical evolutions, political and economical events. There are no visible signs that this situation will change in the foreseeable future.

The activities embraced in the primary raw materials industrial domain are:

- search for the resource ie. exploration
- extraction of the deposit ie. mining
- treatment of the raw product ie. processing
- conveying to users ie. transportation.

All these activities involve a broad range of scientific disciplines, physics, chemistry, geology, geophysics, life sciences, biological sciences etc. It is without doubt the most multi-disciplinary area of technology and because it is often regarded as a basic industry the extraordinary complexities of the science involved are often underrated.

III-2-B: THE SITUATION OF THE EUROPEAN COMMUNITY

From the beginning of time man has always and everywhere tried to utilize the natural environment with varying degrees of intensity and success. A major step occurred during the Renaissance period in Europe in terms of general scientific advancement. This led to the first ever treatise published in the field of raw materials: "De Re Metallica" by Agricola in 1556. From that period on progress in the technology for recovery of minerals improved in parallel with general scientific knowledge and development.

With the progressive developments in the "Age of Discovery" and the subsequent periods of colonisation and trading all the hitherto acquired knowledge was effectively exported including know-how, techniques and trained specialists.

The tremendous opening up of the world had an adverse effect on Europe which was generally not apparent until recent times. As many third countries captured a major part of the technological advancement which had originated within Europe this resulted in pressure being placed upon European industry to accept "semi finished" products which it had previously made itself. Business in Europe continues to battle against these forces but faces more and more difficulty on account of the inequality of the prevailing political and production cost structures including environmental issues.

From a broad survey it can be said that the mineral raw material industry, including solid fuel, represents an overall contribution to the GNP of Europe of approximately 50,000 Mecu but it should also be noted that other associated activities require to be considered.

Training and research: Universities, Colleges, R & D centres

Business: multinational involvement of European

companies, technical trading

Services : equipment manufacturers, engineering

companies, expertise.

III-2-C : THE PROBLEM FOR EUROPE

Competitiveness: As third countries have gained access technological advancement their cost structures have become a controlling influence on world commodity prices. During the periods colonisation and empire and in some cases beyond into "independence", this had little influence on the originating groups within Europe as effective control was still maintained. In many of these third countries there were favourable factors such as cheaper manpower and better quality deposits. This in addition to direct and indirect subsidies or uneconomic production for hard currency, has completely turned the tables on the original developers. controller has become the controlled. With further advances in technology the balance might be shifted as more attention is paid to the home ground but the driving force of undervalued commodities from third countries which calls for greater added value at the final product end of the supply chain will continue. The correct economic and strategic fit for recycling materials requires careful planning.

Supply: The needs are growing in importance, diversity and quality. Numerous historical deposits lying within Europe are nearing depletion or facing difficult mining conditions. Considering that Europe covers a very large geographical area, some important commodities are not well represented relative to their likely occurrences (e.g. deposits of nickel, platinum metals, chromium, etc.). To rely entirely on external supply would be to further put at risk the whole down-stream economy. Actions have to be taken to continue to explore the "old world" which is likely to yield further good quality deposits such as those discovered recently.

Quality: As commodities are the first link for industry, they have to deal with more and more demanding downstream users. This cannot be achieved without a continuous and strong effort to bring more added value to the supply chain.

Professionals: As with all the basic sciences there is developing a severe shortage of suitably qualified and experienced personnel capable of effectively guiding the industry along the clearly required path. Urgent action is required to redress the situation. The needs within Europe are evident but this problem is a world wide one exacerbated by the recent downturn in the base metal industry just as a whole generation of experience was reaching maturity and is now approaching retirement.

III-2-D : R & D AS A MEANS FOR IMPROVEMENT

Whilst R & D is not the only means which leads to process improvement, it is a fundamental necessity at all levels of the primary raw materials industry. This is particularly true given the wide range of disciplines involved and the unusual combinations of these disciplines that are required.

It is through R & D that the right basic knowledge and understanding of involved mechanisms are obtained. In addition R & D that is performed in other areas than in raw materials is of wide use, for example in discoveries and techniques in areas such as advanced materials and data processing. Without the basic knowledge and understanding, however, these advances cannot be integrated in any useful manner.

R & D in the raw materials industry which covers a wide range of disciplines, has quite clearly the capability of contributing to other earth sciences as well as physics, chemistry and more general areas such as ergonomy. R & D is also one of the best ways to train future operators and managers, to obtain mobility of manpower and to diffuse knowledge and know-how.

III-2-E : THE EC CONTRIBUTION TO R & D

It is assumed that the EC has to play a role in helping the raw materials industry to progress. It has to act at a supranational level, over and above national bodies, industrial organizations and academic institutions to help solve problems of common interest.

The overall objectives being clearly defined, the way to promote R & D is to assist the actors by financial contribution. The procedure becomes a critical step as the funding will be directed to specific areas of action and a balanced approach with regard to associated actions such as work in advanced materials is clearly required. Defining the priorities is an operation that must be done having a clear view of the situation, including definition of the topics where R & D could enable progress. The analysis of the situation including a continuous assessment of the future should avoid conjectural reactions. It has to take account of not only the opinions of those directly involved in raw material industry, that are by essence partial, but also must consider other associated activities such as downstream users, environmentalists politicians.

The funding must be appropriate to the size of the problems to be solved and the expectations of the results.

Many R & D problems can be studied at a laboratory scale. The reality of the raw material industry which deals with the geological environment is such that in many cases the answers are only obtainable after full scale operations in actual conditions. This requires considerable flexibility in programme funding. It is important not to undervalue the effects and contributions made by an indirect mechanism such as contact groups, information and idea exchanges which in themselves can lead to further valuable work. Further, flexibility is also required in dealing with innovation which does not fit conventional time schedules.



III-3: SCIENTIFIC AND TECHNICAL ACHIEVEMENTS

FINDINGS

The evaluation of scientific and technical achievements must be seen in the context of the process which has been used to organise the EC funding.

The Programme was established to direct R & D efforts within the Community towards solving problems in the raw materials industry covering such areas as cost effectiveness and strategic supply. The topics covered were selected by extensive consultation with concerned parties and because of the very restricted funding a variable set of priorities were established, based on the conventional wisdom of the day. The successful contractors were therefore those who were the most closely aligned to these priorities or those who were large enough to mould a project to suit.

This represents a highly selective procedure on and above the normal consideration of competence and merit.

The letting of large contracts with break periods of one to two years also tends to favour the larger institutions who have the staff flexibility to cover such proposal costs and time. These larger institutions are also the ones with high reputations further favouring their selection.

After an extensive analysis of all relevant documentation, interviewing concerned parties and considering personal experiences, the panel members agreed to the comments contained in the previous evaluation report about scientific and technical achievements but also felt it sensible to extend their assessment to some further considerations.

The composite assessments are as follows:

In the majority of cases the programme topics have been properly addressed. It was clear, however, that some topic areas were not adequately covered, which may be a reflection of the perceived need not being real. The effect cannot be explained by a lack of expertise in this area. The panel felt that it was more a question of the effect produced in replying to a specific and time dependent request for tenders.

As expected the quality of the work performed is recognised as being of a high level for the vast majority of contracts. No formal evaluation can give a measure to this assertion without conducting a very detailed audit which is clearly not justified. The general levels of interest shown in the projects, the acceptance of the resultant publications, the development of contractual collaboration and participation in professional seminars are testimony to the technical success of the programmes.

As a general comment, however, it is clear that reporting to international standards remains a weakness in many European teams.

There were significant differences within the main topic areas. In exploration, for example, the tenor of the projects was heavily biased towards basic knowledge acquisition, whilst the ore processing sub-programme contracts had a stronger applied technology basis. The mining technology and recycling sub-programmes were almost entirely directed to specific issues of a more current nature.

In terms of the original claims and objectives there was a high degree of reasonable success and this level of achievement is obviously related to the high quality and professionalism of the various teams involved.

Reports (see annexes 8 and 9) give evidence for all of the topics selected by the programmes that the results are abundant, important and of high quality.

III-3-A : METALS AND MINERAL SUBSTANCES

III-3-A-1 : EXPLORATION

INTRODUCTION

Several publications initiated and published by the Commission staff provide useful and essential information on which to base a technical evaluation of the topic "Exploration". These are "Summary reports of the sub-programme in materials and mineral substances (1982-85) Volume 1", edited by M. Donato and L. Vanwambeke (EUR 11521, 1982); "Mineral Deposits within the European Community", edited by J. Boissonas and P. Omenetto (Springer Verlag, 1988); and an informal series of Information Sheets on Exploration, Nov.1985 - Aug.1987", collated by Mr L. Van Wambeke.

The field was divided into six topics which are listed below, together with the number of projects undertaken and the relevant funding.

	No of projects	Ecu
Topic 1.1. Geology of Ore Deposits and their Host Rocks Topic 1.2. Geochemical Methods Topic 1.3. Geophysical Methods Topic 1.4. Remote Sensing Topic 1.6. Statistics and Geostatistics Applied to Exploration Data	39 15 11 5	3,556,191 1,170,995 2,338,480 505,375 326,875
TOTAL		7,897,916

The proportion of the total funding dedicated to the exploration sub-section was 46% of the MSM budget (excluding recycling) and amounted to an average of 111,000 Ecu per contract.

Topic 1.1. Geology of Ore Deposits and their Host Rocks.

This topic comprised the greatest number of projects funded under the Exploration research area. 39 projects were funded which covered the following research areas:

Deposits associated with mafic/ultramafic rocks (sulphides, chromite, platinum) - 13 projects

Deposits associated with granites - 8 projects

Deposits in sediments, principally carbonates - 7 projects

Deposits related to alkaline rocks - 4 projects

Other projects - 7 projects

Deposits associated with mafic/ultramafic rocks.

These included investigations into chromite (5 projects), sulphides and hydrothermal solutions of oceanic ridges (5 projects) and platinum (3 projects).

Chromite. Positive and encouraging results were obtained for all projects. The major collaborative projects between ERGM (038-F), the University of Copenhagen (120-DK) and the Open University (108-UK) was selected for a detailed study of its final reports. Using geochemistry, geophysics and structural studies it was shown that supra-subduction zone ophiolites are the host in contrast to those of "mid ocean ridge basalt" (MORB) settings, and that chromites are associated with deformed, serpentised ultramafics. The collaborative multidisciplinary study 135-GR/136-UK developed structural and geochemical techniques which have general application for economic discoveries.

Sulphides and hydrothermal solutions of oceanic ridges. Four projects (015-D, 016-D, 017-D, 018-D) studied the sulphide ore deposits of the Northern Troudos Ophiolite, Cyprus. Positive results were obtained; the origins of the massive and stockwork sulphides is more clearly understood than heretofore, and the same techniques could be applied to similar oceanic crust material elsewhere.

A fifth project (032-F) studied metal behaviour in hydrothermal solutions at the Djibouti ocean ridge and allowed the source of the metals to be determined.

<u>Platinum</u>. Project 089-UK on "the development of techniques for the determination of the platinum group elements in ultramafic rock complexes" was selected for a detailed study of its final report. This highly successful project developed new techniques of beta-radiography which are of major economic importance.

Two other projects (023-F and 116-DK) investigated the prospecting for platinum group elements in ophiolites in association with base metal sulphides, and definitive conclusions were recorded for both.

<u>Deposits associated with granites</u>. The projects covered a variety of aims and all were successful; the technical standard was high. Project 102-UK was selected for a detailed appraisal of its final report. Fluid inclusion studies and thermometric work of high calibre indicated a clear model for the tungsten mineralisation associated with the Hemerdon deposit in SW England. The same techniques can usefully be applied to the tungsten deposits of both Caledonian and Hercynian age in Western Europe.

Five other projects also investigated tungsten mineralisation. The importance of a multidisciplinary approach to locate deposits was demonstrated in most cases. The value of collaborative projects was clear, and one team found particularly useful the contacts and ideas developed within the framework of the EC "Contact Group".

One project (031-F) aimed to determine the origin of Sn and W in granites. This project had a positive result and highly accurate analytical techniques were employed. The outcome indicated that the initial protolith must have high levels of Sn and W with a subsequent high degree of fractional crystallisation and the involvement of fluids.

Finally one project (117-DK) aimed to establish new ideas on the origin of porphyry-Mo mineralisation in continental rifts. It is clear that back-arc rifting, as proposed classically for Colorado, may not always be the model, and is clearly not the case for the Tertiary province of east Greenland and the Olso Graben.

Deposits in sediments, principally carbonates. The co-ordinated projects 010-D (University of Heidelberg), 041-F (BRGM), and 078-B (Geological Survey of Belgium), were selected for a detailed study of their final reports. The research teams carried out an impressive amount of work of the highest quality. Multidisciplinary techniques were applied to selected areas of a range of sediment types of different ages in France, Spain and Belgium and it was demonstrated that it is highly important to select the best analytical and prospecting methods appropriate for each district.

Of the other four projects in this category, three had a positive outcome and yielded some new local information; in one case however, it is doubtful whether the results obtained represent anything new or are of any additional value in exploration.

<u>Deposits related to alkaline rocks</u>. Project 118-DK was selected for a detailed analysis of its final report. It involved high calibre, multidisciplinary collaboration with a wide range of institutions. The study produced very worthwhile results which indicated economically promising zones of pyrochlorite enrichment in the Motzfeldt Centre of the Igaliko Complex, Greenland.

Three other projects investigated the phosphate potential of some alkaline

complexes in Greenland. Although the three projects (005-D, 098-DK, and 119-DK) identified some low grade igneous phosphate occurrences, none of these seem to be economic, and the EC will have to continue to depend on imported phosphate. 005-D identified potentially economic niobium in the Motzfeldt Centre which warrants further study.

Other projects.

These comprise a variety of subjects generally using multidisciplinary techniques. Overall, the techniques, although of a high technical standard failed to yield much new positive evidence of mineralisation in the areas studied.

An exception was 079-B, which investigated the stratiform phosphate deposits of the Mons Basin, Belgium. A positive result was obtained with an 800 million tons of resource of phosphatic chalk indicated at a grade of 6-12% P_2O_5 and a reserve of 30-45 million tons which may be economic.

Topic 1.2. Geochemical Methods

This topic comprises 15 projects which covered geochemical prospecting (9 Projects) and analytical techniques (6 Projects), although there is some overlap between the two types.

Prospecting.

Each had a successful result, although in the case of the projects which studied the use of lithogeochemistry in exploration, a successful result was in any case predictable. One lithogeochemistry project (074-NL) showed that elevated levels of Cu and Zn are associated with tungsten rich skarns and are absent from barren skarns. The dispersion of metals in soils and streams as studied by 035-F showed that the techniques used must be relevant to the local geological conditions. Lithogeochemistry of granites and their country rocks (096-UK) successfully showed that in many cases the presence of concealed granites can be determinated and signature

mineralisation can be defined which indicates the presence of tungsten. A multidisciplinary study (090-UK) of carbonate hosted mineralisation in the English East Midlands gave highly positive results on the origins of "Irish-style" and "Pennine-style" deposits, and based on these it is possible to propose the correct exploration methods.

Two quite different projects were 077-B and 105-UK. 077-B gave highly promising results in the innovative application of thermoluminescence of quartz in mineral exploration. 105-UK showed that trend surface analysis on geochemical data from surface sediments from the Greek continental shelf can be a worthwhile technique in locating placer, hydrothermal and lode minerals.

Analytical techniques

All six projects gave positive results. Four of them investigated the use of soil and gas geochemical exploration methods. One of these projects, 106-UK, was selected for a detailed evaluation of its final report. The work carried out was of a high standard and demonstrated, that despite ambiguities in some cases, significant differences between mineralised and unmineralised areas can be detected, particularly in carbonate terrains. Two other projects under this category showed that under certain circumstances gas geochemistry can locate one bodies better than normal soil geochemistry.

The other two projects under this heading developed new techniques. 104-UK developed a new plasma source spectrometer which has given excellent results in the determination of trace and rare earth elements. 073-NL developed a new technique of "Integral Rock Analysis" in which rock slices can be directly and non-destructively analysed by XRF with large consequent savings in time and cost.

Topic 1.3. Geophysical Methods

The eleven projects funded produced worthwhile results and included a wide range of geophysical methods. Several completely new techniques were developed.

New techniques in UV laser prospecting (003-D) led to the discovery of several new exploration targets in Turkey. In a study of the potential of seismic methods in near-target mineral exploration (007-D), it was found that vertical seismic profiling (VSP) and transmission tomography gave the clearest and most cost time effective picture.

The use of TEM (transient electromagnetic methods) was the study of two projects (009-D and 097-UK). Interpretational aids were successfully developed and it was found that TEM can detect massive sulphides even under unfavourable conditions.

030-F successfully developed new techniques in nuclear technological analysis of elements in boreholes. The costs of borehole analysis can be lower than using conventional methods. 087-UK developed a new downhole very low frequency (VLF) prospecting instrument capable of detecting conductive zones beyond the borehole wall.

The remaining five projects investigated the usefulness in prospecting of various electrical methods and all showed a fairly high degree of success. Of particular interest are a new frequency domain electro-magnetic system which was developed (044-F) suitable for the search for deep seated conductors. In addition, project 101-D produced a multi-frequency electromagnetic depth sounding system which is better suited for detecting thin conductive layers at great depth or for penetrating high resistivity overburden than conventional methods.

Topic 1.4. Remote Sensing

Five projects were funded, each of which produced worthwhile results. 111-EIR was selected for a detailed evaluation of its final report. This study applied a wide range of remote sensing data and geological, geochemical and geophysical information to a large area of Central Ireland in order to determine the controls on mineralisation in several previously known mineralised areas. The study compiled an impressive amount of data enabling detailed models of the structural controls on much of the Irish base metal mineralisation to be proposed. A study with a similar approach, 114-DK, also involved the statistical integration of remote sensing with other data from central east Greenland. Very positive results were obtained and it is clear that multivariate analysis of combined data sets reveal many otherwise hidden geological features.

037-F was in two parts, studying both the Armorican Massif where covered by thick superficial formations, and the Mount Rhodope area, Greece. A clear relationship between remote sensing data and vegetation, and between vegetation and geology was established. Finally, 071-NL investigated the usefulness of side looking airborne radar as a tool in mineral exploration. In the area studied, the Huelva pyrite belt of Spain, the technique was found to be of limited use compared to other remote sensing techniques. Further research is needed.

Topic 1.6 Statistics and Geostatistics applied to Exploration Data

The two projects funded produced useful role models for logging and classifying systems as well as 3D imagery.

GENERAL COMMENTS

For the 1982-85 programme approximately 30% of the total budget was allocated to Exploration, with 8 million Ecu covering 72 projects. All of the projects were technically of a high calibre.

Among the topic "Geology of Ore Deposits and their Host Rocks", which comprised the greatest number of projects, studies on chromite, platinum and tungsten gave particularly encouraging results.

Under the topic "Geochemical Methods" many of the projects of the sub-topic "Prospecting" gave rather predictable results. However, under the sub-topic "Analytical Techniques" some very worthwhile new techniques were developed which are of value to the Community as a whole.

The geophysical projects of the 1982-85 Programme developed several new techniques and the Remote Sensing projects gave very worthwhile results in the area of multivariate analysis of combined data sets.

For the 1986-89 Programme 3.5 million Ecu have been allocated to cover 25 projects, making up about 20% of the budget. The funding of a lesser number of projects, each with a somewhat larger budget than those of the 1982-85 Programme, is to be welcomed, especially as the number being funded in prospecting which would yield predictable results have been considerably reduced.

Nevertheless, it is clear that the total budget available for projects is far too small, in that worthy projects are each now receiving a larger amount of funding (on average about 20%), but the number of projects funded under many of the topics is so small as to have no great impact on Exploration in the Community as a whole.

III-3-A-2 : ORE PROCESSING

INTRODUCTION

The work conducted in this sub-section is previously reported in the resources document "Summary reports of the sub-programme: metals and mineral substances (1982-85)", Vol. 2, edited by M. Donato and L. Van Wambeke - 1988. In addition other publications of some projects were made

and selected subjects involved workshops and seminars.

This field was divided into 8 topics which are listed below, together with the number of projects undertaken and the relevant funding.

	No of projects	Ecu
Topic 2.1. Complex lead, zinc and copper ores	23	3,410,240
Topic 2.2. Other complex and oxidised ores	7	1,252,362
Topic 2.3. Aluminium from low-grade sources	2	1,214,145
Topic 2.4. Chromium from low-grade sources	1	152,630
Topic 2.5. Phosphates	1	120,000
Topic 2.6. Slags and residues from metallurgical processing Topic 2.7. Modelling and Control in mineral	4	513,530
processing	5	1,063,225
Topic 2.8. Improved mineralogical analysis	2	255,405
TOTAL		7,982,087

The proportion of the total funding dedicated to the ore processing subsection was 45% of the MSM budget (excluding recycling) and amounted to an average of 180,000 Ecu's per contract.

Topics 2.1. - 2.8. Ore Processing

Despite the various topic divisions which served to provide different ways of addressing a wide range of industry problems the overall nature of the ore processing group is best classified en-mass. Save to say that topic 2.6. does not overlap with the Recycling of Non-Ferrous metals but does serve to illustrate the inseparable nature of the processing spectrum.

The distribution of the contracts on a national basis as per the leading group were:

Of these projects 20 were industry led and 3 were joint contracts.

In terms of unit processes the contracts were sub-divised as follows:

Mineralogy	3
Preconcentration	1
Comminution	1
Flotation	6
Leaching	24
Smelting	1
Modelling	4
General	5

The industrial contracts were reviewed on a qualitative basis and classified into three composite categories: "successful", "meaningful" and "not beneficial". This classification was based on the following criteria:

- results as compared with objectives
- results capable of wide application
- the scope for industrial application
- the extent of the technical progress achieved

This gave an overall rating which for the ore processing sub-programme was:

- successful = 37 %
- meaningful = 37 %
- not beneficial = 25 %

The sub-group main conclusions were:

- The success rate of the research programme is generally satisfactory.
- Dependance on imported raw materials has not been changed fundamentally by the outcome of the programme but in some specific cases vulnerability of supply decreased to some extent because of improved processing technology in the minor metals field.
- By deduction from the results, competitiveness should have improved and the programmes have undoubtedly stimulated better co-operation between industry and universities.
- It is felt that research capabilities in this sector have increased in the EC during the last decade in part as a consequence of the programmes.
- The non-beneficial number of projects seems to be rather high. This is due in part to the criteria adopted by the Sub-Group which classify projects with too specific targets as "non-beneficial" even though they may be technically sound.

GENERAL COMMENTS

There was a heavy bias towards hydrometallurgy, which was a pity as the programme as a whole should have covered areas of equal importance, ie. pyrometallurgy, which account for the bulk of non-ferrous metal production; the direct attack of the simple chemical bonds of a metalliferous concentrate is bound to offer the most economic route, and R & D work directed towards improving the efficiency of such unit operations can only be helpful.

It is again a function of such limited funding that fashion and short term perceptions should play such a major role in project selection. In the

late Seventies and early Eighties, when environmental pressures were building on all sides, particularly on SO_2 emissions, it became conventional wisdom to regard low temperature hydrometallurgical processes as being environmentally less sensitive. Time and much effort and money has shown this not to be true and in fact most of the proposed main-stream hydrometallurgical process routes have foundered on the bases of cost, complex chemistry and environmental problems.

Another heavily supported category was modelling: although this cannot be considered a specific research operation it has the great merit in helping to understand the critical and controllable parameters in a way which the normal accounting based central strategy cannot. It therefore represents an ideal area for the EC to support as it has a wide applicability and no one process or industrial operation could justify the development of the techniques required.

Having concentrated on the main areas of funding allocation it has to be stated that several basic scientific and process functions were seriously underfunded:

- Mineralogy and characterisation: the starting point of all process development and the basic means of control of any operation. It can assist in the design of large numbers of devices and techniques for size and shape characterisation in medicine, ceramics, etc., but it seems not to attract much interest for the domain of ore processing as only one project dealt with it. It opened up a way to more systematic use of one of these techniques through simplification of use by automation. The characterisation of surfaces, so critical to operations like flotation, agglomeration, attracted 2 projects resulting in highly significant findings.
- Comminution: the most inefficient and expensive unit process which is applied not only to ore processing but is of widespread existence throughout all industries dealing with particulate solids. The ore processing industry which is perhaps the largest

single user of this unit process has been shown to be less innovative than others particularly in the avenue of producing very fine particle sizes.

- Pyrometallurgy: A major process for most metals. It is still an area for improvements in both capability and efficiency. Pyrometallurgy is the most flexible process to adapt to the demands of the downstream user.

To the analysis by technique should be added some comments about specific problems the EC is facing in ore processing:

- The supply situation of Europe for certain commodities based on known and existing low grade ores have been covered by only 6 projects. This low level of interest could be explained by the fact that mineral processing is highly product dependent but no specific potential deposit had been proposed in the Programme. Also it must be stressed here that the processing is not a target as such but must be included in overall technical feasibility including all the aspects about grade, ore, mining, etc. as to be able to appreciate the potential call on this source in case of necessity. This cannot attract industry, but should involve it to avoid only academic answers.
- The absence of projects related to industrial minerals, probably related to the apparently restricted list of proposed topics in the programmes, is not in accordance with the increasing importance of this sector in Europe.
- There is a permanent need for new separation techniques, to be able to adapt to new conditions, to extend beyond critical limitations. Although there were only two projects on this topic considering not completely new techniques, their appraisal has led to a better understanding of mineral assemblages not tested before, leading to

new areas of application: these are spherical agglomeration, bubble flotation, flocculation, preflocculation.

- Although the mineral processing world has been a leading one in the past century for creating new highly performant equipment, and although this area is being highly active in many industrial areas as agroresources, pharmacy, ceramics, etc., it seems no longer to attract European firms' interest. The need for new equipment still exists for better performances, lower energy demand, fine grinding, lower contamination, size separation in fine particles, etc. Only one project covered this area of concern related to improvements and extension in working conditions for heavy media hydrocyclones.
- The improvement of the operating results of 2 industrial plants as to the flexibility to cope with changing feed quality and market product specifications is and should be a continuous concern of any industrial company so as to maintain and improve its competitive position. At first this would appear no direct concern of the programme under review but since R & D would be required to provide part of the answer to the immediate problems proper diagnosis and data gathering was required and this was supported by the EC on this basis.

III-3-A-3 : MINING TECHNOLOGY

INTRODUCTION

The main compendium of the scientific and technical findings in this area are the "Summary reports of the sub-programme in materials and mineral substances" (1982-85) Vol 2. edited by M. Donato and L. Vanwambeke, 1988. This area of the sub-programme is an extreme example of difficulty of tackling such a broad subject in a very limited fashion: in that within the funding available only partial coverage of some of the potential topics was possible.

The field was divided into three topics which are listed below with the number of projects undertaken and the relevant funding.

	No of projects	Ecu
Topic 3.1. Problems associated with depth Topic 3.2. Marginally economic deposits Topic 3.3. Geostatistics and modelling in mineral exploitation	8	1,219,765 O
	1	234,870
TOTAL		1,454,635

The proportion of the total funding dedicated to the mining technology subsection was 8% of MSM budget (excluding recycling) and amounted to an average of 161,000 Ecu per contract.

Topic 3.1. Problems associated with depth

Eight projects at a total cost of 1,219,765 Ecu's correspond to 83.85% of the total funds allocated to mining technology.

General mining operations and methods of exploitation	_	3 projects
Geotechnical studies	-	4 projects
Water ingress studies	_	1 project

This is not a closed classification as, in some cases, no clear differences can be established between the first and second group of projects. The classification attempts to compare tendencies and areas with the previous Programme 1978-1981.

General mining operations and methods of exploitation.

Three projects have been considered in this area: 011-D, 013-D and 052-I. In effect, the project 011-D could also be included in Topic 3.3 because of the importance given to the modelling.

In fact, a computer model has been developed to analyse, evaluate and compare different options of mining techniques using cemented back-fill in deep base-metal mining, thus trying to optimise the planning of mining operations. The development and the results of the project have been carried out for the Meggen mine.

This model does not differ from others developed by various deep mines in order to meet similar specific targets; however, in principle, the application of such computer programmes from one mine to another seems to be difficult.

The project 013-D is, also, dedicated to Meggen mine. In this case, the aim is the development of rockfill techniques for a complete extraction of the base-metal ore without damaging the surface (subsidence). The works have been achieved successfully allowing for the complete extraction of 3.5 million tons of ore at the Meggen mine. Of particular interest was the pressure resistance obtained with the cement (>3 MPa) and the technique which could possibly be extended to other cases even taking into consideration that the good results were not linked to the specific conditions at Meggen, including the quality of its waste rock.

The Project 052-I deals with the specific approach for the modification of the method of exploitation at a talc mine in Italy, this was experimentally undertaken in a mine pilot panel. Good results have been obtained by changing from the traditional mining method, upward crossing and timbering, to the new one, downward horizontal slicing and hanging wall rock concrete back-filling. The general productivity was improved as was the section of galleries and support and ventilation in the mine pilot panel. Several of these conclusions could be extended to similar mines.

Geotechnical Studies

Four projects were considered in this area: 050-F, 034-I, 053-I and 062-I.

The project 050-F deals with the scientific study of the influence of filling and its setting underground on the stability of mining structures. The scientific and systematic approach has been developed in co-operation with different french mines using innovative techniques of testing the different types of filling materials. The conclusion is that this type of scientific analysis can generally improve the different mining back-filling methods.

Following a technical systematic approach, the 062-I project developed a similar study on the properties of materials to be used as mining fillings. Both projects ran parallel but were connected and the latter used materials coming from two Italian mines where mine pilot panels were tested with good results leading to an improvement in safety and mining recovery.

Two projects, 034-I and 053-I were devoted to attempt to solve stability and rock mechanics problems in connection with the mining operations in two italian mines. Normal methodology was applied, although the use of microseismic techniques and scientific layout in the former and the introduction of geostatistics in the latter can be pointed out as being of a high scientific level. The 034-I project applied to the Raibl mine has helped the mine operator to improve modelling the mine, better recovery of ore and better supporting methodology in galleries. The 053-I project gave the Masua mine operator the scientific model of rock settings enabling deepening of the mine in safe conditions and also defining a technique for progressing using on-line interpretation of data.

Water Ingress Studies

One project, 057-I, is related to the study of ground water and more specifically to the karstic circulation in relation with the potential

exploitation of a deeper deposit in the Italian Monteponi mine. In fact this project is the follow-up of the 114-I included in the 1978-1981 programme. This new extension was devoted to the detailed study of the groundwater circulation within the structures of Nebida-Masua-Acquaresci, Su-Zurfufu-Gutturu Pala and S. Benedetto. Also, detailed studies about the geochemistry and the flow of the ground water linked with the karst phenomena which influenced any future mine exploitation were conducted.

Topic 3.2. Marginally economic deposits

No projects have been carried out in this field.

Topic 3.3. Geostatistics and modelling in mineral exploitation

Although many above-mentioned projects have used different mathematical modelling techniques, the 033-F project is specifically devoted to the development of a complete model to be used in open pit projects and operations. Although this Project is considered in the summary under the Research Area 2 (Ore Processing) it should have been placed here as it deals only with mining operations. Through this simulation methodology, different alternatives can be compared specially during the project phase. The geomathematical tool can be used in both, open pit and quarries, and has also been tested in different mines and quarries in France. Both hardware and software have still to be expanded and improved.

GENERAL COMMENTS

The 1986-89 Programme made an attempt to re-align the proportion of overall funding dedicated to this area ie. 6.5 Mecu from an overall budget of 20 Mecu. The overall comments of the panel are still pertinent regarding the quantum of funding but this is at least a step in the right direction which along with greater trans-national participation greatly enhances the value of the efforts in this field which has been very sparsely funded.

1st progra	emme	1978-81	1.1 Mecu
2nd progra	amme	1982-85	1.5 Mecu
3rd progra	amme	1986-89	6.5 Mecu

The topic subdivision of the on-going programme is also more practical ie. rock fracturing, rock mechanics - stability and support systems, application of robotics in mines at depth, modelling and simulation, problems associated with small size mines.

Only 8% of the 1982-85 budget was allocated to Mining Technology which gave an average project funding of 40,406 Ecu/year. This compares with only 21,475 Ecus in the first programme and a much more realistic figure of 85,526 Ecus for the on-going (1986-89) programme.

Although it is still necessary to complete and improve the general studies about filling materials and modelling for an open pit operation, both works can be considered as excellent starting points to further research and applications.

It is rather surprising that no projects were sponsored by the EC in the field of marginally economic deposits, taking into account this important topic especially in Europe.

In the previous evaluation it was pointed out that the projects only partially covered all the possible topics within mining technology. This remains true in this Programme probably because of the lack of a clear policy in the difficult field of mining technology which would enable us to find guidelines of general mining interest for Europe as a whole.

III-3-B : RECYCLING OF NON-FERROUS METALS

INTRODUCTION

A document comprising a set of 19 synthesis final reports was published in October 1987.

The 1982-85 programme was a relatively small one and was constructed during a period where greater emphasis was placed on recycled material as a resource to replace in part primary material.

Time has shown this not to be the case but that the recycling of non-ferrous metals is an integral part of the raw materials industry more analogous to semi-finished products than an alternative to primary supplies.

The field was divided into two topics:

		No of projects	Ecu
Topic 2.	Physical Processes for the treatment of non-ferrous metal scrap and residues	5	745,277
Topic 3.	Metallurgical Processing of non- ferrous metal scrap and residues and refining of secondary metals	16	1,721,610
	TOTAL		2,475,887

NB. <u>Topic 1</u>. Collection and Characterisation of non-ferrous metal scraps and wastes was defined but not included in the call for proposals of 1982.

The proportion of the funding dedicated to topic 2 and topic 3 was 30% and 70% respectively and amounted to an average of 118,000 Ecus per contract.

Topic 2. Physical Processes for the treatment of non-ferrous metal scrap and residue

The topic was subdivided into two sub-groups, Topic 2.1. Mechanical Processes and Topic 2.2. Physical Processes. No projects were let under 2.1. and five were let under 2.2. Three of these projects were general in terms of sorting varied scrap while 2 of the projects looked at the particular problems associated with in one case arsenide wastes from smelting operations (006-F) and the other the recovery of elements for zinc carbon and alkaline battery scrap.

Topic 3. Hydrometallurgical Processing of non-ferrous metal scrap and residues

The topic was subdivided into two groups, Topic 3.2. Hydrometallurgical Processes for the treatment of non-ferrous metal scrap and residues, and 3.4. Refining of Secondary Metals. The majority of the projects were conducted under 3.2. and were mainly concerned with the recovery of minor, precious and deleterious, elements from plant residues. Of these 008-F, and 012-I were involved with innovative process development.

Seven projects were conducted under 3.4. which were for the most part pyrometallurgical approaches to similar issues addressed in 3.2. although some examined the further processing suggested by the sub-group heading.

The objectives of the sub-programme RNF for 1982-85 were to improve the mechanical, physical and metallurgical processes used in the treatment of non-ferrous metal scrap as well as to improve the techniques for refining secondary metals from alloying elements and impurities.

In general most of the 21 projects participating in the R & D programme in the Raw Materials sector of 1982-85 met their objectives while there have been cases of unsuccessful or incomplete results or as in the case of "Reactive Plasma System" (contract 023-UK) recommendations have been given that the project should be stopped due to lack of existing technology in a special reactor design.

The methods used to reach the objectives have been conventional and non-conventional ones but in all cases modified to serve the purpose of the project. In many cases some quite innovating methods have been used and have led to commercial applications. Also quite a number of publications and patent applications have resulted based on the methods and results of the projects. Undoubtedly, through the programme valuable experience in the field of recycling has been gained and various new process equipment has been developed to better serve the needs of the Community's industry.

However, a lot more work and money are required to be spent for research and pilot plants, in order to develop more cost-effective processes and reduce the dependency of the EC upon imported supplies and mainly on strategic raw materials, such as tungsten, titanium, tantalum, mercury, manganese, vanadium, cobalt, zinc, copper, precious metals, arsenic and others.

It has been said that recycling only becomes attractive if it succeeds in developing recycling processes which lead to top quality products at lowest possible cost.

In the group of the 21 projects for recycling non-ferrous metals for 1982-85 this is the exception rather than the rule.

Of course there have been processes developed during the programme which have found industrial applications in recuperating valuable metals and saving big amounts of energy but in general the majority of projects have very poor economical justification. That is the recycled material is very expensive to produce due to inefficient processes and economical circumstances of 1982-85.

There is a number of reasons why the recuperation of the non-ferrous metals through recycling was not economically feasible for the period of 1985-85. Here are some of them:

High cost of collecting and transporting scraps to the processing station.

High cost of the chemicals used in the processes.

Uneconomical treatment of pollutants resulting from recycling. High energy consumption.

Methods used were very expensive limiting the application only to a laboratory scale.

The poor market and low prices of the metals during 1982-85 made most recycled non-ferrous metals uneconomical.

In view of the present good market for metals most of the projects could be justified for further work.

From the final reports of the projects it is apparent that there is a great gap in the knowledge of what properties make some recycled material top quality product and what are the processes which lead up to them. Also, because of the lack of existing economical methods, difficulties arising from known reprocessing techniques and the difficulty of providing and applying methods for testing, refining or not having a trial in a pilot plant, most of the recipients of the grants indicated that further fundamental studies and research are necessary before they could hope to achieve an economical recycling method. A number of them have already reapplied to the Commission for an extension to their projects.

III-3-C : RECYCLING OF URBAN AND INDUSTRIAL WASTE

INTRODUCTION

The R & D programme on Recycling of Urban and Industrial Waste (RUW) was initiated in 1979-80, with an allocated budget of 9 Mecu. 58 research projects were selected for support and EC support was 5.4 Mecu.

A second call for bids in 1982 produced a further 18 projects with a funding of 1.6 Mecu.

The second programme of 1986-89 with 3 Mecu allocated, is now supporting 21 projects. The new sub-programme, called REWARD (Recycling of Waste R & D) proposed for the period 1990-92 has a budget of 6 Mecu.

The 1979-85 programme was formulated by the CREST Raw Material Sub-Committee on the climate of the middle Seventies, when the Club of Rome Report had predicted serious depletion of non-renewable resources and the price of oil in rapid escalation was considered a symbol of energy supply shortage. At that time the definition of "waste resource" was in fashion and there was interest to consider, at least in the short term, waste as an available supply for material and energy.

When the second Programme was defined, the situation had changed as a consequence of relatively low prices of primary raw material and an oil glut; the general interest moved towards the protection of the environment and on potential action minimizing the impact of waste disposal. The R & D programme was divided into four main areas:

- Sorting of household waste and recycling of materials
- 2. Thermal treatment of waste
- 3. Fermentation and hydrolysis of organic waste
- 4. Recovery of rubber waste, particularly tyres.

The area 4 was designated for co-ordination action only, this is similar

to the action taken in the area of composting.

Very few projects relating to industrial waste were submitted and as a consequence the urban waste studies received almost all the attention and the financial support.

The proposed programme for 1989-92, in its objectives still considers both materials and energy conservation and waste disposal problems.

The programme covers the following research areas:

- 1. Sampling and Analysis of waste
- 2. Recycling technologies
- 3. Energy production from waste.

The areas 1 and 3 will be implemented by co-ordination, the items of area 2 which will receive research contracts are:

- A. Separation and recovery
- B. Upgrading and use of reclaimed products
- C. Production of chemicals from specific organic waste.

Topic 1. Sorting of Household Waste and Recycling of Material

A detailed assessment of the technical and economic status of waste sorting and refuse derived fuel (RDF) production technology in Europe was produced. The report recorded the status of waste sorting and the RDF plants in operation in the various Member States at the time, many of which had been developed with support funds from the R & D programme.

An assessment of process economics for the various developments was also included. This study published by Elsevier is now one of the standard reference books in the waste sorting field.

Methods for Sampling and Analysis of Household Waste

At an early stage in the programme the contact co-ordination group recognised a major problem in that the results of work being pursued in different Member States were not being reported on the same basis.

The experts have elaborated a "Recommendation" on that subject.

Evaluation of Health Hazards

It was anticipated that the introduction of waste sorting as a major process in the treatment of household refuse could give rise to health hazards, for example due to pathogen content, toxic metals, allergies associated with dust etc.

Technology for the Sorting of Bulk Wastes

The studies were mainly concerned with air classification and size separation of refuse by screening. There were two complementary studies in air classification, one concerned with the fundamental aspects of particle separation in vertical classifiers and the other with the application of the technology to real systems. The results showed that feed preparation was the main factor controlling the separation efficiency and not the air classifier design. The refuse screening studies, with particular reference to the use of trommel screens, provided valuable results and indicated optimum design and operating conditions for specific screening tasks, including feed preparation for air classification. The technologies are not achieving lasting success largely due to the changing economic scene and the lack of commercial incentive to operate such processes.

Material Recovery

Of the eleven projects pursued in this topic area, eight were related directly or indirectly to the separation and recycling of plastics. The various projects on plastics recycling all contributed to further the knowledge in this area and significant technical success was achieved.

Other projects are still being investigated and developed at pilot or demonstration scales, although economic success is often proving elusive. The main difficulties relate to the problems of collection and separation of such low bulk density materials, combined with the increasing complexity of plastic composites in current use. With mixed plastics products there are quality control problems but the main difficulty is promoting an adequate market for the products at appropriate prices.

Topic 2. Thermal Treatment of Waste

Energy Recovery

Some ten projects were accepted under this topic heading, six were concerned with refuse derived fuel. The projects on RDF were all showing technical promise at the early stage of the development, subsequently, as results from more extensive and longer duration combustions trials became available, difficulties became more apparent. Furthermore the changes in the energy market and the relative reduction in oil prices resulted in a decline in the commercial interest in refuse-derived fuel.

Firing of Waste Derived Fuel

The five projects in this area ranged over the use of fluidised bed and various other combustion systems. These projects were being pursued at a time when production of RDF, particularly densified or pelletised RDF, had not progressed to a continuous state and therefore there were limitations on feedstock availability and there was lack of consistency in composition, particularly with regard to moisture and ash levels. A lot of the combustion tests were of relatively short duration and did not uncover some of the difficulties recognised subsequently. These related to the nature and composition of the ash and the effect on sinter formation and boiler fouling but emission levels in the stack gases, particularly HCl and heavy metals, were the major cause for concern. It is worth noting

that project 001-D of the Technical University at Berlin concluded that intensive gas cleaning was needed if the emission regulations proposed in Germany were to be met, largely because of the HCl and heavy metal content of the stack gases. These findings, coupled with subsequent work in relation to dioxins, and taken in conjunction with the falling energy prices, have effectively constrained the further commercial development of refuse derived fuel.

Pyrolysis and Gasification

Pyrolysis of waste, particularly during the time of energy shortage and high prices, looked an attractive approach offering as it did the opportunity of recovering fuel oil or possibly more valuable organic products. The researchers ranged from laboratory (university) scale to larger pilot plant investigations.

Whilst good results were obtained, by and large these projects showed little promise of commercial success.

Gasification systems encountered problems of poor economics, particularly at small scale. Fluidised bed pyrolysis showed technical promise, but again the economics were not favourable.

Topic 3. Fermentation and Hydrolysis of Organic Waste

Anaerobic Digestion

In this subject area the largest number of projects, some thirteen including extension contracts, were concerned with household refuse or municipal solid waste. Whilst much of the work was at the laboratory scale some was pursued to pilot scale. The application of anaerobic digestion in landfills was also considered. The general conclusions were that the results were technically promising, further investigational work was required but the economics looked unfavourable at that time. Two of the

projects were concerned with utilisation of gas from landfills and both indicated the need for further work to develop methods of overcoming problems associated with contaminants in the gas which render it corrosive or otherwise difficult to handle and use.

Investigations into the digestion of agricultural wastes, predominantly from cattle and pig breeding, illustrated the potential of this approach and in one project a manual was produced with the aim of promoting the use of digestors on farms. However, the general conclusion was that the process was not economic although it may provide opportunities for overcoming objections to alternative waste disposal methods in some areas.

Basic studies on digestor control provided valuable results.

There is now an extensive information base and technical expertise within the EC which should be used increasingly to tackle environmental problems including the destruction of toxic organic wastes in the clean-up of contaminated land.

Carbohydrate Hydrolysis

The research projects accepted, for the funding in this area of the Programme, were almost wholly from the University and Research Institute sectors and in contrast with the research in other areas of the waste programmes, the studies here were mostly of a basic long term nature.

There has perhaps been less success in arriving at agreement over compost processing and specifications for compost product quality. In Mediterranean countries the need for organic matter to counteract soil erosion can represent greater motivation than the environmental concern over possible adverse effects of heavy metals.

The third Programme 1986-88 is under way and results are now not available.

GENERAL COMMENTS

Contact Groups

When the first R & D programme was underway the ACPM set up Contact Groups covering Areas 1, 2 and 3 of the Programme. These groups had several objectives. They provided a forum for researchers from Member States to meet and discuss technology. Discussions at these meetings also provided an insight into gaps in the technology and future research needs and highlighted the need for co-ordinated activities, for example, in relation to analytical methods and specifications to ensure that results and developments in different Member States could be compared on the same basis. This was essential for encouraging technology transfer.

The meetings and proceedings of the Contact Groups undoubtedly represented a major benefit arising from the RUW programme and were generally acknowledged as such by all participants.

Co-ordinated Activities

Reference to the original definition of the recycling of waste programme shows a number of areas that were designated for co-ordinated activities.

The most successful informal co-ordination activity has been in relation to composting. Several seminars have been organised and there has been useful publication of proceedings.

A major area designated for co-ordination which has not been pursued at all relates to the recovery of rubber waste.

Contact Groups do bring together the experts in the field and therefore provide an ideal forum for co-ordinated activities. This is an area which justifies greater attention from both the CGC and the programme management in the future.



III-4: THE QUALITY AND PRACTICAL RELEVANCE OF THE RESULTS

FINDINGS

When evaluating the results as to their quality and applicability, it should be considered that the R & D work covers a wide range of fields from fundamental science to effective industrial applications. Broadly these are :

- * Basic research is directed towards increasing knowledge and understanding in the science of the subject studied rather than towards practical applications. In industry basic research projects are original investigations to advance scientific knowledge without specific commercial objectives, though they may be in current or potential fields of interest to the company.
- * Applied research is directed towards the practical application of knowledge. In industry this covers projects which are directed towards obtaining scientific knowledge with specific products or process commercial objectives.
- * Development is the systematic use of scientific knowledge directed towards the production of useful materials, devices, systems, or methods including the design and development of prototypes and processes¹.

With respect to the above the entire framework is controlled by the development of technology. A suitable definition of technology is regarded as "products, processes, tools and devices and their organisation for use by man in fashioning goods and services that constitute his environment"².

Practical relevance of the results of the EC programmes is within the

¹ Source: National Science Foundation (US)

Source : Battelle

original objectives. There are two areas to be distinguished. The applicability of the results and their actual application:

The applicability and follow up by the various groups in the domain of assisting industry to solve its various problems is supported mainly in public organisations. All of these have benefited from their activities within the EC framework programme; this was directly expressed in the interviews as well as being pointed out by some industrialists.

It has to be recognised that the poor level of participation by industrial companies in the contracts did not result from a lack of interest but could be explained by a non-accordance between the specific activity of the companies and the timing which cannot allow for short term reactions. For some participants such as small and medium enterprises, municipalities etc., despite the fact that they have R & D needs, there is no way to give them access to sufficient knowledge of potential partners to produce a proposal.

* The actual practical relevance of the programme for the industry can be therefore only evaluated through factual data such as patents issued, direct applications, development of collaboration and also common proposals for contracts into subsequent programmes. In these areas good achievements have been obtained in all the fields but with a maximum in modelling of processes (in feasibility studies and for manufacturing).

III-4-A : METALS AND MINERAL SUBSTANCES

There is no doubt that the scientific and technical results of the contracts within this programme are of the highest quality. Whilst this is not perhaps surprising given the competition for and

selection procedure for such contracts, it is nevertheless an outstanding achievement which should not be disregarded. One area where particular attention should be drawn is that of the programme monitoring which was obviously conducted diligently and professionally by the very small EC staff.

The MSM subsection was in make up very similar to the first programme with the bulk of the available funds split between exploration and mineral processing with only a very small proportion dedicated to mining technology.

The same comments made by the previous evaluation panel are just as pertinent to the programme under review.

"It is quite clear that this level of expenditure is very low and only compatible with either

- a) the briefest of initial exploratory work in any new process or
- b) minor development work in already established processes".

This truism does not undervalue the work done which has contributed considerably to know-how and development but underlines the need for the considerably enlarged activities of the EC in order to both achieve more in its own right and act as a reference point and catalyst for others to take direct action.

III-4-B : RECYCLING OF NON-FERROUS METALS

This is perhaps the most subjective of all areas of the programme for the boundary limits of where the recycling process begins and ends defies adequate definition. The problem is further complicated by the highly variable economic parameters which are also overlain by environmental considerations, costs and benefits. The projects supported in the EC programme all provided useful information and given the very small and selective field the practical relevance and general quality of the findings is of a high order. This should not be confused by the concept of technological breakthrough which is clearly not applicable to this area.

A number of projects talk of "bonne probabilité de réussite industrielle" or "a quite interesting technique but further development is needed" but they do not give conclusive results which depend on other parameters that have yet to be determined.

Also a lot of projects have been limited only to a laboratory scale or at a theoretical stage. The degree of confidence obtained in the laboratory is not large enough to justify a decision on industrialisation and further testing on scientific and commercial pilot plants must be done. It has been indicated that on the basis of the results obtained industrial implementation would be rather difficult and/or expensive.

Of course a number of projects gave very solid and encouraging results which have found direct application in industry. It is worth noting that the projects which used non-conventional and innovative methods to achieve their objectives, gave the best results and industrial benefits.

The recycling of non-ferrous metals can be economically attractive, if a solution to the main problems of finding new and more efficient methods of recycling can be found. To this purpose much more effort is required from the scientific community.

At the same time, the side benefits of energy saving and environmental protection along with the economics should be taken into consideration by the Commission in allocating more money for research for recycling of non-ferrous metals.

III-4-C : RECYCLING OF URBAN AND INDUSTRIAL WASTE

There was general agreement on the high standard of most of the work performed by contractors and by contact groups.

Also the quality of basic studies and of explorative analysis of new solutions is of high standard.

Problems arise from the activities of technological relevance where several situations are found of non-application of results.

In this sector it is necessary to consider together the activities of DG XII and DG XVII.

The evaluation therefore led to conflicting conclusions.

From one side we may consider that most of the work performed and the results obtained did not find application at an industrial level due to their costs and complexity and to the changed situation of the prices of raw materials and energy; in conclusion the programme had very limited economical impact and relevance.

On the other hand we may consider that the evidence of difficulties, complexity and cost for obtaining valuable goods from waste and garbage have avoided the diffuse construction of recycling plants everywhere in the Community - as forecast in the seventies - which could have created negative economical and environmental results.

In conclusion the programme had a very positive economical impact and high relevance.

An explanation may be proposed for what has occurred. In the European Community, the sector of material recycling is very active at least in some countries (eg. scraps for steel making, new wool from used clothes, cardboard from used paper). This sector is organised in small and specialised industries which operate frequently in local

market niches; they are quite innovative at a technical level, but not at a scientific one, they utilise selected production residue more than refuse. As a result of such characteristics these industries, in general, have not the structure and the dimension for responding to the EC programme initiatives.

The EC programme drew the attention of universities and of research and engineering companies, interested in the possibility of transforming the huge quantity of urban refuse into valuable material sources and in the related market of large plants for the selection and the combustion of urban refuse.

Obviously, it was impossible in so short a time and with a limited amount of funds, to solve a problem having not only technical difficulties but also many complex implications such as human behaviour, fiscal systems, climate, and finally social structure.

III-5 : MANAGEMENT EFFECTIVENESS - RNF & MSM

FINDINGS

The very description of the heading of this section is bound to be regarded as an "entrée" to criticism. This is certainly not the intent of such a sub-division, but the panel felt that it is an area where, if the emotive reactions can be avoided, there is much of value to be obtained from a scientific analysis.

With regard to the sub-programmes MSM and RNF the previous evaluation reported under Section 3.5. of their report:

"The scientific management of the contracts has been conducted in a highly commendable and professional fashion. This is even more the case when it is considered that a maximum of six permanent staff have carried out the scientific management of the contracts, including monitoring, initial evaluation and selection, monitoring progress, including site visits and assisting in final report compilation.

The Commission was assisted in its task by an Advisory Committee set up by the Council, but the panel felt that the technical input from this Committee and its subgroups should have been more specialised and more detailed, which would have helped considerably with the effective execution of the work in hand. It is, of course, necessary to involve expert panels in the decision-making process but they should have more clearcut terms of reference and be closely associated with the type of work being planned and/or progressed.

In addition, it seems that the whole system - scientific and administrative management, contractors management, financial budgeting and control - produces delays in the allocation of contracts and in the timely transfer of funding.

In considering the above it is the opinion of the panel that this work load under the present system involving such a large number of vario-discipline subjects made effective control and judicious decision-making difficult. This placed a large burden on the small number of Commission scientific staff".

Some four years on from this statement the situation of the Commission staff burden has now become worse whereby effectively three people are attempting to conduct all the duties of managing a similar programme with increased cross-national content. It is with considerable regret that the panel must report that it considers this state of affairs to be unacceptable. It is to the eternal credit of those staff members involved who have carried out their tasks with vigour and competence, and to have achieved what they have with such limited resources is in some cases quite astounding.

However, as any good general knows 'brave soldiers dying on the wires do not win battles'. It is in this context that the panel's views on the need to improve the effectiveness of management is directed.

Without doubt the present format of the programme, ie. that proposed for 1989-92 which is similar to the programme under review in this document, requires a much larger staffing allocation so as to cover in greater detail the subtler issues of proposals, letting and review of progress.

It is one of the main recommendations of the panel that broader issues should also be the subjects of consideration, and while the direct contract work should continue, a more comprehensive position description than simply an overseer of projects is required. This would entail a high calibre of staff with a broad experience background capable of formulating policies as well as the operating of plans.

This will permit the Commission to conduct on an almost continuous basis the sort of evaluations contained in this document and will of itself avoid at least some of the problems of the very long lead and lag times inherent in the present evaluation procedures.

A larger pro-active permanent basis will also permit other peripheral tasks such as regular informal multi-national and multi-discipline contacts to be maintained, which is a quite impossible task under the present arrangement.

This is an area where even more regular and more easily accessible publications will not remove the need for personal contact, and for a respected and easily identifiable person who is responsible for a given area of the R & D programme. The regular contacts with associates in the field, whether in Industry, Universities or Research Institutions, can only improve the value and relevance of the work proposed and/or undertaken. There is no substitute for personal contact in such a vario-discipline and widely dispersed subject area as the raw materials industry.

It is therefore a prime recommendation of the panel that the Community would be best served in terms of promoting the right projects works if the permanent Commission staff establishment was substantially expanded and the appropriate divisions created whereby not only scientific projects were conducted to the best ends, but also where direct responsibilities are given for information gathering and dissemination and where policy formulation forms and integral part of the on-going evaluation and planning exercise.



III-6: MANAGEMENT EFFECTIVENESS - RUW

FINDINGS

The RUW programme suffered shortage of personnel and with the death of the person in charge the situation deteriorated for some period of time.

This was not so important at an administrative level where, in contrast to the bureaucratic delays of most national programmes, interviews of contractors indicated a good appreciation of EC management.

It was important for the guidance of contractors in the changed reference context and for the follow-up of actions; several contractors answered: "Nobody was interested in the results of our work". In the urban refuse sector, the technical results of R & D work are only useful if they are integrated with institutional and social aspects. Their specific value is of lesser importance.

There was a general positive opinion, concerning the operation of Contact Groups and of seminars which indicated that in sectors like RUW, characterised by the presence of small companies and local authorities not in communication with each other, there is a strong need for communication, integration and support for the application of results. Otherwise the EC financial contribution may produce, eg. in a small company, distorting effects.

It was also very important for the ability of management to maintain close connections among the several programmes of the EC approaching the waste problem from different directions, the DG XII for research, the DG XII for environment, the DG XVII for regional policy, and the DG XVII for energy, thus avoiding conflicts and duplication and permitting continuation of valuable actions from research to demonstration.



111-7: SOCIO-ECONOMIC CONTRIBUTION TO THE EC

FINDINGS

As a precursor to any assessment it must be stressed that the raw materials industry is held as being essential to the economic development of the Community. This is in contrast to the view of some politicians who state that it should be left to third countries and more particularly third world countries.

This stance requires that considerably more effort be made in the area of upstream activities than has been common in the recent past. The erosion that has taken place in this area is moving rapidly downstream with the inevitable end-point, if no remedial action is taken, of leaving the Community essentially dematerialised.

It is therefore seen as a requirement that a broader and more comprehensive view of the industry is required whereby exceptions can be made to the general rule of market forces in order that unsustainable imbalances are not created by the slavish pursuit of oversimplified theory of political dogma.

A competitive industry can be effective on a world scale without the need to disregard local requirements. Japan as a trading nation is undoubtedly the most successful at applying such techniques albeit that some of the resultant practices come close to being restrictive. It has however shown that local and global considerations can be effectively and successfully addressed.

This does not mean that metals and mineral deposits located inside the EC should be mined at any price. But the challenge is to stay in a prominent position as has been the case in the past, to provide all the downstream users with the products they need - with an improved quality and safety. As an example the highly successful Pechiney position in aluminium (always one step ahead in metal recovery by

electrolytic processes) is clear evidence of the possibilities.

It has to be realised that the "smoke stack" label often used to describe the mining and processing of raw materials is quite wrong. The mineral industry is in fact a highly performant innovative user and promoter of high-tech technologies as well as a catalyst of much progress in other areas.

The control of industrial pollution requires to be fully considered in an integrated manner. Previous moves to "export" the problem are not now regarded as the "solution".

To maintain the place of raw materials activity inside the general course of development, actions have to be taken for the Community at the same level of consideration as other activities. Due to the importance of the sector assistance by funding should reflect the level of turnover which is of the order of 50.000 Mecu.

R & D is one of the aspects of this promotion. The role assigned to it is the progress of knowledge, the training of people, the transmission of the knowledge and the know-how, and finally to contribute to the European influence in the world. But, as always when dealing with science, the unknown appears larger and larger as the knowledge base is increased. The temptation is great to promote actions in every dimension. This behaviour of "toujours plus" not specific to the raw materials domain, is supported by some and while it has to be considered as noble it is in the final analysis unrealistic.

The real and effective way to orientate R & D is to define the objectives with respect to the general objectives of the socio-economical development of the Community and equilibrium with all the other fields. This means also that the selection of the fields and topics to be the framework of the funding cannot be defined only by particular participants, their judgement being

biased. It relies probably more on the end-users of the products derived from raw materials, to define where there will be needs in the medium and longer term.

The foregoing applies mainly to the MSM and RNF sub-programmes whereas the situation with regard to the RUW sub-programme is subtly but significantly different.

The programmes of R & D, Directorate XII, and of demonstrative applications, Directorate XVII, on Recycling and Utilisation of Waste, were established as a consequence of the socio-economical importance of materials and waste problems.

In some countries, at least in Italy and Spain, pressure was established on public financing institutions for obtaining contributions for expanding activities in agreement with the priority chosen by the EC, so that the rise and fall of Community initiatives produced a rise and fall in national interests in RUW and to the birth and death of some engineering companies.

The results of EC Research programmes on RUW together with those of demonstrative programmes (DG XVII) had a strong influence on the decisions of local authorities on refuse combustion and RDF production.

On these bases, the socio-economical impact of the EC programme on RUW should be considered highly significant, out of all proportion to the small amount of funds and the specific results of the individual contracts.

The meetings and seminars were extremely useful for decision-makers eg. people responsible for Municipal Authorities, with their wide range of information and the analysis of technical and non-technical implications of plant operation. In contrast, the individuals involved in the recycling of urban and industrial waste were subject to a very low level of impact.

III-7-A: THE CONTRIBUTION OF THE PROGRAMMES

On the social side the Programmes have without doubt been a success, even if limited in overall impact.

In addition to the barriers existing between public and industrial centres, fundamental and applied researchers, Europe suffers from cultural, language and historical barriers. The way that the programmes are working is leading to an increased feeling for the people involved of belonging to the European Community and to the weakening of the boundaries between them. The diversity of the cultures, so long considered a negative aspect, is now a "plus" in that it allows crossfertilisation. This effort must be continued embracing more and more participants from areas and organisations left aside at this stage.

On the economic side, the contribution of the R & D programme under review and for that matter the previous and current programmes have contributed little in terms of measurable benefits for industry as a whole. There is no doubt that the programmes have been economic in terms of their expenditure but, considering that this was at such a relatively low level, the economic impact is understandably so low as to be barely measurable on a European scale.

In terms of added value the perception is clearly different and it is quite evident in socio-economic terms that, considering the benefits reaped by the R & D programmes in terms of both direct outcome, future co-operation and information base improvement, the R & D programmes were an outstanding success.

BACKGROUND

1. Fields and periods of time covered by the evaluation.

The object of the study is part but not all of the programmes in the raw materials sector. It includes three main fields:

- primary raw materials (metals and mineral substances)
- secondary materials, recycling of non-ferrous metals
- secondary raw materials, recycling of urban waste.

The first field was evaluated in 1984. The two other fields have not previously been evaluated. All three fields are evaluated in this report. The present evaluation focusses on the phase of the programmes covering the period 1982-85 and on the ongoing phase of 1986-89.

2. History of the Programmes.

In the years following the energy crisis of 1973, serious concern arose with regard to the prospects of supplying the needs in raw materials. In a first communication to the Council (COM 50(75)), the Commission proposed various orientations aimed at developing a Community-wide supply policy. In the communication from the Commission to the Council of 30 June 1977 (Bulletin of the EC, Supplement 3/77), the field "raw materials" was mentioned as a part of the "preparatory work of new Community research programmes".

In the seventies, the CREST Raw Materials Sub-committee set up working groups and called for a series of reports dealing with the various sectors of the raw materials and recycling industries. The first R&D Programme in the field of primary raw materials was agreed by the Council in its Decision of 6 March 1978. This Programme included three research areas: exploration, ore processing, and mining technology.

To assist the Commission in its task of management, an Advisory Committee on R&D Programme Management (ACPM) in the Field of Primary Raw Materials was established.

The waste recycling Programme was also first formulated by the CREST Raw Materials Sub-committee. To provide guidance on programme content this committee set up working groups and called for a series of reports dealing with the various sectors of the waste and recycling industry. Most of these reports were completed in 1977 and the R&D programme was finally agreed in 1979. The Council Decision of 20 November 1979 adopted the first Programme in the field of the Recycling of Urban and Industrial Waste. An ACPM in the field of Urban and Industrial Waste Recycling was set up. In its first four year period the programme on Recycling of Waste was run independently from the other programmes in the field of raw materials. The Programmes in the field of raw materials were merged in 1983.

In the seventies, the CREST Raw Materials Sub-committee initiated also studies in other sub-fields of the Raw Materials sector, among them the sub-field on Paper Waste and the sub-field on Recycling of non-ferrous metals. The Commission issued a Background Document on Recycling of non-ferrous metals in 1981. In its Decision of 17 May 1982 the Council decided to implement the Research Programme in the field of Recycling of non-ferrous metals and to implement the second period of the Research Programme in the field of Primary Raw Materials. A unique ACPM was given the task of assisting the Commission in the management of the two programmes.

In its Decision of 17 May 1982 the Council recorded under the title "Raw Materials Research and Development Programme" the following sub-programmes:

- I. Metals and mineral substances
- II. Wood as a renewable raw material
- III. Recycling of non-ferrous metals
 - IV. Substitution and materials technologies...

and also uranium exploration and extraction and finally the ongoing programme "Recycling of Urban and Industrial Waste" due to end in October 1983.

This Council Decision was however amended by the Council Decision of 12 December 1983 which merged the two sub-fields of Recycling into the unique title "Recycling of non-ferrous metals and urban and industrial waste" also called "Secondary Raw Materials".

A simplification of the structure of management of the sub-programmes of the "Raw Materials R&D Programme" was achieved by the Decision of the Council of 29 June 1984. An end was put to all former ACPM's and new management and co-ordination committees referred to as "CGC's" were established. A unique CGC was set up to manage and co-ordinate all research projects in the field "raw materials".

At the end of the 1982-85 period of the Raw Materials Programme the Council adopted on June 10, 1986 a new four year research programme on raw materials. This Programme had four sub-programmes:

"Primary raw materials"

"Primary raw materials" and Secondary raw materials" are therefore the current denomination of the Programmes of the present evaluation.

3. Objectives of the Programmes.

The objectives of the Raw Materials Programmes have had changing emphasises during the last ten years. The original objectives were set up in relation with the Community dependence on external resources to provide its needs in raw materials of most kinds and in relation with the expectation of serious depletion of non-renewable resources.

[&]quot;Secondary raw materials",

[&]quot;Wood, including cork, as a renewable raw material", and

[&]quot;Advanced materials".

Over the life of the programme the overall position has changed since the prices of primary raw materials and of oil went down to relatively low levels. The principal goals of the programmes became promotion of industrial competitiveness, improvement of the management of raw materials and development of the industrial dimension of recycling.

Each sub-programme had its specific objectives.

The main objectives of the first primary Raw Materials Programme 1978-81 were:

- increase in self-supply potential in raw materials for the Community as a whole;
- reduction of trade payments deficit;
- development and export of new technologies for the exploration and exploitation of minerals.

The objectives of the 1982-85 Raw Materials Programmes (primary and secondary raw materials) were:

- the discovery of hitherto unknown native non-renewable resources entailing research into geology and into mineral prospection methods;
- the improvement in the production of native resources;
- the economic exploitation of native low-grade resources;
- the utilisation of resources;
- the improvement of recycling.

The broad objectives for the 1986-89 Programme were the following:

- 1. To develop and promote economic processes for the provision of primary and secondary materials.
- 2. To promote co-operation within the EC scientific community.
- 3. To contribute to the training of specialists in the fields covered.

The specific objectives of the Primary Raw Materials Programme were:

a) To maintain and enhance the competitivity of the EC mining and

metallurgic sectors; therefore, to improve or develop basic techniques and methodologies which can be widely applied on a routine cost-effective basis throughout the Community's mineral industry (exploration, mining technology, mineral processing);

b) Secondly, to reduce the vulnerability of the EC for a number of mineral raw materials, particularly those of critical or strategic interest; therefore, to decrease reliance on external sources of supply or to help diversifying those sources.

The objectives of the Recycling of Waste Programme had also changing emphasises during the last ten years. In the first programme the conservation of resources were given greater emphasis than the environmental pollution aspects.

The motivation for the new programme became increasingly environmental protection, the objective being now to recycle and reutilize materials to minimize the environmental impact of disposal.

4. EC organisation of Programmes (approvals and setting of criteria)

Immediately following the Council Decision which represented an agreement to launch a programme, the EC published in the Official Journal of the European Communities, for each of the sub-programmes, an Invitation to submit proposals for participation in the sub-programme. It was said in these Invitations that the Commission wished to receive proposals for participation by means of cost-shared contracts (the maximum from the EC being 50%). The calls for tenders of 1982 contained a detailed description of the Research topics. Furthermore, the calls for tenders of 1982 and 1986 contained a short list of selection criteria.

In 1982 it was written:

"As a general rule the Commission, in considering the proposals, will tend to favor those which:

- 1. offer scope for applicability;
- 2. are joint ventures involving universities, institutes, industry or other specialized laboratories;
- 3. involve, or offer projects for involvement of more than one Member State."

In 1986 it was written:

"Preference will be given to joint projects associating organizations of at least two Member States. Approximately 90 of the funds for contracts will be allocated to projects which require a minimum annual EC contribution of 80,000 ECU."

In the Research Action Programme on Materials of 1986 it was also specifically mentioned that the research area "exploration" was of minor importance compared to the research areas "mining technology" and "mining processing".

Rate of selection of projects:

The data: number of proposals/number of projects have been the following:

Programme Primary Raw Materials

1978	270	/	140
1982	255	/	121
1986	360	/	72
Programme Recycling of non-ferrous	metals		

1902 /1	/	•	Z I
1986 76	/	/	16

1000

Programme recycling of Waste

First	phase	:	1979	1	L88	/	58
Second	phase ¹	:	1982	1	L 31	/	18
Third	phase	:	1986	1	L73	/	21

¹ In the second phase the call for bids was limited to two research areas instead of three for the first phase.

5. Raw materials in the framework programmes.

The first programme in the field of raw materials was initiated in 1978. In the supplement 3/77 of the Bulletin of the European Communities the Commission published its Communication to the Council of 30 June 1977: "Common policy in the field of science and technology". This document contained guidelines for the R&D policy 1977-80 with references to the world and European situation.

In section 4.1.2. of this document the main objectives of the Community R & D Programme in the field of raw materials were presented. The high level of dependence on imports of raw materials made it essential for the Community to develop a coherent and comprehensive raw materials supply policy. In addition to guaranteeing the continued external supply, two components of such a policy were said to be of paramount importance: increase of internal supply, and conservation through recycling, substitution and product design. For the secondary raw materials programme the objective was conservation in the use of raw materials. The link of these activities with environmental protection was rather seen as a side effect.

In the 1984-87 Framework Programme the need to improve the management of energy and raw materials resources was mentioned as one among five main challenges to be faced by the EC. In the list of main scientific and technical objectives, the one of the raw materials programme was the optimal use of raw materials (including recycling them). The protection of the environment was in relation with the Community goal of improving living and working conditions. Under the heading "programme guide" the Commission suggested five criteria to assist in the identification of the specific S&T objectives to be selected. The five criteria were: scale of human and financial resources required, size of the potential market, transnationalism, collective needs, and support for the Community's major objectives.

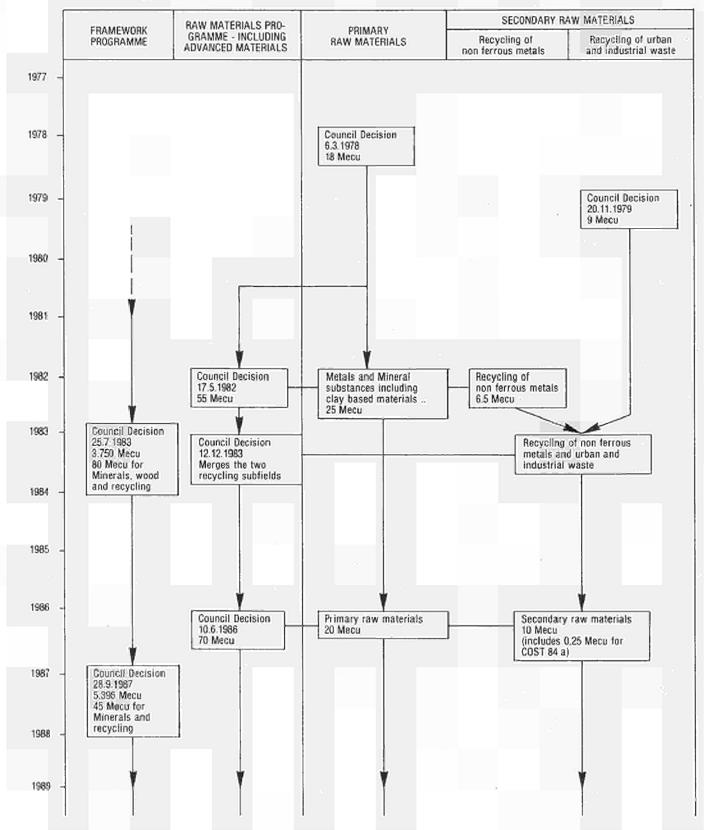
The Community R&D programmes on recycling were justified on the ground that they would help to improve the Community's raw materials situation but also on the ground of their useful effects on the environment and the energy balance.

In the 1987-91 Framework Programme the field raw materials did not appear in the list of the eight main fields of activities but as one of the four sub-fields of the field "modernization of industrial sectors". The purpose of the raw materials and recycling Programme was "to contribute to the competitiveness of traditional and new industrial sectors of the Community, by satisfying their requirements in raw materials, both renewable (wood) and non-renewable". This sub-field "raw materials" was funded with 9 Mecus per year in a total funding of R&D activities of 1079 Mecus per year, i.e. at the level of 0,8% of the total funding. As a comparison the provision of funding in 1977 had been of a level of 2,9% of the total funding.

ANNEX 2

Programme management

1. Chronology



2. <u>Management structure</u>

The Commission was responsible for the implementation of the programmes and it was assisted in this task by advisory committees on programme management.

One division of DG XII, with a staff of five, was responsible for the implementation of the programme Recycling of Urban Waste and another division, with a staff of approximately six, was responsible for the implementation of the programmes Primary Raw Materials and Recycling of Non-Ferrous Metals. The Commission was assisted by advisory committees on programme management (ACPM). Initially an ACPM had been formed in the field primary raw materials and recycling of non-ferrous metals and another ACPM in the field recycling of urban and industrial wastes.

In 1984 the Commission adopted a new approach to the management of its research programmes. A new management committee, the CGC, was formed for all Programmes in the sector raw materials. This CGC comprised two permanent delegates from each Member State. The permanent delegates were appointed by the Commission for a period of 4 years which ended in December 1988.

The CGC would meet in variable configuration, depending on the main subject matter for any particular meeting where delegations would be supported by an appropriate expert.

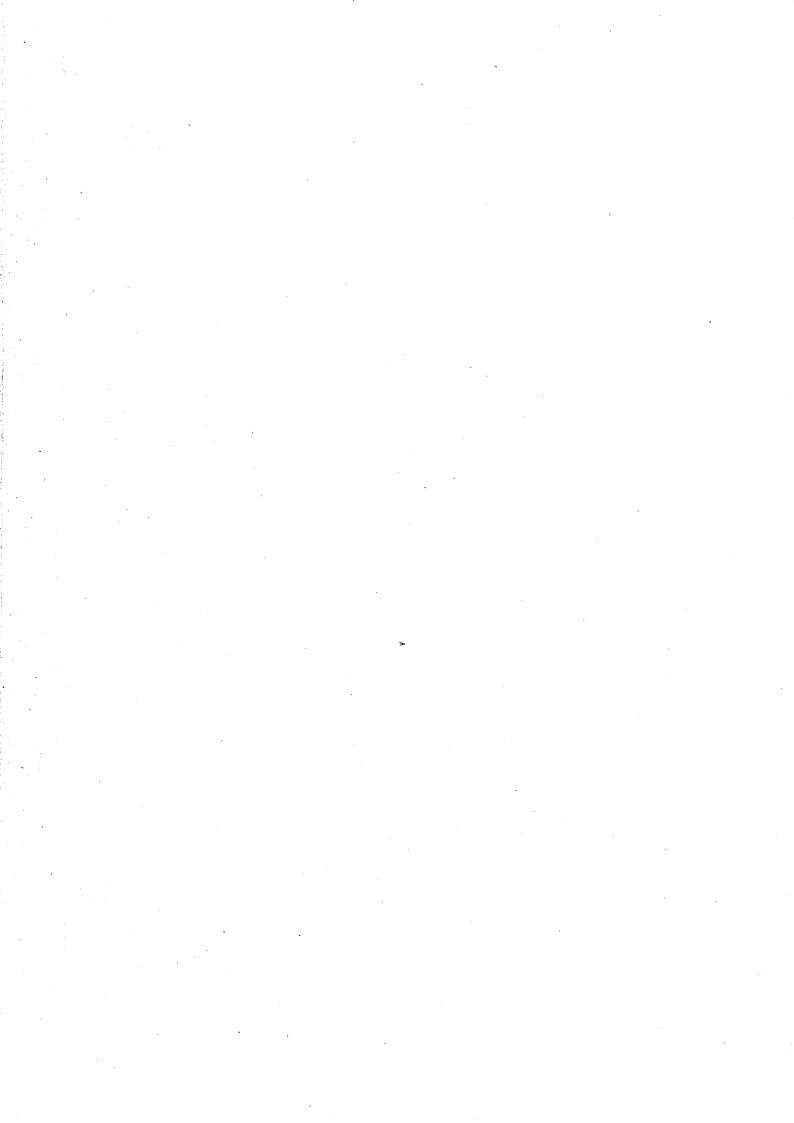
The ACPM's assisted the Commission in the selection procedure following the first call for bids, and also advised on the second phase of the Programme. Once the research projects were under way the ACPM's set up Contact Groups, one for each sub-topic of the Programmes.

During the first phase of the Programmes, project leaders were invited to present progress reports at contact group meetings. In general the proceedings of the contact group meetings were not published. Nevertheless these meetings provided peer reviews of progress on the projects.

The meetings of the Contact Groups were precursory to the formal seminars that were held as sectors of the programmes reached completion and full results could be published.

3. Publications, workshops

A list of publications and of workshops which have been followed by a publication is given in Annex 6.



ANNEX 3

CONTRACT PROCEDURE

The basic principle of the R & D contracts of the Commission is to fund projects on a cost-sharing basis of the full costs. The CEC contribution is normally 50%.

However, for some organizations such as Universities and Higher Education Establishments, the concept of wholly reimbursing only certain categories of additional costs (the marginal costs) has been developed (their recurrent costs relating to the project being fully borne by themselves).

The R & D contract model envisages three categories of participants:

- a contractor (partner) who is a signatory to the contract with the Commission and, in addition to performing essential work on the research project, must contribute to the costs of the research project;
- an associated contractor who must contribute to the costs of the research projects, but will not be a signatory to the contract with the Commission;
- a sub-contractor who is fully reimbursed by a contractor or an associated contractor and does not contribute financially to the costs of the research project.

For each project there must be a coordinator who must be one of the contractors. This coordinator is responsible for general liaison between the contractors and the Commission.

Each contractor and associated contractor designates a project manager who is responsible for the technical supervision of the part of the project to be undertaken within its organization.

The funds needed to carry out the projects, in the Programmes being evaluated, when not provided by the Commission come from other public contracts and subsidies and from the contractor's clients. According to the results of the questionnaire sent to contractors (the detailed results are set out in Annex 9), preparing an application takes too much time (23 man days on average) though 92% of contractors think that the procedure for contracts is workable. Nevertheless, the personal interviews carried out with the contractors (see details in the Annex), revealed some negative comments concerning the long and tiring administration in the pre-acceptance stage of the contract, and that a faster notification of the decision would be welcomed. This uncertainty in getting contracts affects availability of staff and makes long term planning difficult.

In the post-acceptance stage of the contracts, more positive comments ensued. Contract follow-up appears very satisfactory and no specific problems were encountered.

ANNEX 4

PRACTICAL COMMENTS OR INTERPRETATION OF THE TERMS OF REFERENCE

1. Programmes to evaluate

- 1.1. The "research action programme materials" is a research programme in the materials sector which associates four sub-programmes:
 - (I) primary ray materials (minerals), (II) secondary raw materials, (III) wood, including cork, as a renewable raw material, (IV) advanced materials (EURAM). The subprogrammes "wood" and "EURAM" have been evaluated separately. The present "raw materials" evaluation is concerned with the sub-programmes (I): primary raw materials (minerals) and (II) secondary raw materials. The "secondary raw materials" programme is itself divided into two subprogrammes: II.1 Recycling of non-ferrous metals and II.2 Recycling and utilization of Waste.

Account must be also taken that two separate administratives units of the DG XII are responsible for the execution of the programme.

- DG XII, Directorate C (Technological research), unit 4 (Materials Technology) is responsible for the subprogrammes "primary raw materials" and "secondary raw materials-recycling of non ferrous metals".
- DG XII, Directorate E (Environment and non-nuclear energy sources), unit 1 (Environment and Waste recycling) is responsible for the sub-programme "secondary raw materials-Environment and Waste recycling". It is therefore convenient to consider the programmes to be evaluated as three sub-programmes:
 - (I) primary raw materials (minerals) (abbreviated MSM (metal and mineral substances))
 - (II) secondary raw materials-recycling of non-ferrous metals (abbreviated RNF)
 - (III) secondary raw materials-recycling and utilization of waste (abbreviated RUW)

- 1.2. Each one of the sub-programmes to evaluate consists of two sub-programmes of four years each according to the dates of the Council decisions, the programmes and the contracts. For example the "primary raw materials" programme is divided into two programmes:

 1) the programme 1982-85 (preparation of the programme, choice of topics, council decision,..., final results of the programme) 2) the programme 1986-89 currently running (preparation of the programme, choice of topics, council decision,..., preliminary results).
- 2. General terms of reference of the evaluation panel: According to the Plan of Action on evaluation (0.J.C14/5,20-1-87) the Panel is to assess the following:
- 2.1. The scientific and technical achievements of the programme taking into account its original objectives and milestones.
- 2.2. The quality and practical relevance of the results including commercial development and exploitation and possible spin-offs.
- 2.3. The effectiveness of management and of the use of resources.
- 2.4. The programme's contribution to the development of Community Policies and to the social and economic development of the Community.
- 2.5. The benefits resulting from the implementation of the programme at Community level (Community added value).

Quantitative indicators will be used whenever appropriate.

The evaluation should lead to recommendations on the following:

- a. The future continuation, alteration or termination of the programme.
- b. The management of the programme or activity.

- c. The use of research results by the organization carrying out the work.
- d. The transfer of technology to other organizations, by movements of personnel, by licensing and by other means.
- 3. Suggested areas of investigation:
 Within the general guidelines specified above the panel will analyse:
- 3.1. Whether the contracts satisfy selection criteria as those formulated in annex 3 of the Framework programme (87/516/Euratom, EEC).

The following criteria in particular justify Community action:

- research which contributes to the strengthening of the economic and social cohesion of the Community and the promotion of its overall harmonious development, while being consistent with the pursuit of scientific and technical quality,
- research on a very large scale for which the individual Member States could not, or could only which difficulty, provide the necessary finance and personnel,
- research the joint execution of which would offer obvious financial benefits, even after taking account of the extra costs inherent in all international cooperation,
- research which, because of the complementary nature of work being done nationally in part of a given field, enables significant results to be obtained in the Community as a whole for the case of problems whose solution requires research on a large scale, particularly geographical,
- research which contributes to the achievement of the common market and to the unification of the European scientific and technical area, and research leading, where the need is felt, to the establishment of uniform norms and standards.

3.2. Whether the contracts satisfy the requirements (possibly implicit) of the call for proposals. (E.g; O.J. N° C 137/2, 29/5/82):

"As a general rule the Commission, in considering the proposals, will tend to favour those which:

- (i) offer scope for applicability
- (ii) are joint ventures involving universities, institutes, industry or other specialized laboratories,
- (iii) involve, or offer prospects for the involvement of more than one Member State."
- 3.3. The panel is to evaluate whether the objectives of the programme, set out in the proposal of the Commission, have been achieved:

3.3.1. General objectives:

- To develop and promote economic processes for the provision of primary and secondary raw materials.
- To promote cooperation within the EC scientific community in all phases of the materials cycle.
- To contribute to the training of specialists in the fields covered. (see COM(85) 399 p7)
- 3.3.2. In view of the broad scope of the raw materials, interconnections inevitably exist with areas of other EC R&D programmes, notably industrial technologies (Brite), non-nuclear energy, agriculture, biotechnology, ECSC (Steel and coal), reference materials and methods. Proper coordination must be assured to avoid duplication of work. (see COM(85)399 p8).

3.3.3. Objectives of the Minerals sub-programme:

- To maintain or enhance the competitivity of the EC mining and metallurgical sectors on the world scene; to improve or develop basic techniques and methodologies which can be widely applied on a routine, cost-effective basis throughout the Community's mineral industry (exploration mining and mineral processing).

- To reduce the vulnerability of the EC for a number of mineral raw materials, particularly those of critical or strategic interest; therefore to decrease reliance on external sources of supply, or to help diversifying those sources.
- To ensure availability within the EC of adequate concepts and techniques in the likely event that supply problems may arise in the future, thus leading to a renewal of exploration activity. (idem p9-10)
- 3.3.4. Objectives of the secondary raw materials -recycling of non-ferrous metals subprogramme:
 - To develop cost-effective technologies which will enable industry to recycle a greater proportion of metals from waste;
 - to maintain or enhance the competitiveness of the EC metals industry;
 - to alleviate environmental problems arising from the disposal of metal containing waste.
- 3.3.5. Objectives of the secondary raw materials recycling and utilization of waste subprogramme:

To increase the rate of cost-effective recycling of household, post-consumer and other types of waste (mostly organic) through the development of better sorting methods, the improvement of the quality of recycled products, the adaptation of recycling techniques to new types of waste. Consequently, to reduce the amount of waste to be disposed of and to meet the increasingly severe environmental protection requirements. (idem p15)

- 3.4. The panel is to assess the impact of the programme:
 - Whether the programme has brought or is likely to bring about several highly significant technical breakthroughs.
 - Whether the programme has attracted the interest of European industrial firms, as shown by their participation in projects

- and recruitment of scientists who have worked on them and wether some projects are likely to lead to additional development expenditure by European industrial firms.
- Whether the programme has led to effective transnational collaboration on a continuing basis between scientists and laboratories in different Member States.
- What the Community programme added to twelve different national programmes.
- Whether the results of the programme are reaching potential users.
- Whether the achievements of the programme can assist developing countries.
- Whether the application of the results of the programme could lead to a reduction of trade payment deficits, by means of less imports of raw materials and more export of new technologies.
- Whether the relative levels of support which should be applied to the general upgrading of expertise within the Community as opposed to the areas of immediate economic importance are well balanced.
- 3.5. The panel is to assess the managerial and administrative aspects such as:
 - Call for proposals;
 - Negotiation of contracts and payments;
 - Reports requested from the contractors;
 - Monitoring of the contracts;
 - Diffusion of the results;
 - Whether lessons of earlier evaluations have been put into effect;
 - Whether the distribution of funds among several subtopics and within Member States has been adequate.
 - Decision making process (CGC, interaction amoung Community institutions, etc)

3.6. The panel shall consider in particular articles 4 and 5 of the Council decisions 82/402/EEC and 86/235/EEC and how the Commission responded or is prepared to respond to these articles:

"The programme shall be reviewed at the end of the second year. In the light of this review the Commission may, through the appropriate procedures; present to the Council a proposal for a new four-year programme which would supersede the current programme at the beginning of the third year."

"The information resulting from the implementation of the indirect action defined in the Annex, in so far as it concerns raw materials covered by the Treaty, shall be disseminated in accordance with Council Regulation (EEC) N° 2380/74 of 17 September 1974 adopting provisions for the dissemination of information relating to research programmes for the European Economic Community."

LIST OF OFFICIAL DOCUMENTS

- 1. COM(77) 284 final 24 June 1977: Proposal for a multiannual R & D programme in the field of primary raw materials (indirect action) (1978-81)
- 2. OJ No L 72/9 6 March 1978 (78/263/EEC) adopting a multiannual R & D programme for the EEC in the field of primary raw materials (indirect action)
- 3. OJ No C 110/4 11.5.78: Invitations to tender for R & D programme in the field of primary raw materials
- 4. OJ No C 233/2 3.10.78: Proposal for a Council Decision adopting R & D programme of the EEC in the field of recycling of urban and industrial waste (secondary raw material) indirect action (1979-82)
- 5. OJ No C 81/5 28/3/79 amending the proposal for a Council Decision ... recycling of urban and industrial waste
- 6. OJ No L 293/19 20/11/79 (79/968/EEC): Council Decision of 12/11/79 adopting a multiannual R & D programme for the EEC in the field of the recycling of urban and industrial waste (secondary raw material)
- 7. OJ No C 50/4 28/2/80: First call for tenders for R & D programme of the EEC in the field of recycling of urban and industrial waste
- 8. OJ No C 207/2 12/8/80: Invitation to present proposals for participation in the second phase of R & D programme in the field of primary raw materials (1978-81)
- 9. Background document XII/291/81: Sub-programme recycling of noferrous metals

- 10. COM(81) 281 final multiannual R & D programme of the EEC in the sector of raw materials (1982-85)
- 11. OJ No L 174/23 (82/402/EEC) Council Decision of 17 May 1982 adopting an R & D programme in the raw material sector
- 12. OJ No C 162/4 29/6/82 : R & D programme in the raw material sector (1982 to 1985) : invitation to submit proposals for participation in the sub-programme on RECYCLING OF NON-FERROUS METALS
- 13. OJ No C 72/3 23/3/1982 Invitation to present proposals for participation in a R & D programme in the field of recycling of urban and industrial waste (1979 1983) Second phase
- 14. OJ No C 137/12 29/5/1982 Invitation to submit proposals for participation in the sub-programme on metals and mineral substances.
- 15. COM(82) 806 final Proposal for a Council Decision amending Decision 82/402/EEC adopting a R & D programme (1982 to 1985) in the raw materials sector
- 16. OJ No L 174/30 21/6/82 (82/403/EEC) Council Decision on the conclusion of the Cooperation Agreement between the EEC and Sweden on a European R & D programme in the field of recycling of urban and industrial waste
- 17. OJ No L 181/24 6/7/83 (83/332/EEC, Euratom) Council Decision amending Decision 82/402/EEC....
- 18. COM(83) 540 final 21/9/1983 Proposal for a Council Decision amending Decision 82/402/EEC (programme 82-85 in the raw material sector)
- 19. OJ No C 272/5 11/10/1983 Proposal for a Council Decision amending Decision 82/402/EEC

- 20. OJ No L 357/33 21/12/83 (83/634/EEC) Council Decision amending Decision 82/402/EEC
- 21. OJ No L 360/45 23/12/83 (83/647/EEC) Council Decision ... amending the Cooperation Agreement between the EEC and Sweden ... in the field of the recycling of urban and industrial waste
- 22. OJ No L 177/25 4/7/84 Council Decision ... dealing with structures ... (84/338/Euratom, ECSC, EEC)
- 23. COM(85) 399 final 24/7/1985 Proposal for a Council Decision adopting a multiannual research action programme on materials (raw materials and advanced materials) (1986 1989)
- 24. OJ No L 211/35 8/8/85 (85/376/EEC) Council Decision ... Cooperation Agreement between the EEC and Norway on a R & D programme in the field of metals and mineral substances
- 25. OJ No L 159/36 14/6/86 (86/235/EEC: Council Decision of 10 June 1986 adopting a research programme on materials (raw materials and advanced materials) (1986 to 1989)
- 26. Supplement to the OJ No S 116/44 19/6/86 Call for research proposals on secondary raw materials (1986 to 1989) (recycling of non-ferrous metals)
- 27. Supplement to the OJ No S 116/44 19/6/86 Research action programme on materials (1986-1989) Call for research proposals on primary raw materials
- 28. Supplement to the OJ No S 175/39 11/9/86 Call for research proposals on secondary raw materials (1986 to 1989) (recycling and utilization of waste)

- 29. Doc XII/396/85: Research Action Programme Materials raw materials and advance materials 1986-1989 Programme Description
- 30. Evaluation of the Community's primary mineral raw materials programme: report No 16 1986 EUR 10191
- 31. OJ No L/302 Council Decision of September 1987 concerning the Framework Programme for Community Activities in the field of Research and Technological Development (1987 to 1991)

ANNEX 6

LIST OF PUBLICATIONS

PROGRAMME M.S.M.

- 1. Summary reports of the sub-programme: metals and mineral substances (1982-85), Volume 1, Volume 2: Report EUR 11521 (1988)
- 2. Remote sensing in mineral exploration. Report EUR 10334 (1986)
- 3. Second European Workshop on "Remote Sensing in mineral exploration".

 Report EUR 11317 (1988)
- 4. Workshop on mineral leaching (Brussels, 17 November 1983). Proceedings. Report EUR 9606
- 5. Workshop on lead (Trappes, 22 March 1984). Proceedings, Report EUR 10169
- 6. 1986 Report EUR 10511 First European workshop on Remote sensing in mineral exploration.
- 7. 1988 Report EUR 11317 Second European workshop on Remote sensing in mineral exploration. (1986)
- 8. October 1987 Synthesis final reports Recycling of non-ferrous metals. R & D programme (1982-1985)
- 9. Synthesis final reports Metals and Mineral Substances. R & D programme (1982-1985)

PROGRAMME R.N.F.

1. Summary reports October 1987

PROGRAMME R.U.W.

- 1. 1985 **Proceedings** (1984): Sorting of Household waste and thermal treatment of waste. (Elsevier) (EUR-9682)
- 2. EUR 9347 (1984): Proceedings of the information symposium under the EEC programme on recycling of urban and industrial waste, Luxembourg, 8-10 May 1984. Anaerobic digestion and carbohydrate hydrolysis of waste. (Elsevier) (EUR 9347)
- 3. 1984 EUR 9419 Composting of agricultural and other wastes edited by J.K. Gasser (Proceedings of a seminar organised by the CEC, held in Oxford UK, March 1984), Elsevier 1985
- 4. 1984 brochure: Utilisation in agriculture of anaerobically digested effluents. (Rapport de contrat)
- 5. Waste sorting and RDF Production in Europe (EUR 100081) (Elsevier 1985)
- 6. Report EUR 10602: M.P. Ferranti, G.L. Ferrero and P. L'Hermite, 1987
 "Anaerobic digestion: Results of research and demonstration projects".

 Proceedings of a CEC Workshop held in Villeneuve d'Ascq-Lille (F), 4-6
 March 1986. Elsevier Applied Science Publishers, Barking.
- 7. Report EUR 10636 M. de Bertoldi et al, 1987 "Compost: Production, quality and use". Proceeding of a CEC symposium held in Udine; 17-19 April 1986. Elsevier Applied Science Publishers, Barking.
- 8. F. Colin et al, 1983 "Proposal for the definition of parameters and

- analytical measurements applicable to the aerobic digesion processes". Agricultural Wastes, Vol. 7, 3, 1983, 183-193
- 9. J. Belaich et al, 1984 "Proposal for the definition of parameters and analytical measurements applicable to carbohydrate hydroysis processes". Process Biochemistry, Vol. 19, 1, 1984, 2-5
- 10. EUR 9751 H. Naveau, 1986 "Anaerobic digestion in the EEC". In "Anaerobic digestion of sewage sludge and organis agricultural wastes". Proceedings of a CEC seminar held in Athens (GR) on 14-15 May 1984. Ed. A.M. Bruce, A. Kouzeli-Katsiri and P.J. Newman, Elsevier Applied Science Publishers, Barking
- 11. F. Zuconi and M. de Bertoldi, 1987 "Specifications for solid waste compost". Bio-Cycle, 28, Nr 5, P. 56-61
- 12. G. Gieseler, 1985 "Evaluation of the potential of organic residues in the EC with regard to availability and conversion to basic chemicals". Dornier System Gmbh, Friedrichshaven (contract No RUW/126/D)

Technical Reports on Activities of Contact-Coordination Groups

- 1. <u>Anaerobic Digestion</u>: "Utilisation in agriculture of anaerobically digested effluents" (contract EC1/1012/B7210/83/B)
- 2. Carbohydrate Hydrolysis "Recommendations on methods for polysacchrides content determination, cellulose, hemicellulose quantitive and quantitative determination of hexosans, pentosans and simple sugars" (doc.XII/MRS/13/84-EN). "Recommendations on methods for lignin content determination: acetyl bromide lignin, acide soluble lignin, lignin in transformed substrates, soluble lignin (Klason)

lignin excluded)" (doc.XII/MPS/14/84-EN).

"The use of ultra-violet absorption spectra to determine the concentration of soluble lignin" (doc.XII/MPS/6/84-EN) "Pectins" (doc.XII/MPS/75/83-EN)

3. <u>Composting</u>: "Compost specification for the production and charcterisation of compost from municipal solid waste" by F. Zucconi and M. de Bertoldi (contract RNW/119/I and RNW/135/I)

"The value of analytical methods for assessing compost maturity" by F. Zuconi (contract RNW/134/I)

"Economics from household to compost through a complete system in the Federal Republic of Germany"

PROGRAMME COST 84 bis

- 1. Treatment of lignocellulosics with white rot fungi (EUR-11252) Elsevier 1988. Proceedings of a workshop held in Braunschweig, 21-23 October 1986
- 2. Degradation of lignocellulosics in ruminants and in industrial processes (EUR 11084)--(Elsevier 1987). Proceedings of a workshop held in Lelystad, 17-20 March 1986
- 3. M. Chenost and Reininger, 1988 "Evaluation of straws in ruminant feeding". Proceedings of a workshop held in Thix (F). Elsevier Applied Science Publishers, Barking. (In print)
- 4. G.-L. Ferrero, B. Lajounie and P. L'Hermite, 1988 "Recovery of plastic waste". Proceedings of a conference held in Paris. Elsevier Applied Science Publishers, Barking. (In print)

ANNEX 7

LIST OF INTERVIEWED PERSONS

DG XIII A5

M. NICOLAI

M. PASTOR

DG XI A3

M. JUNGER

DG XII

M. BOURDEAU

M. GARCIA ARROYO

M. MASSIMO

M. DONATO

M. L'HERMITE

M. OTT

M. REINIGER

M. VAN WAMBEKE

DG XVII E1

M. CORTE

Warren Spring Laboratory

M. JACKSON

President of the CGC

M. HALPIN

Chairman of the Evaluation

M. PECK

Panel of the Raw Material

Research Programmes on

Wood and Cork

Projects:

50 Contractors

• Report on interviews by "RESEARCH ASSOCIATES (STONE) LIMITED"

"Policy study for the European Commission on the Evaluation of the raw materials research programme (1982-1985)"

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THE RESEARCH - ITS OBJECTIVES, METHOD AND SAMPLE

Introduction - the objectives of the research and the method used

The Commission of the European Communities wished to evaluate its Raw Materials Research Programme (1982-1985).

The Commission required a qualitative evaluation of its Raw Materials Research Programme (1982-1985).

Three sub-programmes were to be reviewed -

- 1 Metal and mineral substances abbreviated MSM
- 2 Recycling of non-ferrous metals abbreviated RNF
- 3 Recycling and utilisation of waste abbreviated RUW

The Commission required a summary of the background of contractors and the usual methods of research funding. The outcomes of the research and the effects of the availability of the grant were to be assessed. Coverage was also required of the administration and management of the programme and Research Associates was to draw overall conclusions for future programmes.

The method used was face-to-face interviews with contractors. Interviews were conducted with senior respondents and typically lasted one and a half hours.

51 interviews were carried out with 56 respondents covering 50 contracts. The interviews took place in all nine member states involved in the programme.

28 interviews were carried out in the MSM sub-programme, 9 in the RNF sub-programme and 14 in the RUW sub-programme.

	MSM		RNF		RUW	
	No of conts	No of ints	No of conts	No of ints	No of conts	No of ints
France	34	7	. 6	2	12	3
UK	30	7	3	2	12	2
Germany	17	5	5 ′	2	8	2
Italy	16	4	3	2 .	9	1
Holland	5	1	2	1	6	1
Belgium	6	1	1	0	9	2
Denmark	6	1	0	0	1	1
Greece	6	. 1	0	0	1	1
Ireland	3	1	1	0	3	1
	123	28	$\frac{}{21}$	9	61	14

Background of contractors and methods of research funding

EC grants are usually a supplementary source of research funding accounting for an average of about 17% of total research budgets.

The contractors interviewed can be classified into four main categories -

Academic institutions tend to rely heavily on internal money and additional state grants to fund research. Some obtain small proportions of the costs of projects from industry. The EC accounts on average for 34% of research funds.

<u>Industrial companies</u> tend to generate most of their research funds internally. The second most popular source of funds is the state which can sometimes account for as much as 50%. The EC accounts on average for 16% of research funds.

Private research organisations tend to generate funds from the state and from industry equally. The industry contribution is usually in the form of annual subscriptions and ad hoc contracts. The EC accounts on average for 15% of research funds.

Public research organisations source most of their research funds from the state. There are several cases where industry contributes significantly to research budgets. Examples were given of 50% and 65% funding from industry. The EC accounts on average for 4% of research funds.

Photograph of scientists interviewed at Imetal in Trappes, France

The photograph below shows a group of scientists at Imetal, who worked on several contracts in the MSM sub-programme.



Details of the respondents interviewed during the research

Interviews were carried out with 56 senior respondents. Two were interviewed twice on separate contracts.

Armines Armines BRGM Imetal Imetal Imetal Imetal SFC	J du Mouza E Tincelin J-F Sureau P Fossi C Masson J Predali S Jorget L Lecrivain	Research Eng Professor Head of Dept Tech Advisor Tech Advisor Min Proc Mgr Tech Advisor MD	Paris Paris Orleans Trappes Trappes Trappes Trappes Trappes Paris
BCRA BCRA NERC NERC Open University Warren Spring Warren Spring Warren Spring	R Cubbon W Roberts T Ball R Ogilvy H Prichard D Flett D Collins S Newton	Dpty Chf Exec Head of Div Princ Sci Off Princ Sci Off Res Fellow Head of Dept Dpty Hd of Dep Metallurgist	Stoke on Trent Stoke on Trent Nottingham Nottingham Milton Keynes Stevenage Stevenage Stevenage
Res Inst Feuerfest RWTH Aachen RWTH Aachen Sachtleben Bergbau Sachtleben Bergbau WBK	A Majdic G Friedrich P Herzig I Rohlfing B Heide R Schepers	Professor Director University Asst Mine Manager Works Director Head of Dept	Cologne Aachen Aachen Lennestadt Lennestadt Bochum
SMMP Turin Polytechnic Turin Polytechnic Turin Polytechnic Pertusola Sud Pertusola Sud	C Brusca O del Greco G Carosso E Gechele E Sambarino R Belfiore	Tech Inspector Engineer Professor Director Director Head of Dept	Rome Turin Turin Turin Crotone Crotone
Rijks University	R Schuiling	Professor	Utrecht
Brussels University	G Panou	Head of Dept	Brussels
Greenland Geol Soc	A Steenfelt	Geologist	Copenhagen
Athens University	A Kontopoulos	Assoc Professor	Athens
EOLAS EOLAS	A Carroll T Kelly	Head of Dept Tech Mat Dept	Dublin Dublin
RNF			
IRCHA Imetal	M Prevost P Fossi	Head of Dept Tech Advisor	Vert le Petit Trappes
NEI Int R&D Tetronics R&D Metallgesellschaft	G Wilkin D Page B Nichtweiss	Instrumentation Director Metal Laboratory	Newcastle u Tyne Faringdon Frankfurt

RWTH	J Krueger	Director	Aachen
Agip Pertusola Sud	A Paggi E Sambarino	Engineering VP Director	Milan Crotone
Budelco	J Hill	Quality Mgr	Dorplein
RUW			
BRGM PEC Engineering	F Clin F Bully	Engineer Lab Manager	Orleans Nancy
Foster Wheeler UWIST	H Wilson H Slater	Project Leader Professor	London Cardiff
Karlsruhe University Karlsruhe University Saarberg-Fernwaerme	L Hartmann R Staud H Hummelsieg	Head of Dept Engineer Head of Dev	Karlsruhe Karlsruhe Saarbruecken
Fiat Engineering Fiat Engineering	L Canzanno C Bortolossi	Hd of Env Res Tech Engineer	Turin Turin
City Waste Co	R Bruinsma	R&D Consultant	Amsterdam
Brussels University Flaekt	C David M Francois	Hd of Res Unit Head of Dept	Brussels Brussels
Aalborg University	K Dahl	Asst Professor	Aalborg
Ministry of Env	A Skordilis	Dept Manager	Athens
AFT	J Brogan	Head of Dept	Dublin

• .--

HOW FAR THE CASE OBJECTIVES OF CONTRACTS WERE MET

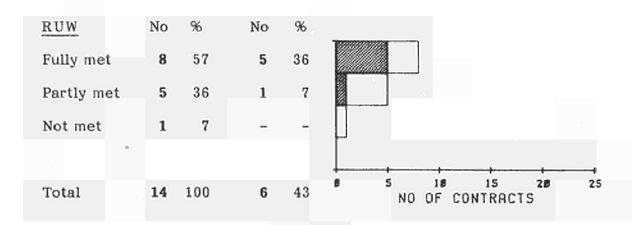
Summary of RA's views of contracts set out later in this chapter

Overall, 66% of contracts fully met their case objectives and 40% were of commercial benefit.

The tables and bar charts below show RA's view of the number of contracts with individual case objectives fully met, partly met and not met. Contracts which in RA's view were of commercial benefit are indicated by the shaded area.

	Contracts	Commercial benefit	
MSM	No %	No %	
Fully met	21 75	10 36	
Partly met	7 25	1 3	
Not met			
Total	28 100	11 39	8 5 18 15 28 25 CONTRACTS

RNF	No	%	No	%	
Fully met	4	50	3	38	
Partly met	2	25	-	-	
Not met	2	25	-	-	
Total	8	100	3	38	8 S 18 15 28 25 NO OF CONTRACTS



How far the case objectives of the contracts were met - MSM

Most successful sub-programme. 21 of the 28 contracts (75%) fully met their case objectives. 11 of the 28 (39%) have been of commercial benefit.

'Can you tell me what has happened specifically as a result of the research project which you have undertaken in terms of your own company and in more general terms?'

RA assessed the results reported by contractors against the case objectives of each project. Results which in RA's view were of commercial benefit are marked with an asterisk*. Summaries of contractors' comments on the 28 contracts in the MSM sub-programme are given below.

Objectives fully met - 21 (75% of contracts in sub-programme)

- 'Improved pyrite production with an annual saving of 1.4m DM. Improved grade and recovery of zinc, saving 1m DM on each per year. Revenue from consulting on grade and recovery in Canada, Australia, Spain, US.'*
- 'Successfully developed rockfill technique for extraction of base metal without subsidence in host rock at surface and in mined out rooms. Prevented loss of more than half our reserves. Sold technique to Spain, US, Australia, perhaps Turkey. Spain and US bought equipment too. Salzgitter company may use technique for storing atomic waste.'*
- 'Refined platinum prospection technique for ophiolite complex in Shetlands. Deposits found here and in Norway, and prospecting continuing. Brazil, Portugal, Ireland also looking. Major spin-off is application of technique to gold and silver. Silver found in Germany, and dozens of international enquiries for both metals received, the results of which are not known.'*
- 'Successful study of weathering on heavy clay/shale and effect of chemical additives. Led to more consultancy with existing clay users on plant design and one new customer. Our advice against weathering improves product quality and cost.'*
- 'Improved recovery and utilisation of waste material to prepare cemented fill in Italian talc mine, with savings on aggregates and dumping costs, also environmental benefits. Follow up research done with mining company concerned, but only this mine using methods. We improved numerical model for calculating parameters with uses in many areas eg tunnelling, slope stability and soil as well as rock.'*
- 'Exceeded aim in many cases by developing flow sheet to optimise ore extraction process. Ongoing work on this, but not being used because of decline in ore prospection. Another participant, BRGM, was inspired to develop and sell its own software. Did flow sheet for government for dust disposal and work planned in other mining sectors.'*
- 'Removed sulphur and arsenic from matte. Process not commercialised due to new contract for matte at good price without treatment. Minor internal cost savings from improvements to recovery of germanium and iridium, wet sieve and leaching processes, and from building of new plant to separate carbon and sterili. Environmental benefits result from waste produced as slag rather than slurry.'*

- 'Learnt a lot about tile characterisation and selection and blending of materials. Findings reduce heavy losses by up to 20%. Tile companies bring materials for tests so there is continuing involvement and income.'*
- 'Companies involved applied findings on tin concentration by gravity and made monetary improvements by better control and plant modifications. Sold software in UK, EC and outside. Techniques are being applied in this division, have gained us new contracts and prompted ongoing research work.'*
- 'Improved new grinding and flotation techniques for metal recovery from ores. Further research done which has been commercialised. Now working on similar projects using the knowledge gained. The methodology is being used in Morocco for other ores.'*
- 'Identified sulphide formation process in ophiolite complexes in ancient oceanic crust. Helped Canadian project in NE Pacific leading on from ours. Will join Fiji diving project in '89 with France and Germany. Spin-off of gold oxidation zones in ophiolite complexes in Cyprus with good samples but no mining yet. Conference in Oman in '90 on similar complexes there. Minor spin-off of successful drilling project in continental crust in the Oberpfalz in '87 using similar methods.'
- 'Both aims met at lab scale ie satisfactory nickel/cobalt extraction levels from laterite using sulphuric acid leaching and iron separation from resulting solution. Work being followed up in a continuous mini-plant prior to pilot plant stage. Process likely to be commercial in 5-10 years.'
- 'Improved our analytical methods for finding lead, zinc, silver and copper in sedimentary rocks. Still using analysis and publishing further work, but no application for our methods before end of base metal recession here. Similar methods are being used elsewhere eg Germany is using them in Peru.'
- 'Improved our theoretical knowledge of the drying process of clay ceramic materials but as it was only a small part of a larger research programme it was not directly useful in itself. We do use it when we advise industries.'
- 'Increased knowledge of chemistry of pyrochlore and hydrothermal processes in alkaline magmatic rocks and found niobium-tantalum deposits in two complexes in Greenland. Led to further university research in petrology. Several mining companies expressed interest though no action yet.'
- 'Developed cost-effective analytical method for rock analysis. We have applied it in the university but have not actively promoted it outside. Led to a pilot study with a mining company. Generally, mining companies slow to adopt it. Potential spin-off as a test for quality control in industries using bulk raw materials and producing bulk inorganic products.'
- 'Both projects improved application of down-hole IP resistivity and TEM techniques and papers were published. Techniques are being used worldwide now but hard to say if as a direct result of my work.' (Two contracts)

- 'Our unique technique of seismic tomography proved more successful for small scale disturbances than standard reflection techniques. Equipment we developed was very suitable and we have refined it since. Ore prospection in decline in Germany, but as results were so positive, we are adapting technique to coal, though that is decreasing too. Geothermal energy project planned linking our technique to nuclear dumping. We are also helping Canadian and US contacts with equipment problems in bore holes.'
- 'Much interest in our work on gas compositions in soil but no one using it to find ore deposits. Swamped with prospecting projects from outside EC eg Ghana, Botswana. Main advance is potential use outside EC of technique for geothermal energy research and use of geothermal pollution control in EC.'
- 'We made a scientific advance in the study of heating of ceramic structures. It has industrial applications but no one is using it yet. We gained research contracts using the same method but on different materials.'

Objectives partly met - 7 (25% of contracts in sub-programme)

- 'We aimed to leach lead and leave copper and zinc. We achieved fairly good selectivity but to be industrially realistic would have to look at it further. This is the most likely process to be used on an industrial scale if the situation changes. Took out patents and won a big commercial contract with Sanjo as a result of our increased knowhow.'*
- 'Results on stage one ie evolution from magnetite ore bodies to schelite ore bodies by vertical and horizontal zoning. Omitted stage two of verification by drilling. If model could be verified, spin-offs likely for other ore body types with some adaptations. Formed a study group to work with other universities on commercial mineral extraction.'
- 'Increased copper recovery levels from 50% to 70-80%. Looked at copper separation before purification and bought two reactors and settling tank for commissioning this year. Confident process will be economic. Adapted process to cadmium recovery, where copper also used. Could be adapted to sphalerite which is rich in copper so silver in the sphalerite is not wasted.'
- 'Proved refractory castables can be reinforced by addition of ceramic rodlets with similar properties of thermal expansion and shrinkage. However, rodlets tended to break when added to castable so no known use yet.'
- 'Mathematical model made and laboratory trials done on backfilling but Italians failed to do more lab and on-site work. Worked with English to improve their very good pump for depositing fill.'
- 'Proved mathematical models for leaching processes worked in theory but no application as other partners did not have all the data we needed. In-house technology from modelling studies led to more research in another division.'
- 'Improved evaluation techniques for 2 zinc by-products but the pilot plant for testing didn't happen. Prompted to use a different method ie electric oven.'

Other outcomes associated with the project

Outcomes are grouped in order of frequency of mention.

- Publications 6 eg in Mineral Wealth (Greek) and Iron Control in Hydrometallurgy (CAN) and Extractive Metallurgy of Nickel and Cobalt (CAN) and The Metallurgical Society Technical Paper (US) and Society of Mining Engineers (US) and plan to publish in 3 further journals / published in 'Erzmetall' and others / published in ceramic journals and others / articles in 'Industrie Minerale Francaise' / published in 'The Geophysical Journal' and 'Geophysical Prospection' / the EC report was sent to 100 platinum experts and also published in 'Canadian Mineralogist' and 'Mining Journal' / several publications in 'Journal of Applied Geochemistry' and a Dutch geology journal / published papers / we did several publications / published a whole series of papers / did a paper on this and there was therefore transfer of technology / we published papers on the global approach
- 12 Forming of contacts exchanged reports with BRGM and Warren Spring / marvellous to meet European colleagues indeed I have made friends all over Europe / we got to know other labs in the programme better / we were able to improve our relations with partners in the project / strengthens developing ties with people at EC and other participants in England Belgium and France with whom contact is ongoing / we got the chance to work on rocks in other countries / helped our links with other countries / helped our links with other contacts for future research / contacts with industry strengthened / it improved our relationships with industry who are now helping us with other projects / making contacts is part of ongoing confidence building
- Presentations 3 in Phoenix '88 and 1 in Toronto '86 / lectures eg at the BMFT in Germany / talks in Aachen and South Germany / attended an international workshop in Aachen / presented papers to a convention in March and there are 2 more in the pipeline / attended the Geo-Platinum Symposium and numerous other platinum conferences
- Reputation acknowledged as partners in world class research into oceanic crust / helped build our reputation in general and people will look to us for more work / improved our credibility / the Open University suddenly had a platinum reputation / raised our standing as consultants because of our increased knowledge / helps us gain contracts because of our continuing expertise
- 4 Experience engineers' knowhow increased / very good experience and training for all those working on the project / enhanced our knowledge / gained expertise generally
- Theses four at Athens University on different aspects of nickel and iron extraction / doctorate sent to 50 libraries in Germany and scientific colleagues abroad / cement fill project led to a thesis at the Polytechnic / we took on one or two people who published their theses
- 2 Help of students students contribute to lab generally / we had the help of a German student

How far the case objectives of the contracts were met - RNF

4 of the 8 contracts (50%) fully met their case objectives. 2 (25%) partly met their case objectives. 3 (38%) were of commercial benefit.

'Can you tell me what has happened specifically as a result of the research project which you have undertaken in terms of your own company and in more general terms?'

RA assessed the results reported by contractors against the case objectives of each project. Results which in RA's view were of commercial benefit are marked with an asterisk*. Summaries of contractors' comments on the eight contracts in the RNF sub-programme are given below.

Objectives fully met - 4 (50% of contracts in sub-programme)

- 'Commercialised EAF process for fine and difficult materials. Led to ongoing 'design and build' project for British Steel, building of plants under licence using our equipment for 4 US companies, and funding by US institution to design equipment for group of plants. Further contract imminent with Norway, perhaps Japan. Steel waste is rendered non-toxic so safer and cheaper to dump or may be local market for it as light aggregate.'*
- 'Installed plant to recover higher yields of better quality chrome more cheaply than commercially produced chrome. As 90% of chrome waste is removed first, the remaining waste is safer to dispose of in river.'*
- 'Designed a unit for recovering various metals which was commercialised. Led to another project as a result of which a workshop was built. Did an inventory of waste products in Europe that clients are using profitably. More work funded by an industrial organisation which has extended the technique to other fields ie quality control of products which has also been commercialised.'*
- 'Proved technical viability of classifying carbide cutting tools but no application by Sandvik because of high development costs to take technique to economic production. Patented a few aspects anyway.'

Objectives partly met - 2 (25% of contracts in sub-programme)

- 'Handled difficult materials in electric furnace with very good environmental control but Jarosite and Goethite processes both too noxious and expensive for commercial use. Follow up research on larger scale looking for rare metals and ammonia.'
- 'Partly successful ie separation of silver and copper, but the methodology is not viable for industry as we did not handle palladium, which is present in industrial processes.'

Objectives not met - 2 (25% of contracts in sub-programme)

- Project ended early as electricity company took it over themselves.
- 'Unable to separate non-ferrous metals as aluminium infiltrated other metals. As a spin-off, split metal from non-metals and built a machine able to split a particular steel type ('Edelstahl') from non-metals by magnetic separation. Have patented machine but no use foreseen.'

Other outcomes associated with the project

Outcomes are grouped in order of frequency of mention.

- Experience learnt to work with fast detectors and gained experience with magnet systems / more training in handling fine and difficult materials in electric furnace smelting / we are now well versed in other problems / bettered our expertise / higher process equipment developed than otherwise would have been the case which is useful for the future
- 4 Publications input information into academic institutions in UK and Spain / published at the International Recycling Congress / several publications in the '85 International Extraction Congress and major Paris congress in '86 / trade journals of industrial organisation which evaluated the equipment
- 2 Presentations numerous presentations to groups of potential customers and one-on-one presentations in five countries / many conferences and EC workshop
- 2 Theses thesis at Aachen on zinc winning / thesis at Strasbourg on liquid membrane technology
- 1 Enhanced reputation Gaining EC approval gives us credits with potential users
- 1 Exchanges of ideas had two meetings of contractors at Brussels
- 1 Knowledge of EC procedures clearer understanding of EC grants procedure so can apply for more
- Others rightly highlighted issue of splitting non-ferrous metals / may have saved time doing zinc winning project alongside other research



Professor Krueger of RWTH Aachen, who led a project on zinc winning.

How far the case objectives of the contracts were met - RUW

8 of the 14 contracts (57%) fully met their case objectives. 5 (36%) partly met their case objectives. 6 of the 14 (43%) were of commercial benefit.

'Can you tell me what has happened specifically as a result of the research project which you have undertaken in terms of your own company and in more general terms?'

RA assessed the results reported by contractors against the case objectives of each project. Results which in RA's view were of commercial benefit are marked with an asterisk*. Summaries of contractors' comments on the 14 contracts in the RUW sub-programme are given below.

Objectives fully met - 8 (57% of contracts in sub-programme)

- 'Built new plant to recover electricity from solid fuel wastes. High set up costs, but long term savings expected. Another plant planned for southern Italy in two years. No longer use landfill for disposal which is an environmental benefit.'*
- 'Two or three large scale digesters built for abattoir waste which are being used locally. University is continuing research in this field.'*
- 'Waste disposal contracts with municipalities now based on new criteria ie volume rather than weight.'*
- 'Demonstrated technical viability of the electrostatic technique and one factory adopted it for cleaning plastics. This is isolated use since French market saturated with cleaner plastics. However, we are developing waste valorisation in LDCs eg Africa.'*
- 'Company created to follow anaerobic digester project through to commercialisation. More work led to better system being developed, patented and licensed by company in France and Reunion Island.'*
- 'Met our objectives of looking at the energetic valorisation of burning coal and waste. Not commercially viable since marginal energy saving on coal offset by large investment costs.'
- 'The ACM has endorsed findings on area variations in waste component quality. Experimental recycling lab set up and further research on waste selection funded. No commercial application yet as potential investors remain unconvinced of the commercial value of analysis.'
- 'Built small reactor to recover gas from household waste. Building larger, improved reactor next year, with long term savings in disposal costs expected. German competitor trying gasification for paper and synthetics. US using chemical process rather than gas in similar plant.'

Objectives partly met - 5 (36% of contracts in sub-programme)

- 'Showed microbiological breakdown of cellulose worked but no time to show if economically viable. Set up company called BTL which did two further projects, one of which led to commercial applications in control of methane production. BTL also set up a collaborative research project to continue straw work with a technical institute in Denmark. Two of staff trained on this project now using skills in other areas.'*

- 'Found system to separate types of plastic with lab scale machine. In follow up study unsuccessfully tried to link machine on to the plant of a state waste disposal company in Holland. Process uncommercial, owing to high plant investment and energy costs of process.'
- 'Study of liquid crystal properties successful and ongoing research may find applications. Improved pre-treatment of cellulose but process too expensive versus oil prices and too polluting to be commercial. Our follow up work on lignin degradation showed no practical application for polymers from molecules. An Argentinian university refined cellulose pre-treatment as a result of our work, but not known if applied.'
- 'Extracted methane from protein and sugar element of olive waste, but not from oil or unknown organic material. Now know the correct process, but it would be too expensive and complex to implement in Greece anyway. Set up research group at University of Athens which has done environmental projects. Consulted on potato waste recycling in Germany, corn in Mexico and coconut in Far East.'
- 'Resolved some problems preventing the commercialisation of fluidised bed combustion and did an economic analysis, though not being used, owing to lack of interest by original industrial sponsors.'

Objectives not met - 1 (7% of contracts in sub-programme)

- 'Established that viscosity of cattle slurry cannot be modified using anaerobic digestion. Major mechanical problems with pipes and pumps of digestor and economics steadily worsened. Now looking at injecting slurry just under the topsoil in pipes.'

Other outcomes associated with the project

Outcomes are grouped in order of frequency of mention.

- Publications published in 'Das Muell and Abfall' / papers in 'Biotechnology and Bioengineering' 'Macromolecules' 'Applied Biochemistry and Biotechnology' 'Polymer Preprints' / papers published and more planned / published papers / body of information reported on
- 3 Experience young scientists' education is enhanced and all the research group has gained experience / now 4 people have thorough training / expertise gained in fluid bed combustion will be of use
- 3 Reputation now important research group with contacts in Luxembourg and France / promoted awareness of company as only one researching this field in UK / project the first in anaerobic digestion
- Theses PhD and several MScs / three PhDs on separate aspects / students used the results for their theses and make their own experiments in the field of solid waste management
- 2 Employment have some of the trained people here still / Foster Wheeler was in trouble and the project maintained employment
- 2 Presentations Berlin Recycling Congress / about ten congresses in numerous countries
- 1 Knowledge of EC procedures learnt how to manage EC procedures

Reasons why some contracts were not of commercial benefit

The main reason why the original objectives of contracts were not of commercial benefit is economic, followed by technical problems.

The table below sets out contractors' views of why the original objective of a contract was not of commercial benefit, although there may have been a spin-off from the project which was of commercial benefit.

The reasons are grouped by numbers of mention. The number of contracts concerned in each sub-programme is set out below the table. From this it can be seen that more than one reason may apply to an individual contract, mainly in the RUW sub-programme.

	<u>MSM</u>	RNF	RUW	Total
Economic	5	2	6	13
Technical problems	2	3	6	11
Further work required	6	-	1	7
No industry action	3	· -	3	6
No commercial aim	2	· –	1	3
No proven link	2	-	-	2
Others	-	1	1 .	2
Total	20	6	18	44
No of contracts	20	5	10	35

Economic - (13 mentions)

In the case of MSM contracts, the decline in ore prospection is the main reason why the original objectives of projects were not of commercial benefit. In one instance, shifts in metal prices made the pre-treatment process of a metal blend unnecessary.

In the case of the RNF contracts, one reason given was the cost of the recovery process versus metal prices. The other reason given was the high investment costs to set up a sorting process.

About half the mentions of economic factors were on RUW contracts, although these only account for 29% of the contracts concerned. The costs of the recycling process versus the value of the end-product were mentioned four times, for example in the recovery of methane from olive waste or the recycling of plastic products into lower grade products. High investment costs of recycling schemes were mentioned twice.

Technical problems - (11 mentions)

The type of technical problems which prevented contracts being commercially applied varied by sub-programme and by individual project.

About half the mentions of technical problems were by RUW contractors.

Further work required - (7 mentions)

This reason was given almost entirely by MSM contractors. Further work was needed in four instances because some part of the project which should have been done was not done. In two of the four instances this was due to the failure of partners. The need to scale up the research was mentioned three times, by two MSM contractors and an RUW contractor, all of whom were positive that the research would ultimately be successfully applied.

No industry action - (6 mentions)

The lack of industry action mentioned by contractors is due in four cases to inertia/other preoccupations. There was one mention of changes in the marketplace since the research was done, making a bottle-cleaning technique redundant, and one case of potential investors being sceptical of the commercial value of waste component analysis.

No commercial aim - (3 mentions)

Of the three contracts in question, two were wholly or partly 'blue skies' research, while the third was a small part of a large research programme, so that it was never envisaged that it should be commercially applicable in itself.

No proven link - (2 mentions)

The contractors in question improved the application of certain exploration techniques, but because similar research has been undertaken elsewhere, they could not attribute usage of these techniques specifically to their work.

Others - (2 mentions)

One other reason was the fact that a project was terminated early because another company wished to take over the research. Another was that a particular recycling process was too complicated both technically and logistically.

EFFECTS OF THE EC GRANT AVAILABILITY ON THE PROJECTS

The effects of the availability of EC grants on the projects

40% of projects would not have been done without the EC grant. More than 50% of the rest would have been done on a smaller scale or more slowly.

'Has the grant scheme had any effect either favourable or unfavourable in any areas? What is the nature of these effects?' 'Tell me what happened with the grant and what would have happened without the grant?'

All the replies to these questions focussed on what would have happened without the grant, as shown in the table below.

	No of mentions	% of contracts
Project not done	20	40
Project scaled down	18	36
Project slower	7	14
Money from elsewhere	6	12
Additional research	5	10
Fewer staff	3	. 6
Other	12	24

Project would not have been done - (40% of contracts)

The main reason given by respondents was the lack of available funds from other sources at the time.

Two contractors mentioned that the EC subsidy acted as an important precedent for their company or an outside sponsor to contribute. Two other contractors commented that it was the EC's call for proposals which sparked off the idea for the project in the first place.

In the absence of a grant, respondents were then asked what they and their team would have done instead. The activities mentioned are set out in the table below.

No of mentions

Alternative research	10
Normal job	4
Unemployed	1
Don't know	8

Project would have been scaled down - (36% of contracts)

Most of these respondents were specific about the way in which they would have scaled down the project. The majority would have attempted the original scope of the project but in less depth, for example by restricting the research to the scale of the laboratory or a small plant. The rest would have omitted a particular part of the project.

There was a general feeling that the same quality of results could not have been achieved by scaling down the project.

'It wouldn't have been done on the required scale with a diversity of applications built in.'

'With just internal funding we could only have done a shortened version ie small plant or laboratory trials.'

'We would have done small sections of the project but it's not very satisfactory because you lose the overall picture and important connections.'

'It would have been very difficult to have done the project just by small laboratory experiments - we really needed the digester which is a major capital item.'

Project would have been done more slowly - (14% of contracts)

Most of these respondents could not specify how much longer the work would have taken. One contractor said that with the grant the project was completed in three years instead of ten.

Would have got the money from elsewhere - (12% of contracts)

Only a minority of all contractors were confident that alternative funding to the EC grant could have been found. The sources mentioned were mainly state organisations - BMFT (Germany), AIF (Germany) and Association of Communities and Municipalities (Greece). One respondent mentioned industry as a source of funding.

Additional research would have been done - (10% of contracts)

The majority of these respondents would have done additional research in conjunction with the scaled down version of the original project. They pointed out that further funding would have been needed for this extra research. Other respondents would have postponed the original project and done additional research in the interval.

Would have employed fewer staff - (6% of contracts)

A minority of all respondents mentioned that without the grant they would either have lost staff or taken on fewer staff. In every case this was as a result of scaling down the project.

Other - (24% of contracts)

Respondents gave a variety of other effects of the availability of the grant. These tended to be qualitative in nature and were largely favourable.

'Without the grant we wouldn't have had the contact with partners.'

'We couldn't have interested the university in setting up a mixed study group to look at commercial mineral extraction.'

'Without the weight of the EC we wouldn't have seen the project as serious new technology.'

'The three year time scale gave us more stability.'

'To have EC rather than state funding made us less politically vulnerable.'

'Without the EC we would have put in less marketing effort.'

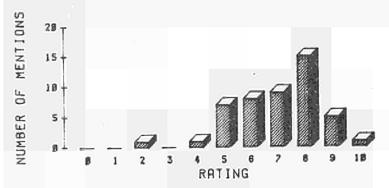
'We couldn't have bought our new computer system without the grant.'

THE ADMINISTRATION/MANAGEMENT OF THE PROGRAMME

Summary of the contractors' views set out later in this chapter

Many respondents reported no problems and good EC contact. However, faster notification and greater EC interest in projects would be welcomed.

'Thinking about the administration of this particular grant programme by the EC, I would like you to consider two aspects separately. Firstly, can you give me three words or phrases to describe the <u>pre-acceptance stage</u> of the programme. Can you also give me a rating on a scale of 0 - 10.'



Median rating 7

Positive and neutral 43%

No problems	26
Good EC relations/contact	18
Speed of notification	5
Improved administration	2
Others	6

Negative 57%

Slowness of notification	17
Bureaucratic	13
Complex paperwork	12
Poor selection of projects	7
Difficult to plan	7
Research categories restricted	5
Lack of contact with Brussels	4
Application period too short	4
Others	8

Secondly, can you give me three words or phrases to describe the post-acceptance stage of the programme and a rating on a scale of 0-10.



Median rating 8

Positive and neutral 58%

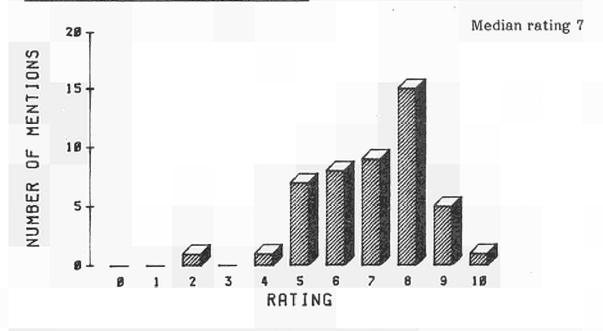
No problems	30
Good EC relations/contact	22
Good meetings	14
Right level of EC input	11
No money problems	10
Other	1

Negative 42%

Lack of interest	17
Bureaucratic	13
Money problems	12
Slow response	6
Lack of confidentiality	4
Reporting too frequent	2
Poor liaison	2
Others	8

Views on administration/management of the pre-acceptance stage

Many respondents reported no problems and good EC contact. However, faster notification would be welcomed.



Comments are grouped in order of frequency of mention. Comments made by UK/Eire respondents are indicated by an asterisk*.

Positive/neutral - 43% of all mentions

- No problems *no problems / *no problems / no big problems / no particular problems / no problem for me but had to help my industrial partner / correct / correct / reasonable / reasonable / very good throughout / good / not too much administration / light on admin / was not so difficult as had experience from a previous project / *came together very well as we had advantage of having more experience / took its usual course ie nothing in the way of hitches / system for proposals was effective / not bureaucratic / business-like / proper / satisfied from my technical point of view / not a waste of time since it works / took a reasonable amount of time to go through / you need to know the system and follow the rules / *not much interaction if clear-cut / in spite of bureaucracy there was accuracy of all activities and arrangements were clear
- Good relationship/contact with EC very good open relationship with EC / good rapport / people at Brussels score 9 as they listen and help if necessary / when applying there is good personal contact with the representative / *Jean Boissonnas helped get proposals through / our project continuously pushed by Dr Boissonnas who was a good manager / good rapport with M Boissonnas / good relations with Mme Ferranti who was very helpful and informative / M Ferrero good / best if you had personal contacts before you apply so they know what you're doing / helpful / helped us / pleasant / phoning fast and effective / interested / lots of discussion / courteous / scientific level of people is very good

- 5 Speed of notification *didn't take long (6 months) before indication things were going our way / fast notification of grant / relatively rapid / timing OK / not slow
- 2 Improved administration *was really hopeless but better now / *has improved slightly
- Others used to it / always interesting ie all participants gave papers to Brussels people regarding projects planned / subjects well chosen / fair and not nationally biased / works for long term projects but short ones solved too quickly for finance / hearing of EC fundings was a mere coincidence

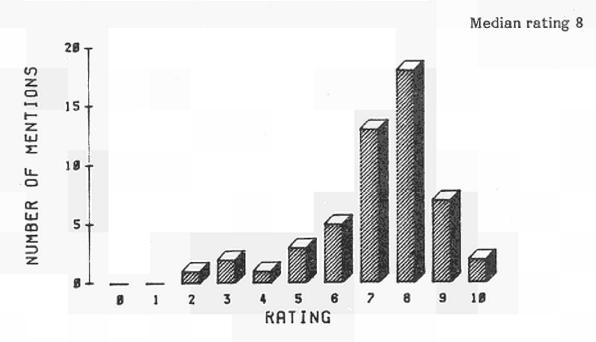
Negative - 57% of all mentions

- Slowness of notification *incredibly slow / well meant but very slow / *long time making decision / *a nightmare because it's a very long process / had best impression of leader but whole administration behind very long and very tiring process / long wait between proposal and reply and you know nothing during the wait / too long (5-6 months) / notification of 1 year is too long / 8 months to have a reply / lot of inertia in the system ie so many committees and people in the chain that it was hard to get decisions / people were helpful but difficult going through chain / generally gave impression of a slow reaction to application like the Greek authorities whereas hoping it would be faster without bureaucratic restriction / bureaucracy in decision-making procedure / don't get replies / delay delay delay especially lately ie 88/89 programme as it took 1½ years to notification and then 6-12 months for contract after that / was better then but now if you ring the EC they send you everywhere and I get the impression no one knows anything there these days due to Spain and Portugal joining or computers? / these days you don't even hear if your application is accepted
- Bureaucratic bureaucratic / bureaucratic / administrative / administration complicated so without a name it's difficult / not very simple / *a dreadful struggle probably because kicked off before a clear policy by the Commission / lot of effort before contract formalised / *no national reference points but go to Brussels for everything which is even more true now than then / felt lost in front of EC / same reports had to be submitted by the co-operating groups which could have been done in one report / *awful lot of meetings / *we spent a lot of money on meetings / inflexible
- 12 Complex paperwork complicated questionnaire / was very heavy as wanted to know lots of details about us / application not very precisely worded so specific problems can't be explained / *forms are difficult to understand because translated badly / *great lack of awareness by us of what was required regarding the proposal / costing has to be too precise at the beginning / too many forms / too much paperwork / difficulty in application process which is true of all sources of public funding / *they get so many applications that it's a more tortuous process now / *need a simplification scheme for doing proposals / paperwork

- Difficult to plan *uncertainty of getting contract affects availability of staff / difficult to plan for future because decisions so slow / *can be committed to something else by time you find out if you've got contract / *if we get contract have to get equipment / *have to estimate 18 months ahead / had to commit years in advance / *very uncertain
- Poor selection of projects rejected some interesting projects / a lot of unimportant projects get proposed by universities which becomes like a 'club' so should have more stringent selection criteria for projects / EC interested in a limited amount of big projects / *need to be more open in how they decide as I think they choose via old boy network rather than necessarily picking the best projects / *these days if collaborate with other countries it's guaranteed but it may be better to use 2 UK labs / *may be conflict of interests for applicants also on CGC committee / *annoyed that universities get favoured because essentially they're fully funded by the government but EC grants enable them to do projects more luxuriously while the EC can get more projects done for its money
- Research categories restricted categories too many or too general and not suited to our field / call for proposals should be as open as possible / grouping of projects into families not very satisfactory since only family we could fit into was white clay (fine ceramics) / hard for EC to see olives as raw materials / *odd that waste programme ran under solar energy
- Application period too short *only a short time available to apply ie read in EC journal end May and had to submit 1st Sept! / no time for applying as the deadline for preparations was impossible especially for other partners / time is limited / *call for proposals gives insufficient time
- 4 Lack of contact with Brussels personnel the personnel role in Brussels is very important and they should encourage people and help contacts more than they do / don't direct enough / if applications are declined no reasons are given / no contact this period except administration of contract whereas would have preferred contact but probably such a good project they didn't think they needed to
- Others at conferences it was often discovered that we knew solutions to others' problems especially universities which have better contacts than industry and more time so get money more easily / German rep came and after discussion said he'd try to get money but there were difficulties / start programmes for limited number of years so if can't start project at beginning difficult to get in later / *lot of unfunded time to put proposal together in terms of study and preparation / *we suffered by being guinea pigs / *in proposing need to get into mind of EC's advisors as EC panel not up to speed and relies on outsiders for expertise / too many are trying to re-invent the wheel each in their own corner / *EC stipulates half of funding must come from industry but firms in Eire are too small to finance us

Views on administration/management of the post-acceptance stage

Higher ratio of positive comments refer mainly to no problems and good EC relations, but EC's perceived lack of interest criticised.



Comments are grouped in order of frequency of mention. Comments made by UK/Eire respondents are indicated by an asterisk*.

Positive/neutral - 58% of all mentions

- No problems no problems / *no problems / no problems / satisfactory / satisfactory / satisfactory / no hitches / no hitches / *went well / went well / passed off very well / went fairly well / the programme ran smoothly without problems / *OK / day to day OK / ran smoothly with no serious problems in the research / *projects went reasonably smoothly / very normal / normal / very pleasant and very good / good / fine /very positive overall / correct for us who are used to *technically contracts realistic / no difficulties / *monitoring and execution no problem / nothing to complain about / classic / *sent in report as required
- Good relations/contact with EC relations with experts good because they understood / relations continued to be affable / very good relationship / good rapport / very positive feelings from the EC concerning the nature of the research project / came to know the people running the programme and formed a mutual understanding and respect / the Commission people did their best to be helpful / showed support / Commission staff showed interest at the time / helpful in case of problems / excellent service / good advisory service / professional / capable / very friendly / *we had contact so when we wanted something we rang up and got it / Commission easy to contact / no problems with our contact / *wonderful coordination of raw materials project / were kept informed by the Commission about details of meetings / good liaison / EC paid us several visits

- 14 Good meetings good meetings / meetings and presentations went well / interesting meetings / exchange of ideas through presentations good / Italian and French meetings good / meetings and papers from other labs took place every 6 months / *talking to other platinum groups good / brought us back into contact with mainstream European agricultural research / all participants went to Brussels to report which was interesting / one or two visits to the mine by Brussels people and other participants and sometimes met in France or Manchester / days for reports given by us and other participants a good arrangement / we ensured regular meetings between parties / got to know other contractors at contact group meetings which was very constructive / plenty of discussion
- Right level of EC input *right level of input / not abnormally restraining / never found them too heavy / strict but appropriate control over the activities undertaken by the solid waste department and the procedure followed / *appropriate interest but not breathing down our neck / easy to co-operate with administration / reports take 6 months which was just right / *report requirement of 6 months OK / 6 months scientific control was good / at contact group meetings EC responded well to our input / respected confidentiality of report
- 10 No money problems money paid OK / *EC's readiness to discharge the funds surprised me / no problems with money / *money came regularly / project ran a bit longer than official limit with funding / good we get money in advance / good EC pays for full posting for PhD students before they are qualified while DFG only pays 50% / as long as report in on time get money in time / good the way EC gives 5% of the money separately for the school's internal admin which doesn't have to be accounted for rigorously / the EC wanted to ensure correct allocation of money
- Other my student fully responsible for project and because he's good project had a smooth passage

Negative - 42% of all mentions

Lack of interest - bureaucrats not interested in findings only 17 that numbers are correct / *if paperwork is all right they don't care about the results / *think it may be open to abuse so maybe more monitoring needed / *report deadline seen as more important than quality or whether an important change of tactics could be made to research if given extension / technical assessor too theoretical and academic and didn't agree with our results but we're working in dirty world of applied research for industry not a lab / role of Brussels personnel is important and they should be interested / lacks evaluation of scientific side during study rather than at end / no interest at end of grant period / *good having technical input at beginning but we also need someone to work with us throughout whereas we never hear anything after the report has been sent / we never get a reply to reports / at the end of the project we sent them their report and they did nothing indeed don't even know if they read it / *we lack technical touchstone to discuss modifications to project once it is underway and the project office is really too

inundated to approach / need a more structured surveillance / more observation by Commission would have been more helpful / Commission staff could be more dynamic / need a reporter for each theme to oversee projects / should make sure the meetings happen and follow the programme

- Bureaucratic *very bureaucratic / *bureaucratic inertia /
 *contract an irrelevant bureaucratic exercise / bureaucracy
 perhaps bit heavy / *nightmare / very heavy for our small
 organisation / heavy administration / contract too much for a
 university / *bogged down with red tape if out of the ordinary /
 keep bureaucratic things low key or else we'd need a whole year
 just for admin! / *very complex / complicated with many
 misunderstandings between scientific and financial EC groups /
 complicated having to do accountancy report on such a small
 amount
- Money problems payment somewhat slow / very long time between acceptance and arrival of first sum of money / lengthy procedure to get money / payments not punctual / payment hold ups following interim reports though OK after final report / we need to get reimbursed in same year for internal budget / complexity of expenses / cost of attending technical meetings not in contract / delay with payment of two months or so after contract / EC deposited money in bank but not clear which project it referred to so we didn't access it for a long time so suggest money should be earmarked for projects / *if EC were relaxed about how we use money we could run on beyond stated time eg 6 months if student applied late / *university had to finance continuation while EC decided what to do
- 6 Slow response slow / *quick response impossible / *sometimes slow to reply to things which is almost inevitable / *nightmare because didn't confirm so project 6 months late / had to wait for contract a long time / no follow up
- 4 Lack of confidentiality concerned about confidentiality of results with panel members in industry so don't bring most important research forward / when we have industrial partners don't want to give too much away to EC / difficult to reconcile industrial confidentiality and sharing information / *difficulty presenting findings because of commercial application
- 2 Poor liaison poor liaison / internal EC support was not clear to begin with
- Reporting too frequent rather too frequent reporting times /thorough monitoring is a good thing but slightly question intensity
- 8 Others EC has greater ambitions than resources and told us to defer things till next year / reports for DTI and EEC at different times / meetings dull because we were on the margins of the topic / *reporting was very thin from competing organisations / *meeting ranked non-specific / more long term programmes at least 6 years but understand may have to be cut if not successful / why not a programme for marketing recycled products / extra grant for international co-operation

Respondents' attitudes to the system of three-yearly programmes

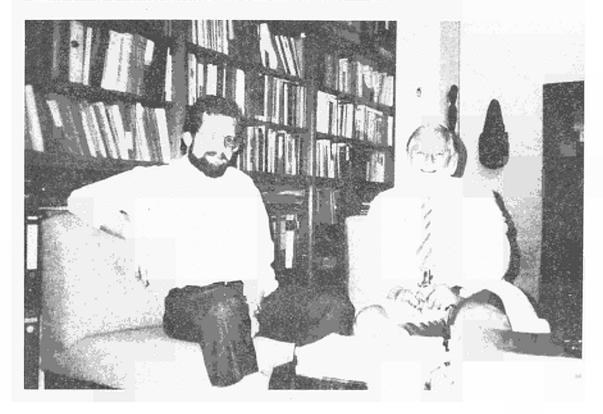
The majority of respondents think the three-yearly programmes are about right but many would like to see a more flexible system in operation.

'What do you think of the EC's current system of three-yearly programmes?'

- Just right OK, OK, OK, OK for us, OK for us, OK especially when opportunity for extension, OK but 4 years maximum, correct but shouldn't be too long between proposals and starts, fine, for smaller projects 2 to 3 years is enough, good but difficult to introduce a new idea, good for very big programmes, it's a reasonable period, just right, long enough, reasonable and good length, sensible time span, sufficient
- 12 Needs more flexibility a rolling programme is better, a rolling programme is better, better to have ongoing system, need to be more flexible and have a follow on, should be continuously running, should be invitation for submissions every year, should be a permanent call for proposals as some only need 1 year, should be more flexible and perhaps yearly with possible prolongations, 3 isn't bad but shouldn't have gaps, should be variable lengths, 2 years is enough for 60% and 3 years for 30% and 1 year for 5% and 4 years for 5%, would be better if continuous for small projects
- Too long should be 18 mths to 2 years or readjustment every year, 2 years would be good with the possibility of lengthening 1 year, should be maximum 2 years, would prefer 2 years to make people react
- Too short for larger projects not enough, long term programmes need 6 years, 5 years would be better, too short for long term planning

Photograph of scientists interviewed at RWTH Aachen in Germany

The photograph below shows scientists interviewed at RWTH Aachen, who favoured the system of three-yearly programmes.



MAIN QUESTIONS ANSWERED AND RECOMMENDATIONS

Main questions answered/recommendations for future programmes

Overall the programme has been successful with most of the objectives set being achieved to a large extent.

In reading this chapter the reader may wish from time to time to refer to the European Commission's 'Practical comments or interpretation of the terms of reference'. This is reproduced in Appendix 1 (Pages 30-35).

Research Associates has taken what it feels to be the key elements of these terms of reference and used them as a basis against which to assess the achievements of the programme.

1 Did the programme achieve its general objectives as stated? (3.3.1 in the terms of reference)

Yes.

- * The programme was successful at developing economic processes for the provision of primary and secondary raw materials (See Page 5)
- * There is evidence that co-operation in the EC scientific community was promoted particularly as a result of the MSM sub-programme (Page 9)
- * The programme contributed successfully to the training of specialists (Pages 9, 11, 13)

2 Did the contracts fulfil their objectives as stated in terms of scientific and technical achievements? (2.1 in the terms of reference)

Yes.

- * Overall 66% of the projects fully met the scientific and technical objectives set. A further 28% partly met the objectives. Only 6% failed entirely to meet the objectives (Page 5)
- * 75% of MSM contracts fully met and 25% partly met the objectives set (Page 6)
- * 50% of RNF contracts fully met and 25% partly met the objectives set (Page 10)
- * 57% of RUW contracts fully met and 36% partly met the objectives set (Page 12)

3 Did the results lead to commercial development and exploitation or spin-offs? (2.2)

Yes.

- * Overall 40% of projects led directly or indirectly to commercial applications (Page 5)
- * 39% of the MSM contracts have been commercially applied (Page 6)
- * 38% of the RNF contracts have been commercially applied (Page 10)
- 43% of the RUW contracts have been commercially applied (Page 12)

4 How far did the minerals sub-programme achieve its objectives as stated? (3.3.3)

Well in most of the main target areas.

- * Four contracts resulted in increased business outside the EC (Pages 6-8)
- * The programme achieved significant improvements in basic techniques and methodologies for exploration and processing which may be used in the future although many have not yet been put into practical application (Pages 5, 6-8)
- * There is no evidence that reliance on external sources of supply has been reduced

5 How far did the recycling of the non-ferrous metals sub-programme achieve its objectives as stated? (3.3.4)

Well in the main target areas.

- * The programme achieved improvements in techniques for the alleviation of environmental problems arising from disposal of metals containing waste (Page 10)
- * The techniques which were commercially applied were generally more cost-effective than previous techniques (Page 10)

6 How far did the recycling and utilisation of waste sub-programme achieve its objectives as stated? (3.3.5)

Well in the main target areas.

- * The programme achieved improvements in techniques to reduce the amount of waste to be disposed of and to help meet increasingly severe environmental protection requirements (Pages 12, 13)
- * The techniques which were commercially applied were in general more cost-effective than previous techniques (Page 12)

7 Was the programme management acceptable? (2.3)

Yes, particularly the post-acceptance stage. However, the pre-acceptance stage attracted a lower median score and a large proportion of negative comments.

- * The median score on the pre-acceptance stage of the programme was 7 (Page 19)
- * 52% said they had no problems with the management of the preacceptance stage (Page 19)
- * The median score on the post-acceptance stage of the programme was 8. (Page 22)
- * 58% said that they had no problems with the management of the post-acceptance stage (Page 22)

8 Can the Commission improve its management of future programmes? (2.3)

Yes. A large proportion of negative comments suggests that respondents see areas for improvement, particularly in the pre-acceptance stage.

- * 57% of comments on pre-acceptance stage were negative. Slowness of notification was the most frequent negative comment on the pre-acceptance stage (Page 20)
- * 42% of comments on post-acceptance stage were negative. Lack of interest from the EC was the most frequent negative comment on the post-acceptance stage (Pages 23, 24)
- * Twelve respondents suggested that the current system of three-yearly programmes should be more flexible (Page 25)
- 9 How did the programme contribute to the development of Community policies and to the social and economic development of the Community? What were the benefits resulting from the implementation of the programme at Community level? (2.4 and 2.5)

The programme and its implementation made significant contributions to the Community.

- * A great deal of direct benefit occurred inside the Community in terms of scientific progress (Page 5 and following)
- * Seven of the projects which were of commercial benefit resulted in increased business outside the EC (Pages 6-8, 10, 12)
- * 'Good meetings' was the third most frequently mentioned positive comment on the post-acceptance stage (Page 23)
- * 'Forming of contacts' was mentioned 12 times as a positive outcome of the MSM sub-programme (Page 9)

10 In summary - did the programme have an impact in the areas of interest to the Commission? (3.4)

Yes - in the survey sample, which was approximately a quarter of actual cases, impact was achieved on the scale below.

- * The programme achieved technical advances, ranging from minor advances to major breakthroughs, in 49 cases (Page 5 and following)
- * European industrial firms participated in the original projects in 19 cases, and the programme attracted the subsequent interest of European firms in different ways in a further 21 cases (Page 6 and following)
- * The programme has led to communication between scientists in at least 14 cases, and some of this is ongoing (Pages 9, 11, 23)
- * There have been seven sales of technology or industrial contracts gained outside the Community due to the programme (Pages 6-8, 10, 12)

 Results of the questionnaire by GMV Conseil.
"Impact analysis on contractors"

OUTLINE

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I - AIM OF THE SURVEY

I.1 - Objectives

This study describes the contractors involved in the "Raw Materials" programme of the DG XII. It analyses the opinion of the contractors through their answers to a questionnaire which had been mailed to all head of contracts.

The two main objectives are:

- a thorough analysis of the impact of the Raw Materials Programme. That is, the enhancement of European collaboration among contractors involved in the programme and the development of research activities for the contractors.
- a feedback from the contractors about the perception of the programme management and the possible evolutions for future programmes.

Results presented in this survey come from the answers to a questionnaire based on a previous questionnaire elaborated for the evaluation of a similar programme managed by the DG 12 (namely: ENN3). It was sent to all contractors: 187 who work in 151 different organisms while the total number of contracts is 218.

I.2 - Description of the population

The sample studied in this report is based on 107 contractors (team leaders) managing 124 contracts.

The Raw Materials Programme is divided in 3 subprogrammes:

- Metals and minerals substances, subdivided in :
 - . Exploration.
 - . Mining technology.
 - . Mineral processing.
- Recycling of non ferrous metals.
- Recycling and utilisation of waste.

The programme involved 10 countries (Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Nederland, Sweden, United-Kingdom).

The sample studied reflects the population both in terms of country and programme.

SAMPLE BY COUNTRY (number of contracts)

	% TOTAL	SAMPLE %	TOTAL NUMBER OF CONTRACTS	SAMPLE NUMBER OF CONTRACTS
Belgium Denmark France Germany Greece Ireland Italy Nederland Sweden UK	7.8% 4.13% 24.77% 16.05% 2.75% 4.13% 11.93% 6.42% 0.92% 21.10%	11.29% 4.03% 24.19% 16.94% 3.23% 3.23% 9.68% 4.84% 1.61% 20.97%	18 9 53 35 6 9 26 14 2 46	14 5 30 21 4 12 6 2 26

Belgium is slightly over represented whereas Italy is under represented.

In terms of programmes the sample is precisely reflecting the population.

	POPULATION %	SAMPLE NUMBER %	POPULATION	SAMPLE
Metals & mineral substances	61	62	133	73
Recycling of non-ferrous metals	10	11	22	13
Recycling & utilisation of waste	29	27	63	32
			218	118

6 contracts received studied Substitution and Ceramics. They are not listed in the above table and they have not been statistically treated in any subprogrammes.

II - CONTRACTORS

II.1 - Description

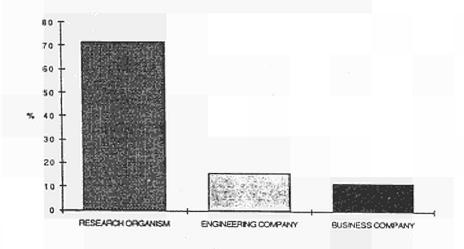
Contractors are mainly research organisation (72%).

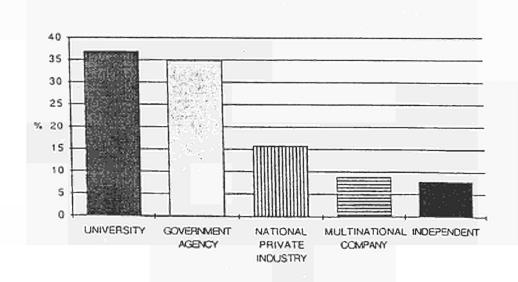
17% are engineering companies.

12% are business companies.

They are in connection with universities for 37% or with a government agency for 34%.

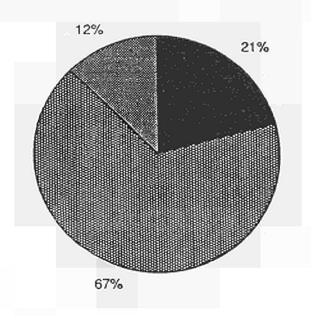
TYPES OF ORGANISATIONS

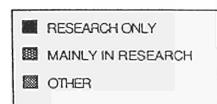




- · Teams are strongly involved in research :
 - 67% of the contractors are mainly involved in research.
 - 21% are exclusively dedicated to research.

TEAM INVOLVEMENT IN RESEARCH



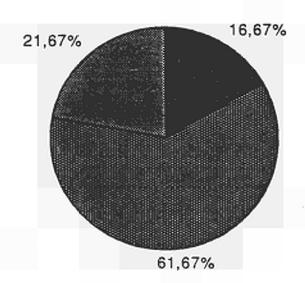


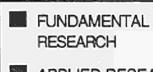
- The average team size is made of 12.1 research graduates and 8.4 other researchers. However, there is a large dispersion. Some teams are formed of 1 researcher up to 100.
- The average number of permanent researchers in the whole organization is 957 but it does not show the spread from 2 to 24 000 researchers.
 A confidence interval of 95% allows to calculate a number of permanent researchers of about 670.
- 2/3 of these research organisms are selling their services.

II.2 - Involvement in research

- Although the main purpose of research in their organisation is fundamental research (42%) and development (37%), they declare that the main purpose of the CEC contract is applied research (76%) and development (26%).
- Raw materials cover a large part of both their organisation's research activities and their team activity (raw materials take 20 to 80% of the research activities of 59% of the organism), (raw materials take 20 to 80% of the research activities of 66% of the teams).

CEC CONTRACTS PURPOSE







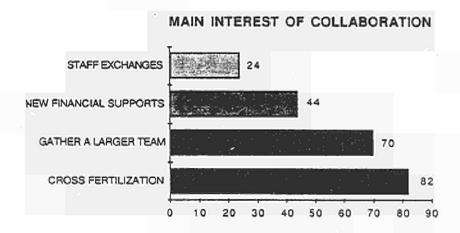
DEVELOPMENT

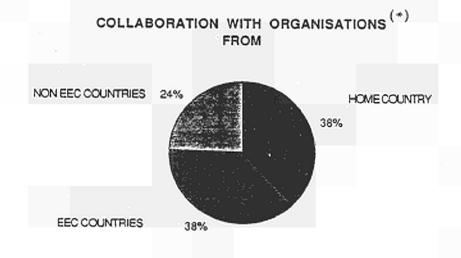
 Teams involved in the Raw Materials Programme are used to collaborate with other teams (96%). They equally collaborate on a national and European basis (60.5%) but 37.9% have links with non EEC countries.

The main interest of such a collaboration is :

-	cross fertilization	82%
-	gather a larger team	70%
-	to open the possibility of new financial support	44%

Staff exchange seems to be quite unoften (24%) and is not considered as the main purpose of the collaboration.





^{(+) 100% =} total number of collaborations.

II.3 - Regarding the CEC

• 45% of the contractors have or had signed other contracts with the DG XII and 24% with another DG. Thus, for more than half of the contractors, the raw materials contract is the only contract that they have with the CEC.

However 48% of the contractors did not attend any preparation meeting at the beginning of the programme.

- The number of contracts signed by the contractors with the CEC varies from 1 to 15. The average is 3.1 contracts but 75% of the contractors signed either 1, 2 or 3 contracts and 25% signed 3 contracts and more. Contractors filled in 4.5 applications on the average but more than 50% filled in 3 or less applications.
- The subjects were primarily initiated by the team (69%) or/and by the organisation (34%) whereas the CEC initiated the subject through a consultation in 24% of the cases and the home country in 23%. It has to be noted that the market initiated only 34% of the subjects treated.

II.4 - Financial supports

- Contractors declare that 59% of their projects could not be carried out without public financial supports. However supports from clients are increasing (78%) and for 52% of the contractors, supports from clients represent 20 to 80% of their financial means.
- The table shows the percentage of the four main sources of financial supports for the contractors. It enlights the predominance of public fundings through either public contracts (68% on the 20 to 80% range), subsidies (65% on the 20 to 80% range). CEC contracts provide less than 20% of the fundings for 61% of the contractors.

In Belgium CEC contracts represent 20 to 80% of the fundings for 62% of the contractors.

Thus, financial supports for research activities come from various sources, however tax reductions and banking systems are not significant sources of funding.

Contractors declare that financial supports from CEC contracts are decreasing (74%) as well as public subsidies (65%) and incomes earned by other activities (83%).

• Opinions suggest that contractors believe that subsidies are necessary to carry on a research work (94% agree or totally agree). Subsidies come on time and are interesting even if the fundings are relatively low. However, contractors are rather sensitive to the confidentiality of their research (especially England 88% agree or totally agree on the opinion "Some research works are too confidential to be supported by public subsidies").

72% of the contractors agree or totally agree on "Some kind of subsidies forbid long term planning".

FINANCIAL SUPPORTS

	GLOBALLY FRANCE		U .K.		ITALY		BELGIUM		GERMANY									
	Less than 20%	20% to 80%	More than 80%															
Clients	37%	52%	11%	20%	73%	7%	27%	64%	9%	67%	17%	17%	75%	25%	-	37%	50%	12%
Incomes earned by other activities	62%	29%	9%	100%	-	-	-	_	-	•	-	-	67%	33%	<u></u>	50%	37%	12%
Public contracts	28%	68%	4%	50%	50%	-	50%	50%	<u>-</u>	25%	25%	50%	_	100%	-	9%	91%	-
Public subsidies	20%	65%	15%	27%	67%	7%	-	83%	17%	-	67%	33%	37%	37%	25%	33%	44%	22%
EEC contracts	61%	38%	1%	75%	25%	-	64%	36%	-	79%	25%	-	37%	62%	_	65%	35%	-

III - RESULTS OF THE PROGRAMME

III.1 - The supported projects were medium sized ones

The average financial contribution from the CEC was 159 000 ECUS per year and per contract, which represented 47.5% of the total cost

and they appear as "standard" projects in the team :

- with respect to the size of the team: supported project involved 5.3 researchers (1 293 man days) and 1.95 full time researchers i.e. the equivalent of the average team usually devoted to a project (2.09 full time researchers).
- with respect to the project itself for 2/3 of the contractors, the supported projects appear as a core activity.

One of the major effects of the programme was to speed up new projects: 89% say "it helps to get results more rapidly" and 68% agree with "without that CEC contract, we would not have undertaken that research".

III.2 - CEC programme utilized and developed existing European collaborations

Only in 53% of the cases, the research was done in European collaboration, whereas 60% of the contractors, as a rule, collaborate with other organisations in ECC countries.

The main interests of such a collaboration on the contract were cross fertilization (82%) and increasing resources (47%). Only 23% mention the obligation due to the CEC.

But <u>CEC programme brought some new collaborations</u>. Half of the contractors had already worked with the same partners before, half had not. 68% worked with at least one new partner on the contract and 82% of the contractors say "the best thing about it, is that it establishes new contacts among Europeans".

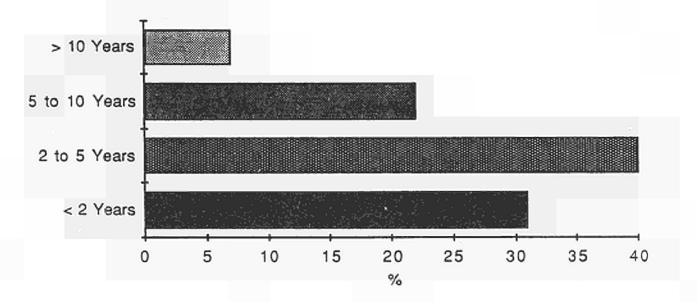
During the contract, the collaboration with European partners was not very active. They held an average of 3 meetings per year and wrote very few joint reports (27%) and joint publications (14%).

But it finally appears as a fruitful collaboration since 84% intended, and still intend, to maintain it for other purposes.

III.3 - The projects were still ahead of commercialisation

42% of the contracts have led, or will lead, to a commercialisation. Within them, 71% will lead to a commercialisation within 5 years (with an average term of 4 years).

COMMERCIALISATION



Some differences appear between the subprogrammes.

69% of the contracts in RNF instead of 42% as an average will lead to a commercialisation within 4 years.

The number of theses (1.2) and of publications (3.4) is rather high but only 19% of the contractors applied for patents or still intend to do so (1.4 patent on average).

	TOTAL	MSM	RNF	RUN
People involved on the contract	5.3	5.6	5.8	4.5
Full time researchers	1.95	2.1	1.7	1.8
Number of theses	1.2	1.1	2.3	1.3
Number of publications	3.4	3.6	2.1	3.5
Commercialisation (% of contractors)	42	41	69	34
Term of commercialisation (years)	4.3	4.4	3.8	5
Know your partner (%)	32	26	69	28
Apply patent ? (%)	19	13	38	26
Number of patents	1.4	2.8 (large dis persion)	1	1



IV - CONTRACTORS OPINION ON CEC PROGRAMME

- 91% of the contractors agree with the themes defined in Raw Materials. They say "the CEC Programme subdivisions meet real needs"
- The CEC Programme is considered as "workable" by 92% of the contractors. Contracts follow up appear very satisfactory to most of the contractors and no problem was faced before or during the contract.

However they also think that the Commission should avoid the gap between two successive programmes (96%) and that preparing an application takes too much time (23 man days as an average). They also think that it is not worth writing more than one report per year (66%), but half of them would appreciate a larger circulation of these reports.

V - CONCLUSION

V.1 - Raw materials gathered teams that are now well linked together and become specialists of the CEC

- They know each other quite well, 76% know other projects in their subprogramme and attended meetings with other contractors. Those meetings are very praised, since 83% think that they were of high scientific level.
- They are now directly informed of the programmes by the Commission (45%) and have a very high percentage of successful applications (70%) while Raw Materials Programme rejected between 6 and 8 proposals out of 10. This is strengthened by their success to a new contract in 1986. 64% applied and within them, 71% were accepted.
- As they are now well connected to other teams in the CEC, they think that the CEC must promote teams with European connections (89%) with a mixture of best teams and general level ones (71%).

V.2 - There are still two questions to be asked regarding the success of the programme in respect to its objectives

- Developing new European connections

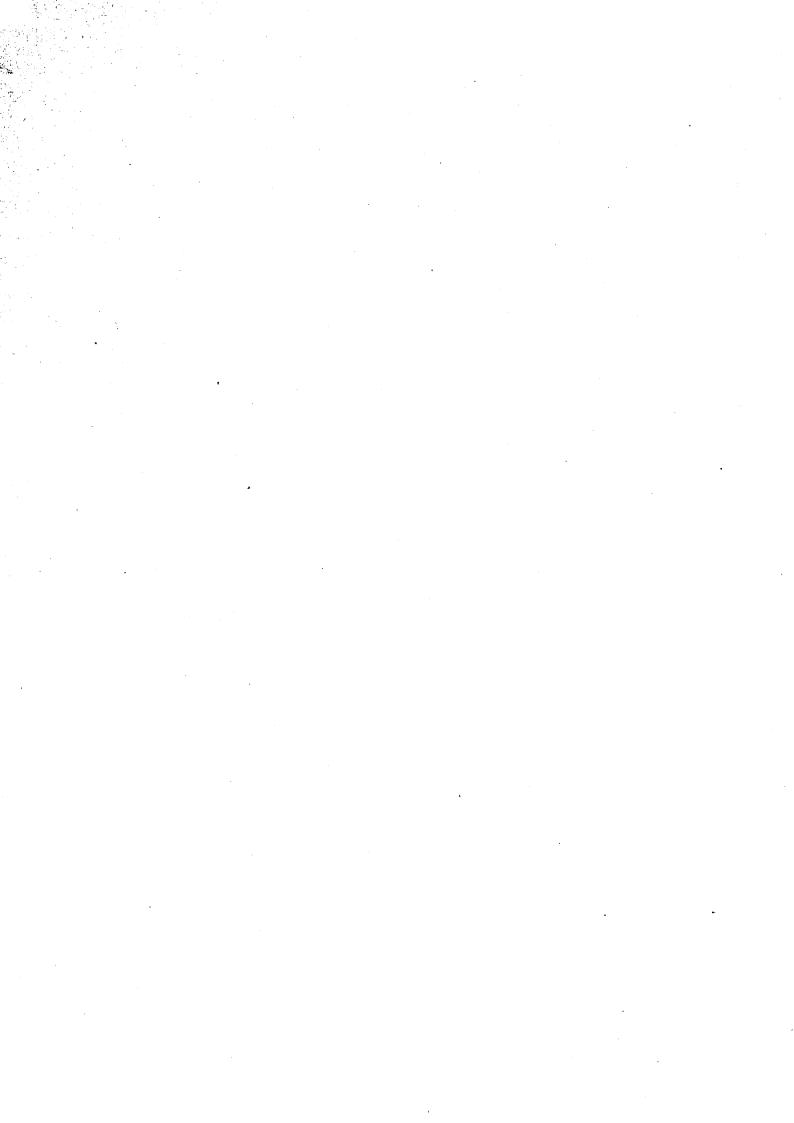
The programme was mainly useful to reinforce the already existing "club" and connected only a few new members.

- Precompetitive research

Did the financial support of the CEC actually meet the objective of bringing teams initially specialized in fundamental research to more applied activities?

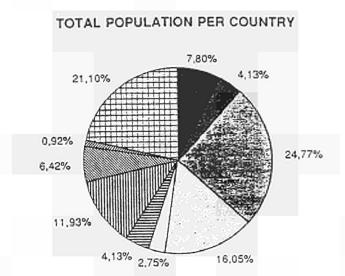
The low percentage of projects leading to a commercialisation seems to indicate that:

- either the scientific quality of the results is not so high,
 - or they have used the subsidy of the Commission to carry on more basic research.

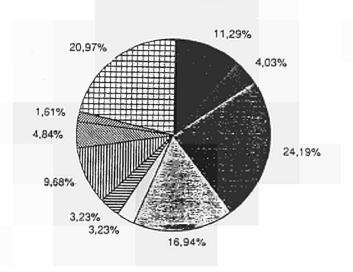


APPENDIX A

- TOTAL POPULATION AND SAMPLE BY COUNTRY
- POPULATION AND SAMPLE BY COUNTRY AND PROGRAMME.

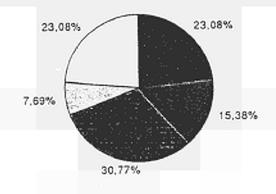


SAMPLE PER COUNTRY





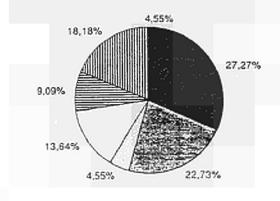
SAMPLE
RECYCLING OF NON FERROUS METALS



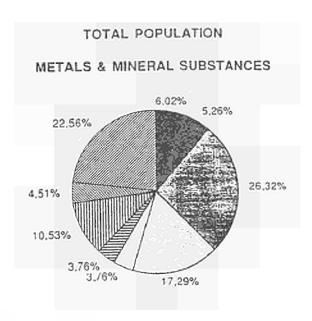


TOTAL POPULATION

RECYCLING OF NON FERROUS METALS

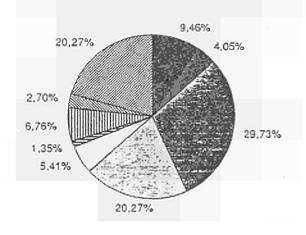






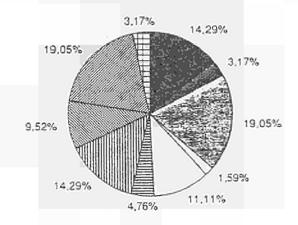
SAMPLE





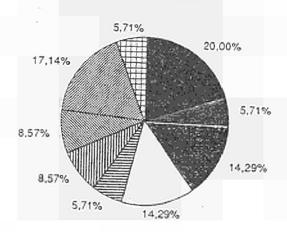


TOTAL POPULATION
RECYCLING OF WASTE



SAMPLE

RECYCLING OF WASTE

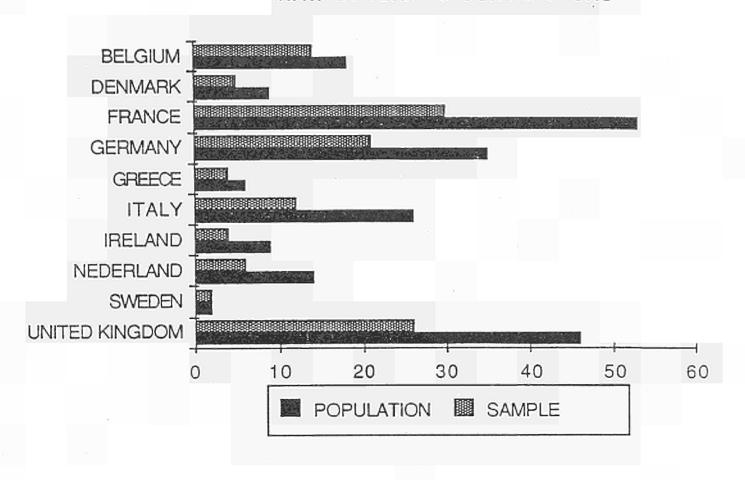


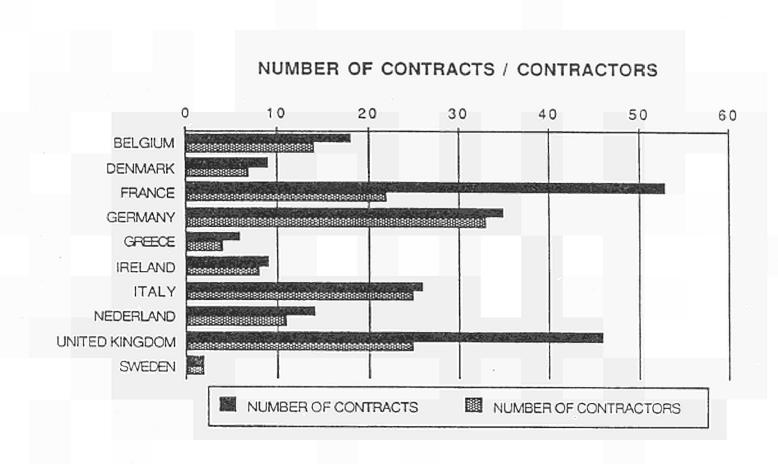


APPENDIX B

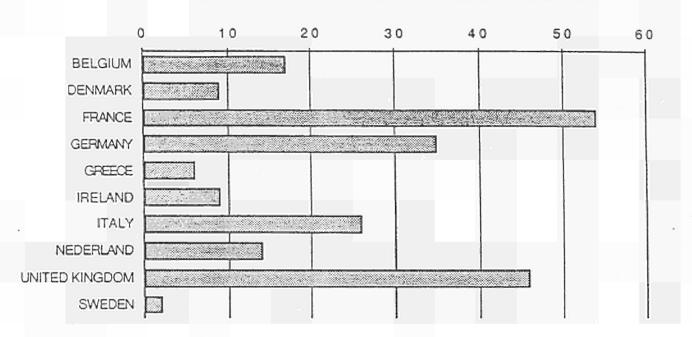
- POPULATION AND SAMPLE OF CONTRACTORS BY COUNTRY.
- NUMBER OF CONTRACTS BY CONTRACTORS AND COUNTRY.
- TOTAL NUMBER OF CONTRACTS BY COUNTRY.
- NUMBER OF CONTRACTS BY PROGRAMME.
- NUMBER OF CONTRACTS BY PROGRAMME AND COUNTRY.

RAW MATERIALS CONTRACTORS

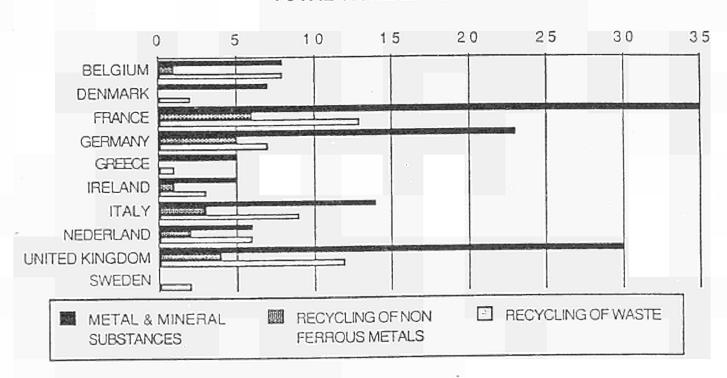




TOTAL NUMBER OF CONTRACTS / COUNTRY

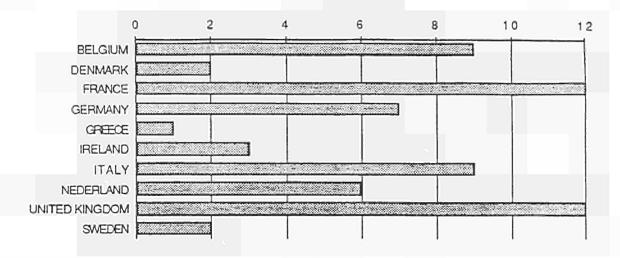


TOTAL NUMBER OF CONTRACTS

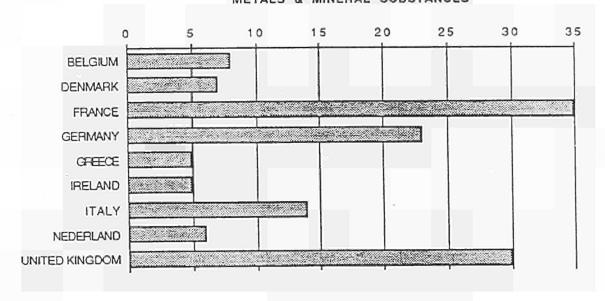


NUMBER OF CONTRACTS

RECYCLING

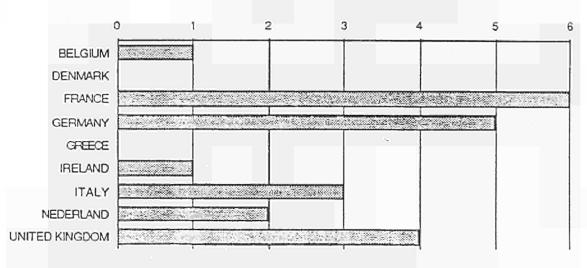


NUMBER OF CONTRACTS METALS & MINERAL SUBSTANCES



NUMBER OF CONTRACTS

RECYCLING OF NON FERROUS METALS



APPENDIX C

DETAILED RESULTS

- TOTAL POPULATION
- RECYCLING OF NON FERROUS METALS
- RECYCLING OF WASTES
- METALS AND MINERAL SUBSTANCES
 - . EXPLORATION
 - . MINERAL PROCESSING

MAIN RESULTS:

METALS AND MINERAL SUBSTANCES (61) First number RECYCLING OF WASTE (28) Second number RECYCLING OF NON FERROUS METALS (11) Third number

GENERAL IDENTIFICATION

GENERAL IDENTI	FICATION		
1 - Please would you 77% 64% 55% 16% 21% 18% 8% 14% 45%	describe your organisation Research Organisation Engineering company Business company	? (multiple answers possib in connection with a University with a Government Agency with national private industrial with a multinational comparindependent	rsity 44% 32% 18% y 34% 29% 9% try 8% 21% 36%
•	otal number) : 801, 430, 325 2 to 4 700, from 3 to 2500, fi		al annual budget) 87 000 000 ECUS 71 000 000 ECUS 77 000 000 ECUS
	71% 63%		
	other	11, 10, 13 7, 9.9, 14	2004 2004 4504
4 -To which program 100% Metals and 57% I 1 Expl	oration ng technology	belong ? 100% 100% 4% 100%	Il Secondary raw materials Il 1 Recycling of non-ferrous metals Il 2 Recycling and utilisation of waste
5 - Did you attend ar	ny preparation meeting at the	e beginning of the programn	56% 43% 45% yes 44% 57% 55% no
6 - Do you or did yo	u sign any other contract wit	h the DG XII ?	44% 38% 64% yes 56% 62% 36% no
7 - With another DG	? 17%;	32% 25% yes	83% 68% 75% no
8 - How many contra	acts have you ever signed w and	ith the Commission ? how many applications ?	3 2.8 4.1 4 4.8 5.3
% OF TOTAL CO	CONTRAC	T 175° T 215° T 37°	% 36%

CONTRACT 4...... 2% 4%

CEC RAW MATERIALS EVALUATION (MMS + RUW + RNFM)

REGARDING R&D

10 - What part do research activities represent in your organisation? 12% 27% 30% less than 20% 75% 58% 60% 20% to 80% 13% 15% 10% more than 80%

11 - Would you say that	the main purpose of	this research is	(multiple answ	ers possible))	
61% 43% 27%	for basic knowledg					
18% 11% 9%	to influence politica	al decisions			*	
41% 46% 45%	to develop new pro	ducts			•	
48% 29% 27%	to develop new me	thods of work				
20% 7% 27%	to beat competitors	5				
23% 11% 9%	to develop interna	tional links				
33% 29% 18%	prospective (testin	ng out new fields	of research)			
45% 39% 64%	development →	21% 17% 2 1% 9% 10% 9%	•	2% 34% ind	ustrial development	
11% 7%	other (please spe	ecify: education,	••••••••••)	
12 - Which part do raw r	naterials take in you	ır organisation's	research activitie	es ?		
23% 56% 30%	less than 20%	63% 37% 70%	20% to 80%	14% 7%	more than 80%	
13 - And in your team's	•			,		
11% 15% 20%	less than 20%	56% 77% 8%	20% to 80%	33% 8%	more than 80%	
14 - Does your team, a	s a rule, collaborate	with other organ	isations on your	research pro	jects?	
98% 89% 100 yes →	79% 71% 73% in y	our home countr	у	82% 54% 82	2% in CEC countries	

15 - What is(are) the main interest(s) of such a collaboration?

13 - Wilat IS(ale) lile i	nair interest(s) or such a conaboration:			
85% 89% 82%	cross fertilization	1	1	1
67% 71% 55%	to gather a larger team	3	4	3
74% 79% 64%	to open the possibility of new financial supports	2	2	2
66% 79% 55%	staff exchanges	4	3	4
62% 68% 64%	other (please specify)			
	if more than one answer, please classify		•	

54% 25% 55% in other countries

16 - How many different projects does your team manage in a year?9,8 9,1 14

17

7 - Who initiates a subject ?										
68% 77% 56%	you or the members of your team	32%	37%	56%	your organisation					
31% 42% 33%	the market	26%	22%	22%	a consultation in your country					
27% 31% 11%	a CEC consultation									

REGARDING SUPPORTS

18 - What percentage of your projects could not be carried on without public financial supports? 67%

19 - Where do your financial supports come from ?

	٠,	< 20%	20 to 80%	> 80%	1	+
52-57-55	clients	47-38-0	47-50-67	6-12-33	83-73-75	17-27-25
	,	67-50-67	25-50-0	8-0-33	β3-100-10	67-0-0
3-4-9	tax reductions banking system		-			
46-57-36	public contracts	32-19-50	61-81-50	7-0-0	54-29-0	46-71-100
59-54-27	public subsidies	17-27-67	61-73-33	22-0-0		79-43-100
69-75-55	EC contracts	57-62-10	43-33-0	0-5-0	31-18-0	69-82-10

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CEC RAW MATERIALS EVALUATION (MMS + RUW + RNFM)

20 Several quotations from various contractors are listed below. Please, would you indicate for each of them, if you TOTALLY AGREE, AGREE, DISAGREE or TOTALLY DISAGREE with such a comment.

	totally	agree	disagree	totally
	agree %	%	%	disagree %
Without that CEC contract, we wouldn't have undertaken that research	39-46-9	24-36-45	27-18-36	10-0-9
It helps to get results more rapidly	31-35-18	54-62-73	12-4-9	3-0-0
The best thing about it, is that it establishes new contacts among Europeans	30-25-9	55-61-55	12-14-36	3-0-0
The advantage is that the CEC contract can be obtained on a subject not supported by the government	11-19-10	45-46-40	31-31-40	12-4-10
The CEC procedure for contracts is workable	13-11-18	77-89-64	3-0-18	7-0-0
The CEC programme subdivisions meet real needs	32-14-20	61-68-70	4-14-10	4-4-0
		_		

For each contract which you manage in the Raw Materials Programme (1982-85), please fill in the following sections for each contract.

REGARDING YOUR MAIN CONTRACT WITH DG XII (RAW MATERIALS)

100% 7% Metals 58% 1 1 10% 1 2	orogramme does it belong? s and mineral substances Exploration Mining technology Mineral processing	93% 4% 89%	100% 91% 9%		v materials non-ferrous metal nd utilisation of waste
23 - What kind of a	research is it?				
20% 25% 18	basic research			80% 61% 55%	applied research
20% 32% 36%	development 👈 1	3% 14% 10% pi	lot	6% 12% 21% 1% 6% 5%	industrial development demonstration
24 - With respect to	o your main activity, is this c	contract rather		32% 54% 55% 68% 46% 45%	a side line programme a core activity
25 - Was this proje	ct done in collaboration with	n another Europe	ean organ	isation yes 63%	32% 64%
26 - What is the market 21% 70% 86% 23% 25% 43% 23% 13% 20%	obligation due to the			2% 29% 43% incr 7% 63% 20% staf	Ţ.
27 - Had your team	n already worked with the s	same partners be	efore?		6% 44% 71% yes 4% 56% 29% no
28 - For this projec	t, did you work with at least	t one new partne	er?	. 7	74% 78% 38% yes 26% 22% 62% no
29 - How many wo	rking sessions do you have	, per year, on th			2 3.1 4.5
3.3 3.5 4 trip	s are made abroad, <mark>ev</mark> ery y	ear, due to the p	roject	5,7% 4.4% 4%	of the budget
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CEC RAW MATERIALS EVALUATION (MMS + RUW + RNFM)

30 - Have you written	38% 11% 27% 31% 21% 45%	a joint report a separate rep		4% - 4% 18%	a joint pub a separate	lication publication
31 - Will you maintain th	at cooperation for other	purposes ?		5% 7 1% 5% 29 %		yes no
REGARDING THE RI	ESULTS OF THE CO	NTRACT				
32 - How many people v		eam, on the contrac number of man da			632	
33 - How many full time	researchers ?		2,2	2 1.6	3	
34 - How many Theses	will be produced? 1.1	1.6 1.9 H	low many p	ublications v	written ? 4	3.8 1.9
35 - Will the research le	ad to a commercialisation	on ? 40% 40% 7 3	3% yes	1	60% 60% 2	7% no
36 - When ? 26% 22% 26% 11%	13% < 2years 25% 5 to 10 years		2% 56% 62 % 11%		2 to 5 years > 10 years	
37 - Do you already kno	w who could be your in	dustrial partner ? 11% 4% 179		15% 28% 10% 4%	,	es ourself
39 - Did you apply for pa	atent(s) or do you intend	d to do so ?		15% 25% 85% 75%	,	es o
40 - How many patents	? 2.7 1.1 1			•		
REGARDING THE C 41 - Would you say ?	OMMISSION					
		•	totally agree %	agree %	disagree %	totally disagree '
Without that CEC undertaken that	contract, we wouldn't research	t have	39-46-9		5 27-18-36	
It helps to get re	sults more rapidly		31-35-18	54-62-7	3 12-4-9	3-0-0

	totally	agree	disagree	totally
	1 1	•	_	, ,
	agree %	%	%	disagree %
Without that CEC contract, we wouldn't have undertaken that research	39-46-9	24-36-45	27-18-36	10 -0-9
It helps to get results more rapidly	31-35-18	54-62-73	12-4-9	3-0-0
The best thing about it, is that it establishes new contacts among Europeans	30-25-9	55-61-55	12-14-36	3-0-0
The advantage is that the CEC contract can be obtained on a subject not supported by the government	11-19-10	45-46-40	31-31-40	12-4-10
The CEC procedure for contracts is workable	13-11-18	77-89-64	3-0-18	7-0-0
The CEC programme subdivisions meet real needs	32-14-20	61-68-70	4-14-10	4-4-0

42 - Did you meet any problems v	vith the n	nanage	ment of	your contract by t	he Commissi <mark>o</mark> i	n ?		
- Call for tenders	13%	4%	9%	yes	no	87%	96%	91%
 Documents required 	12%	12%	-	yes	no	88%	88%	100%
- Payments	21%	26%	9%	yes	no	79%	74%	91%
- Reporting	11%	11%	-	yes	no	89%	89%	100%
- Monitoring of your contract	9%	15%	-	yes	no	91%	85%	100%
- Letting of contracts	12%	4%	-	yes -	no	88%	96%	100%

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in terms of man days 25 20 14

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CEC RAW MATERIALS EVALUATION (MMS + RUW + RNFM)

44 - Do you know the other projects supported by the commission in your sub 81% 67% 36% yes → how many of them? 5.2 4.5 7.4	progra	mme ?
45 - Did you attend any meetings with the other contractors of the CEC?	75%	77% 40% yes
	25%	23% 60% n o
46 - Would you say that these meetings were of high scientific level ?	77%	76% 75% yes
	23%	24% 25% no
47 - How are you informed of CEC programmes and competitive biddings?		
52% 29% 27% by direct communication from the CEC		44% 36% 64%
many and and all 1 mm.		0404 4004 0004

52% 29% 27%	by direct communication from the CEC		44%	36%	64%
36% 46% 9%	through a Government agency		31%	43%	36%
18% 25% -	through other official channels		20%	11%	27%
16% 21% 27%	by informal means		18%	25%	18%
	Aborthoping alid continuous of Aborthopinas and	_			

48 - What do you consider the best way of the Commission for informing the potential participants in the programme? 13% 25% 45% direct mailing 8% 14% 9% government agency 3% 11% 9% publications

49 - Do you know any team which is not involved in the programme but that, in your opinion, should be in?

3% 3% yes 97% 97% no

REGARDING THE IMPROVEMENTS YOU MAY WISH

50 - How many meetings by the commission per contract (3 years) would you consider really useful?

3.4 3.1 2.2

51 - Is it useful, for you, to write more than one report per year?

Would you wish a larger circulation of those reports?

30% 20% 36% yes 70% 80% 64% no 52% 36% 45% yes 48% 64% 55% no

52 - Would you say ?

	totally agree %	agree %	disagree %	totally disagree %
The CEC has to support only high scientific level teams	22-18-27	32-14-9	27-57-45	20-7-18
The CEC must avoid the gap problem between two successive programmes	47-26-27	51-67-55	2-8-18	
There is a need for a continuous rolling programme	37-27-30	57-65 -6 0	4-8-10	2-0-0
4 years between two calls for tenders is too long	34-22-30	56-68-40	5-4-30	5-4-0
The CEC must promote teams with European connections	46-32-18	47 -57-64	7-11-18	

53 - According to you, should the CEC concentrate on technical excellence or enhance the general level of European Research?

13% 14% 9% best teams 12% 18% general level 72% 71% 64% a balanced mixture of both

54 - In 1986, did you apply for a new contract?	67% 46% 71% yes 33% 54%	% 29% no
55 - Was it accepted?	66% 73% 67% yes 34% 27%	% 3 3 % no
56 - Do you intend to apply for other CEC contracts?	81% 78% 91% yes 19% 22%	6 9% no
continuation of those you already signed	60% 62% 88% yes 40% 38%	6 12% no
in other fields	89% 81% 81% yes 11% 19%	6 18% no

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Commission of the European Communities

EUR 12146 - Evaluation of the R & D Community Programme in primary and secondary Raw Materials (1982-1985); Progress of the Programme (1986-1989).

K.J. Sangster, Y. Achlioptas, M. Araus Quilez, P. Brück, L. Bubenicek, G. Tomasseti

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According to the Community Plan of Action relating to the evaluation of Community R&D activities for the years 1987 to 1991, the Commission has set up a panel of independent experts to evaluate the R&D programme "Primary and secondary Raw Materials" for the period 1982-1985 and the partial results for the period 1986-1989.

The evaluation covers not only the scientific and technical achievements of the programme but also analyses the quality and practical relevance of the results, the effectiveness of the management and the programme's contribution to the socio-economic development of the Community.

The panel views are based on the discussion with programme managers and other witnesses directly or indirectly linked to the programme, the available documents, interviews with fifty contractors and a questionnaire.

This report summarises the panel's findings and draws out conclusions and recommendations on the role of the Commission in the future continuation of the programme.



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