

FIVE YEAR ASSESSMENT REPORT
RELATED TO THE
SPECIFIC PROGRAMME:
CONFIRMING THE INTERNATIONAL
ROLE OF COMMUNITY RESEARCH
COVERING THE PERIOD 1995 - 1999

The Panel:

Wladimir Andreff
Anastasios Eleftheriou
Manfred Horvat (Chairman)
Lieselotte Krickau-Richter (Rapporteur)
Thomas Nolan
Anne-Marie Pilotti
Nuno Ribeiro da Silva

May 2000

Contents

Executive Summary	4
1. Introduction	6
1.1. General remarks	6
1.2. Summary of the assessment approach, work-plan of the Panel, and data sources	6
1.3. Input from previous monitoring exercises.....	7
1.3.1. Synthesis of the INCO Monitoring Reports 1995-99	7
1.3.2 INCO in the Framework of European R&D - Synthesis of the Annual Activity Reports 95-99.....	8
2. General observations on the INCO programme	8
2.1. The role of INCO in a broader context	8
2.1.1. The evolution of the international R&D collaboration between the EU and third countries.....	8
2.1.2. The role of INCO in FP 5.....	10
2.1.3. INCO and Synergies with Member States' programmes.....	10
2.1.4. Major overall achievements.....	11
2.1.5. Lessons learned and recommendations	11
2.2. Quality of the programme management – efficiency.....	12
3. Assessing the different areas of INCO	16
3.1. Area A1: Co-operation with other fora for European scientific and technological co-operation	15
3.1.1. COST	15
3.1.2. EUREKA.....	16
3.2. Area A2: INCO Copernicus	18
3.2.1. Assessing efficiency.....	19
3.2.2. Assessing effectiveness	20
3.2.3. Major achievements	21
3.2.4. Assessing lessons learned.....	22
3.2.5. Assessing relevance	22
3.2.6. Recommendations for the future.....	23
3.3. Area B: Co-operation with industrialised countries outside Europe	24
3.3.1. Assessing efficiency.....	25
3.3.2. Assessing effectiveness	25
3.3.3. Major achievements	27
3.3.4. Lessons learned.....	28
3.3.5. Assessing relevance	28
3.3.6. Recommendations for the future.....	29
3.4. Area C: S&T co-operation with Developing Countries	29
3.4.1. Evolution of the S&T co-operation with DCs.....	29
3.4.2. The regional dimension	31
3.4.3. Assessing efficiency	31
3.4.4. Assessing effectiveness	33
3.4.5. Achievements.....	35
3.4.6. Lessons learned.....	35
3.4.7. Recommendations for the future	36
4. Identified major trends - observations from the Core Data	37
4.1. Identified major trends from previous monitoring exercises.....	37
4.2. Achievements based on recent statistical overviews.....	38
4.2.1. INCO Specific Actions.....	38
4.2.2. Third country participation in Specific Programmes.....	38
4.2.3. The results of a correlation study	39
4.3. The participation of women in the INCO programme	40
4.4. Response to the new approach of FP 5	41

5. Conclusions and Recommendations	43
5.1. Conclusions concerning INCO's role in the Framework programme	43
5.1.1 INCO's co-ordination and policy support role.....	43
5.1.2. Global S&T Co-operation as a separate programme in FP 6	43
5.2. Conclusions and recommendations concerning the different areas of INCO	45
5.2.1. Co-operation with other fora	46
5.2.2. COPERNICUS.....	45
5.2.3. Co-operation with industrialised countries and emerging economies	46
5.2.4. Co-operation with developing countries.....	47
5.2.5. Participation of third countries in the thematic programmes	47
5.3. Conclusions and recommendations concerning implementation and management	48

Annexes

Annex I:	List of INCO managers and Commission officials interviewed
Annex IIa:	List of Programme Committee members and other experts interviewed face to face or by Questionnaire
Annex IIb:	Interview Guidelines / Questionnaire
Annex III:	Observations from the Core Data
Annex IV:	The INCO Five Year Assessment Panel

Executive Summary

1. Assessment approach

The Panel structured its work in accordance with the Broad Guidelines for the 1999 Five Year Assessment and the terms of reference for the specific programmes' assessment.

The following issues were considered the most important: current and future orientation of the INCO Programme in general and in its different areas; quality of the results; quality of the management; rules and procedures for FP 4 and FP 5; recommendations for the midterm re-orientation of FP 5, and future outlook and recommendations for FP 6.

2. The role of INCO in the Framework programme and beyond

Overall, the Panel is very impressed with the developments from FP 3 to FP 5 in this important area of Community RTD activities.

In the five years period covered by the assessment, INCO succeeded in integrating all non-nuclear international RTD activities of the community into one single programme. The objectives were broad and far-reaching, and the activities designed to meet these objectives encompassed both important policy support measures and targeted operational programmes with all categories of third countries.

With this broad and complex approach the INCO Programme and its predecessors made essential contributions not only to the Community RTD policy but also to other EU policies, like, for example, external, development and agricultural policies.

The most important achievements concern the enlargement process of the Community. INCO has been a very solid and helpful base and provided pro-active support and assistance for the pre-accession states. Almost from the beginning of FP 5 candidate countries could be treated on an equal footing with Member States in a participatory context. As a consequence, the European research community is now based on the scientific communities of 30 countries. That means, that at least three years ahead of the other policy areas, the full integration of the accession countries is already a reality in the field of Community research.

While the achievements of the dedicated INCO co-operation programme are widely recognised the cross-programme and cross-DG tasks and activities and the related demand on the INCO staff to date does not seem to be adequately acknowledged by other Commission services. The Panel strongly encourages the INCO management to better present the dual function of INCO as a driving force for implementing specific measures for R&D collaboration with certain countries or regions on the one hand and INCO's co-ordination and policy support role in the context of the international dimension, integral to each of the other specific programmes of the FP, on the other hand.

In addition, it is necessary to further develop a well-structured and continuously nurtured dialogue between INCO, the thematic programmes of the FP and other DGs relevant for international co-operation.

3. Management

In an overall assessment, the Panel recognises with satisfaction, that the INCO Programme and its predecessors have been executed in accordance with the general objectives of the Framework Programme and the special objectives of the specific programme. The Panel is able to confirm that the INCO management succeeded in achieving a high level of integration, consistency and coherence of the programme, and it was impressed by the quality of work performed in all areas of the programme by a highly competent and motivated personnel. The heterogeneity of the programme with a wide range of topics was considered to be a real challenge to the management. For the future, the Panel sees opportunities to better utilise possible synergies between the different programme areas and measures.

Concerning the general FP management the Panel is worried about a noticeable shift in the FP management, with the distinct dominance of the administration - namely the legal and financial services -, increasingly bureaucratic processes and lengthy hierarchical decision making procedures. The Panel emphasises that a fundamental change is needed in the FP management, because the acceptance and acceptability of EU RTD activities are seriously endangered. The Panel highly welcomes the proposals made by an internal ad hoc working group at the end of February 2000, and it sincerely hopes that these proposals will be implemented as soon as possible.

4. Assessing the different programme areas of INCO

Co-operation with other fora: Concerning COST, the Panel is convinced of the special importance and advantages of this bottom-up approach which serves – amongst other aspects - as a „source“ for the Framework Programme. However, a thorough analysis of the administrative arrangements and structures of COST as well as the problems arising from a continuous growth in the number of actions is necessary.

EUREKA: although the European Commission is just one voice amongst EUREKA members, the Panel recommends that the Commission take a clear position towards EUREKA and its future development. Only a few signs of progress could be identified in the implementation of the strategies for improving synergies between these two fora for RTD collaboration in Europe. There should be more examples of strategic EUREKA/FP projects in the future.

Co-operation with Central and Eastern European Countries and the Newly Independent States of the former Soviet Union: Overall, at the end of FP 4, INCO-COPERNICUS appears as a well-established and widely recognised framework for co-operation with CEECs and NIS, with more than 400 research contracts implemented under COPERNICUS and some 2500 under INTAS. With COPERNICUS and INTAS, CEECs and NIS have gone through a most valuable process that has helped to consolidate their RTD potential and prepared scientists from CEECs for association with FP 5. The socio-economic impact of COPERNICUS individual projects is not easy to measure. However, the overall participation in the COPERNICUS programme has clearly influenced the national science and technology policies in the candidate countries.

For FP 6 there is a need to rethink the activities towards NIS under the Framework Programme. In general, more flexibility should be applied for the NIS, and COPERNICUS should interact in a more dynamically ongoing manner with INCO DEV in order to identify synergies between the two INCO programme areas.

Co-operation with non-European industrialised countries and emerging economies: the activities have constantly evolved over the last five years. Here, INCO plays a unique role for the entire FP, since it is the task of INCO to promote such co-operation through the negotiation of agreements that allow the parties concerned to tailor country-specific frames and to orient the scientific communities towards selected RTD themes of common interest.

The Panel stresses that S&T co-operation agreements – which have to be based on reciprocity - are important instruments to ensure a more coherent approach to multilateral co-operation in fields of common interest. They are in particular essential to ensure effective protection and equitable distribution of intellectual property rights and other research results in a global economy. In the case of emerging economies and developing countries these agreements complement the “classical” Co-operation for Development of the EU, hence they contribute to more coherent policy concepts.

Co-operation with Developing Countries: The Panel collected evidence that INCO-DC and the preceding STD programmes played an important role both in supporting collaborative scientific research, and networking and concertation. Furthermore, the Panel concluded that

INCO-DC was enjoying growing recognition and support in the research community, and its implementation seemed to have adequately covered all its main objectives. It made a major additional contribution to that of the STD programmes when consolidating international collaboration and facilitating the achievement of other aims of European integration and particularly of multilateral co-operation inside the EU.

The programme has succeeded in getting the European research community involved in development issues on a multi-lateral basis. It is important that these aspects of the programme are not only considered but also recognised in the FP funding decisions.

The programmes have strengthened the capacities of DCs in many areas, contributing to the consolidation and amplification of local research activities in the areas of environment and health, and to a certain extent in agriculture. It was noted also that the EU / DC interaction worked in both directions and that the knowledge did not flow in one direction only. In this way, the EU has experienced a net gain from its involvement with the DCs. The concept of “partnership” has become stronger.

In regard of FP 6 it should be ensured that in the preparatory phase of the new programme both the expectations and needs of the developing countries and the potential benefits of the European Union be taken into account in a well-balanced way. In addition, continuous interaction, co-operation and co-ordination with the Thematic Programmes of the FP and other DG's activities should be institutionalised.

5. Observations from the Core data

Scientific quality and excellence were the predominant criteria for the selection of proposals. Due to the limited funds available, the success rates in shared cost actions remained rather low with an average rate of approximately 15 %. Recognising these facts, the Panel emphasised that the funds available for INCO were not high enough to retain the interest of the European research community in this programme.

Third country participation in Specific Programmes is concentrated on EFTA-EEA (34%) and other European countries (29%) in respect of proposals received and even more so in respect of selected projects. Among CEEC, the lion's share in participation in proposals received and projects selected for funding was for Hungary – Poland - Czech Republic (61% proposals / 62% projects). There is also strong concentration on the co-operation with DCs; four countries attract together 52% of all the participants of selected projects among DCs: Tunisia (17%), Morocco (14%), Egypt (12%) and Brazil (9%). Environment and climate is by far the dominant area of DC proposals. Among other European countries, the great bulk of participants in proposals (95%) concerns proposals with Swiss participation. As far as non-European industrialised countries (NEIC) are concerned, 60% of the proposals received originated from Israel.

6. Conclusions

Due to the very special nature and the global relevance of the international RTD activities of the EU the Panel recommends keeping a well-designed, specific programme for this area of Community actions under Framework Programme 6.

The international research dimension of the EU can be motivated by complementary issues such as problems related to global issues (food supply chain, biodiversity, atmospheric pollution, clean and efficient energies, global diseases, health problems), scientific co-operation for economic growth and profit, and research for development. This view is supported by the problems of globalisation and the challenging tasks to ensure adequate communication channels and very well-designed action lines for collaboration with all categories of countries world-wide. Another aspect is the new organisation of knowledge production and the need for the European Union to tap into sources of knowledge on a global scale.

1. Introduction

1.1. General remarks

The Commission provided a large amount of information and documents and it was a real challenge for the Panel to digest the material in the given period of time. The Commission services presented publications and internal documents from the different areas of the INCO programme as well as some comprehensive information on the past history and evolution of the programme and statistical material on calls, proposals and funded projects. In addition the Panel received useful input from the INCO Monitoring Reports 1995-99 and the Annual Reports 1995-99 on Research and Technological development Activities of the European Union.

The Panel structured its work in accordance with the Broad Guidelines for the 1999 Five Year Assessment and the terms of reference for the specific programmes' assessment.

The following issues were considered the most important:

- current and future orientation of INCO in general and in its different areas;
- quality of the results;
- quality of the management;
- rules and procedures for FP 4 and FP 5;
- recommendations for the midterm re-orientation of FP 5
- future outlook and recommendations for FP 6.

1.2. Summary of the assessment approach, work-plan of the Panel, and data sources

The Panel formulated a work-plan composed of several tasks. The work involved

- 10m meetings of the Panel (6 two day and 4 one day meetings);
- interviewing 23 senior INCO Programme officials, INCO Heads of Unit and INCO project officers as well as officials from the thematic programmes and other DGs;
- summarising the INCO monitoring reports 1995 –1999 and the Annual Reports 1995 - 1999;
- analysing information from the core data and other statistical material (see Annex);
- questionnaire survey and some interviews with 31 Programme Committee Members, National Contact Points and other experts;
- analysing (selectively) the extensive printed material provided by the Commission services (92 documents);
- drawing some conclusions from the general questionnaire survey carried out by an external contractor for all specific programmes.

The results from the general questionnaire survey which the Commission had contracted to an external company in the general context of the Framework Programme assessment were taken into account only to a limited extent since the findings for INCO were not representative due to the relatively small number of responses received from the projects and the fact that an average had been taken across the different areas of the programme. However, the Panel appreciates in general the support from the questionnaire survey.

In January 2000, the Panel delivered some very preliminary findings and conclusions to the Framework Assessment Panel.

An Interim Report with a first and preliminary account of the work performed by the Panel was delivered in mid February 2000. In addition, the Panel provided some input and recommendations for the midterm re-orientation of FP 5 to the Framework Programme assessment Panel in April 2000.

In producing the final report the Panel has undertaken to identify issues for attention both in the context of the midterm re-orientation of FP 5 and INCO in the future FP 6. The *conclusions developed under the different paragraphs are italicised* and **recommendations are printed in bold**.

1.3. Input from previous monitoring exercises

1.3.1. Synthesis of the INCO Monitoring Reports 1995-99

The annual programme monitoring exercises were introduced with FP 4.

The INCO programme in FP 4 was the first attempt to integrate into one programme all Community activities in the area of RTD directed towards third countries and international organisations.

The first INCO monitoring exercise examined the initial stages of the Programme's operation and was completed towards the end of 1995. Fundamental issues on which this report made recommendations included the orientation of the INCO programme, synergy with Member States' programmes, interaction with other EU policies, information packages, evaluation procedures, accompanying and supporting measures.

The Commission responded constructively to the recommendations of the 1995 Monitoring Report. The 1996 Monitoring Report presented a brief assessment of progress towards their implementation. Some additional issues raised in the five-year assessment of the INCO programme and its predecessors over the period 1991 to early 1996 (report completed in the autumn of 1996) were also discussed. The 1996 Monitoring Panel came to the view that evolving global factors and changing circumstances in partner countries highlight the need for greater flexibility within a four-year programme for international co-operation and it would be important for FP 5 to be designed to take full account of this. The 1996 Panel focused its attention on a number of key issues essential to a coherent and effective INCO programme. In particular, two issues were considered to have a large potential for raising the effectiveness of the programme: 1) scientific and technological monitoring and assessment of running projects, and 2) introduction of a comprehensive Management Information System.

Since INCO, in contrast to other specific programmes, encompasses not only operational complexity but also a large number of tasks in the area of RTD policy and strategy support, the 1997 Monitoring Panel had a specific interest in the efficiency and effectiveness of the programme management. This related to 1) the very special and complex communication tasks of DG XII-B, 2) the interaction with the INCO Committee and the RTD community in the EU and beyond, 3) the support for the dialogue on RTD policies and strategies with third countries world-wide, and 4) the co-ordination and co-operation with other Commission services.

1998 can be characterised as a transition period since preparations for FP 5 needed as much attention as the completion of FP 4.

In the 1998 monitoring exercise, special attention was given to the European added value of the INCO Programme. The Panel greatly welcomed the approach to more coherence between Community policies and the efforts made to improve co-ordination between the DGs involved in the implementation of this new strategy. The Panel noted also some progress concerning complementarity with Member States' policies. However, it was stated that there is still considerable room for improvement on this touchy issue which has also foreign policy dimensions.

The launch of FP 5 was the focus of the most recent annual monitoring exercise as 1999 was the first year of FP 5 implementation. Special attention was given to the new procedures, such as the application process, proposal evaluation and selection, and programme and project management with special emphasis on managing the transition between FP 4 and FP 5 and the thematic and horizontal programme interface. Major recommendations concerned the information for proposers, monitoring the effectiveness of the Programme's own operational capabilities, active management of the project cycle and systematic monitoring of the way in which the Programme is delivering its specific objectives. Finally it was suggested that there must be a dynamic approach to communicating findings to all stakeholders as this is seen to be crucial to the achievement of beneficial outcomes.

In general, the Panel is satisfied with the extent to which recommendations put forward by the monitoring exercises were converted into action by the INCO Programme management.

1.3.2 INCO in the Framework of European R&D - Synthesis of the Annual Activity Reports 95-99

The Annual Reports 1995 to 1999 on Research and Technological development Activities of the European Union provided a systematic account of the breadth and the depth of the activities in the area of international research and technology co-operation. This information shows the broad spectrum of activities both at the programme-oriented level and in the area of policy and strategy support. The Panel used that information as a checklist and a chronological guideline for the organisation of its evaluation activities.

2. General observations on the INCO programme

2.1. The role of INCO in a broader context

2.1.1. The evolution of the international R&D collaboration between the EU and third countries

The Panel broadly discussed the evolution of international R&D collaboration at EU level and the respective orientation of the INCO programme in general, with a particular focus on policy, strategy and programme development. *Overall, the Panel is very impressed with the developments from FP 3 to FP 5 in this important area of Community RTD activities.*

In the five-year period covered by the assessment, INCO succeeded in integrating all non-nuclear international RTD activities of the community into a single programme. The objectives were broad and far-reaching:

In FP 4 these objectives included enhancing the benefits of common FTE activities by targeted FTE co-operation and by developing synergies with other Community actions, supporting community policies in other areas, and developing a global EU-strategy for S/T co-operation with third countries which includes all relevant Commission services ¹.

In FP 5 “The main objectives of this horizontal theme are: to promote S/T co-operation internationally; to reinforce Community capacities in the fields of science and technology; in a broad way to support the achievement of scientific excellence within a wider international framework, and to contribute to the implementation of the Community’s external policy also with the accession of new members in mind” ².

The activities designed to meet these objectives encompassed both important policy support measures and targeted operational programmes with all categories of third countries. With this broad and complex approach the INCO Programme and its predecessors were expected to make essential contributions not only to the Community RTD policy but also to other EU policies, like, for example, external, development and agricultural policies.

Before FP 4, there was a “basket” of different programmes, actions and measures ranging from five types of actions under the name of PECO/COPERNICUS for Central and Eastern Europe (in response to the political developments in Central and Eastern Europe after 1989) to STD – Life Sciences and Technologies for Developing Countries – (part of FP 3), and the APAS Activity - exclusively for Latin America, Asia and Mediterranean countries – (ISC, in parallel with STD 3).

The Maastricht Treaty then gave a basis and legal backing for a research activity which was a fundamental commitment by the Member States, including a very specific reference to international co-operation.

FP 4 (1994–1998) represented a major change in international RTD collaboration to conform with the terms of the Treaty of Maastricht. It was decided to group all these different activities into a single programme that was fully integrated into the FP.

There were two principal instruments in FP 4:

- 1) a specific programme on co-operation with third countries and international organisations (INCO 1) – and
- 2) the recognition of an international dimension in all the specific programmes of Activity 1 of FP 4. These programmes were opened up for the participation of European third countries (countries eligible for Copernicus-1) and countries eligible for INCO DC with the possibility of funding from the INCO 1 programme.

The two instruments are still available in FP 5 but within each there are significant differences that reflect the strategic changes in the overall FP policy objectives. Here, there was a clear need for consolidation and better targeting of research areas and countries eligible for participation in order to reduce dispersal and resources and the administrative burden.

There was also a policy need to shift the balance to improve the impact of the programme on society and economy, and stimulate socio-economic development.

¹ Council Decision of 23 November 1994 adopting a specific programme for co-operation in research, technological development and demonstration with third countries and international organisations (1994-1998); Official Journal L 334 (22.12. 1994)

² Council Decision of 25 January 1999 adopting a specific programme on confirming the international role of Community research (1998 to 2002); Official Journal L 64 (12. 3. 1999), page 83

2.1.2. The role of INCO in FP 5

Under FP 5, international co-operation is being pursued through two complementary routes.

Route 1 is a dedicated co-operation Programme: INCO 2

The most important changes in the nature and objectives of the INCO Programme under FP 4 and FP 5 are in that the particular objectives in the INCO work-plan in FP 5 are specific and geographically based and they focus on RTD activities not addressed by other thematic programmes of FP 5.

This meant that basically all high-tech research areas, such as information and communication technologies (open for third country participation with the possibility of funding already under the ISC scheme and later under INCO 1) disappeared from the INCO 2 agenda. Within the regional context socio-economic aspects became more important.

The developments in the different areas of INCO are assessed in more detail in Chapter 3.

Route 2 involves an international co-operation dimension integral to each of the other thematic and horizontal programmes under FP 5.

The countries eligible for Copernicus-2 and INCO DEV continued to be eligible for participation in these programmes also, but without the possibility of funding from INCO-2 and, only in exceptional cases with funding from the thematic programmes concerned.

More importantly, it is the task of INCO under route 2 to promote co-operation with non-European industrialised countries and emerging economies through the negotiation and conclusion of specific S&T agreements. Funding for partners from third countries has to be provided from the respective countries' own sources.

For details of third country participation in specific programmes see Chapters 3.3. and 4.2.2. *Overall, third country presence in shared cost projects seems to be closely related to the scientific and financial capacities of the respective partners. In this context, the Panel is concerned with the weak participation of the non-European NIS and some strategically important countries. Another observation is that traditional and well-established bilateral links connected with a common interest in specific areas facilitate collaboration with third countries (USA, Canada, Switzerland, Northern Africa).*

At the programme management level the international dimension is achieved by formal meetings of the GoDs (Group of Directors) of which there are 32 involved with INCO. **The Panel recommends that this cross-programme activity be further developed in order to avoid duplication and ensure synergies between INCO and the other thematic programmes and horizontal activities.**

2.1.3. INCO and Synergies with Member States' programmes

The question of synergies between INCO and Member States' Programmes for international R&D collaboration was addressed in the interviews with Programme Committee members. *The overall impression is that INCO had some impact on the Member States' activities. However, international R&D collaboration seems to remain closely related to individual Member State's foreign, development and economic policies.*

In view of the continuing weakness in co-ordination between EU and national policies for international S&T co-operation, a study – INCO POL Study – was launched (on the recommendation of the 1996 Monitoring Panel). The aim was to have close contacts with national agencies in order to gain systematic information on national objectives and programmes.

The study contains a potential wealth of information, though the most appropriate organisations were not chosen to prepare the national studies in any particular case. For that reason, the INCOPOL Study does not show a uniform level of outputs. *In an overall assessment, the Panel regards the activities as useful, since the orientation of INCO should complement national RTD programmes for third countries and in particular for DCs. The concrete recommendations and conclusions are, however, disappointing. It may help to reopen this existing relatively large volume of information and to identify uses for it.*

2.1.4. Major overall achievements

The current policy and the activities related to it have led to significant achievements, in particular concerning the enlargement process of the Community. INCO has been a very solid and helpful base and provided pro-active support and assistance for the pre-accession states, and a reference point for concrete action. Almost from the beginning of FP 5 candidate countries could be treated on an equal footing like Member States in a participatory context. As a consequence, the European research community is now based on the scientific communities of 30 countries. That means, that at least three years ahead of the other policy areas, the full integration of the accession countries is already a reality in the field of Community research.

For more specific achievements under the different programme areas see Chapter 3.

2.1.5. Lessons learned and recommendations

- *While the achievements of the dedicated INCO co-operation programme are widely recognised the cross-programme and cross-DG tasks and activities and the related demand on the INCO staff to date does not seem to be adequately acknowledged by other Commission services. **The Panel strongly encourages the INCO management to better present the dual function of INCO** as a driving force for implementing specific measures for R&D collaboration with certain countries or regions on the one hand and INCO's co-ordination and policy support role in the context of the international dimension, integral to each of the other specific programmes of the FP, on the other hand.*
- **As a first step, the Panel sees a need for the INCO programme management to provide a rolling record of all activities and services rendered internally to other services.**
- *“Joint initiatives and interfaces” between the INCO programme and initiatives implemented through other DGs, or externally in areas of global significance such as environment, energy, food, agriculture and health are important since INCO project results can potentially also be exploited by others. Those interfaces are developing (there is close contact for example between INCO DEV and DG Development officials); **however, it is necessary to further develop a well-structured and continuously nurtured dialogue between INCO, the thematic programmes of the FP and other DGs relevant for international co-operation. This dialogue must not be based merely on the commitment and enthusiasm of individuals but has to be based on clear policies and strategies**, whereby an institutional memory is also ensured. In addition, some cross-DG management efforts directed towards an internal monitoring of potentially exploitable project results are required.*
- **The diversity and the policy connection of the INCO programme objectives cause problems for assessing their delivery/fulfilment. Therefore, some system for follow-**

up needs to be put in place in order to assess how well and to what extent the programme objectives in the policy support area are being addressed and met.

2.2. Quality of the programme management – efficiency

In an overall assessment, the Panel recognises with satisfaction, that the INCO Programme and its predecessors have been executed in accordance with the general objectives of the Framework Programme and the special objectives of the specific programme. The budgets were fully committed, however with some changes related to the responses to Calls for Proposals and the needs of fulfilling the work programmes (for more details see the analysis of the core data in Annex III). There was further improvement in the timeliness and quality of information provided by the Commission. The Programme Committee was actively involved in all relevant matters.

*The Panel is able to confirm that the management succeeded in achieving a high level of integration, consistency and coherence of the programme, and it was impressed by the quality of work performed in all areas of the programme by a highly competent and motivated personnel.. The heterogeneity of the programme with a wide range of topics was considered to be a real challenge to the management. **For the future, the Panel sees opportunities to better utilise possible synergies between the different areas and measures managed by the programme, especially with regard to specific problem areas.***

The staffing situation (broadly described in the 1996 INCO Monitoring Report) remains an area of concern, although there had been some improvements in 1997. The INCO project officers manage a large number of projects averaging 50-80 each. However, *in addition to the quantitative burden the Panel is particularly concerned that increasing bureaucratic requirements were leading to reduced possibilities for S&T input to and monitoring of running projects by the Commission staff.*

These deficits are due to the general rules and procedures applied to the whole Framework Programme. *The Panel is worried about a noticeable shift in the Framework Programme management, with the distinct dominance of the administration - namely the legal and financial services -, increasingly bureaucratic processes and lengthy hierarchical decision making procedures.* From a scientific viewpoint over time there continues to be less time available to project officers for scientific and technological monitoring and control while legal certitude is much more prominent today.

The Panel recommends that a substantial effort be made to identify and eliminate useless administrative processes. Quite a few of them are neither transparent for the customers nor reasonable for the scientific officers. DG Research has to come to a more straightforward approach to decision-making on RTD projects. **More responsibility should be delegated to the appropriate level related to the programmes. It should be ensured that more than 50 % of scientific staff time is devoted to scientific and technological monitoring of running projects.**

In preparing FP 5, in the context of transparency and legal certainty the most important aim was to speed up procedures, since in FP 4 procedures were seen as being too slow, and delays were too long. For transparency, it is essential that all participants know the rules of the game before they participate. Therefore, a harmonised Information Package to be used for all programmes was prepared. The evaluation process and the evaluation criteria are described in

the Evaluation Manual (a part common for the whole FP, and a specific annex for each specific programme). The road maps are reinforced on an annual basis. The format of the information and the rules applied are now the same for the whole FP.

However, in the start-up phase of FP 5, the processing of proposals from evaluation to contract ended up with substantial delays, not easily understood and accepted by researchers.

This happened, although FP 5 follows a new approach with a reduced number of Commission decisions and using possibilities of habilitation to the Director General.

It was pointed out by the responsible director, that the delays were linked to the difficult situation caused by the changes in the Commission during 1999.

*In concrete terms, the Panel is concerned about the processing of the proposals from the Calls in March and June 1999. By the end of the year only a very small number of contracts had been signed by the Commission. It was noted that proposers were pressed to deliver information for the contract negotiations in a very short space of time. However, after that they frequently did not receive any information for quite a long time. Therefore, more and more complaints are put forward both to the National Contact Points and to the national delegates in the Programme Committee. **The Panel proposes that a short letter to inform proposers on the further procedures and the expected approximate time frames would be appropriate.***

*At the same time, the Panel notes that proposers complain about the heavy task of filling in the Contract Preparation Forms, especially because the information that has already been provided for the proposal (Technical Annex) has to be provided once more in a huge document but in a different format. The Panel was informed that this had been caused by problems with the informatic system. It is planned to have three different databases for processing the proposals from the registration to the contracts. In the future, the Contract Preparation Form will be produced automatically and sent to the proposer who has to check it and then only to confirm it. The Panel welcomed the good intentions to build a new informatic system to support the processing of proposals and the contract negotiations. *It was unfortunate, however, that the databases did not function properly, and the Panel expressed its concern that many proposers are really concerned about the unnecessary workload.* This problem is worsened by the fact that the system applied under FP 4 worked well without imposing useless administrative tasks on the proposers.*

Another issue addressed by the Panel was the a priori control of projects which is required since research involves risk on the one hand, but on the other hand there should at least be no financial risk. Commission administrative officers negotiating with contractors are not financial analysts. In FP 4, the financial information necessary to assess the financial soundness of the organisations to be involved in EU RTD projects was provided by an external service provider. This was a good banking analysis but not perhaps best for research. **The Panel recommends that the issue be reviewed once again on the basis of experiences made during the start-up of FP 5.** In such a review exercise, company representatives or intermediaries well aware of company problems especially in SMEs should be involved in order to ensure that the procedure chosen can be applied by companies in a practical way.

Finally, **the Panel highly welcomes the information that an internal ad hoc working group has analysed the most urgent programme management issues and delivered a report at the end of February 2000. The Panel sincerely hopes that the proposal made by**

that working group will be implemented as soon as possible. The Panel emphasises that a fundamental change is needed in the FP management, because the acceptance and acceptability of EU RTD activities are seriously endangered.

Information: Building on the implementation of recommendations made by previous monitoring panels (especially the 1997 Panel), the procedures and mechanisms as well as the infrastructure for public relations and information, and *the information about INCO was remarkably and substantially improved* in the second part of the implementation of INCO under FP 4. This was due to different initiatives: improved information packages, Internet presentation and publication of highly informative brochures. For CEEC the network of FEMIRCs, introduced in 1997, continued to play an important role for information dissemination till spring 2000. For NIS, especially Russia, more appropriate information and consultancy centres and services have still to be established. Additional efforts in information dissemination also seem to be necessary in developing countries. The Panel appreciates the efforts of the INCO management in preparing the newly associated states for their integration into FP 5. In particular, training of the emerging National Contact Points and active support in information activities are very important ongoing activities of the INCO staff.

Management Information System (MIS): The Panel strongly supports the recommendations of previous monitoring exercises that **the Commission should give urgent consideration to adopting and implementing a comprehensive central Management Information System using harmonised data for submitted and accepted proposals across all specific programmes.** Such a system would facilitate the co-ordination and monitoring of programmes. In addition, it would make it possible to measure progress against objectives and identify causes of failures at any time. *Unfortunately, the Panel could not identify any real progress in that important area of programme management at FP level. However, the management of information within INCO – MIS-INCO - is considered excellent and a most useful tool for decision-making and quantitative monitoring of the INCO Programme.* **MIS-INCO should certainly act as a pilot project for the whole Framework Programme** and can be shown as an example of best Commission practice in the area of programme management.

Transparency of the proposals evaluation process: *The Panel recognises with satisfaction, that the quality of the evaluation process and the selection of proposals has constantly improved and it is considered to be good.* Taking up recommendations from previous monitoring exercises, the evaluation criteria have been regularly updated and the evaluation procedures have been made transparent through evaluation manuals that are available to potential applicants on Internet and as printed documents.

The Panel considers the new approach to recruit evaluators through an open call as useful and appropriate, since the procedure provides an opportunity for young researches to gain deeper insight into the Framework Programme. **The Panel recommends to set up a well designed system for selection of evaluators** before they are included into the database. The Panel is well aware, that substantial care is taken in the selection of evaluators for the specific evaluation exercises. However, the Panel notices certain doubts raised by the scientific community against the present approach, which is interpreted as a self-registration system.

As regards the general *organisation of the evaluation exercises, the Panel noticed a change for the worse* from FP 4 to FP 5. The newly chosen centralised approach has caused substantial problems for the *external evaluators* and for the Commission services who have *had to work under conditions far from optimal.* Therefore, **the Panel sees an urgent need to review and assess how the evaluation exercises have been organised** and how the

involvement of the external service provider was planned and implemented. In that context, the Panel wishes to point out that the evaluation exercises also form an important aspect of internal team building and motivation producing and strengthening „ownership“ of the specific programme by the responsible Commission services.

Scientific and technological monitoring and assessment of projects: Building on strong recommendations from previous monitoring exercises that international collaborative projects need regular S&T monitoring during their operation in order to assess progress against original objectives, the "collective" monitoring of projects was introduced for INCO-COPERNICUS. Reviewing the results of the first "collective" monitoring exercises, *the Panel considers this an interesting and promising approach that should be pursued.* **However, a more systematic S&T monitoring and assessment has still to be implemented** under FP 5, because, so far, such exercises have remained exceptional cases and could not be applied in ways covering major parts of the programme

Summing up, the Panel appreciates the efforts made by the INCO management to continuously improve the general management of the INCO programme. The problems encountered at the start of FP 5 were routed outside INCO. However, the Panel underlines the general importance of a smooth, transparent and efficient programme management. This is essential for the future acceptance of the Community RTD activities. The problems at the start-up of FP 5 certainly led to a deplorable setback in that respect.

3. Assessing the different areas of INCO

3.1. Area A1: Co-operation with other fora for European scientific and technological co-operation – COST and EUREKA

3.1.1. COST

Concerning COST, the present Panel agrees with previous monitoring panels and is convinced of the special importance and advantages of this bottom-up approach which serves – amongst other aspects - as a „source“ for the Framework Programme. However, **the Panel recommends a thorough analysis of the administrative arrangements and structures of COST as well as the problems arising from a continuous growth in the number of actions.**

The Panel supports the idea of organising the COST Secretariat(s) administratively independent from the European Commission's internal procedures, because it is concerned about the inflexible procedures COST has to follow as long as it is integrated into the Commission services. In that context, the Panel sees a clear need for an increase in the number of permanent staff, both at the scientific and at the administrative level. This is necessary to maintain both the quality of the management and the scientific monitoring, and support activities of the secretariats, as well as ensuring an institutional memory.

The Panel supports the recommendation of previous monitoring panels that **the Commission should become a member of COST.** This would ensure a clear role for the Commission in the COST management structures. In any case, the Commission contributes 95% of COST funding.

The number of COST actions has grown to 200. 50 new actions per year are far more than the number of actions needed to keep the COST activities at a relatively constant level. Since the COST budget remains constant, **the Panel sees a necessity to create a mechanism of controlling the evolutionary process that has characterised the development of COST** so far. *The only way to achieve that will be to define criteria for the selection of new COST actions. The Panel emphasises that scientific quality must play the key role in the future also. However, there is a clear need for additional criteria. Added value of the transnational collaboration should be clearly considered, as well as criteria of a strategic nature related to the development of the European Research Area.*

Finally, **the Panel welcomes the attempts to identify and support synergies between COST and the Framework Programme.** The Panel accepts and supports the independent role and function of COST as a programme of specific characteristics and of importance for the development of the European knowledge base. Nevertheless, it sees a need to keep an appropriate balance between complementarity and synergies between the different fora of international RTD co-operation in Europe. Following the ideas of the European Research Area, there is a clear need to support the general policies on synergies by providing appropriate instruments for their implementation in the rules for participation in the Framework Programme.

3.1.2 EUREKA

Although the European Commission is just one voice amongst EUREKA members, **the Panel recommends that the Commission take a clear position towards EUREKA and its future development.** The 1998 Monitoring Panel recognised the activities of the joint Working Group on Synergy between EUREKA and the Framework Programme, but it would have welcomed more examples of strategic EUREKA/FP projects. In the meantime, *only a few signs of progress could be identified in the implementation of the strategies for improving synergies between these two fora for RTD collaboration in Europe.*

In any case, starting such considerations, there is a need to reflect in a more realistic way on comparing the scope of the two activities. One must not ignore the fact that EUREKA is very much smaller than the Framework Programme, probably by about one or two orders of magnitude. Taking into account that, at present, the Commission is involved in only a very small percentage of the running EUREKA projects one might conclude that these joint activities are of rather marginal importance and impact so far. Thus, they should not be over-estimated. On the other hand, if they are well designed, they could be of strategic importance.

Over recent years, a gradual decline of EUREKA activities could be witnessed – both with respect to the size of new projects and the size of the companies involved. In addition, a move towards non-industrial projects, for instance in the environmental field, should be mentioned.

In 1999, the ministerial conference agreed on a so-called –„spring scenario“ to re-launch the EUREKA initiative in a fairly cautious way. However, *the Panel experienced difficulty in obtaining a realistic picture as to the real importance which participating countries give to EUREKA. The low number of ministers participating in EUREKA ministerial conferences is interpreted as an alarming signal.*

The Panel sees a strong need for clearly (re-)defining EUREKA’s objectives and priority activities. In doing so, it will be necessary to take into account EUREKA’s structures and

procedures as well as the available resources at the strategic and operational level on the one hand, and customer needs on the other hand.

In this context, the Panel emphasises that in re-designing EUREKA, the evolution and development of the Framework Programme – both with respect to objectives and contents and to a well-designed portfolio of different types of modalities for participation as well as a harmonised procedural and financial framework - have to be considered. Most importantly, it has to be underlined that the Framework Programme has moved very close to the market, firstly by means of the CRAFT scheme, where a bottom up approach is applied, providing an open space for SMEs. Secondly, the demonstration, as well as the combined R&D and demonstration projects have to be mentioned. That, means that EUREKA's claiming to be much closer to the market than the Framework Programme is no longer applicable. The FP activities including targeted stimulation actions for SMEs are supported by efficient networks for information and assistance.

On the other side, there are several characteristics of EUREKA, that make amalgamation of projects from the two fora difficult, for the time being:

- EUREKA has no funds of its own and depends on the different national funding schemes of EUREKA member states;
- most importantly, EUREKA has no evaluation procedure comparable to or compatible with the FP procedures, and
- EUREKA has no mechanism of central monitoring of projects ensuring that consortia stick to originally agreed objectives and work plans;
- finally, one must say that the multiple application procedure for the EUREKA label and for the national funding of different partners, is not as simple as is often described.

With regard to synergies, aspects of co-ordination, complementarity and compatibility of the two approaches to transnational collaborative RTD in Europe should be the main guiding principles. The Panel sees a number of possibilities which could help to achieve that aim:

- thematic concertation meetings to co-ordinate activities – as far as possible – and to exchange experiences and results. Such measures would stimulate co-ordinated activities between EUREKA and the EU Framework Programme, while projects could follow the respective rules of the two initiatives as appropriate
- downstream activities in the area of technology transfer and company start-ups might be examples of interesting fields for EUREKA actions closely concerted with activities supported by the Framework Programme. Such a focus might help to avoid overlaps, would offer public support to very important instruments in the area of innovation, and last but not least – would justify the co-existence of the two fora. It should be mentioned that such a move would also support the objectives of the Community Action Plan for Innovation. However, even in following that direction, it must be recognised that there a number of initiatives already exist which support the setting up of companies and bridge the gap between R&D and finance organised by the Framework Programme – in different Thematic Programmes, such as Biotech, and in the Innovation and SME programme
- of course, **setting up large strategic projects developed and implemented jointly by the Framework Programme and EUREKA would also be a promising approach.** The Panel supports this idea. However, it sees problems, because – as has been mentioned above - *the different rules applied in the two schemes, make amalgamation of projects*

difficult. For the evaluation and selection of such major projects the same selection criteria for objectives and themes as well as evaluation criteria as applied in the Framework Programme have to be used.

There is no doubt, that, at the time of its launching in the mid eighties, EUREKA played an extremely important role in stimulating and encouraging trans-national research and technology co-operation in Europe. In the meantime, however, the Community Framework Programme has developed into an activity encompassing many characteristics not covered when EUREKA was started.

For several years, synergies between EUREKA and the Framework Programme have been on the political agenda. However, the Panel cannot see that any substantial and convincing progress has been made in that respect. Therefore, despite possibly foreseeable political hurdles, the Panel sees a strong need for a fundamental review of the relationships between EUREKA and the Framework Programme.

As in the case of COST, the Panel recommends that for FP 6 appropriate instruments are foreseen in the rules for participation in the Framework Programme providing opportunities to implement synergetic activities with EUREKA.

In conclusion, **the Panel recommends that the research activities of the Framework Programme, COST, EUREKA - and possibly INTAS – be co-ordinated under one well agreed umbrella.** Such a common framework should safeguard the main characteristics of the different fora, and at the same time offer a concise and coherent portfolio of different instruments in accordance with their different objectives and mechanisms. Such a strategic move would certainly support the most important ideas regarding the European Research Area.

3.2. Area A2: INCO COPERNICUS

INCO-COPERNICUS addresses a part of the world where there has been a rapid evolution in scientific and economic relationships; it has a number of instruments at its disposal, so that one of its most crucial tasks is to co-ordinate them. Until 1994, PECO concentrated on Central and Eastern European countries (CEECs). But excepting those measures under FP 3, there was no programme decision on co-operation with these countries providing a uniform frame before FP 4. Since 1994, CEECs, Russia and the New Independent States (NIS) have been addressed under FP 4 by INCO-COPERNICUS. In FP 5, INCO2 also addresses Albania, Bosnia-Herzegovina and Macedonia. However, in FP 5, pre-accession countries are no longer treated as INCO target countries, but participate in Community research on the same footing as EU member states. Only the Centres of Excellence-concept (a recommendation from the 1996 Monitoring Panel) and some accompanying measures have been taken on board in FP 5 as activities for the pre-accession countries.

On the other hand, some countries that belong geographically to Eastern Europe - and more precisely to the Balkans - have not yet been admitted, for current political reasons, to co-operation in the INCO framework. This being the case of Croatia and the Federal Republic of Yugoslavia, *the Balkans area is not entirely covered by INCO-COPERNICUS. Such a situation is a matter of concern in an evolving economic and political context within this sub-area* (for instance, the results of the Croatian democratic election).

The first priority aim of COPERNICUS in a general context is to help target countries to support scientific activities as a basis for their future development. Thereafter, the second aim is to enable CEECs and NIS to apply for projects geared towards finding solutions to

economic and social issues in co-operation with Western partners. The small budget of COPERNICUS means that these issues have to be selected extremely carefully. In FP 5, this *has led to a reduction in the number of projects selected and to a change in the focus of the projects.*

For scientific co-operation with the NIS, INTAS (International Association for the Promotion of Co-operation with Scientists from the Independent States of the former Soviet Union) has been established as an independent organisation run under Belgian private law as an action complementary to INCO COPERNICUS. INTAS was funded up to 95% from the INCO 1 budget (FP 4) and 92% from the INCO 2 budget (FP 5). INTAS generally aims at comparatively more basic science, complemented with some applications. Following a bottom-up approach, INTAS *is more flexible and has a larger budget* than COPERNICUS in FP 5. However, the average project budget under INTAS amounts to only 10-15 % of a COPERNICUS shared cost project.

In addition, DG Research is involved in staffing and management of ISTC (International Science & Technology Centre) and STCU (Science and Technology Centre in Ukraine), while the operational funds for the two centres are provided by TACIS and some third countries. The objective of the centres is to prevent the proliferation of scientific knowledge linked to the military sector and to promote conversion.

Overall, at the end of FP 4, INCO-COPERNICUS *appears as a well-established and widely recognised frame for co-operation with CEECs and NIS*, with more than 400 research contracts implemented under COPERNICUS (shared cost projects) and some 2500 under INTAS. With COPERNICUS and INTAS, CEECs and NIS have gone through a most valuable process of co-operation that has *helped to consolidate their RTD potential*. For the former country group, COPERNICUS has also *prepared scientists for association with FP 5* under the same conditions as those of the member states.

3.2.1. Assessing efficiency

In assessing whether the objectives of INCO have been pursued in a cost-effective manner, one must acknowledge the difficult situation of addressing this large group of countries in their very difficult transition and development situation. The programme management has been sound and efficient, tackling the problems related to raising awareness and dissemination of information. However, *the efficiency at the project management level, specifically the S&T follow-up and monitoring of projects, was constrained by the limited number of staff and the wide range of topics*. For COPERNICUS, there were five EC scientific officers to deal with roughly 400 projects at the end of FP 4. The fact that INTAS received two thirds of the COPERNICUS budget led to a situation where a number of good COPERNICUS projects had to be left out due to budgetary reasons. The mutual project monitoring sessions of some clusters of INCO and INTAS projects had very positive effects such as cross-fertilisation in terms of methodologies, ideas and management, and international publication. However, *the mutual monitoring and review sessions were not systematically organised* due to changing priority areas and a lack of staffing. **Such mutual monitoring and review sessions should be convened in a more systematic way.**

In the course of the programme development, there were too many modes of actions at the beginning. Under COPERNICUS, the main actions were accompanying measures, concerted actions and joint RTD projects, very well suited to prepare CEEC researchers to participate in the community RTD activities. However, researchers faced some problems in getting used to

the general approach of collaborative EU RTD activities and with administrative aspects of project management, such as cost calculations and overheads.

In COPERNICUS, payments are made to the (EU member) co-ordinator who pays the (eastern) participating institutions in the project. This devolution of financial management to the co-ordinator was less obviously efficient in the case of NIS, in particular Russia, where it is difficult to transfer funds and sometimes to prevent embezzlement. INTAS was very efficient in the money transfers since it can be made in a flexible way directly to (individual) NIS researchers and scientists.

In COPERNICUS 1 - FP 4, two-thirds of scientific co-ordinators of COPERNICUS projects were from the east, a fact that lends considerable support for the preparation of researchers in the candidate countries for full integration into FP 5.

Participation in the specific programmes of FP 4 was difficult because the rules and conditions for the inclusion of CEEC and NIS partners remained unclear at the beginning of the programme (the model contract was delayed, for instance) *and this modus operandi was not actually encouraged. The Panel is of the opinion that these difficulties have reduced opportunities for eastern partners.* It recommends that **rules and conditions should be made clear from the very beginning when Calls for Proposals are launched and that the deadlines must be enforced on both sides.**

As has been covered thoroughly in previous monitoring reports, INCO has an important and unique task of cross-programme co-ordination and co-operation, which was accomplished very well despite the tight staffing situation.

The transition between FP 4 and FP 5 was managed efficiently under difficult administrative conditions, that were, however, not specific for INCO but were a result of sub-optimal general provisions at FP level. In addition, in the special case of INCO COPERNICUS, the careful preparations of the programme (including help from independent external advisers) did not materialise due to the fact that 50% of the budget was re-allocated to INTAS.

The co-operation with the CEEC and the NIS is important for the strengthening of S&T links in an enlarging Europe. The budget allocated to these activities is comparatively very low. Despite that fact, the outcomes are rather satisfying, both in terms of some S&T achievements at the levels of individual projects and in terms of soft but very relevant aspects at the systems level, like networking, opening up and building sustainable relationships where no contacts at all existed before.

3.2.2. Assessing effectiveness

The success rate of proposals submitted to INCO-COPERNICUS was 16%. INCO was successful in obtaining high quality proposals and only the highest quality proposals could be selected. However, that means that *not all "very good" projects were funded.* Industry participation in the proposals was low. The non-conformity of some projects with the call for proposals was an important issue in evaluation and selection.

Initially, universities and state-run research organisations (basically eastern academies of science) participated in the INCO-COPERNICUS and INTAS programmes, which differ fundamentally in aims and objectives. In FP 4, INTAS still addressed the scientific world, whereas COPERNICUS has tried to capture more applied research related to industry. Even though COPERNICUS calls addressed different areas, *environment and health remained*

topics of continual importance. Moreover, COPERNICUS had to meet the CEECs' desire to reform their universities and research structures and to improve their quality. In this respect, COPERNICUS funds were distributed on a 50/50 to 60/40 basis between eastern and western partners, and INTAS on a 80/20 basis. Because of these different ratios, *INTAS was a significant fund provider to NIS participants.*

The Panel suggests that with regard to calls, evaluation and funding, INTAS and COPERNICUS can learn from each other in order to achieve increased effectiveness.

The transition from FP 4 to FP 5 was characterised by a major change in the concept and the target countries. The restricted amount of available money and the fact that pre-accession countries are no longer eligible resulted in a drop in the number of proposals (though of a bigger size on average) to COPERNICUS in FP 5. The quality of the proposals has declined (with ratings of 35/50 for the "top" projects).

For restructuring scientific cities and institutions in NIS, TACIS has to play a more prominent role with DG Research contribution for the future. **The feasibility and opportunity of a financial contribution of TACIS for scientific infrastructure should be scrutinised.**

INCO COPERNICUS is very well in line with Community policies and contributes to the enlargement process, where research and technological development are the first policies where the integration is already a reality. In addition, INCO COPERNICUS has also a leveraging effect, stimulating S&T policy development in the candidate countries.

As regards the critical mass of the activities, it has to be emphasised that the projects are comparatively small so that that aspect is difficult to assess. However, there is substantial support for Community level problems, such as the activities in the area of environmental problems or results achieved in the ISTC. In the transition process, particularly difficult in the S&T sector which had to be substantially restructured, INCO contributed also to the employment situation of scientists and to a certain consolidation, which can be seen as an important achievement on its own.

The Panel found it difficult to assess the extent to which research results led to industrial applications. However, INCO COPERNICUS projects produced knowledge relevant to challenges such as Tschernobyl and the environmental problems of the Black Sea.

With respect to the links to COST and EUREKA, the Panel could not identify major synergies. It may be that some of the consortia active in COPERNICUS have continued the contacts established in COST, but no data on that were available. There was no explicit and active strategy to build on COST actions. The same is certainly true for EUREKA.

3.2.3. Major achievements

COPERNICUS in FP 4 has contributed significantly to the EU RTD activities and other Community policies, in particular as an important step towards EU enlargement to the east. The major contributions are:

- *a leverage on competitiveness of CEEC scientific institutions;* the fact in itself that research is the first area in which candidate countries can share on a full basis (contrary to agricultural and structural funds policies);

- in FP 4 and FP 5, COPERNICUS provided for *the consolidation of the eastern scientific sector at an appropriate level* with an impact on employment of scientists in the NIS, introduction of a collaborative research culture in the CEECs, and , to a lesser extent, in the NIS;
- *the environment policy* (Baltic sea, Black sea pollution).

The socio-economic impact of COPERNICUS individual projects is not easy to measure. However, the overall participation in the COPERNICUS programme has clearly influenced the national science and technology policies in the candidate countries.

Concerning information dissemination, among the most successful activities the following can be listed: the “contact points” (innovation relay centres) in the CEECs, the creation and development of FEMIRCs, information transfer through Internet (for example, the 1998 calls were published on Internet since all CEECs research institutions are connected), and the involvement of scientists and researchers from the candidate countries in project evaluations already under FP 4 and in the advisory groups in FP 5. **This policy of information dissemination should be pursued, but the channels for dissemination of information and results must be enlarged and better organised,** especially in the NIS. Information dissemination should, in addition, be extended to the Balkan region in the very near future.

3.2.4. Assessing lessons learned

There is a clear need to concentrate and prioritise. The Panel is concerned about the imbalance between the huge demand for participation from the NIS and the inadequate budgetary allocation to meet this demand. A reduction of the COPERNICUS budget is approaching a critically low level required for any relevant effectiveness. Participation of NIS partners in other thematic programmes of FP 5 seems to be difficult to manage.

The Panel has noted some success stories very well covered in publications. However, overall, success stories and failures in COPERNICUS have not yet been explored systematically. Usually, success is linked with knowing partners well in advance. It has also become evident that *successful collaboration requires careful preparation and a more long-term perspective,* especially for NIS.

Because the EU co-ordinators had to take responsibility for finances and management, they were more or less reluctant to co-ordinate the projects, due to the above-mentioned difficulties in transferring funds, namely in the NIS. In this respect, **the Commission should explore if mechanisms that have been used in INTAS and previously in FP 3 and FP 4 could be applied.**

With regard to good practices, progress has been made in the collective monitoring of projects, but *there is still room for improvement.* Scarce personal resources did not allow for a broader exploitation and dissemination of results. Commercial testing linked to further added value at a subsequent development phase was not a high priority. The latter suggests that **DGs Development and Research should increasingly interact about this urgent matter.** The Panel welcomes joint information activities between INCO COPERNICUS and INTAS.

3.2.5. Assessing relevance

The FP 4 objectives were highly appropriate for the pre-accession countries. COPERNICUS has structured multilateral scientific co-operation and succeeded in including eastern scientists and research institutions in joint activities with EU partners. Overall, it *has improved the*

quality of candidate countries' position with regard to the application for membership, but without being able “to make the difference” or “to reach a critical mass”, due to its inadequate budget, basically for NIS and in FP 5. This evidence opens a **trade-off between budget increase (e.g. in the perspective of the European Research Area) and the risk of an insufficient return from the previous integration of eastern scientists into networks of co-operation with member states scientists and research institutions**. On the other hand, the choice of projects was not determined by the Community's growth, competitiveness and S&T progress policy. In the future, **the socio-economic impact of projects in all participant countries must be even further emphasised in the evaluation of the projects**.

Now, under FP 5, the achievements of organisations from the CEECs in science must be assessed on a uniform scale and under the same conditions as for the EU members. However, COPERNICUS has not already provided a major enhancement in the CEECs scientific capacity, because *it is too small a programme*. Nonetheless, it has made an important contribution to the development of a common research culture between east and west-European partners. **This common research culture should be enforced in FP 6 which is a fundamental argument in favour of maintaining COPERNICUS for the NIS and eventually of extending it to the Balkans**.

3.2.6. Recommendations for the future

- *Mid-term reorientation of FP 5*

The Panel recommends that accompanying measures and assistance should be offered during the whole duration of FP 5 to the newly associated accession countries.

RTD co-operation with NIS and Russia has to take into account the weak participation of non-European NIS in INCO, and an unfavourable overall economic and social environment for developing RTD co-operation in all NIS. Thus, a first mid-term change of FP 5 should be a re-orientation towards selecting and financing proposals that should have the most significant economic and social impact, even though they may not be located in the most prestigious areas of scientific co-operation. The higher flexibility of the INTAS budget makes it more suited to the above suggested re-allocation. Mutual monitoring and review sessions between COPERNICUS and INTAS should be organised on a regular basis.

The new Russian leadership has repeatedly made allusions in official statements to the fact that nuclear weapons could again be resorted to in cases of conflicting interests or aggressive attitudes towards Russia. Thus the perspective of further developing scientific co-operation between EU and Russia in areas relevant for nuclear energy-fission should be reconsidered as such activities could provide input to the further development of nuclear weapons. In this context, **the Commission should enhance its involvement in the ISTC activities on military conversion, since those activities coincide with the development of civilian research in Russia**.

As far as the legal framework allows, **some preparatory measures for the Balkan region should be set up**. A dialogue on how to address this region in FP 6 should be initiated. For FP 5 at least some accompanying measures should be offered to the Balkan countries.

- *Recommendations for FP 6*

For FP 6 there is a need to rethink the activities towards NIS under the Framework Programme. *The Panel is concerned with the capacity of NIS partners to submit proposals under thematic programmes, because in FP 5 they are no longer funded. In this regard, the funding concept of COPERNICUS in FP 4 should be re-introduced for the NIS in FP 6*. **The**

participation of NIS to the proposals could be extended by requiring each proposal under COPERNICUS to include at least two NIS partners. In general, more flexibility should be applied for the NIS, and COPERNICUS should interact in a more dynamically ongoing manner with INCO DEV in order to identify synergies between the two INCO programme areas.

In respect of the European Research Area and global RTD issues, the allocation of funds for NIS under FP 6 should satisfy the following requirements:

- consolidation and extension of established co-operation,
- continued European added value,
- concentration on global issues such as environment, sustainable development and health,
- using the strong research potential for the benefit of the European Union.

The co-ordination between INTAS and COPERNICUS should be enhanced, although the programmes differ fundamentally in aims and objectives and have different evaluation and funding mechanisms.

The Panel sees an *urgent need for the Commission to develop policies and strategies for RTD co-operation with the Balkan countries.* The Presidency's conclusions from the Lisbon European Council of March 2000, that peace, prosperity and stability of South East Europe are strategic priorities for the European Union, are highly appreciated in this context. RTD co-operation with the Balkans **could be based on mechanisms similar to those of COPERNICUS or, better still, it could proceed with the admission, within a given deadline, of all Balkan countries into COPERNICUS.** As a special requirement, the regional trans-border co-operation between at least two organisations should be one of the eligibility criteria for projects in addition to the co-operation with EU partners.

3.3. Area B: Co-operation with industrialised countries outside Europe

Co-operation with non-European countries has constantly evolved over the last five years. *Here, INCO plays a unique role for the entire FP, since it is the task of INCO to promote such co-operation through the negotiation of agreements that allow the parties concerned to tailor country-specific frames and to orient the scientific communities towards selected RTD themes of common interest.*

There are two types of agreements

- Co-operation agreements: these cover the main co-operation arrangements and questions relating to intellectual property and reciprocal access to programmes; there is no financial contribution by the partners to the programmes as such. The Commission has concluded co-operation agreements with Argentina, Australia, Canada, China, South Africa and the USA. Negotiations have started with India, and a negotiation mandate for Brazil has been transmitted to the Council. For EURATOM formal negotiations were launched with Japan, and a directive for negotiation with Ukraine was approved in 1999. The negotiation of an agreement with Russia has been finalised, but the formal signature and conclusion were suspended for political reasons at the end of 1999.
- Association agreements: these cover the same issues as co-operation agreements but with funding for the partners in a third country in return for a contribution (based on GDP) from that country to the FP. In 1996 Israel became the first and, up to now, the only non-European country to be fully associated to the FP. This association coincided with major developments towards a Peace Settlement in the region. With the new S&T agreement of 1999 Israel is fully associated to FP 5.

Similar association agreements have been concluded with the countries of the European Economic Area (Norway, Iceland and Liechtenstein) and the pre-accession countries. The full association of Switzerland is expected for 1 January 2001.

Co-operation with Japan:

In the absence of a formal bilateral S&T agreement, co-operation with Japan takes place on an *ad hoc* basis in areas of mutual interest. At the Ministerial Meeting in 1993, it was agreed to establish a High Level Forum on Science and Technology and, up to now, the Forum has met three times (Tokyo 1994, Italy 1996, Tokyo 1998). The central role of the Forum is to foster scientific co-operation and to evaluate the most appropriate instruments for future co-operation activities.

In order to provide an opportunity for scientists from EU Member states to establish closer links with Japanese research institutions, the Commission launched the “Fellowship Programmes in Japan” in 1996.

3.3.1. Assessing efficiency

Since the majority of these agreements are fairly new, it is probably too early to make a reliable assessment of their efficiency.

The Panel would welcome a more active promotion and implementation of the agreements. Overall dissemination of information, leaflets with information on how to participate, which research areas are covered, contact persons in funding bodies of partner countries, etc. should be published for each S&T agreement.

The efficiency of the agreements will of course depend on appropriate follow-up activities such as implementation arrangements and their day-to-day management as well as on continuous monitoring.

3.3.2. Assessing effectiveness

There was remarkable progress in the co-operation with **Israel**. Although Israel started only half way through FP 4 due to the delay in negotiating the association agreement, there were 350 joint projects under FP 4, with a success rate higher than the EU Member States’ average. However, Israel’s strong scientific potential was not fully exploited.

Concerning **Australia** an extension of the 1994 S&T agreement was signed in July 1999, widening the fields of collaboration to all the thematic programmes of FP 5 and also covering research projects on large-scale facilities. 37 joint projects were launched during the course of FP 4, mainly in the fields of medical research, the information society, environment, biotechnology and marine science. In return, the agreement allows EU researchers to participate in Australian research programmes. It is impossible to account for every single European participation in Australia’s pluralistic R&D system, but the established trends seem to be, nevertheless, encouraging: the share of joint publications has grown from 20% to 27% in the past five years; 40 % of the international projects under the Australian Research Council involve European partners and 67 % of Australia’s Co-operative Research Centres have links with European companies and institutes.

The S&T co-operation agreement with **Canada**, concluded in 1996 for an undetermined period of time has been widened to all research activities under the four thematic programmes of FP 5 (1st activity) and to part of its 4th activity on the basis of reciprocity. A similar agreement on nuclear research co-operation entered into force in December 1998. **With**

Canadian participation in 307 proposals received for funding under FP 4 (resulting in 76 signed contracts – success rate of 25 %) the co-operation with Canada was quite significant. Data on reciprocal participation of Europeans in Canadian R&D programmes are, unfortunately, not available due to the decentralised organisation of the Canadian science system

US participation was already visible in FP 4, even before the entry into force of the S&T co-operation agreement. In total 237 proposals were received (among them over 100 in life sciences and biotech research) and 74 signed contracts with partners from the US. The 31% success rate for these proposals is very high. The bulk of proposals was in the sectors of telematics, communication and information technologies, followed by the biomedical and health sector. As regards participation in each other's research programmes after the entry into force of the S&T agreement the first statistical data on US involvement in FP 5 projects during 1999 are expected for May 2000. **The Panel encourages the Commission to insist on obtaining reciprocal data on EU involvement in US research programmes, although it may be difficult to get co-ordinated and comprehensive information from the highly decentralised US R&D system.**

Interaction between Commission services and different US agencies has been very active and was a major instrument in stimulating collaborative activities. There are two arrangements which pre-date the S&T agreement: the “Administrative Arrangement for the EC-US Task Force on Biotechnology Research” (created 1990) and the “ESPRIT-NSF Understanding on co-operation in Information technology. Of particular importance were the initiatives taken in the form of “Implementing Arrangements” for the better organisation of the collaboration in specific areas of research (in 1999 e.g. implementing arrangements were signed with the US National Science Foundation, and with the US National Institute of Standards and Technology for collaboration on metrology research). Further implementing arrangements are being prepared.

The two conferences (Washington 1998 and Stuttgart 1999), organised to explore and stimulate the collaboration, made a significant contribution towards the identification of important research areas with potential for Transatlantic co-operation. The Panel also welcomes the efforts of the Commission services to facilitate collaboration with the highly decentralised US science system through synchronised procedures (e.g. co-ordinated calls on “multilingual information access and management” and on “materials research”). *However, the opportunities and benefits of the S&T agreement and the related implementation activities do not yet seem to be well known on both sides of the Atlantic. Here, urgent improvement is needed.* **The Panel acknowledges the activities of the science councils in the US to disseminate information to universities and research organisations. In addition, it recommends that information activities be commenced e.g. in co-operation with the European Union Centres, established by DG X at certain US universities.**

South Africa was the first country amongst the emerging economies to conclude a S&T co-operation agreement with the EU in 1997. Although the country has not been able to allocate special funds for implementation activities (except some seed-money), due to the economic situation, South Africa has participated within FP 4 in 35 INCO-DC projects with 48 South African Teams. In addition, 7 projects within FP 4 specific programmes involved SA participants. It is expected, that SA research teams will join European consortia in many fields under FP 5.

The S&T co-operation agreement with **China** (1999) complements activities under the “classical” Co-operation for Development of the EU under which China was the first country ever to benefit from FP 4 (European Biotechnology Node for Interaction with China -

EBNIC). It covers the four thematic programmes of FP 5 (1st activity). EBNIC helps to identify areas of common interests and there are some joint projects.

Concerning co-operation between the EU and **Japan** formal negotiations were launched in April 1999 for an EURATOM-Japan Agreement on the Peaceful Use of Nuclear Energy. The major issue covered by this agreement will be nuclear trade, but it is anticipated that the agreement will also provide a framework for activities in nuclear research and development.

Bursaries for Japan: the benefits of those programmes had already been questioned by previous Five-Year Assessment panel. Re-integration problems of returning fellows may well result from the high age limit (some participants had asked for return fellowships). The age limit of candidates has been lowered, and there were more candidates going to industrial laboratories. The reduction of the budget for these activities in FP 5 to currently 1.5 Mio Euro/year is sufficient.

3.3.3. Major achievements

The most remarkable achievements are to be noted in the co-operation with **Israel**: for FP 5 the association was renewed, with an Israeli contribution of 160 Mio Euro (= 1% of the total FP budget), and Israeli organisations seem to be very keen to participate. Under FP 5, Israel is expected not only to increase its participation in the thematic programmes, but also to play a major role in the Mediterranean partnership. There are particular preferences for life sciences and for the mobility programme. European consortia appreciate the Israeli high-level sciences, technological know-how and entrepreneurial spirit, especially among SMEs, that contribute significantly in the projects. Partners from Israel can, and in many cases do act as full co-ordinators which demonstrates that they are very positively associated to the FP.

- Concerning the collaboration with the **US** particular mention should be made of the Transatlantic Biotechnology Initiative launched in 1999 by Presidents Prodi and Clinton. It will be implemented through an enhanced dialogue between administrators from both sides and by the establishment of a “Consultative Forum“ involving representatives from civil society and more directly concerned interest groups.
- There are some positive developments in **South Africa** as well: currently SA research authorities are very active in diffusing information on the possibilities offered by the EU-SA S&T co-operation agreement. Over 1000 people participated in a launching conference of FP 5.
- **ASEM** – Ministerial meeting on S&T co-operation: The Panel recognises with some satisfaction that the European Commissioner for Science and Research was invited to attend the Meeting of Asian Ministers of Science and Technology (proposed by the Chinese Prime Minister) in Beijing in October 1999. Considering the purpose of this meeting (which was to boost the ASEM process by adding to the high-level deliberations the topic of science and technology as a factor contributing to sustainable economic and social development in the 10 ASEM-countries) the Panel shares the Commission’s view that the ASEM approach will ensure greater consistency between the policies pursued and should also encourage intra-Asian co-operation. It welcomes further discussion of working papers between ASEM and EU on 11 subjects: forests, water problems, agro-industry, sustainable development of ecosystems, transfer of knowledge between universities and industries, clean production technologies, sustainable cities, cultural heritage and generic research.

3.3.4. Lessons learned

The Panel stresses that S&T co-operation agreements – which have to be based on reciprocity - are important instruments to ensure a more coherent approach to multilateral co-operation in fields of common interest. They are in particular essential to ensure effective protection and equitable distribution of intellectual property rights and other research results in a global economy.

In the case of emerging economies and developing countries these agreements complement the “classical” Co-operation for Development of the EU, hence they contribute to more coherent policy concepts.

Since effectiveness and achievements of co-operation agreements - depending on the non EU-partners interests and capacities – are apparently very different, the Panel recommends, however, that the Commission should provoke concepts and evaluate more carefully the perceptions of future potential partners and their feelings concerning the balances in and the benefits of scientific and technological co-operation with the EU. This applies in particular to the envisaged negotiations with more countries.

*In this context it is important to note, that the negotiation and the conclusion of country-specific agreements including the negotiation of appropriate conventions securing the protection of intellectual property rights under the international copyright and patent agreements and the necessity to obtain reciprocity rights for the participation of Europeans in publicly funded RTD programmes of a particular country require substantial political and managerial investment on the Commission’s side to take care of the various legal and other aspects. **Therefore, it is essential to maintain and build up appropriate capacities for intergovernmental co-operation.***

More attention should be given to the promotion of joint research projects under the S&T agreements both in the EU and in the partner states. Here, the EU has a clear staffing deficit since the Commission’s representation offices have rather limited capacities compared to other – e.g. US - agencies.

The successful implementation of the agreements call for extensive monitoring and continuous evaluation. The procedures for co-operation should not be too complex.

3.3.5. Assessing relevance

The INCO activities targeted towards non-European countries are very relevant to the Community as a whole: the increased deployment of Europe’s S&T strength to non-European industrialised countries is expected to result in an increased access to the markets of these countries for European industry. It will also lead to increased access to the high level RTD carried out in these countries, to achieving synergy between approaches that are often complementary and to pooling resources and sharing the costs and risks associated with certain research activities. S&T co-operation with emerging economies (Brazil, China, India, Russia) will also contribute to improved industrial relations.

Other requirements of increasing importance with regard to economic and trading interests in a global economy are jointly acknowledged rules for an effective protection and equitable distribution of intellectual property, as well as common databases and mutually acceptable standards.

The role of S&T agreements in this is to create more favourable frames and parameters for collaboration with non-European countries at Community level and to remove political as

well as technical obstacles. In addition these agreements promote a multilateral collaborative research culture and lead to mutual cultural understanding.

3.3.6. Recommendations for the future

- *Mid-term reorientation of FP 5*

*S&T agreements between the EU and third countries have a special European added value since they are setting up „harmonised frames“ for bi- and multilateral co-operation. **The Commission should actively disseminate information on the opportunities offered by these agreements and the rules and procedures of how to involve partners from the target partner countries into EU RTD activities.** The INCO Programme Management should inform the INCO Programme Committee and the Thematic Programme Committees on the progress made in the implementation of the agreements as well as on forthcoming activities. Optimal use of the networks of National Contact Points should be made.*

*Taking into account that the scientific and technological potential for mastering major scientific challenges of the future is already available in the USA and Europe, co-operation through joint research projects under the agreement with the US is of particular interest. It would ideally complement the fast development of bilateral RTD-interaction between individual Member States and the US and lead to more synergy by pooling resources and sharing risks in fields of common interest. **Accordingly, the Panel recommends that collaboration with the US should be given high priority in the second half of FP 5.***

- *Recommendations for FP 6*

The Panel recommends that follow-up activities for existing as well as for new S&T co-operation agreements be introduced into the programme design of FP 6. The work programmes of the specific programmes should define thematic areas and appropriate mechanisms such as co-ordinated calls and accompanying measures for active implementation of each S&T agreement.

3.4. Area C: S&T co-operation with Developing Countries

3.4.1. Evolution of the S&T co-operation with DCs

The impetus for the EU's research co-operation with DCs may derive from complementary issues such as problems of a global dimension (environment, health, biodiversity), scientific co-operation for economic growth and profit, and research for development.

With growing recognition of the critical importance of research in the development process, the importance of research in support of development has been highlighted. *Nevertheless, it is evident that the complexity of development issues should not be under-estimated.* Decades of development aid programmes constitute a good example. There is a need for research related to socio-economic, cultural and environmental features of DCs in Asia, Sub-Saharan Africa, the Mediterranean and Latin America. As far as the Mediterranean area is concerned, there is also the prospect of a future Free Trade Zone with the EU.

The EU's S&T co-operation programmes targeting DCs, evolved from bilateral activities between the EU and recipient countries, in the STD programmes to specific programmes in the FP structure, INCO DC (FP 4) and INCO DEV (FP 5). The first issues concerning developing programmes were in agronomy (a spin-off of the green revolution), health matters,

research and environmental issues. The STD programmes were “customer or demand-driven”, where the DCs had the first say in setting priorities. Other areas, such as information and communication technologies, energy and materials, were included in FP 4 as a result of a political process which targeted more advanced countries. FP 4 represented a revolution in EU RTD relationships with the DCs. The EU streamlined INCO DC in accordance with the overall approach of the FP in that:

- the Commission invited proposals via calls for proposals to meet identified areas in need of research;
- projects had to be carried out by consortia between partners from EU and DCs, indicating that there should be a mix of partners;
- there was a need for a regional dimension in a consortium to contribute to capacity building in DCs. In this scenario, similar problems in different geographic areas could be studied sharing common preoccupations;
- a continuous regional dialogue was envisaged in order to maintain contacts with regional groups of the scientific communities and contacts with different bodies in DCs, such as SADEC, ASEM club, SITED.

In FP 4, emphasis was still on technology- the production of tools to initiate, develop or further processes. Approximately 90% of the budget was allocated to three main areas - health, natural resources (here the highest percentage of contracts concerned water-related projects), and agriculture. Other technologies such as materials, information and communication, were fringe activities in INCO DC. In addition, DCs could benefit from support for participation in specific programmes of FP 4, especially environment and climate, information technologies and communication technologies.

In FP 5 a new element of a strategic approach was added to address issues to influence policy. In short, FP 5 could be classified as policy research, systems research and research on tools for sustainable development. Policy research concerns policy development and should be knowledge-oriented, meet basic needs (i.e., poverty) and aim at sustainable development strategies (optimising the use of resources). The aim is to facilitate DCs to formulate their own priorities.

In FP 5 there was also a radical change concerning the enlargement of partnerships. The thematic programmes are now open for the participation of non-EU and non-associated countries. There has been a considerable increase in the participation of Third countries in the thematic programmes, mainly from Israel, US and Canada. Asia, Africa, Latin America and the Mediterranean countries have been participating at a much lower level. In this context **the Panel suggests that the INCO management act as a driving force and structure the dialogue with DCs in order to involve them in a more substantial way in the thematic programmes.**

The Mediterranean countries are regarded as developing countries under INCO DEV. In addition, there is a dedicated INCO MED programme, which is a partnership programme, reaching beyond the subjects of INCO DEV. INCO MED tackles specific topics so as to focus the programme on a regional basis and to include differences between areas. The Med-dialogue is improving with regard to priority-setting, with water pollution appearing to be the main problem. *However, the Panel notes that agriculture does not feature in the specific INCO Med agenda despite the important role it is playing in those countries.*

The heterogeneity and complexity of the programme is high as exemplified in the EU's relation with Turkey. Turkey, a third country, is a developing and an emerging country, and is also a both a Mediterranean partner and a pre-accession country.

The programme objectives show both a high diversity and policy complexness. As a result its *outcomes and impact are not easy to measure*. **Criteria by which to monitor and evaluate the achievements of the objectives should be defined, as well as the criteria needed to assess both the success achieved and the effectiveness of exploitation and dissemination of results.**

The role of INCO DEV is to align EU-RTD co-operation with developing countries with other Community policies, activities and initiatives. **This type of co-ordination and policy support by INCO DEV is important and ought to be better presented and organised.** A well-structured dialogue between INCO DEV and the thematic programmes is required. The dialogue should be based on commonly agreed policies and strategies and not merely on personal commitment and enthusiasm.

3.4.2. The regional dimension

The co-operation with DCs evolved from a "customer demand" driven procedure in the STD programmes through calls for proposals to meet identified areas under INCO DC to the introduction of the regional dialogue (step 2) in FP 5. The EU/ASIA meetings (ASEM) are a product of this dialogue. For the latter, the term "regional" requires definition - is it related to cultural aspects, or to a political entity? This is not clear from the documentation advertising the call for proposals and should be rectified in the re-orientation of FP 5 and for FP 6. Furthermore, analysis of the core data did not reveal any evidence of regional-based pattern of individual project integration or regional priority setting (see Annex III).

The Panel suggests that a region must represent an area or situation where it is perceived that the research results will apply and lead to the most widespread benefit emanating from a communality of outlook by its users living there. The Panel is also concerned that the development of national programmes and clear understanding by different countries of where their individual programmes fit into the regional context, should be an essential requirement for success. There is the additional consideration that there has to be a clear structure for defining the lead-/ or co-ordination role.

3.4.3. Assessing efficiency

The Panel collected evidence that INCO-DC and the preceding STD programmes played an important role both in supporting collaborative scientific research, and networking and concertation by accompanying measures. This is exemplified in the finding that there are on average six partners per project with three from EU countries and three from DCs. Furthermore, the Panel concluded that INCO-DC was enjoying growing recognition and support in the research community, and its implementation seemed to have adequately covered all its main objectives. It made a major additional contribution to that of the STD programmes when consolidating international collaboration and facilitating the achievement of other aims of European integration and particularly of multilateral co-operation inside the EU.

There is the problem of insufficient staff - for 450 projects there are only nine scientific officers, who, in addition, must maintain contacts with other DGs and develop and maintain links with national and regional authorities and programmes in DCs and outside agencies such

as WTO, WHO, CGIAR, FAO. *The Panel is concerned that there is not sufficient time for S&T monitoring in addition to the bureaucratic follow-up of projects and the policy support activities.*

Overall, *the high diversity and policy complexity made it difficult for the Panel to evaluate in depth, in the time allocated, the overall impact of the various programme results. The Panel recommends that an evaluation of research carried out to date should be initiated* with a view to the more detailed evaluation of the socio-economic and other impacts of projects and groups of projects. In addition **there is a need to identify mature research results, which could be integrated into the development activities and programmes of the EU.**

Information and transparency: Dissemination of information was a problem early on and even to date it is not sufficient, basically because there was never enough staff or resources to meet the requirements of DCs. A good deal of effort went into publications in collaboration with a private company which did not, however, deal with countries outside the ACPs, for instance, Latin America. The Internet greatly facilitated the dissemination of information. The harmonised information package in FP 5 was considered more complicated, too heavy and too complex for the specific target clients of INCO-DC, because the specificity that existed previously has been lost.

Modes of action: Joint research projects were essential for DCs, with participation being 50:50 between EU and DC. Concerted actions, however, proved less effective, because in DCs there are special demands for project work to be funded. From all financial resources, only 35 to 45% was allocated to DCs partly due to the higher overhead rates charged by EU countries. It could be argued that this is too low a proportion. Funds allocated to concerted action partnerships were considered to be well spent, however. Demonstration projects are not of great relevance, since dissemination should be supported in the framework of development activities of DG VIII. By comparison, accompanying measures are very important and should be continued but in a modified form or be re-oriented respectively. Because of the large distances between partners, **accompanying measures should also be used for exploratory activities towards the preparation of project proposals.**

Allocating the same period of time to all projects is unrealistic because some projects need longer time-periods than others because of the nature of the work. A three-year time limit is usually too short for projects involving DCs. **The Panel recommends more flexibility**, with a possible duration up to five years, with an intermediate evaluation after three years.

In general, **the Panel considers that INCO DEV should have a larger proportion of the INCO budget when it is measured against the potential** outlined above (inclusion of NIS and other countries) and its role to date in international co-operation with DCs.

INCO Med: The Panel agrees that the Med-area deserves special attention. However, since *only time will tell whether it would be good to have a separate programme entity for the Med-countries in FP 6*, **a monitoring process should be initiated to assess this issue.**

Failures: The issue of failures was also addressed by the Panel and the failures were broadly categorised as follows:

- i) projects which were terminated by EU
- ii) projects which were terminated by the co-ordinator and / or the partners
- iii) ongoing projects which have not been completed within the original time scale.

The Management Information System should be used to identify the characteristics associated with failures and to apply the key criteria that separate successful projects from failed projects, in order to learn from the failures.

Generally, consistency in projects remains a real problem. In some cases, projects had not been well conceived from the outset, or had over-ambitious goals, were not properly understood by partners, or partners did not fit the Programme objectives. Project disruptions had been caused by a lack of continuity in the teams involved (e.g. DC staff going abroad to take a Ph.D. degree). DC scientists cannot start to work before payment is received, a process that takes a very long time because the internal Commission procedures are extremely complicated. This raises the issues of timing and finance for DCs.

3.4.4. Assessing effectiveness

The programme was oversubscribed and had a really low funding success rate in FP 4 of 12%. This resulted from the severe selection pressure where only about 50% of the A rated submissions could be funded due to the small budget. The Panel is concerned about the low rates of participation from some strategically important DCs (see Annex III).

Clustering or merging of projects should be considered more widely in order to ensure that the different disciplines required to interact in most projects have the opportunity to do so, and also to reduce the number of projects. This should result in a more comprehensive research in different problem areas and would most likely lead to more innovative projects and even greater international co-operation and dialogue.

The Panel sees a problem in that the importance of the programme might decline if no measurable results can be presented. The Panel was surprised to find that there were only insufficient statistics available on publications, joint publications, numbers of Ph.Ds, as well as on education and training. In this context, the Panel supports activities such as the recent inquiry into projects. It has to be pointed out that the scientific excellence in DCs should not be under-estimated and that the potential exists to bring together the best teams from DCs and the EU.

However, scientific and technological quality must never become the only criterion - important strategic aspects are involved, as well as aspects related to regional relevance, including education and training. The budget of about 3.6 MEuro for the present INCO programme's training component (with a limit of 20% of total project costs) is seen as a rather "modest pilot phase".

In relation to European added value, significant co-ordination efforts are required to secure capacity building in both the EU and DCs. In this respect, therefore, important criteria on which to place emphasis are the maintenance and the re-enforcement of research co-operation. The partnership format in FP 4 greatly facilitated the mobilisation of personnel and subsequent co-operation.

The regional priority component has an important role to play so as to encourage South/South co-operation. INCO-DC was used by the Commission as an example of the methodology to be followed in how to work in other types of international co-operation. For instance, INCO-DC had been deeply involved with the Convention on Desertification as a follow-up to the Rio Meeting. It has managed to reflect EU external relations successfully and has collaborated well with DG VIII. The Programme was complementary with the developing

funds but less successful with economic co-operation. This limited the achievements of some projects.

The industry component is rather weak in INCO. However, industry interaction is required in, for example, the development of vaccines which must be carried out on a commercial basis if the information is to be used. In integrated pest management as well as in the medical sector and in the farming area, industrial involvement is also necessary. *Since no commercial returns can be expected so far, international action is needed. EU-funded benefiting laboratories should allow free access to information and should not be allowed to retain sole access to information with a view to the commercialisation of the products. The co-operation with the Quality of Life Programme is considered important* in order to stimulate EU co-operation to develop vaccines. In INCO phases 1 and 2, human-based trials applied to different local populations in DCs were very important. It is felt that there should be special initiatives to motivate project teams to disseminate results or to utilise Intellectual Property.

Social objectives, strongly related to issues of health and environment, imply various obligations, such as nutrition, the quality of the environment, and the development of health facility systems (also WHO), including the optimisation of regional actions. Increased domestic food production and better planning of health systems in DCs should be facilitated by means of research. The same holds true for the sector of agriculture, e.g. adaptation of crops to drought.

The Panel shares the view of the Programme management that the money allocation per contract should be increased to an average of 700,000 to 800,000 Euro, rather than roughly the 500,000 Euro level that is common at present. Such an increase is considered important if the impact of projects is to be boosted.. This view is supported by aspects of administration, implementation of the regional concept, and complementarity that can be achieved by the merging of projects leading to a stronger interdisciplinary character more appropriate for a problem solving approach.

Co-ordination with other Community activities is considered to be good, although it is not formally organised but mostly based on an understanding reached between individual persons. In order to build on these positive commitments, **the Panel sees a need to develop commonly agreed strategies on procedures to safeguard continuity.** Moving agricultural research from DG VI to DG XII was considered to be a significant improvement.

Thematic networks for dissemination are being established to bring research results to the development phase, - e.g. from DG Research to DG Development - and some initiatives exist in this category now. *EIARD*, the European Initiative for Agricultural Research and Development *is a positive development in the co-ordination between Member States* aimed at alleviation of food shortages. The tropical forest network and the European Malaria Vaccine Initiative (EMVI) - are other useful activities in this context. There were also many links with other programmes such as MAST, Biomed and Environment. Some accompanying measures with ENRICH were jointly funded. SHARED (Scientists for Health and Research for Development - European Initiative on Health Research and Development) was concerned with sharing information on health research which was strengthened by means of Web communication.

The Panel suggests that INCO DEV could examine the available information in certain areas such as biodiversity, fishing, sustainability and should have regular consultations with DG Development to see what kind of results exist that are ready for a development test

phase. A commercial test phase should be included for thematic areas in collaboration with DG Development. This could streamline procedures and improve quality as well as any future evaluation of impact. The user cannot be expected to take on the risks involved in testing new procedures or systems.

The Panel supports all activities which have as their aim the involvement of industry in the projects.

3.4.5. Achievements

As for the results of S&T co-operation with DCs, it has to be noted that the results from STD 3 are available, many projects from FP 4 are still running, and FP 5 is in the process of starting up.

The programme has succeeded in getting the European research community involved in development issues on a multi-lateral basis. It is important that these aspects of the programme are not only considered but also recognised in the FP funding decisions. Furthermore the subsequent programmes under INTAS and COPERNICUS were modelled utilising the experiences developed under the STD/INCO programmes.

The programmes have strengthened the capacities of DCs in many areas, contributing to the consolidation and amplification of local research activities in the areas of environment and health, and to a certain extent in agriculture. In Europe, they have acted as valuable interacting and consolidating agents between national or bilateral activities. This may have precluded inefficiency associated with duplication. In addition, the skills and information sources available in different member states became more widely understood and appreciated and the identification of other researchers in similar work areas contributed much to overall progress and efficiency. It was noted also that the EU / DC interaction worked in both directions and that the knowledge did not flow in one direction only. In this way, the EU has experienced a net gain from its involvement with the DCs. The concept of "partnership" has become stronger. Since 1994, the possibility has existed that the scientific co-ordination could be performed from the DC side. However, the percentage of such projects is still low.

The Panel considers EIARD as a positive example for co-ordination between Member States. Similar initiatives in other areas, e.g. health would be necessary. **There is a need for more Thematic Networks under INCO DEV.**

Specific achievements (success stories) were outlined in documented format to the Panel. The publication "European Community research and co-operation with developing countries" gives some examples of good programmes in the areas of malaria research, crop husbandry and prevention and control of animal disease. The publication list of DG X11 B-4 is further evidence of progress within the different programme areas. There are some 450 projects under INCO-DC.

3.4.6. Lessons learned

In connection with the future programme design of INCO-DC, there should be as much flexibility as possible to make the dialogue process work. In addition, to governmental institutions a 'sounding out' with representative institutes and researchers in the DCs is considered essential to proper programme design which would lead on to dedicated priorities. It is also necessary to optimise the regional dialogue with different regions as targeted in FP 5, in order to assess the real needs.

The Panel noted that it is important to have staff with inter-disciplinary knowledge and experience. National experts from DCs should be seconded for short periods to the Commission services as a method of improving the mutual understanding and interaction, also at the level of research programme policy development, administration and management.

3.4.7. Recommendations for the future

The Panel supports keeping scientific and technological co-operation with DCs as separated specific measures in FP 6 under the first Horizontal Activity. It should be ensured that in the preparatory phase of the new programme both the expectations and needs of the developing countries and the potential benefits of the European Union be taken into account in a well-balanced way.

In addition, **continuous interaction, co-operation and co-ordination with the Thematic Programmes of the FP and other DG's activities should be institutionalised.**

There, the dual function of INCO has to be emphasised. INCO DC has developed the culture of not only implementing specific measures for R&D collaboration with third countries but also fulfilling the co-ordination and policy support role towards other Community policies, activities and initiatives.

- *Mid-term-reorientation of FP 5*

The Panel states that it is imperative to evaluate the present method of identification of the appropriate research needs of DCs. An independent group of external experts should evaluate a selected number of projects to consider to what extent these projects are carrying out research appropriate to the needs of the target developing countries. Government authorities, research organisations and users should be interviewed in this context. This would produce information useful in the preparations for FP 6 and the future design of the project evaluation and selection procedures appropriate to the conditions of RTD co-operation with developing countries.

The term "policy research" must be better defined and "policy research" must be tied to certain actions which are measurable, so as to be in a position to evaluate progress made as a result of the new "policy research" approach.

The INCO staff has accumulated significant levels of special knowledge, competencies and expertise on RTD co-operation with DCs. The Panel recommends that the further development and utilisation of this special expertise be ensured.

- *Priorities setting for FP 6*

The priority setting process for FP 6 will have to take into account the fact that there have been major changes in the climate of opinion. The Rio Earth Summit, WTO etc. were responsible to a large extent for a change in the general outlook. The probable inclusion of a European Research Forum and its integration into a Global Research Forum (to be decided at the Berlin Meeting in June 2000 where the overall aim is to achieve a convergence of outlook on research needs) can be expected to affect INCO DEV from a number of aspects. Currently, because the DCs identify their own problems, this could be risky as the problems they identify may reflect only their perception of the problem (again the Panel suggests that the value of the regional dimension for problem identification be questioned, especially if it is

only at Ministerial level) rather than the real problems. Therefore, **maximum use of input and feedback should be made from existing S&T networks in parallel with discussions with governmental organisations.** The regional dialogue does work, but it cannot be considered optimal since major social and cultural problems (scientific education, organisational aspects, attitudes, approaches, the ethical background) affect priority settings. Here, *the aim has to be to get governments to establish a better environment for research and the FP has to be flexible so that urgent demands from DCs can be addressed.*

Specific framework conditions are needed to ensure a regular policy dialogue and to manage RTD co-operation with DCs.

There is also a general need for simplification in order to make the co-operation programme easier to understand for proposers from DCs. The Panel recommends that all the different INCO programme areas be integrated into one activity. This view is supported by the observation that there is no indication for cross-area co-operation between separate programme areas of INCO, although there are similar issues and problems and although there is a large potential for synergies. *An integrated single programme would in this regard serve to consolidate relationships, particularly between the non-associated CEE and NIS countries and the Southern countries.* This in turn could be expected to be of very great European added value since in this scenario the lessons learned could be applied to this new venture, building on the experiences already gained.

As regards implementation the Panel recommends that advantage be taken of more flexible elements and structures similar to INTAS , as well as for co-operation with DCs.

These matters must form the substance of FP 6: it is suggested that they can be expected to maintain and improve the overall main aim of the Framework Programme which is to improve European competitiveness. In the long term bringing together the 'new' eastern European countries with the existing INCO DC countries can only be in the wider interest of EU in relation to added value.

4. Identified major trends - observations from the Core Data

4.1. Identified major trends from previous monitoring exercises

The core data supplied to the 1995, 1996 and 1997 Monitoring Panels have not been analysed to a large degree. In 1996, those data contained input exclusively from DG XII-B since the other DGs concerned with the INCO Programme did not have the data readily available in the required form nor the resources to obtain them.

Although the situation two years later was far from ideal due to the deficits of the Commission Internal Management Information System, more useful core data were provided in 1998.

According to these overall statistics and the core data for 1998, scientific quality and excellence were the predominant criteria for the selection of proposals. Due to the limited funds available, the success rates in shared cost actions remained rather low with an average rate of approximately 15 %. Recognising these facts, the *Panel emphasised that the funds available for INCO were not high enough to retain the interest of the European research community in this programme.*

4.2. Achievements based on recent statistical overviews

A first assessment of FP 4 achievements was elaborated by the expert Panel on the basis of data available in *INCO Statistical Overview on International RTD Co-operation in FP 4 (1995-1998). Wrap-up INCO 1 (Final)*, EC DG XII, July 1999. The detailed analysis may be found in the Annex III: "Observations from the Core Data". The major findings areas follows:

The distribution of the actual INCO budget exhibits the EU priorities in favour of international co-operation with DC and CEEC/NIS. On the other hand the allocated budget does not sustain a strictly balanced effort in the co-operation with both privileged areas since the CEEC/NIS share in implementation is slightly above that of DCs. The main beneficiaries of FP 4 appear to be CEEC: just as in the overall EU economic assistance to "the East" (PHARE and TACIS) more funds are geared towards CEEC than to NIS.

4.2.1. INCO Specific Actions

The success rate is rather low for applications to INCO-Copernicus (16%), and even lower for INCO-DC (12%). The success rate is higher among the largest proposals submitted. Smaller proposals fail more often, on average.

As to the DC, a noteworthy fact is the over-representation of ACP among participants of selected projects when referred to the weighting of these countries among participants of proposals received. Is this relatively high success rate (22%) due to the higher quality of their proposals.

On the side of EU and Associated States, the *lion's share* of the number of INCO-Copernicus participants to proposals received is in the hands of Germany (19% of the total number of participants) and UK (15%). Almost the same proportions prevail in the selected projects. The concentration of EU-Associated States in the number of INCO-DC participants compares with that of INCO-Copernicus: two countries make up roughly one third of the total number of participants to proposals received, the UK (18%) and France (16%). In the selected projects, this level of concentration is even higher.

4.2.2. Third country participation in Specific Programmes

Third country participation in Specific Programmes is concentrated on EFTA-EEA (34%) and other European countries (29%) in respect of proposals received and even more so in respect of selected projects. It is worthy noting the 0% success rate of non-European NIS, which seems to express both a lack of interest of the EU to become involved in RTD in this area and the low level of RTD in these countries.

The numbers of participants in proposals in which EFTA-EEA countries are involved, is rather significant (5389) and strongly concentrated on Norway (87%) as compared with Iceland and Liechtenstein. The dominant sector (topic) (in terms of attracting participants to proposals) is agriculture-fisheries. What must be underlined is the important effort of the EU in developing international co-operation in the fields of dissemination of research results, and communication technologies.

Among CEEC, the lion's share in participation in proposals received concerns proposals involving Hungary – Poland - Czech Republic (61%); these countries have 62% of participants in selected projects from the CEEC area. Such a concentration on the three "most advanced countries" in the post-socialist reform process is quite similar to the concentration of

PHARE aid in the same countries. We observe that, as to the number of participants, the major sectors are exactly the same as the most important sectors of RTD co-operation with EFTA-EEA countries, though with a different ranking.

The overwhelmingly important share of Russia (79%) in the proposals with participation of European NIS results in its lion's share (79%) of the participation in selected projects within this area. The privileged sectors of co-operation with the European NIS, in terms of success rates, are different from those privileged in the co-operation with either CEEC or EFTA-EEA.

There is also strong concentration in the co-operation with DCs. Four countries attract together 52% of all the participants of selected projects among DCs: Tunisia (17%), Morocco (14%), Egypt (12%) and Brazil (9%). As far as success rates are concerned Tunisia (39%), Morocco (52%) and Egypt (59%) have above average (28%) success rates. Environment and climatic technology is by far the dominant area of DC proposals, but is only at the second rank of participants in selected projects. It is preceded by participation in projects in information technology.

Among other European countries, the great bulk of participants to proposals (95%) concerns proposals with Swiss participation. The most important areas (selected projects) are slightly the same as for the co-operation EFTA-EEA and CEEC.

As far as non-European industrialised countries (NEIC) are concerned, 60% of the proposals received originated from Israel. The high success rates of proposals with participation from Korea (67%) and Taiwan (50%) must be stressed although these figures are based on a very small sample. The sectoral distribution is not very different from that of co-operation with EFTA-EEA, CEEC and Switzerland.

4.2.3. The results of a correlation study

A third exercise was carried out by the Panel (Annex III, 3) which consists of a correlation study between INCO data on the one hand, and on the other hand some significant or representative data of economic size measured by GDP, as well as with data reflecting in some way the state of the research sector in these countries (using World Bank data series³). The main results concerning participation of CEEC and NIS countries are :

The number of participants in proposals with participation from CEEC and NIS is correlated with the economic size of these target countries. In other words, the bigger the economy, the greater the number of participants in proposals received, which is quite in tune with economic common sense. The number of participants in signed contracts depends, to a rather large extent, on the economic size of the country. This means that the success rate (and thus the quality of the proposals) is not much influenced by the economic size of target countries, so that there are no major discrepancies between the rankings in terms of economic size, in terms of participants in proposals received, and in terms of participants in signed contracts. This can be interpreted as a sign that the quality of proposals (and the quality criteria used in the selection of proposals) is not at all dependent on the economic size of target countries.

The number of participants in signed contracts being no more correlated to economic development than the number of participants in proposals received, we can conclude that *the success rate* (and the quality of proposals) can be equally high among the most and the least developed CEEC and NIS. The quality is proposal-specific and not country-specific.

³ Selected World Development Indicators“, in: World Bank Development Report 1999-2000, World Bank, Washington D.C.

Weak correlations mean that neither the level of education nor the overall endowment of the research sector activity with a great number of scientific workers are determinants of the number of participants in proposals with participation of CEEC and NIS to INCO. The interpretation of these results is a bit more tricky. The capacity of CEEC and NIS to participate in proposals to INCO does not depend on their overall RTD potential. A reliable conclusion here would require a deeper analysis of the transitional RTD sector in CEEC and NIS to be carried out.

The results are similar for COPERNICUS alone and for the overall INCO, as regards the participation of CEEC and NIS.

. The financial contribution of INCO-COPERNICUS to CEEC and NIS is well correlated with the economic size of the participants' country, and the ranking of any two countries according to the two variables is similar with a 78.69% probability factor. We can thus conclude that the distribution of COPERNICUS research credits to CEEC and NIS is uneven, favouring the bigger countries. However, this is basically due to the capacity of these countries to apply with a greater number of participants in proposals. COPERNICUS funds flow much more to the most developed than to the least developed CEEC and NIS.

If we assume that the researches triggered by the COPERNICUS finance allocated to CEEC and NIS are likely to upgrade their economic development in some way, then we can speculate that COPERNICUS is not moving towards the trend of levelling off economic development throughout the whole CEEC and NIS area.

There appears to be a good correlation between the COPERNICUS financial contribution to CEEC and NIS and the number of patents filed in these countries (even though the great bulk of patents are from non-residents there). COPERNICUS finance is first allocated in CEEC and NIS where it is the most likely to come out with the biggest RTD output (i.e. the number of patents).

The results obtained in the case of DCs are quite comparable:

The number of DC participants in proposals is correlated with the economic size of these target countries. The number of DC participants in signed contracts depends on the economic size of the country, but to a lesser extent than on the number of participants in proposals received. In other words, large DC economies perform less well which slightly alleviates their initial size advantage in the participation to proposals received.

Neither the number of participants in proposals received, nor the number of participants in contracts signed is correlated with the level of economic development of target DC, expressed by their GNP per capita. The quality is probably proposal-specific rather than country-specific in the sense of being related to the level of economic development of the country.

Neither the level of education nor the overall endowment of the research sector activity with a great number of scientific workers is determinant of the number of participants in proposals with DC participation.

There is no correlation between the number of DC participants in signed contracts and the number of scientists and engineers.

The results are similar for INCO-DC and overall INCO participation. The financial contribution of INCO-DC to DCs is well correlated with the economic size of the participating countries.

4.3. The participation of women in the INCO programme

In view of the increased effort being made in FP 5 to strengthen the presence of female scientists in all specific programmes the Panel has investigated the current input of women to the INCO programme. Some figures were available for DG XII:

In the 391 INCO-DC FP 4 contracts approximately 12 % out of a total of approx. 2465 participants and approx. 13 % of the co-ordinators were women.

In INCO Copernicus a minimum of 11,9 % of the participants and 7,9 % of the co-ordinators were female.

In the INCO 1999 calls – FP 5 – 19 % of the contact persons (180 of a total of 965 proposals) were women. Regarding the gender of contact persons in the different calls of 1999 the female presence was rather low with only 9 % (19/206) in the INCO-Copernicus call for shared cost projects, concerted actions and thematic networks, and it was rather high with 81 % (34/42) in the Japan Fellowships

The presence of women was also visible in the proposal evaluations: for the proposal evaluations of the 3 INCO-DC calls in FP 4, a total of 638 evaluators were used, of which 65 (10,1 %) were female and for the INCO Copernicus evaluations of the 1997 call 22 (15,1 %) out of a total of 145 evaluators were women. For the proposal evaluations of the INCO 1999 calls – FP 5- the Commission nominated 167 male and 40 (19,3 %) female experts.

The Panel warmly welcomes these efforts to increase the female input to INCO and encourages the programme management to approach more qualified female scientists, in particular for the proposal evaluations.

4.4. Response to the new approach of FP 5

The total budget for INCO in FP 5 is 475 MEuro, including 70 MEuro for INTAS.

The statistics and data available to date relating to the first year of FP 5 performance, do not allow to draw definitive conclusions concerning the attraction of the programme to the scientific community and to the countries and regions addressed by the different programme areas.

By the end of 1999, only 9 contracts were signed, corresponding to a total financial volume of only 1,53 MEuro.

The total number of proposals received in 1999 was 1028, involving 4204 partners. 49% concerned shared-cost actions, with a total requested financial contribution of 433 MEuro. Accompanying Measures are responsible for 36% of the proposals received, with a requested financial contribution of 187 MEuro. Fellowships represented approximately 10% of the proposals.

Following the evaluation by independent experts 275 proposals were selected for the negotiation of contracts which corresponds to a success rate of 26,75 %.

From the proposals selected for contract negotiation 64 were selected for funding in 1999. These proposals involve 215 participants, and the total financial contribution of the Commission amounts to 27,40 MEuro.

Due to the short time available for the preparation of proposals the response to the first calls in INCO was weak. However, the situation improved in the course of 1999. The breakdown by programme areas shows the following:

COPERNICUS-2 (shared cost projects, concerted actions, thematic networks): 206 proposals involving 1252 participants;

COPERNICUS - Centres-of-Excellence (accompanying measures): 185 proposals;

INCO-MED (shared cost projects, concerted actions, thematic networks): 109 proposals in total, of which 42 for the June 99 deadline and 67 for the September 99 deadline

INCO-DEV (accompanying measures): total of 72 proposals, of which 27 for the July 99 deadline and 45 for the November 99 deadline

INCO-DEV (shared cost projects, concerted actions, thematic networks) registered 242 proposals in total, growing spectacularly from 38 for the June 99 deadline to 204 for September 99.

A preliminary analysis of the involvement in INCO proposals by countries shows a very diverse pattern. There is an impressive involvement of the candidate countries and the countries associated to FP 5: in total those countries are represented in 553 proposals. The most active countries are Poland (participation in 73 proposals), Bulgaria (51), Romania (47) and Hungary (45).

Russia appears with participation in 422 proposals, 278 of which to Research Centres (including the JRC). Ukraine is involved in 116 proposals.

Non-European industrialised countries are represented in a very small number of proposals.

Mediterranean Partner Countries contributed to 321 proposals, among them – as before in FP 4 - Morocco (82), Tunisia (60), Egypt (54) and Jordan (43) as the leading countries.

As to the non-European NIS and Mongolia, only Uzbekistan (26 proposals) and Kyrgyzstan (14 proposals) had a considerable involvement.

Asian countries are not well represented with participation in only 98 proposals. The leading countries here are Pakistan (22) and Thailand (16).

Latin American countries appeared with an interesting and well-distributed participation: Brazil (49) and Argentina (40) have the lead, followed by Mexico (30), Colombia (24) and Cuba (19).

The ACP countries' participation in proposals is limited, with Kenya (46) as the leading country, followed by Senegal (24), Tanzania (19), Zimbabwe (18) and Uganda (18). From the 76 ACP countries, 52 do not participate in any or in one proposal only.

In summary, the first data available for 1999 show a very differentiated involvement by regions and countries. The Panel notes the strong presence of the candidate countries and countries associated to the FP, as well as the visible presence of the Mediterranean and Latin America Countries.

The Commission provided also some preliminary data concerning the participation of third countries in proposals to the thematic programmes. The largest interest was in "Competitive and Sustainable Growth" with third country participation in approximately 39% of the proposals. The thematic programme "Quality of Life and Management of Living Resources" registered third country participation in 25% of the proposals submitted; "Energy, Environment and Sustainable Development" had third countries in 23% of the proposals, and the "User-friendly Information Society" had 12%.

5. Conclusions and Recommendations

5.1. Conclusions concerning INCO's role in the Framework programme

The evolution of the Community's international R&D collaboration from FP 3 to FP 5 represents – in the Panel's view – a most impressive achievement, since the Commission succeeded in integrating into one single programme all non-nuclear international R&D activities of the Community. These activities encompass both important policy support measures and targeted operational programmes with all categories of third countries. The INCO Programme made essential contributions not only to the Community RTD policy but also to other EU policies, like for example external policy, development policy, agricultural policy.

5.1.1 INCO's co-ordination and policy support role

- **INCO** is the leading force for implementing specific measures for R&D collaboration with third countries on the one hand. On the other hand, INCO has an important co-ordination and policy support role in the context of the international dimension integral to each of the other specific programmes of the Framework programme. The cross-programme and cross-DG tasks and activities and the related demand on the INCO staff do not seem to be adequately acknowledged by other Commission services. **The Panel strongly encourages the INCO management to better present the dual function of INCO.**

The cross-DG tasks “joint initiatives and interfaces” in areas of global significance such as environment, food, agriculture and health are important since INCO project results can also be exploited by others, in particular also by other Commission services. **Therefore, the Panel recommends that a well structured and continuously nurtured dialogue between INCO, the thematic programmes of the Framework Programme and other DGs relevant for international co-operation, be further developed.** This dialogue should not rely merely on the commitment and enthusiasm of individual persons but must be based on clear policies and strategies, whereby an institutional memory is also ensured.

- As a first step the Panel sees a need for the INCO programme management to **provide a rolling record of all activities and services rendered internally to other services.**
- The Panel is convinced of INCO's contributions to other community policies, especially in the context of the enlargement process, but it is difficult to quantify the achievements. Therefore, it is recommended that these aspects be borne in mind when formulating future programme objectives. **Explicit reference should be made to policy research in order to facilitate the ex-post evaluation of measures.**

5.1.2. Global S&T Co-operation as a separate programme in FP 6

Due to the very special nature and the global relevance of the international RTD activities of the EU the Panel recommends keeping a well-designed, specific programme for this area of Community actions under Framework Programme (FP) 6.

- *Objectives:* The international research dimension of the EU can be motivated by complementary issues such as problems related to global issues (food supply chain,

biodiversity, atmospheric pollution, clean and efficient energies, global diseases, health problems), scientific co-operation for economic growth and profit, and research for development. This view is supported by the problems of globalisation and the challenging tasks to ensure adequate communication channels and very well-designed action lines for collaboration with all categories of countries world-wide. Another aspect is the new organisation of knowledge production and the need for the European Union to tap into sources of knowledge on a global scale.

- *Structure:* The design and the structure of a global S&T co-operation programme will have to be carefully considered. **The Panel recommends that the two principal objectives available in FP 4 and FP 5 should be kept, because the dual function of the programme is very well reflected in these two objectives.** For the specific programme on co-operation with third countries there is a general need for simplification of presentation and procedures in order to make this programme easier to understand for proposers. **The Panel recommends that all the different programme areas be integrated into one activity.** This view is supported by the observation that there is no indication for cross-area co-operation between the four separate programme areas, although there are similar issues and problems covered by the RTD activities providing a considerable potential for synergies. **As regards implementation the Panel recommends that more flexible procedures similar to INTAS should be used as far as possible.**
- *Contents:* **The Panel stresses that EU research should be relevant on a world scale.** Researchers from third countries should come to Europe, taking into account its particular societal dimension, ethical issues, dissemination and exploitation of research results. Of course not everything should be done at the European level, but activities at EU level can facilitate the discussion and will provide an opportunity for multi-lateral collaborative research not supported by any other programme, action or initiative.

With existing programmes, successful co-operation must be driven by research objectives to ensure an internal logic to actions such as nutrition, environment and health. Industrial research logic is driven by the research logic of individual countries and companies.

With regard to research logic, it might be interesting to look for areas of international RTD co-operation which are of specific importance for the EU. Examples are bio-diversity in Latin America, software in India, and biomedicine in DCs as a whole. **In addition, the specific research potentials of different countries have to be taken into account.**

Concerning methodologies for identification of problems and research areas **the Panel shares the view of previous monitoring panels that maximum use of input and feedback should be made from existing S&T networks**, in parallel with discussions with governmental representatives. Since both in CEEC and developing countries the views of the S&T communities frequently differ in substance and emphasis from the statements of official and governmental representatives, such views could be gathered through regional and thematic workshops. Appropriate assistance mechanisms should be developed more widely in both CEEC and developing countries as accompanying measures to existing programmes.

Debating these issues at global level is not an easy task, though the EU encourages European discussion. **The Panel welcomes the discussion on the European Research Area and recommends that these developments should be considered in the preparations of the future programme.**

- *Budget:* With regard to the budget of the future Framework programme the question arises how to deal with more areas from a broader geographic, social and cultural base now that there are effectively 30 countries eligible for funding. **There is a clear need**
 - 1) **to further concentrate and prioritise in order to ensure the levels of funding required for any relevant effectiveness,**
 - 2) **to improve staffing, and**
 - 3) **a slight increase of the operational budget should complete the adjustment to the increasing number of eligible countries.**
- *Interaction with other programmes and instruments:* **High priority should be given to strengthen the working relationship with PHARE, TACIS and MEDA.** In agricultural research, especially in collaboration with DCs, the Panel considers EIARD, the European Initiative for Agricultural Research and Development, as a very positive activity for the dialogue, co-ordination and co-operation between Community S&T and development activities of the member States.

5.2. Conclusions and recommendations concerning the different areas of INCO

5.2.1. Co-operation with other fora

- *COST* was very successful during the reporting period and continues to be very well accepted by the European research community. **The Panel recommends that the Commission should become a formal member of COST** in order to ensure a well defined relationship and interaction with COST. The responsible COST management bodies should develop an adequate set of criteria for the ex-ante evaluation and selection of proposals for new COST actions. **The COST Secretariat(s) should be organised administratively independent** from the Commissions internal procedures.
- *EUREKA* is going through a transition phase and appears close to a re-launch. **There is a need for re-considering the general design of EUREKA** and ensuring the co-ordination and complementarity between the Community RTD activities and EUREKA, taking into account, however, the different orders of magnitude both with respect to the number of projects and budget of the two activities. For FP 6 appropriate modalities to support synergy between the different fora for RTD co-operation in Europe should be foreseen when preparing the new rules for participation.

5.2.2. Co-operation with Central and Eastern Europe (CEEC) and the Newly Independent States of the Former Soviet Union (NIS)

- *CEEC pre-accession countries:* INCO played an important role in preparing the pre-accession countries from Central and Eastern Europe for full integration into the Community research activities under FP 5. This was achieved by very efficient and effective information and assistance activities organised and supported by highly committed Commission staff, and by the participation of researchers from those countries in PECO, INCO-COPERNICUS and in other specific programmes.
During the whole duration of FP 5, some accompanying and assistance measures should be offered to the CEEC accession countries. In FP 6, there should no longer be any special action line devoted to these countries.

- *Balkan region:* As far as the legal framework allows, **some preparatory measures for the Balkan region should be set up** and at least some accompanying measures should be offered to the Balkan countries already in FP 5. A dialogue on how to address this region in FP 6 should be initiated. **For FP 6 the concept of COPERNICUS III should be applied to collaboration with Macedonia, Albania, Montenegro, Bosnia-Herzegovina and Croatia.** As a specific criterion for the selection of proposals, cross-border co-operation between at least two organisation in the region should be applied in addition to the requirement of co-operation with partners from at least one EU member state and another member state or an associated state. The integration of Yugoslavia should be dependent on the political situation there.
- *NIS:* RTD co-operation with the newly independent states of the former Soviet Union (NIS) was an important action line of the INCO programme throughout the period covered by the Five Year Assessment and at the same time of INTAS and the EU contribution to the ISTC and the STCU.
RTD co-operation between the EU and the NIS should be continued and strengthened but has to take into account the weak participation of non-European NIS in INCO, and a bad overall economic and social environment for developing RTD co-operation in all NIS.
For FP 6, there is a need to rethink the activities towards NIS under the FP. The Panel is concerned with the capacity of NIS partners to submit proposals under thematic programmes because in FP 5 they are no longer funded. In this regard **the concept of INCO in FP 4 which included funding for NIS partners should be re-introduced in FP 6.** In that context the Panel supports a **re-orientation towards selecting and financing proposals that must comply with scientific quality standards and at the same time address the economic and social impact. The specific advantages of both COPERNICUS and INTAS should be utilised.** Mutual monitoring and review sessions between COPERNICUS and INTAS should be organised on a regular basis.
In addition, COPERNICUS in FP 6 should interact in a more dynamically ongoing manner with INCO DC in order to identify synergies between the two parts of the programme. This goes in line with the Panel's recommendation to integrate all programme areas into one activity.
The new Russian leadership has repeatedly made allusions in official statements to the fact that nuclear weapons could again be considered in cases of conflicting interests or aggression. Thus, the perspective for further developing scientific co-operation between the EU and Russia in areas relevant for nuclear energy-fission should be reconsidered as such activities could provide inputs to the further development of nuclear weapons. In this context, **the Commission should strengthen the ISTC activities on non-military conversion.**

5.2.3. Co-operation with industrialised countries and emerging economies

- S&T agreements between the EU and third countries have a special European added value since they are setting up "harmonised frameworks" for bi- and multilateral co-operation with third countries. In this context, issues of intellectual property protection and exploitation are of particular relevance for the global competitiveness of the European economy. **The Panel recommends that the INCO Programme Management should be the driving force to implement these agreements.**
In addition, the Panel encourages the INCO Programme Management to actively disseminate information internally and externally on the opportunities offered by these agreements and on the rules and procedures of how to involve partners from the

target partner countries into EU RTD activities. The Panel supports the idea of co-ordinated Calls for Proposals jointly organised and supported by the Framework Programme (the European Commission) and appropriate funding organisations in the partner countries. **The implementation, EU benefit and impact of the S&T Agreement should be monitored and evaluated on a regular basis.**

5.2.4. Co-operation with developing countries

- During the assessment period the EU's scientific and technological co-operation targeting developing countries has evolved in a most impressive manner from a "basket of activities" into one specific programmes under the Framework programme structures. Today INCO appears as the only world-wide multilateral programme for research on important global and development issues.

The different Community actions AVICENNE, ISC, STD 1 to 3, INCO DC in FP 4 and INCO DC in FP 5 have achieved important results (e.g. in the areas of malaria research, crop husbandry, and disease prevention and control of animal livestock diseases). However, the high diversity and policy complexity made it difficult for the Panel to evaluate in depth, in the time allocated, the overall outcome and impact of the various programme objectives. **The Panel recommends that an evaluation of research carried out to date should be initiated with a view to identify mature research results, which could be integrated into the development programmes of the EU.**

Concerning the mid-term re-orientation of FP 5 the Panel recommends to modify accompanying measures in INCO DEV. Due to considerable distances between partners, those measures should also be used for exploratory activities towards the preparation of project proposals in order to create potentially successful project consortia.

The dual function of INCO is particularly evident in the scientific and technological co-operation with DCs. INCO has developed a culture not only for implementing specific measures for RTD collaboration with third countries; there is also an important policy support role towards other Community policies and initiatives. The Commission staff members are sufficiently competent to accomplish this. The idea of having a specific activity for global co-operation in FP 6 is in addition supported by the fact that specific framework conditions are needed to ensure a regular policy dialogue and to manage RTD co-operation with developing countries. In the preparatory phase of FP 6 both the expectations and needs of the developing countries should be ensured. At the same time, the potential benefits to the European Union should be taken into account in a well-balanced way. The exploitation and application of results in the areas such as malaria research is depending on industrial involvement, which is mostly missing. Therefore, **appropriate incentives to stimulate the participation of industry should be considered in a future programme.**

- *Inco-Med*: The Panel agrees that the Med-area deserves special attention. However, since only time will tell whether it would be good to have a separate programme entity for the Med-countries in FP 6, **a monitoring process should be initiated to assess this issue.**

5.2.5. Participation of third countries in the thematic programmes

- The participation from countries associated with the FP (EEA countries, Israel and candidate countries) and S&T co-operation agreements (USA, Canada, Australia, South Africa) has developed substantially. Participation from Asia (incl. the non-European NIS

countries), Africa, Latin America and the Mediterranean countries remained marginal (with some exceptions in northern Africa)

The Panel recommends that institutionalised interaction and co-operation with the thematic programmes be further developed. There should also be an improvement in the information flow concerning opportunities offered by the FP with third countries.

5.3. Conclusions and recommendations concerning implementation and management

- *General FP management:*

Throughout the reporting period, the INCO programme has continuously improved the quality of the management, partly also in response to recommendations made by Monitoring Panels. In the preparations of FP 5, the Commission worked hard to prepare harmonised and streamlined management procedures. However, the new approaches could not so far be implemented successfully.

Thus, the start-up of FP 5 was characterised by substantial delays in the communication between the Commission RTD services and proposers, caused by questionable internal procedures, inefficiency connected with inappropriate administrative and organisational provisions as well as by new informatic tools not functioning adequately.

This situation is not specific to INCO but appears to apply to the whole FP. In general **the Panel appreciates the Commission's initiative to review and revise the procedures at FP level and it would welcome the implementation of the recommendations of the internal management group presented on 29 February 2000 as soon as possible.** As FP 5 is progressing and the considerations on FP 6 will be starting soon, there is an urgent need to improve the management performance at Framework Programme level substantially. This will be an essential condition for the future acceptance of and the positive response to collaborative EU RTD activities.

Concerning the choice of evaluators for the evaluation of proposals, **clear quality criteria based on expertise have to be defined and published for the entry into and the selection from the new database of evaluators.**

- *INCO specific aspects of implementation and management:*

The information packs must become more user-friendly and sources of information for potential proposers in third countries must be further strengthened.

The S&T monitoring of projects must be improved by using e.g. more collaborative monitoring, mid-term reviews and post-evaluation of projects. There is a need to define criteria for monitoring the progress and success of projects at their different stages, including the exploitation and dissemination of results.

The deficits in the context of monitoring - in addition to the above-mentioned general management problems - are to a certain extent related to the current staffing situation which causes problems in keeping the right balance between the administrative duties and the needs for scientific and monitoring of ongoing projects.

Concertation and clustering or merging of projects should be considered more widely as appropriate in order to ensure that the different disciplines required to interact in most projects have the opportunity to do so, and in order to reduce the number of projects. This should result in more comprehensive research in different problem areas and would most likely lead to more innovative projects.

A review of the staffing situation will be necessary as soon as the structures, tasks and the procedures of the INCO programme in FP 6 are specified.

Annex I

List of INCO managers and other Commission officials interviewed ⁴

T. Arnold	DG XII - INCO
M. Brusati	DG XII - Growth
J. Gabolde	DG XII - Director INCO-programme
D. Gambier	DG XII - ISTC
M. Genovese	DG XII - B2 INCO Copernicus
R. Gerold	DG XII - Director, Quality of Life; former Director of INCO
D. Gould	Head of INTAS Secretariat
E. Habers	DG XIII - Information technologies
P. Härtwich	DG XII, INCO Copernicus
T.J. Hall	DG XII, Former Head of Unit INCO DC, now Head of Unit, Life Sciences
F. Hamburger	DG VIII, Director
M. Kajamanidou	DG XII, INCO Med
M. Liberali	DG XII, Director of Administrative Affairs
E. Magnien	DG XII - Quality of Life
M.C. Marolda	DG XII, RTD Actions: EEA, COST, EUREKA, Int. Organisations
R. W. Meijer	DG XII, Head of Unit Cooperation with CEEC
J.P. Mathy	DG XII - Energy
N.K. Newman	DG XII, Head of Division, International Co-operation, Industrialized Countries and Emerging Economies
V. Nieto	DG IA, Principal Administrator
Ir. J. Sinnaeve	DG XII, Head of Unit, Research for Development
M. Venet	DG XII, RTD Actions: EEA, COST, EUREKA, Internat. Organisations
Prof. F.J. T. Viegas	DG XII, INCO DC
C. de la Torre	DG XII, RTD Actions: EEA, COST, EUREKA, Internat. Organisations

⁴ For the Directorates General the names are used that were valid at the start of the 5 Year Assessment exercise.

Annex IIa**List of INCO Programme Committee members and experts interviewed directly or by questionnaire**

Dan Andree (Sweden)	Josephine Lynch (Ireland)
Albin Babic (Slovenia)	Julie Mebes (Netherlands)
Ros-Mari Balöw (Sweden)	Stephan Neuhaeuser (Austria)
Philippe Barre (France)	Angel Alique Palomar (Spain)
Maija Bundule (Latvia)	Georg Panholzer (Austria)
Antanas Cenys (Lithuania)	M. Pasquier (France)
Milos Chvojka (Czech Republic)	Michael Pender (Ireland)
Charles Clift (United Kingdom)	Boris Pukl (Slovenia)
Pierre Decker (Luxembourg)	Carlo Rizutto (Italy)
Jacek Glinski (Poland)	Jose Manuel Rolo Correia (Portugal)
Antonio A. Guerra Reffega (Portugal)	Klaus Schuch (Austria)
Lone Heyde (Denmark)	Gilles Saint-Martin (France)
Peter Lee (United Kingdom)	André Schlochtermeyer (Germany)
Elizabeth Legrand (France)	Anneliese Stoklaska (Austria)
Marie-Christine Lenain (Belgium)	Carlos Vega Vicente (Spain)
Vilhjalmur Ludviksson (Island)	

Annex IIb

Interview Guidelines / Questionnaire

Interview Guidelines / Questionnaire

INCO PROGRAMME FIVE-YEAR ASSESSMENT 1999/2000

Interviews with members of the Programme Committee (PC) and other experts

1. Background

In accordance with Article 5 of both Decisions on the EC and Euratom Fifth Framework Programmes⁵, before submitting its proposal for a Sixth RTD Framework Programme, the Commission shall have an external assessment conducted by independent highly qualified experts into the implementation and achievements of Community activities. This assessment, covering the period 1995-1999, will be carried out in the light of the criteria and the scientific and technological objectives set out in Annex I and II of the referred Decisions, and of the implementation of these Decisions via the Specific Programmes based thereon.

The Commission shall communicate the conclusions thereof, accompanied by its comments, to the European Parliament, the Council, the Economic and Social Committee, the Committee of the Regions, CREST, the European Research Forum and Programme Committees.

The Commission's Communication to the Council and the European Parliament COM (96) 220 final, 22 May 1996, stipulates that this assessment will subsume the final evaluation of the preceding specific programmes in the areas covered by the FP5 Specific Programme under consideration.

2. Issues to be addressed by the five-year assessment

The assessment will be implemented in the light of the criteria and the S&T objectives set out in FP5 Decisions, according to the structure of FP5, and will cover also the relevant activities which were included in related Specific Programme (SP) under FP4 and FP3. While keeping emphasis on European value added, it is the first opportunity to report in a systematic manner on the following:

- i) for **FP3**, important results their dissemination, exploitation and impact (by the time of the assessment several years will have elapsed from the termination of projects);
- ii) for **FP4**, main results, their dissemination exploitation and identifiable impact (most of the impact can however be expected to occur during the coming years);
- iii) for **FP5**, progress in implementation.

The five-year assessment will be carried out according to the following evaluation criteria, each looking at distinct but inter-related features. For each evaluation criteria, the evaluative questions to be answered are listed below.

You are kindly requested to send the questionnaire back to the Panel member that contacted you before January 14, 2000 by mail or fax.

⁵ EC Decision n° 182/1999/EC and EAEC Decision n° 1999/64/Euratom.

I. Assessing efficiency and transparency of the INCO programme management

1. Have the objectives been pursued in a cost-effective manner?
2. Has the management been sound, efficient and transparent including the role played by the Programme Committee and, where relevant, advisory bodies?
3. How have the Member States and the Commission adjusted to the new role and powers of the INCO Programme Management Committee?
4. Are the modes of action and tools appropriate and have they been applied for optimal performance?
5. What was the quality of the process for the evaluation and selection of proposals (evaluation, preparation of short list, opinion of the PC)?
6. Has the co-ordination been efficient between INCO and the other specific programmes of the different FPs?
7. Was the transition between the successive FPs efficient?
8. Are the actual or expected outputs and impacts commensurate with the resources used?
9. What was the quality of the work of the National Contact Points and their contribution to the implementation of FP5 ?
10. Has information been properly disseminated into third countries?
11. Has the co-ordination and collaboration been efficient and transparent between different Commission services (i.e. legal and financial services) and the INCO programme managers and project officers?

II. Assessing effectiveness - have the objectives of INCO been achieved?

1. Are/were the supported activities of high S&T quality and relevant to the objectives?
2. Are the selected projects covering the work programme's objectives and content?
3. How flexible was the INCO programme reacting to changing conditions in target countries: any good and bad examples?

4. Is there any evidence that FP 3 results influenced policy or legislation or had any other broad socio-economic consequences?
5. In which areas are the results of FP 4 likely to lead to changes in policy and legislation or to have broad socio-economic consequences?
6. Are S&T bases of industry strengthened and is industry becoming more competitive at international level as a result of participation in INCO?
7. Has the INCO programme contributed to the implementation of other Community policies?
8. What European added value has been achieved, as regards critical mass, improved co-ordination between Member States, support to Community policies, resolution of problems at Community level ?
9. Are interactions with other DGs, such as DG I and DG 8 at a proper level?
10. What has been achieved as regards the social objectives (reflecting the expectations and concerns of the citizens in the EU Member States), in particular for employment, quality of life and health, environment?
11. What has been achieved to contribute to harmonious and sustainable development of the Community as a whole, in particular in areas:
 - which are expanding and create good growth prospects?
 - where it is needed to become more competitive?
 - in which prospects of significant S&T progress were expected?
12. Is the produced knowledge and technology relevant to the challenges?
13. Does the research integrate the spectrum of activities and disciplines that are needed for achieving the objectives of the Programme?
14. Are there appropriate links with other European research frameworks including Eureka and Cost?

III. Assessing major achievements:

1. Identify outstanding S&T results and innovations, major contributions to other Community policies, major enhancements of the European R&D infrastructure and developments of the European collaborative research culture
2. Assess the overall socio-economic impact of INCO .

IV. Assessing lessons learned:

1. What lessons have been learned from programme design, decision and implementation?

2. What has been learnt from success stories of collaboration or failures of collaboration?
3. In which fields is collaboration the most successful?
4. What use has been made of the recommendations from the previous monitoring and five-year assessment exercises?
5. Are there good practices identified, disseminated and implemented?

V. Assessing relevance:

1. Were the FP4 objectives and criteria and the objectives of INCO appropriate?
2. Are the FP5 objectives and criteria (Annexes I & II of FP5) and the objectives of INCO still appropriate with respect to evolving S&T, industrial and socio-economic conditions? Do they need any urgent adaptation and are they still valid for a future RTD policy?
3. What is the relative importance of INCO, beyond its direct budgetary contribution, in the European context (e.g. multiplier effect)? How do you assess the role of INCO within the Framework Programme and beyond?

VI. Programme-Area-specific issues

1. Co-operation with industrialized third countries:

How do you assess the EU-Japan fellowship programme

Do you think that the S&T agreements concluded will contribute to improve the global competitiveness of European R&D and industry? Why?

Are the countries selected for S&T agreements appropriate or is there some regional coverage deficit?

2. INCO – Copernicus?
3. INCO-DEV?
4. INCO-Med?
5. COST and EUREKA?

VII. General conclusions and recommendations – please quantify

1. Please indicate whether or not the programme has already led to significant commercial returns for your country.

No returns yet Significant returns

1 2 3 4 5

2. What impact has participation in this programme had on your country?

Negative impact No impact Positive impact

Scientific and technological standing	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Competitive position	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Employment levels	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

3. Please provide scores for the programme as a whole against each of the following issues.

1 2 3 4 5
Low High

The initial relevance of the programme to world scientific and technological developments	<input type="text"/>
The initial relevance of the programme to EU RTD policy goals	<input type="text"/>
The initial relevance of the programme to your country	<input type="text"/>
The initial relevance of the programme to other participating countries	<input type="text"/>
The overall performance of the programme management team	<input type="text"/>
The adequacy of programme resources (human, financial, technical)	<input type="text"/>
The timeliness of programme results and outputs	<input type="text"/>
The quality of project results and outputs	<input type="text"/>
The utility of project results and outputs	<input type="text"/>
The impact of the programme on world scientific and technological developments	<input type="text"/>
The extent to which the programme succeeded in addressing EU RTD policy goals	<input type="text"/>
The impact of the programme on your country	<input type="text"/>
The impact of the programme on other participating countries	<input type="text"/>

VIII. Recommendations for the future

-1	-2	-1	0	+1	+2	+3
----	----	----	---	----	----	----

THANK YOU FOR TAKING THE TIME AND TROUBLE TO COMPLETE THIS QUESTIONNAIRE !

ANNEX III**Observations from the Core Data**(Prepared by Wladimir Andreff ⁶)Contents

1. A first note based on INCO Core Data	56
1.1. Overall view	56
1.2. INCO specific actions	57
1.3. Third country participation in Specific Programmes of activities 1, 3 and 4	58
1.4. Participation of CEEC candidate countries in FP4	60
2. A second note on INCO Core Data: correlation with economic indicators for CEEC and NIS	60
2. 1. Third country participation to overall INCO and economic variables: CEEC and NIS.....	61
2.1.1. INCO and the economic size of target CEEC and NIS	61
2.1.2. INCO and the economic development of target CEEC and NIS	62
2.2. Third country participation to INCO and RTD potential: CEEC and NIS.....	62
2.3. Third country participation to INCO-COPERNICUS and economic variables	63
2.4. Third country participation to INCO-COPERNICUS and RTD potential.....	64
3. A third note on INCO Core Data: correlation between DC participation and economic indicators.....	65
3.1. Third country participation in overall INCO and economic variables: the case of DC	65
3.1.1. INCO and the economic size of target DC.....	66
3.1.2. INCO and the economic development of target DC	66
3.2. Third country participation to INCO and RTD potential: the case of DC	66
3.3. Third country participation in INCO-DC and economic variables.....	67
3.4. Third country participation to INCO-DC and RTD potential	68
4. More on the RTD potential of CEEC and NIS.....	68
5. The data used in the correlation calculations.....	69

1. A first note based on INCO Core Data ⁷

The assessment of FP4 achievements relies on an overall data view, an evaluation of INCO specific actions and a breakdown by third country participation and by sectors (i.e. scientific topics) to other specific programmes.

1.1. Overall viewIndicative breakdown of budget

The total budget on INCO1, including EFTA/EEA appropriations, is 585.1 MECU. Once 56.6 MECU are deducted for staff & administration, the remainder, 528.5 MECU, is broken down, in the indicative breakdown, between :

- . A1 - COST and Other Fora = 44.9 MECU (8.5%)
- . A2 - CEEC/NIS = 227.3 MECU (43.0%)
- . B - Industrialised Countries (ICs) = 29.0 MECU (5.5%)
- . C - Developing Countries (DCs) = 227.3 MECU (43.0%)

revealing an EU intention of balanced cooperation with "the East" (CEEC/NIS) and "the Third World" (DCs).

⁶ Fully supported by the Panel

⁷ Primarily based on INCO Statistical Overview on International RTD Co-operation in FP4 (1995-1998). Wrap up INCO 1 (Final), EC DG XII, July 1999
INCO 5YA, Final Report, 31 May 2000

Implementation of budget

The figures on implementation include in addition the Israel appropriations and add up to a total expenditure of 590.3 MECU. As far as staff and administration expenditures are concerned the implementation here only reaches 50.2 MECU instead of the targeted 56.6 MECU⁸. Nevertheless, a slight discrepancy appears in the distribution of the actual budget between the four sub-programmes as compared with the indicative breakdown :

- A1 = 7.3% < 8.5%
- A2 = 44.9% > 43.0%
- B = 4.5% < 5.5%
- C = 43.3% > 43.0%

Such proportions *confirm the EU priorities in favour of international cooperation with DCs and CEEC/NIS* with a slight overshooting on the one hand, and on the other hand they *do not sustain a strictly balanced effort in the cooperation with both privileged areas* since the CEEC/NIS share in implementation is above that of DCs (44.9% > 43.3%). This means that DCs have obtained 3.2 MECU and CEEC/NIS 13.7 MECU above their anticipated share in FP4.

The 13.7 MECU excess share of CEEC/NIS is explained by the implementation of INCO A2 budget with an INCO-Copernicus excess of 18.1 MECU, an INTAS excess of 1.1 MECU, minus 5.5 MECU coming from CEEC/NIS participation which was lower than anticipated. In fact, *INCO-Copernicus and INTAS have benefited* altogether by 19.2 MECU (six times more than DCs) from the afore-mentioned discrepancy between forecasts and implementation while the latter has been detrimental to COST, ICs and CEEC/NIS participations. INTAS is open only to NIS and thus this area has received the excess 1.1 MECU funding INTAS. The breakdown between the CEEC share and the NIS share in INCO-Copernicus and in CEEC/NIS participations shows that 126.7 MECU (68.3%) have been given to CEEC projects whereas only 58.8 MECU (31.7%) have gone to NIS projects. Once INTAS is taken into account, the distribution is 52.6% for CEEC and 47.4% for NIS. Therefore, the *main beneficiaries of FP4 appear to be CEEC*. Just as in the overall EU economic aid to "the East" (PHARE and TACIS) more funds are geared towards CEEC than to NIS.

Quite logically, yearly appropriations for commitment have grown from 59.9 MECU in 1995 to 194.1 MECU in 1998. Note also that on the supply side of funds, the largest supplier is DG XII in all the four sub-programmes (A1, A2, B, C), followed by DG III (in particular in B) and the INTAS specific budget (in A2), followed by DG XIII, DG VII and DG XVII.

1.2. INCO specific actions

The overall number of proposals received for INCO specific actions in FP4 is 7125 with 36236 participants involved. 49.2% of the proposals were submitted to INCO-DC (with 49.6% of all participants), 45.4% to INCO-Copernicus (49.3% of participants) and the remaining 5.4% are for Japan-Korea fellowships (1.1% of participants). The case of Japan-Korea fellowships is quite specific due to its small size and its high success rate (59%) giving rise to 228 selected fellowships. The *success rate is rather low* for applications to INCO-Copernicus (16%), and *even lower* for INCO-DC (12%).

The average size of selected projects is bigger than the average size of proposals received in both INCO-DC (6.7 participants in projects as against 5.1 in proposals) and INCO-Copernicus (6.2 against 5.5) which means that *the success rate is higher among the largest proposals submitted*. Smaller proposals fail more often, on average. The *average size of short-listed projects is bigger in INCO-DC as compared to INCO-Copernicus* not only in terms of average participation but also in terms of fund allocation to the projects: on average 511.3 KECU in the first group and 245.9 KECU in the second. No project over 600 KECU was financed in the framework of INCO-Copernicus while some INCO-DC projects reached 1200 KECU. INCO-Copernicus projects were mostly concentrated in the range of 200-249 KECU, then 250-299 KECU and 150-199 KECU. The number of proposals is not very much different for INCO-DC (17.991) and INCO-Copernicus (17.858) and that the funds allocated to the former are 214.2 MECU and 130.3 MECU for the latter.

Whereas by definition, in Japan/Korea fellowships all participants are EU/Associated States, the proportion of target country participants is 50% in selected INCO-DC projects (and thus 50% for EU participants) and 58% in selected INCO-Copernicus projects (42% of EU participants). Here again it seems that *Eastern European countries and the former Soviet Union are rather more privileged* at the end of the selection process in this respect. In particular, CEEC projects make up for 46% of all selected INCO-Copernicus projects while NIS projects are only 21% and CEEC/NIS projects 33%.

As for the DCs, the distribution of participants into selected projects is as follows :

- Asia = 279 (21%) out of 2153 proposals (26%)
- Latin America = 379 (29%) out of 2742 proposals (33%)
- ACP countries = 415 (31%) out of 1879 proposals (22%)
- Mediterranean countries = 255 (19%) out of 1657 proposals (20%).

⁸ If one takes into account the share of staff & administration expenditure linked to COST, then the totality of COST expenditures exceeds the 8.5% foreseen in the Council decision.
INCO 5YA, Final Report, 31 May 2000

The outcome is an *over-representation of ACP* among participants to selected projects in relation to the weighting of these countries among participants to proposals received. This is due to uneven success rates: 13% for Asia, 14% for Latin America, 15% for Mediterranean countries and 22% for ACP countries. Should we interpret this result as an index of the higher quality of ACP proposals? Probably not. The distortion is more probably related to the "institutional" proximity of ACP, that is the overall framework of long-term agreements between ACP and the EU. To a lesser extent geographic proximity may underlie the higher success rate of Mediterranean countries compared to Asia and Latin America.

If we look at the participation of target countries in INCO-Copernicus, the most striking feature is that we have nearly the same ranking of the first 15 countries according to proposals received and selected projects (with only one intertwining between Poland and Hungary) and that 19 out of the first 20 countries are the same in the two samples. This suggests that the success rates are not very different among countries and, indeed, most of them achieve between 19% and 21%. On the other hand, if a low success rate is not surprising for countries like Georgia (9%) or Albania (14%), the rates are surprisingly high for Uzbekistan (27%) or even Belarus (22%). It would be interesting to guess (or interview on) *what might be the rationale* underlying such figures.

As to the participation of target countries in INCO-DC, 16 out of the first 20 countries are the same in the ranking for proposals received and in the ranking for selected projects. Peru, Uruguay, Vietnam and Zimbabwe are in the first 20 for proposals submitted though not for projects selected. Senegal, Jordan, Mali and Cameroon are among the first 20 as regards selected projects though not for proposals submitted. It derives from this observation that success rates should be more scattered for INCO-DC target countries than for INCO-Copernicus ones, and that African (or ACP) countries have better (or privileged) success rates. This impression is confirmed by the discrepancies between the two rankings, African (ACP) countries being usually better ranked for the selected projects than for proposals received. The calculation of the success rates for the first 20 shows that they are in the range of 9% up to 27%. At 27% we find Senegal and Zimbabwe, at 26% Mali and Kenya, at 24% Tanzania while Chile and India (9%), Argentina (11%) and Turkey lag behind. Again *what is the rationale behind these figures* if not an institutional advantage in favour of African or ACP countries.

On the side of EU and Associated States, the *highest proportion* of the number of INCO-Copernicus participants to proposals received belongs to *Germany* (19% in the total number of participants) *and the UK* (15%), i.e. more than one-third taken together. France, Italy, Greece and the Netherlands have roughly another third (36%). Almost the same proportions prevail in the selected projects: Germany (18%), UK (16%), France (13%), Italy (11%), Netherlands (8%) and Greece (6%). The concentration of EU-Associated States in the number of INCO-DC participants compares with that of INCO-Copernicus: two countries make up roughly one third of the total number of participants to proposals received, the *UK* (18%) *and France* (16%). Another third goes to the three following countries: Spain (11%), Germany (11%) and Italy (11%). In the selected projects, the concentration is even higher: 21% for the UK, 17% for France, 10% for Germany, 9% for Spain and Netherlands. For the participation in proposals received in respect of Japan-Korea fellowships, France is ahead (22%), followed by Germany (16%) with each receiving 18% of the number of selected projects.

1.3. Third country participation in Specific Programmes of activities 1, 3 and 4

Third country participation in SPs is *concentrated on EFTA-EEA* (34%) and *other European countries* (29%) in respect of proposals received and even more so for selected projects (respectively 39% and 29%), insofar as the success rates of these two areas are the highest, (33% and 29%) if overseas countries and territories (OCT) are excluded from the comparison. The latter's success rate of 40% is based on very few cases - 5 participants to proposals and 2 participants to selected projects - and is further biased by the privileged relationships between France and New Caledonia. All other areas have a lower success rate than average (29%), including DCs (28%), CEEC (26%), Non European Industrial countries - NEIC (26%) and European NIS (25%). Note the 0% success rate of *Non European NIS*, indicative of both a *lack of interest in the EU to become involved in RTD in this area and the low level of RTD in these countries*: there were only 9 participants to proposals submitted of which 5 from Uzbekistan, 3 from Kazakhstan and 1 from Kyrgyzstan, and none from Tajikistan and Turkmenistan (the two least developed and least independent countries vis-à-vis Russia in the area).

The number of participants to proposals in which EFTA-EEA countries are involved is quite high (5.389) and strongly concentrated on *Norway* (87%) compared to rather than smaller countries such as Iceland and Liechtenstein. The success rate is lower for Liechtenstein (21%) than for the two other associated countries (33-34%). In those proposals received that include EFTA-EEA countries, the first sector (topic) in terms of attracting more participants to proposals is *agriculture-fishery* (19% of all proposals received), and it remains the first sector in the participants to selected projects (20%) due to a success rate (34%) slightly higher than average (33%). Then comes information technology (12% of participants to proposals and to selected projects, success rate: 33%), industrial and material technology (a 11% participation to proposals and to selected projects, success rate: 33%) and environment and climate (10% participation to selected projects, 11% to proposals, success rate: 31%). What must be underlined is the *important effort of the EU in developing international co-operation in the fields of communication technologies* (success rate: 52%), *transport* (49%), non-nuclear energy (40-41%) and marine science and technology (39%). Below the average success rate: targeted socio-economic research (30%), measurement and testing (28%), biomedicine and health (27%), surprisingly telematics (25%) and training and mobility (14%). No proposals were received in biotechnology.

Among CEEC, the highest proportion of participation in proposals received concerns proposals with the participation of *Hungary-Poland-Czech Republic* (61%), with 62% of participants in selected projects from the CEEC area, with Hungary ahead (23%) of Poland (23%, 2 participations in projects less than Hungary) and Czech Republic (15%). This *concentration on the three "most advanced countries" in the post-socialist reform process* is quite similar to the concentration of PHARE aid to the same countries. At the other extreme, Bosnia-Herzegovina (only 6 participants in proposals), Yugoslavia (14 participants in proposals) and Croatia (29 participants in proposals) have a 0% success rate and thus get no projects, though Macedonia has 1 project participation out of 5 participations in proposals. In between, Slovenia, the most developed CEEC in terms of GDP per capita, with a 11% participation to selected projects, is ahead of Romania (6%), Estonia, another CEEC of the "first wave of accession negotiation" (5%), the Slovak Republic (5%), Bulgaria (4%), Lithuania (3%), Latvia (3%) and Albania (1%). In the cooperation with CEEC, participation in selected projects is high for biomedicine and health (15% of total participants), telematics (13%), agriculture-fishery (12%), information technology (11%) and environment and climate (10%) are the most significant sectors. We observe that, as to the number of participants, *these sectors are exactly the same, with industrial and materials technology in addition for the CEEC, as the most important sectors of RTD cooperation with EFTA-EEA countries*, though with a different ranking (we note a particular effort on telematics in the participation to projects with CEEC). In terms of policy priority and/or quality of proposals received, the best ranked sectors are marine science and technology (67% success rate), transport (56%) and communication technology (44%), well over the average success rate (26%). But these best success rates apply to fields in which proposals are fewer. Note that, contrary to the cooperation with EFTA-EEA, biotechnology has 123 participants in proposals and 32 to selected projects (26% success rate, i.e. average).

The overwhelmingly important share of *Russia* (79%) in proposals with participation of European NIS results into high proportion (79%) of participation in selected projects within this area. Then comes Ukraine (14% of participants in proposals and 15% of participants in selected projects). We must stress the high success rates of proposals with the participation of Belarus (42%) and Moldova (40%). The privileged sectors of cooperation with the European NIS, in terms of success rates, are transport (61%), marine science and technology (53%), non-nuclear energy (40% and 34%), agriculture and fishery (36%) and industrial and material technology (35%), compared with an average success rate of 25%. Except agriculture and fishery, the *first five sectors privileged in the cooperation with European NIS are different from those privileged in the cooperation with either CEEC or EFTA-EEA*. No Non-European NIS proposal was selected, though two were submitted in telematics and one in information technology (3 in environment and climate and 3 in non-nuclear energy).

There is *no less concentration in the cooperation with DCs*. Four countries attract together 52% of all the participants in selected projects among DCs. They are Tunisia (17%), Morocco (14%), Egypt (12%) and Brazil (9%) while in the participants in proposals received, Tunisia's share is 13%, with 11% for Brazil, 10% for China, 8% for Morocco, and only 6% for Egypt. Tunisia (39%), Morocco (52%) and Egypt (59%) have above average (28%) success rates whereas Brazil (24%) and China (10%) are below the average success rate. Does this imply that Brazil - one of the most developed new industrializing countries - and China are not able to participate in proposals of the same (or higher) quality than those of the three aforementioned Middle-East countries? Or does it reflect a Middle East or (much wider) *African or ACP preference in RTD international cooperation of the EU, for institutional reasons*? The second guess seems more likely. Moreover it is confirmed by the 100% success rate of Algeria, Ivory Coast, Lebanon, Nigeria, Suriname, Togo and Western Bank and Gaza Strip (Nepal has also a 100% success rate), though these countries have only a few participants in proposals (together 14 participations in proposals without Nepal). More significant is the fact that Gambia, Jordan, Kenya, Niger, Syria, Cameroon and Zimbabwe all are also above the average success rate. Non ACP countries are more scattered in this respect: in addition to Brazil and China, we witness the following success rates of proposals with the participation of Argentina (7%), Costa Rica (33%), India (21%), Singapore (44%) and Venezuela (33%).

While *environment and climate is by far the first sector of proposals with DC participation* (26% of total participation), it is only in the second rank of participants in selected projects (19% of total). It is preceded by participation in projects in information technology (43%) which score a 64% success rate as against 20% in environment and climate. Non-nuclear energy (13% participation in selected projects) and marine science and technology (12%) are the only other important sectors among the RTD cooperation with DCs. Note a 0% success rate in telematics (out of 16 participants to application), industrial and material technology, measurement and testing, targeting socio-economic research, and dissemination. Transport has a 100% success rate but achieves only a single successful proposal.

Among other European countries, the great bulk of participants in proposals (95%) concerns proposals with *Swiss* participation, as well as the major participation in selected projects (97%). Then comes Cyprus with a 2% participation in proposals and 1% in selected projects, followed by Turkey (2%) and Malta (1%). The first sectors of participation in selected projects are (mainly Swiss) information technology, industrial and material technology, agriculture and fishery, environment and climate, biomedicine and health, biotechnology, communication technology and telematics, that is much *the same distribution as for the cooperation EFTA-EEA and CEEC*, with the exception of biomedicine and biotechnology which are cornerstones of the industrial specialisation of Switzerland.

As far as Non-European Industrialised countries (NEIC) are concerned, participants in proposals received have a major origin: *Israel* with 60% of the overall number in this area, far ahead of Canada (15%), the United States (12%), Australia INCO 5YA, Final Report, 31 May 2000

(9%) and Japan (2%). New Zealand, the Republic of Korea, South Africa and Taiwan do not have a significant participation in proposals nor a significant share in the participants in selected projects. With a success rate (25%) close to average (26%), Israel remains the main beneficiary of participation in selected projects (58%), followed by Canada (14%), the United States (14%), Australia (8%) and Japan (2%). The high success rates of proposals with participation of Korea (67%) and Taiwan (50%) must be stressed. In this area, 25% of participation in selected projects are in information technology, 15% in agriculture and fishery, 13% in biomedicine and health, in communication technology and in environment and climate, that is a *distribution not very different from that of the cooperation with EFTA-EEA, CEEC and Switzerland*. Note the relative importance of dissemination (a 6% participation in selected projects, including one of the highest success rate: 48%).

1.4. Participation of CEEC candidate countries in FP4⁹

The data cover that part of INCO Specific Actions in which the ten CEEC candidate countries participated as well as their participation in Other Specific Programmes. The ten CEEC candidates have 1.255 participants in selected projects in INCO specific actions out of a total of 1.270 participants in these projects for the whole CEEC area (screened in chapter 1.2. above), i.e. a *99% share*. The remaining 1% is divided among Albania, Bosnia-Herzegovina, Croatia, Macedonia and Yugoslavia. Participation of the ten CEEC candidates in other specific programmes makes for 728 participants out of a total of 736 participants for the whole CEEC area, which means that Albania has seven participants and Macedonia one.

If we look at total FP4 (INCO specific actions plus participation in other specific programmes) participation by CEEC candidate countries, the number of participants in selected projects is 1.983 (9.165 in proposals received, success rate: 22%) with an INCO contribution of 78.3 MECU. The number of participants from CEEC candidate countries in FP3 was 1.167 with a contribution of 58.2 MECU, that is a *70% increase in the number of participants and a 35% increase in the INCO contribution in FP4 compared with FP3*, for CEEC candidate countries.

Hungary, Poland and Czech Republic are the three candidate CEECs that have attracted the biggest contribution in both FP3 and FP4 (respectively 55% and 52% of total contribution). Romania has regressed in the ranking from FP3 to FP4: it was first ranked for the participants to selected projects in FP3 and fourth ranked in FP4, while it remained fourth ranked for the contribution in both programmes. On the other hand, Slovakia's ranking has improved (from the eighth to the seventh rank) from FP3 to FP4 in both the number of participants to selected projects and in INCO contribution. Slovenia and Bulgaria are steadily in a middle ranked position (fifth or sixth) while Latvia and Lithuania are in the last ranks, with Estonia in FP4, with Slovakia in FP3. Such rankings might be explained by the *progress in the economic transformation* (the three first ranked are usually as the most-advanced CEECs in the economic reform process), the *economic size of the country* (Bulgaria and Romania are ahead of more advanced, though smaller, countries in the reform process), and the evaluation of candidate CEECs by the EU (Agenda 2000 and Luxembourg summit, December 1997) in which Slovenia and Estonia have been qualified for the first wave of accession negotiations. These hypotheses might be confronted further with economic data of the ten candidate CEECs.

2. A second note on INCO Core Data: correlation with economic indicators for CEEC and NIS

The purpose of this note is to see whether one can establish some relations between INCO data - i.e. the number of third country participants in proposals received, in contracts signed and the amount in MECU obtained - on the one hand, and on the other hand some significant or representative data of economic size and the level of economic development of these third countries, as well as with data reflecting in some way the state of the research sector in these countries.

We have carried out this exercise for CEEC and NIS. We have taken into account overall INCO data summing up INCO Specific actions and Specific programmes of activities 1, 3 and 4, for 1995-1998, in this stage of calculation. When interesting correlations (or a meaningful lack of correlation) have emerged, then we have extended the correlation calculation to INCO-COPERNICUS data (1995-1998) which are very important for CEEC and NIS. The choice that we have made of the INCO data series to be introduced in the correlation calculation may be discussed and the calculation could have been extended to some other series, but not enough time was available.

A preliminary remark should be made concerning economic and research sector data in CEEC and NIS. One difficulty is to obtain homogenous and comparable data series. For the sake of simplicity and minimal time consumption, we have finally opted for the homogenized data published by the World Bank¹⁰. The advantage gained from this choice is that such comparisons make sense and the methodology of gathering and homogenizing data does not have to be discussed or worked on. However, there is a price to pay for this choice. First, even in the World Bank data series, three countries are not extensively covered and/or many specific data are not available for them until 1998: Bosnia-Herzegovina, Turkmenistan and Yugoslavia. Fortunately, they are third countries not much involved in INCO, at any stage of the process (proposals, contracts, funds), and the fact that they are left out should not introduce a significant bias in the calculated results.

⁹ Based on the Note transmitted by L. Bellemin to M. Le Quément.

¹⁰ Source:

INCO 5YA, Final Report, 31 May 2000

The second price to pay is that one can only select economic and research activity variables for which data are covered and published by the World Bank. This does not cause any difficulty for the variables exhibiting the economic size (GNP in current dollars) and the level of economic development (GNP per capita) of third countries. However, this is more constraining for the data representative of the research sector activity in these countries. We were thus compelled to choose in the World Bank data collection: the number of scientists and engineers in the population, the number of patent applications filed, submitted by residents and non-residents, and, as a loose proxy for the level of scientific education in each country, we have taken the percentage of public expenditure on education in the GNP (which is debatable, and thus we would not rely very much on the results for this variable).

We have calculated both correlations and rank correlations: the latter statistical solution is also advised when the sample is smaller than 30 which is the case insofar as the size of our CEEC + NIS sample is 24, once Bosnia, Turkmenistan and Yugoslavia omitted.

2. 1. Third country participation to overall INCO and economic variables: CEEC and NIS

The selected economic variables for CEEC and NIS are :

PROP = number of participants in all proposals received for Specific actions and Specific programmes of activities 1, 3 and 4, for 1995-1998;

CONT = number of participants in signed contracts for Specific actions and Specific programmes of activities 1, 3 and 4, for 1995-1998;

GNP = Gross National Product in current billion dollars, calculated as the mean value of the two extremal years 1995 and 1998 (in any case, World Bank data are not homogenized and published for 1996); the GNP is an indicator for the size of the economy;

GNP per capita in current dollars (mean for 1995 and 1998) = Index of the economy's level of development.

2.1.1. INCO and the economic size of target CEEC and NIS

The calculated correlations are the following :

$$\text{PROP / GNP : } r^2 = 0.5940$$

$$\text{CONT / GNP : } r^2 = 0.6419$$

Both correlations are significant and rather good. The first one means that the number of CEEC and NIS participants is correlated with the economic size of these target countries. In other words, *the bigger the economy, the greater the number of participants in proposals received* (compare, for instance, Tajikistan with Poland or Russia) which is quite in tune with economic common sense. The second correlation is even better which means that the number of participants in contracts signed depends, to a large extent, on the economic size of the country. In other words, in the INCO selection process relatively big CEEC and NIS economies are more successful than they are already favoured by their initial size advantage for participation in proposals received (or relatively big CEEC and NIS economies tend on average to have higher success rates). That is quite understandable insofar as big economies, compared to small economies, can usually mobilise more human and financial means to prepare their applications and this might be reflected in the average quality of the proposals they participate in. As to the human (scientific) means, this is to be tested (below).

The rank correlations between the same variables are :

$$\text{PROP / GNP : } R^2 = 0.8052$$

$$\text{CONT / GNP : } R^2 = 0.7921$$

The meaning of the rank correlation coefficient is the following. Equal to one, it means that the 24 sampled countries have exactly the same ranking according to each of the two variables. Equal to zero, it means that there is definitely no relation between the ranking of the sampled countries according to one variable and to the other. The rank correlations calculated here exhibit even higher values than the simple correlation coefficients. The relation between the ranking of CEEC and NIS target countries according to the number of participants in proposals received and the ranking according to their economic size is significant; the same conclusion applies to the relation between the rankings as regards the number of participants in contracts signed and economic size.

If we compare the results of simple correlations and rank correlations, then it seems that :

1. The economic size of CEEC and NIS generally has an influence on the number of their participants in proposals. Moreover, CEEC and NIS are ranked in a rather similar order according to economic size and according to the number of participants in proposals. The probability that "the bigger economy, the greater number of participants in proposals" holds true for any bilateral comparison between two sampled countries, is as high as 80.52%.
2. The economic size of CEEC and NIS has even a slightly stronger influence on the overall number of participants in contracts signed. The rankings of these countries according to economic size and according to the number of participants in contracts are rather similar. The probability that "the bigger economy, the greater number of participants in contracts signed" holds true for any bilateral comparison between two sampled countries, is 79.21%.
3. This means that the success rate is not much influenced by the economic size of target countries, so that it introduces no strong discrepancy between the rankings in terms of economic size, in terms of participants in proposals received, and in terms of participants in contracts signed. This can be interpreted as a sign that *the quality of proposals* (and the quality criteria used in the selection of proposals) *is not at all dependent on the economic size of target countries*. Good news for the applicants from small CEEC and NIS countries!

2.1.2. INCO and the economic development of target CEEC and NIS

The calculated correlations are :

PROP / GNP per capita: $r^2 = 0.1588$

CONT / GNP per capita: $r^2 = 0.1220$

Neither the number of CEEC and NIS participants in proposals received, nor the number of participants in contracts signed appear to be correlated with the level of economic development of CEEC and NIS target countries, expressed by their GNP per capita. This means that in both specific actions and specific programmes of activity 1, 3 & 4, the most developed countries (like Slovenia, Czech Republic, Hungary) do not participate in proportionally more proposals with numerous participants than the least developed countries in the sample (such as Tajikistan, Azerbaijan, Kyrgyzstan), once compared to their level of economic development. The number of participants in contracts signed being no longer correlated to economic development, we can conclude that *the success rate can be high among the most and the least developed CEEC and NIS as well*; the failure of proposals in which they participate is also more or less evenly distributed among the most and the least developed target countries. The quality is proposal-specific and not country-specific in the sense of being related to the level of economic development of participant countries.

The absence of relation with economic development is not confirmed by the rank correlations:

PROP / GNP per capita: $R^2 = 0.7009$

CONT / GNP per capita: $R^2 = 0.6296$

which are quite stronger and, in fact, point to an existing relation between the variables.

Thus, the number of CEEC and NIS participants in proposals received and the number of participants in contracts signed with these countries are (rank-)correlated with their level of economic development, even though the observed rank correlation is slightly weaker than that observed with the economic size of the countries. The probability that two countries have the same ranking for the number of participants in proposals and economic development is 70.09%; and for the number of participants in contracts signed and economic development the probability of a similar ranking is 62.96%. The success rate of a project is not much influenced by the economic development of countries from which the applicants come. On the other hand, the capacity of a CEEC or a NIS to participate in a good proposal to INCO with a number of participants, depends to some extent on its level of economic development, which is not surprising. More interesting is the fact that the success of proposals is still influenced by the economic development of the applicant's country insofar as the number of participants in contracts signed is rank-correlated with GNP per capita. But the rank correlation being slightly weaker than the one with the number of participants in proposals (63% against 70%), this can be interpreted as a slight corrective effect introduced by the INCO selection process based on the quality of proposals that *to a certain extent disconnects* the number of participants in contracts signed (compared to the number of participants in proposals) from economic development of the applicant's country.

2.2. Third country participation to INCO and RTD potential: CEEC and NIS

From the data available for CEEC and NIS, the RTD potential is approximated by the public expenditure on education (PUBEDUC) as a percentage of GNP, and by the number of scientists and engineers per million people (SE-RD) in the country's population. The simple correlation coefficient between these two variables and the number of participants in proposals received from CEEC and NIS is extremely weak :

INCO 5YA, Final Report, 31 May 2000

$$\text{PROP / PUBEDUC : } r^2 = 0.0666$$

$$\text{PROP / SE-RD : } r^2 = 0.0837$$

This means that *neither the level of education nor the overall endowment of the research sector activity with a great number of scientific workers are determinants of the number of CEEC and NIS participants in proposals to INCO*. The same hypothesis is confirmed by the value of the calculated rank correlation coefficients :

$$\text{PROP / PUBEDUC : } R^2 = 0.2559$$

$$\text{PROP / SE-RD : } R^2 = 0.1423$$

The probability that CEEC and NIS are ranked in the same order according to the number of participants in proposals and according to the level of public education is 25.59%; However, the probability of having the same ranking with the number of participants in proposals and with the number of scientists and engineers, drops to only 14.23%.

The interpretation of these results is considerably more tricky. The capacity of CEEC and NIS to participate in proposals to INCO, with a number of participants, *does not depend on their overall RTD potential* as it is approximated by the number of scientists and engineers and the level of public expenditure on education. As to the latter variable, it might be considered as not very relevant insofar as, for the development of an RTD potential, it is only higher education as such that matters, and in the much down-sized and restructured educational sector of the CEEC and NIS, higher education might well have (and indeed had) suffered much more than primary and high schools. More striking is the absence of correlation between the scientific potential embedded in the number of scientists and engineers in the population and the number of participants in applications to INCO. We have to stress here again that not only has the R&D sector of CEEC and NIS been down-sized and restructured, but that it has also been privatized and abandoned by many scientists who have moved into business. On the other hand, though some research facilities and equipments have been closed down, others have survived. New competitive private research institutions, more involved in development than in basic research, have emerged in the transition process in CEEC and NIS. All that might explain the discrepancy between the RTD potential of these countries and the number of their participants in proposals to INCO, but a clearer view would deserve a specific study going deeper into details. It is not of course surprising that there is no correlation between the number of participants in contracts signed and the number of scientists and engineers, for which we find :

$$\text{CONT / SE-RD : } r^2 = 0.1248$$

$$\text{CONT / SE-RD : } r^2 = 0.2000$$

The number of participants in contracts signed is distributed independently of the number of scientists and engineers in each country. We could expect that the number of participants in contracts signed is not independent of the number of those "best" scientists and engineers in each country, but we do not know how many are the "best" ones (and on what criteria) in the total number of scientists and engineers in each country.

2.3. Third country participation to INCO-COPERNICUS and economic variables

Given the significant weight of COPERNICUS within INCO for CEEC and NIS, we can expect that the above-commented results and conclusions must apply for COPERNICUS. It would be better to make sure of it by means of some additional calculations. Let PROPCOP stand for the number of participants in proposals received by COPERNICUS in 1995-1998, and CONTPROP for the number of participants in contracts signed in the framework of COPERNICUS in 1995-1998. The results of the correlation calculations are :

$$\text{PROPCOP / GNP : } r^2 = 0.6532$$

$$\text{and : } R^2 = 0.7883$$

$$\text{PROPCOP / GNP per capita : } r^2 = 0.0916$$

$$\text{and : } R^2 = 0.6543$$

$$\text{CONTCOP / GNP : } r^2 = 0.6435$$

$$\text{and : } R^2 = 0.7900$$

$$\text{CONTCOP / GNP per capita : } r^2 = 0.1214$$

$$\text{CONTCOP / GNP per capita : } R^2 = 0.6274$$

The results are similar for COPERNICUS and INCO. The number of participants in proposals received and the number of participants in the contracts signed in COPERNICUS are well correlated with the economic size of the CEEC and NIS, and the countries are roughly ranked in the same order with these variables. The success rate in COPERNICUS is not particularly influenced by the economic size of target countries. The quality of proposals is independent of the economic size of target countries. The simple correlation between the number of participants in contracts signed and economic development of the target countries is very weak. The level of economic development does not influence the number of participants who have successfully applied to COPERNICUS. Nevertheless, the rank correlation between the number of participants in contracts signed and economic development is rather high. CEEC and NIS have a similar ranking in economic development and in the INCO 5YA, Final Report, 31 May 2000

number of participants in proposals with a 65.43% probability, and they have a similar ranking in economic development and in the number of participants in contracts signed with a 62.74% probability. The success rate of a project in COPERNICUS is not much influenced by the economic development of countries from which the applicants come. On the other hand, the capacity of a CEEC or a NIS to participate in a good proposal, with a number of participants in COPERNICUS, depends to some extent on its level of economic development.

For COPERNICUS, we have extended the calculated correlations to the amount of funds, in million Ecus, allocated to CEEC and NIS selected participants¹¹ with GNP on the one hand, with GNP per capita on the other hand. Let MECU stand for the COPERNICUS financial contribution (million Ecus) allocated to each country from 1995 to 1998. The results of the correlation calculations are :

$$\begin{array}{ll} \text{MECU / GNP: } r^2 = 0.6847 & \text{and MECU / GNP: } R^2 = 0.7869 \\ \text{MECU / GNP per capita: } r^2 = 0.1252 & \text{and MECU / GNP per capita: } R^2 = 0.6191 \end{array}$$

The financial contribution of INCO-COPERNICUS to CEEC and NIS is well correlated with the economic size of the participants' country, and the ranking of any two countries according to the two variables is similar with a 78.69% probability. The financial COPERNICUS contribution is not generally correlated with the level of economic development of CEEC and NIS, but the rankings according to the two variables are in concordance with a 61.91% probability. We can thus consider that *the distribution of COPERNICUS research credits to CEEC and NIS is uneven and favours bigger countries*, but this is basically due to the capacity of these countries to apply with a greater number of participants in proposals (see above). Even though the amount of allocated COPERNICUS funds to CEEC and NIS participants does not depend on the level of economic development of the applicants' country as such, the final result is that the countries are at 61.91% ranked in the same way according to the research fund allocation from COPERNICUS and according to their economic development. This must be explained by the rather good rank correlation between the number of participants in contracts signed in COPERNICUS and economic development (see above). But this means that *COPERNICUS funds flow much more to the most developed than to the least developed CEEC and NIS*.

If we assume that the research activities triggered by the COPERNICUS funds allocated to CEEC and NIS are likely to upgrade their economic development in some way, then we can speculate that COPERNICUS *is not moving towards a trend of levelling off economic development* throughout the whole CEEC and NIS area. On the contrary, the concentration of funds on the most developed CEEC-NIS might well widen the gap between the wealthiest CEEC (Slovenia, Czech Republic, Hungary, etc.) and the poorest NIS (Tajikistan, Turkmenistan, Azerbaijan, Kyrgyzstan, Armenia, Moldova, etc.). From the standpoint of potential positive research spinoffs beneficial to EU countries, such an allocation of research credits to third countries is not debatable. If the EU did consider that COPERNICUS must, in some way, contribute in another EU policy - which is its assistance to the convergence of CEEC and NIS in (more a even) development and transition to a market economy - then the allocation of COPERNICUS should be questioned. In the present setting, other instruments have to be applied to support the convergence - or cohesion - process in CEEC and NIS.

2.4. Third country participation to INCO-COPERNICUS and RTD potential

The correlation of the number of participants in proposals received by COPERNICUS and the number of scientists and engineers in CEEC and NIS is very weak, and the correlation of the number of participants in contracts signed in COPERNICUS with the number of scientists and engineers is even weaker :

$$\begin{array}{ll} \text{PROPCOP / SE-RD: } r^2 = 0.1586 & \text{and: } R^2 = 0.2353 \\ \text{CONT COP / SE-RD: } r^2 = 0.1259 & \text{and: } R^2 = 0.2000. \end{array}$$

The comment is here the same as in chapter 2.2. above, and it can only be further qualified through a deeper inquiry into privatisation, restructuring, lay-offs of scientists, etc., in CEEC and NIS. So, we cannot know how efficient the COPERNICUS fund allocation to strong and structured scientific communities is, including the "best" scientists and researchers of each CEEC and NIS. This is the reason why we have calculated the correlation between the allocated funds (MECU) and another variable, that is the number of patent applications filed by residents and non residents in each country (PAT) - taken as a proxy for the efficient output of the RTD potential of a country :

$$\text{MECU / PAT: } r^2 = 0.6535 \quad \text{and: } R^2 = 0.8874.$$

¹¹ The same calculation could have been extended at will to the amount of funds allocated to CEEC and NIS participants through the whole INCO programme. Also, an extension of the calculation to DCs for all variables would have been possible and meaningful. However, there was not enough time for such certainly most useful exercises.
INCO 5YA, Final Report, 31 May 2000

There seems to be a good correlation between the COPERNICUS financial contribution to CEEC and NIS and the number of patents filed in these countries (even though the great bulk of patents are from non-residents there). Thus, *COPERNICUS funds seem to be allocated as a priority where they are the most efficient* for host countries (and probably for spin-offs beneficial to the EU). Even more striking is that the best of all correlation coefficients calculated in this exercise is obtained for the rank correlation between MECU and PAT. The probability that CEEC and NIS have the same ranking according to COPERNICUS fund allocation and according to the efficiency of the host country RTD potential, is 88.74%. *COPERNICUS finance is first allocated in CEEC and NIS where it is the most likely to come out with the biggest RTD output* (i.e. the number of patents).

3. A third note on INCO Core Data: correlation between DC participation and economic indicators

The purpose of this note is to show the results for DC of the same correlation calculations as those achieved for CEEC and NIS (see chapter 2. above). The point is, to see whether one can establish some relation between INCO data on the one hand, and on the other hand some significant or representative data of economic size and the level of economic development of these third countries, as well as with data reflecting in some way the state of their research sectors. The methodology is the same as for CEEC and NIS, and the data sources and problems are the same as well.

First, even in the World Bank data series, several DC are not extensively covered and/or many specific data are not available for them until 1998 (Afghanistan, Cuba, Djibouti, Liberia, Libya, Myanmar, St Kitts-Nevis-Anguilla, St Vincent and the Grenadines, Tokelau and West Bank and Gaza Strip). Fortunately, these ten DC are not much involved in INCO, accounting for 148 participants in proposals received out of a total of 8.405 participants in overall proposals received for INCO (i.e. 1.8%). Only Cuba (81 participants) and Gaza (53 participants) are non-negligible DC in terms of application to INCO among the ten countries left out of our calculation. The ten DC omitted have 18 participants in signed contracts out of a total of 1.369 participants to overall signed contracts in INCO (i.e. 1.3%). Leaving out these ten countries is not likely to introduce a significant bias into the results of our correlation calculation. We have also left out those DC which have not participated in any proposal from 1995 to 1998; Anguilla, Bahamas, Bahrain, DPR of Korea, Haiti, Iraq, Kiribati, Maldives, Marshall Islands, Micronesia, Nauru, Palau, Saint Lucia, Samoa, Somalia, South Georgia and South Sandwich and Tuvalu.

The second price to pay with World Bank data is that one can only select economic and research activity variables for which data are covered and published by the World Bank. This does not affect the variables showing the economic size (GNP in current dollars) and the level of economic development (GNP per capita) of third countries. This is more constraining for the data representative of the research sector activity in these countries. We were thus compelled to choose in the World Bank data collection: the number of scientists and engineers in the population¹², the number of patent applications filed, submitted by residents and non-residents, and, as a loose proxy for the level of scientific education in each country, we have taken the percentage of public expenditure on education in the GNP (which is debatable, and thus we would not rely very much on the results for this variable).

We have only calculated correlations (and no rank correlations) insofar as the DC sample is always larger than 30. When all data are available the size of the DC sample is 108, and it falls down to 32 for the less available data (the number of scientists and engineers per million people in the country's population).

3.1. Third country participation in overall INCO and economic variables: the case of DC

The selected economic variables for DC are :

PRODC = number of participants in all proposals received for Specific actions and Specific programmes of activities 1, 3 and 4, for 1995-1998,

CONDC = number of participants in signed contracts for Specific actions and Specific programmes of activities 1, 3 and 4, for 1995-1998,

GNP = Gross National Product in current billion dollars, in 1998,
= Size of the economy,

GNP per capita in current dollars (1998) = Index of the economy's level of development.

¹² A better indicator would be the ratio of Gross Domestic Expenditure for Research & Development (GDERD) to GDP. We are looking for such data that are currently published by OECD for its member countries. We have found the amount of GDERD only for five CEEC (Czech Republic, Hungary, Poland, Slovakia, Slovenia) and one NIS (Russia). In the case of DC this sort of data is rather rare. We would include the above-mentioned ratio into our calculation if we were able to find the data for a significant number of DC, CEEC and NIS.

3.1.1. INCO and the economic size of target DC

The calculated correlations are the following :

$$\text{PRODC} / \text{GNP} : r^2 = 0.7282$$

$$\text{CONDC} / \text{GNP} : r^2 = 0.6110$$

Both correlations are significant and rather good. The first one means that the number of DC participants in proposals received is correlated with the economic size of these target countries. In other words, *the bigger the economy, the greater the number of participants in proposals received* which is quite in tune with economic common sense. The second correlation means that the number of participants in contracts signed depends on the economic size of the country, but to a lesser extent than the number of participants to proposals received. In other words, the INCO selection process seemingly is less favourable to large DC economies and slightly alleviates their initial size advantage in the participation to proposals received (or relatively large DC economies tend on average to have lower success rates than small DC). It is quite understandable that large DC economies, compared to small DC economies, can mobilise more human and financial means to prepare a greater number of applications and this is reflected in the larger number of proposals they submit. But the INCO selection process has a slight corrective effect of this initial bias in favour of large DC in relatively "de-correlating" (0,6110 against 0,7282) the participation in signed contracts from economic size.

One can thus conclude:

- The economic size of DC has an influence on the number of their participants in proposals. The probability that "the bigger economy, the greater number of participants in proposals" holds true, is 72.82%.
- The economic size of DC has a (slightly weaker) influence on the overall number of participants in contracts signed. The probability that "the bigger economy, the greater number of participants in contracts signed" holds true, is 61.10%.
- This means that the success rate (whatever the quality of the proposals) is somewhat influenced by the economic size of target countries, insofar as the number of participants in signed contracts is less correlated to economic size than the number of proposals received. This can be interpreted as a sign that beyond *the quality of proposals the economic size of target DC* might have played a role in the selection process and favoured smaller DC (namely some ACP countries).

3.1.2. INCO and the economic development of target DC

The calculated correlations are :

$$\text{PRODC} / \text{GNP per capita} : r^2 = 0.00003$$

$$\text{CONDC} / \text{GNP per capita} : r^2 = 0.0019$$

Neither the number of participants in proposals received, nor the number of participants in contracts signed is correlated with the level of economic development of target DC, expressed by their GNP per capita. This means that, on average, in both specific actions and specific programmes of activity 1, 3 & 4, the most developed DC do not participate in proportionally more proposals with numerous participants than the least developed DC in the sample, when compared to their level of economic development. The number of participants in contracts signed being no longer correlated to economic development, we can conclude that *the success rate can be high among the most and the least developed DC as well*; the failure of proposals is also more or less evenly distributed among the most and the least developed target DC. The quality probably is proposal-specific and not country-specific in the sense of being related to the level of economic development of the country.

3.2. Third country participation to INCO and RTD potential: the case of DC

From available data for DC, the RTD potential is approximated by the public expenditure on education (EDUCdc) as a percentage of GNP, and by the number of scientists and engineers per million people (SE-RDdc) in the country's population. The correlation coefficient between these two variables and the number of DC participants in proposals received is extremely weak :

$$\text{PRODC} / \text{EDUCdc} : r^2 = 0.0007$$

$$\text{PRODC} / \text{SE-RDdc} : r^2 = 0.0003$$

This means that *neither the level of education nor the overall endowment of the research sector activity with a great number of scientific workers are determinants of the number of DC participants in proposals*. The interpretation of these results is rather tricky. The capacity of DC to participate in proposals, with a number of participants, *does not depend on their overall*

RTD potential as approximated by the number of scientists and engineers and the level of public expenditure on education. As to the latter variable, it might be considered as not very relevant insofar as, for the development of an RTD potential, it is only higher education as such that matters. More striking is the absence of correlation between the scientific potential embedded in the number of scientists and engineers in the population and the number of participants in applications to INCO. Explaining such a phenomenon would deserve a specific study of the RTD potential in the sampled DC going deeper into details - which is far beyond the scope of this note.

It is not surprising therefore that there is no correlation between the number of participants in contracts signed and the number of scientists and engineers, for which we find :

$$\text{CONDC} / \text{SE-RD} : r^2 = 0.000009$$

The number of participants in contracts signed is distributed independently of the number of scientists and engineers in each country.

3.3. Third country participation in INCO-DC and economic variables

Given the significant weight of INCO-DC within INCO overall, we can expect that the above-commented results and conclusions must apply for INCO-DC as well. It would be better to make sure of it by making some additional calculations. Let PROINDC stand for the number of participants in proposals received by INCO-DC in 1995-1998, and CONINDC for the number of participants in contracts signed in the framework of INCO-DC in 1995-1998. The results of the correlation calculations are :

$$\text{PROINDC} / \text{GNP} : r^2 = 0.7321$$

$$\text{PROINDC} / \text{GNP per capita} : r^2 = 0.00008$$

$$\text{CONINDC} / \text{GNP} : r^2 = 0.6469$$

$$\text{CONINDC} / \text{GNP per capita} : r^2 = 0.0030$$

The results are similar for INCO-DC and overall INCO. The number of participants in proposals received and the number of participants in the contracts signed in INCO-DC are well correlated with the economic size of DC. The INCO-DC selection process has a slight corrective effect of the initial bias in favour of large DC in relatively "de-correlating" (0,6469 against 0,7321) the participation in signed contracts from economic size. The quality of proposals might not have been fully independent of the economic size of target countries. The correlation between the number of participants in proposals received and in contracts signed with economic development is very weak. The level of economic development does not influence either the number of participants to proposals or the number of those who have successfully applied to INCO-DC. The success rate of a project in INCO-DC is not determined at all by the economic development of countries from which the applicants come.

For INCO-DC, we have extended the calculated correlations to the amount of funds, in million Ecus, allocated to DC selected participants with GNP on the one hand, with GNP per capita on the other hand. Let MECUdc stand for the INCO-DC financial contribution (million Ecus) allocated to each country from 1995 to 1998. The results of the correlation calculations are :

$$\text{MECUdc} / \text{GNP} : r^2 = 0.6872$$

$$\text{MECUdc} / \text{GNP per capita} : r^2 = 0.0026$$

The financial contribution of INCO-DC to DC is well correlated with the economic size of the participants' country. It is not correlated with the level of economic development of DC. We can thus consider that *the distribution of INCO-DC research credits to DC is uneven and favours bigger countries*, but this is probably due to the capacity of these countries to apply with a greater number of participants in their proposals (see above). On the other hand, the amount of allocated INCO-DC funds to DC participants does not depend on the level of economic development of the applicants' country: the funds do not flow more to the 'richest' (the most developed) than to the 'poorest' (the least developed) DC.

If we assume that the research effort triggered by the INCO-DC finance poured into DC is likely to upgrade their economic development in some way, then we can speculate that INCO-DC *is not moving towards a trend of levelling off economic development* throughout the whole DC area. Its scattered (and random?) fund distribution among the wealthiest and the poorest DC should neither widen nor close the gap between the level of economic development of the former and the latter. From the standpoint of potential positive research spin-offs beneficial to EU countries, such an allocation of research credits to DC is debatable: international cooperation should have favoured not only the biggest DC but the most developed ones. Now if the European Union did consider that INCO-DC must, in some way, contribute to other EU policies - which could be INCO 5YA, Final Report, 31 May 2000

to provide assistance first to the poorest DC or to the institutionally privileged ACP countries -, then the allocation of INCO-DC would still have to be questioned: a correlation between the (low) level of economic development and the (high) amount of funds allocated should have been revealed by the calculation, which is not the case. The question is: are there any clear policy objectives backing INCO-DC fund allocation towards such objectives?

3.4. Third country participation to INCO-DC and RTD potential

The correlation of the number of participants in proposals received by INCO-DC and the number of scientists and engineers in DC is extremely weak, and the correlation of the number of participants in contracts signed in INCO-DC with the number of scientists and engineers is also very weak :

$$\text{PROINDC} / \text{SE-RDdc} : r^2 = 0.0001$$

$$\text{CONINDC} / \text{SE-RDdc} : r^2 = 0.0007$$

So, we cannot know how efficient the INCO-DC selection process is in favour of strong and structured scientific communities in DC, relying on a significant number of scientists and engineers per million people in the country's population. And, again, it is quite surprising to observe no relation between a DC capacity to participate in proposals, with a number of participants, and its RTD potential (approximated by the number of scientists and engineers).

We have also calculated the correlation between the allocated funds (MECUdc) and another variable, that is the number of patent applications filed by residents and non-residents in each country (PATdc) - taken as a proxy for the efficient output of the RTD potential of a country :

$$\text{MECUdc} / \text{PATdc} : r^2 = 0.1727.$$

There appears to be no good correlation between the INCO-DC financial contribution to DC and the number of patents filed in these countries (even though the great bulk of patents are from non-residents). Thus, *INCO-DC funds do not seem to be allocated in priority where they are the most efficient* for host countries (and probably for spin-offs beneficial to the EU), i.e. in the DC with the highest supply capacity of patents. *INCO-DC finance is not allocated in those DC where it is the most likely to come out with the biggest RTD output* (i.e. the number of patents).

4. More on the RTD potential of CEEC and NIS

The Panel was not very satisfied with the above evaluation of the RTD potential by the number of scientists and engineers in the population. At least for CEEC and NIS, it would have observed more usual data (in the OECD countries for instance) used to express the relative strength of a national RTD potential, such as Gross Expenditures for Research & Development (GERD) or the ratio between GERD and Gross Domestic Product (GDP). The problem is that comprehensive data on GERD are not available for the whole sample of CEEC and NIS. Thus we have only worked with the collected data in the following table so far:

Table: GERD as a percentage of GDP (GERD/GDP)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Estonia				0,61	0,72	0,63			0,53
Latvia				0,49	0,42	0,52			
Lithuania				0,35	0,52	0,48	0,52	0,57	0,57
Poland		1,05	0,83	0,83	0,84				
Czech Republic		2,12	1,83	1,35	1,25	1,15			
Slovakia	1,75	2,25	1,88	1,53	1,01				
Hungary	1,61	1,09	1,08	1	0,93	0,75	0,67	0,74	0,7
Slovenia				1,46	1,61			1,4	
Romania		0,79	0,75	0,82	0,68				
Bulgaria	2,38	1,53	1,64	1,18	0,88	0,62	0,52	0,52	0,52
Ukraine		2,5	1,6	0,7	0,6	0,6	0,6	0,5	
FR Yugoslavia		1,15	1,21		1,19	1,12			
Russia	2.0	1,3	0,6	0,7	0,8	0,7			

Sources: European Commission and D. Dyker, S.Radosevic, eds., 1999
INCO 5YA, Final Report, 31 May 2000

There are not enough data available to calculate a significant correlation coefficient between GERD/GDP for CEEC-NIS and their achievements in INCO (number of proposals, number of contracts signed, allocated funds). A rank correlation calculation makes sense anyway on small samples. Just to have an idea, the following results are presented, correlating PROP, CONT and MECU with GERD/GDP., the three former variables being defined as in the annex of the Interim report.

	PROP 1995-98	CONT 1995-98	MECU 1995-98	GERD/GDP 1994
Estonia	316	48	2,382	0,72
Latvia	264	34	1,223	0,42
Lithuania	328	50	1,734	0,52
Poland	1666	214	7,627	0,84
Czech Republic	1429	190	6,457	1,25
Slovakia	725	112	4,023	1,01
Hungary	1675	218	9,073	0,93
Slovenia	647	78	3,284	1,61
Romania	1101	171	6,405	0,68
Bulgaria	1014	141	5,012	0,88
Ukraine	841	127	4,525	0,6
FR Yugoslavia*	23	0	0	1,19
Russia**	2268	342	14,308	0,8

PROP 1995-98: number of participants in proposals received for Specific actions and Specific programmes of activities, 1995-1998

CONT 1995-98: number of participants in signed contracts for Specific actions and Specific programmes of activities, 1995-1998

MECU 1995-98: COPERNICUS financial contribution (million Ecus) allocated to each country, 1995-1998

GERD/GDP 1994: Gross Expenditures for R&D as a percentage of Gross Domestic Product in 1994, source: European Commission;

* source: D.G. Kutlaca in D.A. Dyker, S. Radosevic, eds., Innovation and Structural Change in Post-Socialist Countries: A Quantitative Approach, NATO ASI Series, Kluwer Academic Publishers, Dordrecht 1999.

** source: L. Gokhberg, in Dyker, Radosevic, eds., 1999, op. cit.

The calculated rank correlation coefficients are:

PROP / GERD/GDP: $r = 0.1538$

CONT / GERD/GDP: $r = 0.1518$

MECU / GERD/GDP: $r = 0.1703$

In other words, there is no (rank) correlation between INCO achievements of CEEC and NIS and their R&D potential approximated by GERD/GDP, a result which confirms what we have found with another estimation of the S&T potential (SE-RD: number of scientists and engineers per million people) already. Nevertheless, the result obtained with the present calculation based on GERD/GDP is less relevant insofar as the country sample is smaller, even though the variable GERD/GDP usually must be considered as more relevant than SE-RD.

5. The data used in the correlation calculations

INCO Specific Actions and Specific programmes of activity 1, 3 & 4 (1995-1998)

Country	PROP (1)	CONT (2)	MECUs (3)			GNP per capita (5)			
			GNP (4)	1995	1998	Mean	1995	1998	Mean
CEEC									
Albania	96	10	0,217	2,20	2,70	2,45	670	810	740
Bulgaria	1014	141	5,012	12,40	10,10	11,25	1330	1230	1280
Croatia	45	0	0	18,10	20,70	19,4	3250	4520	3885
Czech Republic	1429	190	6,457	44,8	51,8	48,3	3870	5040	4455
Estonia	316	48	2,382	4	4,9	4,45	2860	3390	3125
FYROMacedonia	37	3	0,085	2	2,6	2,3	860	1290	1075
Hungary	1675	218	9,073	43,7	45,6	44,65	4120	4510	4315
Latvia	264	34	1,223	6	5,9	5,95	2270	2430	2350

INCO 5YA, Final Report, 31 May 2000

Lithuania	328	50	1,734	7,1	9	8,05	1900	2440	2170
Poland	1666	214	7,627	117,7	150,8	134,25	2790	3900	3345
Romania	1101	171	6,405	35,5	31,3	33,4	1480	1390	1435
Slovak Republic	725	112	4,023	17,4	20	18,7	2950	3700	3325
Slovenia	647	78	3,284	18,6	19,4	19	8200	9760	8980
NIS									
Armenia	68	9	0,381	2,1	1,8	1,95	730	480	605
Azerbaijan	19	5	0,148	3,5	3,9	3,7	480	490	485
Belarus	321	68	1,835	20,6	22,5	21,55	2070	2200	2135
Georgia	88	7	0,129	2,3	5,1	3,7	440	930	685
Moldova	112	18	0,388	3,5	1,8	2,65	920	410	665
Russia	2268	342	14,308	344,7	337,9	341,3	2240	2300	2270
Ukraine	841	127	4,525	80,1	42,7	61,4	1630	850	1240
Kazakhstan	145	29	1,384	21,4	20,6	21	1330	1310	1320
Kyrgyzstan	28	5	0,405	3	1,6	2,3	700	350	525
Tajikistan	9	3	0,048	0,9	2,1	1,5	340	350	345
Uzbekistan	68	17	0,572	21,6	20,9	21,25	970	870	920

(1) PROP = number of participants in all proposals received from 1995 to 1998

(2) CONT = number of participants in signed contracts from 1995 to 1998

(3) INCO-COPERNICUS contribution in signed contracts (MECUs) in 1995-1998 (and not overall INCO)

(4) GNP in current billion dollars (= size of the economy), source: World Bank: no data for Bosnia, Turkmenistan and Yugoslavia; the sample is reduced to 24 countries

(5) GNP per capita in current dollars (= index of development level), source: World Bank

Country	PAT (6)			PUBEDUC (7)			SE/RD (8)
	1995	1996	Mean	1995	1996	Mean	1985-1995
CEEC							
Albania	1564	18762	10163	3,4	3,1	3,25	n.a.
Bulgaria	n.a.	22553	n.a.	4,2	3,3	3,75	n.a.
Croatia	600	615	607,5	5,3	5,3	5,3	1978
Czech Republic	20010	25479	22744,5	6,1	5,4	5,75	1159
Estonia	14767	21156	17961,5	6,6	7,3	6,95	2018
FYROMacedonia	3184	18987	11085,5	5,5	5,6	5,55	n.a.
Hungary	20887	24979	22933	6	4,7	5,35	1033
Latvia	16350	21695	19022,5	6,3	6,5	6,4	1189
Lithuania	15988	21350	18669	6,1	5,6	5,85	n.a.
Poland	22089	27316	24702,5	4,6	5,2	4,9	1299
Romania	18667	23970	21318,5	3,2	3,6	3,4	1382
Slovak Republic	17932	23066	20499	4,4	4,9	4,65	1821
Slovenia	16585	21987	19286	5,8	5,8	5,8	2544
NIS							
Armenia	15570	20430	18000	n.a.	2		n.a.
Azerbaijan	252	16635	8443,5	3	3,3	3,15	n.a.
Belarus	17251	21048	19149,5	5,6	6,1	5,85	2339
Georgia	15948	21413	18680,5	5,2	5,2	5,2	n.a.
Moldova	15877	20535	18206	6,1	9,7	7,9	1539
Russia	41357	46287	43822	4,1	4,1	4,1	3520
Ukraine	22354	26502	24428	7,7	7,2	7,45	3173
Kazakhstan	17399	21088	19243,5	4,5	4,7	4,6	n.a.
Kyrgyzstan	15718	20305	18011,5	6,8	5,7	6,25	703
Tajikistan	15631	19602	17616,5	8,6	2,2	5,4	709
Uzbekistan	16912	22002	19457	9,5	8,1	8,8	1760

(6) Number of patent applications filed by residents and non residents

(7) Public expenditure on education as a % of GNP; source: World Bank

(8) Number of scientists and engineers, per million people, 1985-1995; source: World Bank

COPERNICUS (1995-1998)

Country	PROPC OP	CONTC OP	PROCOP : number of participants in all proposals received by Copernicus
CEEC			CONT COP : number of contracts signed in COPERNICUS
Albania	74	10	both from 1995 to 1998
Bulgaria	858	141	
Croatia	12	0	
Czech Republic	955	189	
Estonia	187	48	
FYROMacedonia	31	4	
Hungary	1024	217	
Latvia	184	34	
Lithuania	240	50	
Poland	1038	214	
Romania	910	171	
Slovak Republic	585	112	
Slovenia	370	78	
NIS			
Armenia	59	9	
Azerbaijan	17	5	
Belarus	309	68	
Georgia	75	7	
Moldova	107	18	
Russia	1828	342	
Ukraine	764	127	
Kazakhstan	142	29	
Kyrgyzstan	27	5	
Tajikistan	9	3	
Uzbekistan	63	17	

INCO Specific Actions and Specific programmes of activity 1, 3 & 4:**DC participation (1995-1998)**

Country	PRODC (1)	CONDC (2)	MECUdc(3)	GNP (4)	GNP/capita (5)
	1995-98	1995-98	1995-98	1998	1998
Algeria	73	11	0,413	46,50	1550
Angola	10	2	0,289	4,10	340
Antigua & Barbu.	1	0	0	0,60	8300
Argentina	518	58	3,793	324,10	8970
Bangladesh	52	5	0,214	44	350
Barbados	7	0	0	2,1	7890
Belize	4	0	0	0,6	2610
Benin	53	12	0,586	2,3	380
Bhutan	2	0	0	0,3	400
Bolivia	99	13	0,997	7,9	1000
Botswana	23	6	0,425	5,6	3600
Brazil	599	96	5,327	758	4570
Brunei	1	0	0	7,2	3260
Burkina Faso	112	21	1,206	2,6	240
Burundi	3	0	0	0,9	140
Cambodia	7	1	0,02	3	280
Cape Verde	7	1	0	0,4	1060
Central African R	2	0	0	1	300
Chad	9	1	0	1,7	230
Chile	311	27	2,075	71,3	4810

China	875	124	9,607	928,9	750
Colombia	171	34	1,966	106,1	2600
Comoros	2	0	0	0,2	370
Congo	18	1	0	1,9	690
Costa Rica	108	17	1,026	9,8	2780
Dem Rep Congo	19	0	0	5,3	110
Dominica	1	0	0	0,2	3010
Dominican Rep	12	4	0,193	14,6	1770
Ecuador	81	13	0,829	18,6	1530
Egypt	288	49	2,69	79,2	1290
El Salvador	18	5	0,132	11,2	1850
Equatorial Guinea	4	1	0,02	0,6	1500
Eritrea	13	0	0	0,8	200
Ethiopia	90	16	1,217	6,1	100
Fiji	6	2	0,094	1,7	2110
Gabon	23	7	0,271	4,7	3950
Gambia	24	7	0,519	0,4	340
Ghana	69	16	1,018	7,2	390
Grenada	1	0	0	0,3	3170
Guatemala	33	8	0,377	17,7	1640
Guinea	24	6	0,321	3,8	540
Guinea-Bissau	21	3	0,204	0,2	160
Guyana	8	2	0,055	0,7	770
Honduras	15	5	0,269	4,5	730
India	476	45	3,776	421,3	430
Indonesia	127	20	1,625	138,5	680
Iran	3	0	0	109,6	1770
Ivory Coast	63	10	0,799	10,1	700
Jamaica	18	2	0,181	4,3	1680
Jordan	122	26	1,437	6,9	1520
Kenya	175	45	2,421	9,7	330
Kuwait	2	1	0	35,2	22110
Lebanon	63	19	1,266	15	3560
Lesotho	7	1	0,07	1,2	570
Madagascar	24	4	0,106	3,8	260
Malawi	35	8	0,235	2,1	200
Malaysia	85	10	0,849	79,8	3600
Mali	84	22	1,019	2,6	250
Mauritania	9	2	0,13	1	410
Mauritius	5	0	0	4,3	3700
Mexico	300	47	2,781	380,9	3970
Mongolia	3	0	0	1	400
Morocco	380	67	3,576	34,8	1250
Mozambique	62	12	0,822	3,6	210
Namibia	29	6	0,443	3,2	1940
Nepal	32	3	0,155	4,8	210
Nicaragua	39	6	0,602	1,9	410
Niger	17	5	0,195	1,9	190
Nigeria	77	15	0,465	36,4	300
Oman	4	0	0	10,6	4950
Pakistan	70	11	0,403	63,2	480
Panama	10	2	0,041	8,5	3080
Papua N. Guinea	9	5	0,263	4,1	890
Paraguay	22	3	0,117	9,2	1760
PDR Lao	7	2	0,109	1,6	330

Peru	149	16	1,182	61,1	2460
Philippines	77	15	2,089	78,9	1050
Puerto Rico	1	0	0	25,4	7010
Qatar	2	0	0	7,4	11570
Rwanda	4	0	0	1,9	230
Sao Tome & Pr.	6	1	0,053	0,04	280
Saudi Arabia	5	1	0	128,9	6790
Senegal	120	32	1,626	4,8	530
Seychelles	1	0	0	0,5	6450
Sierra Leone	9	1	0	0,7	140
Singapore	42	7	0,293	95,1	30060
Solomon Islands	3	1	0,066	0,3	750
Sri Lanka	56	6	0,341	15,2	810
Sudan	24	9	0,481	8,2	290
Suriname	8	2	0,038	0,7	1660
Swaziland	7	1	0,06	1,4	1400
Syrian Arab Rep	70	8	0,345	15,6	1020
Thailand	173	24	1,085	134,4	2200
Togo	22	6	0,327	1,5	330
Tonga	2	0	0	0,2	1690
Trinidad & Tobag	26	3	0,334	5,8	4430
Tunesia	347	67	3,86	19,2	2050
Uganda	81	20	1,357	6,7	320
United Arab Emir	2	2	0	48,7	18220
UR Cameroon	115	23	1,217	8,7	610
UR Tanzania	132	31	1,829	6,7	210
Uruguay	137	11	0,595	20,3	6180
Vanuatu	3	1	0,057	0,2	1270
Venezuela	125	21	1,202	81,3	3500
Viet Nam	141	19	1,532	25,6	330
Yemen	8	0	0	4,9	300
Zambia	54	15	0,93	3,2	330
Zimbabwe	129	35	1,035	7,1	610

(1) PRODC = number of DC participants in all proposals received

(2) CONDC = number of DC participants in signed contracts

(3) INCO-DC contribution in signed contracts (MECUs), and not overall INCO

(4) GNP in current billion dollars (= size of the economy), source: World Bank

(5) GNP per capita in current dollars (= index of development level), source: World Bank

INCO Specific Actions and Specific programmes of activity 1, 3 & 4: DC participation (1995-98)

Country	PATDC (6) 1996	EDUCdc (7) 1996	SE/RDdc (8) 1985-95
Algeria	198	5,1	
Argentina		3,5	671
Bangladesh	226	2,9	
Benin		3,2	177
Bhutan			
Bolivia	123	5,6	250
Botswana	61	10,4	
Brazil	32106	5,5	168
Burkina Faso		1,5	
Burundi	5	3,1	32
Cambodia		2,9	

Central African R			55
Chad		2,4	
Chile	1960	3,1	
China	52714	2,3	350
Colombia	1259	4,4	
Congo		6,2	
Costa Rica		5,3	
Dem Rep Congo	29		
Dominican Rep		2	
Ecuador	361	3,5	169
Egypt	1210	4,8	458
El Salvador	67	2,2	19
Eritrea		1,8	
Ethiopia	3	4	
Ghana	33		
Guatemala	104	1,7	99
Honduras	136	3,6	
India	8292	3,4	149
Indonesia	3997	1,4	
Iran		4	521
Ivory Coast		5	
Jamaica	61	7,4	8
Jordan		7,3	106
Kenya	39049	6,6	
Kuwait		5,7	
Lebanon		2,5	
Lesotho	37045	7	
Madagascar	20807	1,9	11
Malawi	39034	5,5	
Malaysia	4052	5,2	87
Mali		2,2	
Mauritania		5,1	
Mauritius	7		
Mexico	30694	4,9	213
Mongolia	20996	6,4	943
Morocco	327	5,3	
Namibia		9,1	
Nepal	8	2,8	
Nicaragua	35	3,7	214
Nigeria		0,9	15
Pakistan	798	3	54
Panama	173	4,6	
Paraguay		3,9	
PDR Lao		2,5	
Peru	617	2,9	625
Philippines	2797	2,2	157
Rwanda			24
Saudi Arabia	837	5,5	
Senegal		3,5	
Sierra Leone	5		
Singapore	38618	3	2728
Sri Lanka	21188	3,4	173
Syrian Arab Rep	55	4,2	
Thailand	4558	4,1	119
Togo		4,7	

Trinidad & Tobag	15539		
Tunesia	174	6,7	388
Uganda	38497	2,6	
UR Cameroon		2,9	
Uruguay	207	3,3	688
Venezuela	2004	5,2	208
Viet Nam	22243	2,6	308
Yemen		6,5	
Zambia	99	2,2	
Zimbabwe	211	8,3	

(6) PATDC = Number of patent applications filed by residents and non residents in DC

(7) EDUCdc = Public expenditure on education as a % of GNP; source: World Bank

(8) SE/RDdc = Number of scientists and engineers, per million people, 1985-1995;

source: World

Bank

(6) = 49 available data

(7) = 68 available data

(8) = 32 availble data

INCO-DC participation (1995-1998)

Country	PROINDC	CONINDC
	1995-98	1995-98
Algeria	70	8
Angola	10	2
Antigua & Barbu.	1	0
Argentina	504	57
Bangladesh	51	5
Barbados	7	0
Belize	4	0
Benin	53	12
Bhutan	2	0
Bolivia	99	13
Botswana	22	6
Brazil	565	88
Brunei	1	0
Burkina Faso	111	21
Burundi	2	0
Cambodia	7	1
Cape Verde	7	1
Central African R	2	0
Chad	9	1
Chile	303	27
China	844	121
Colombia	168	34
Comoros	2	0
Congo	18	1
Costa Rica	105	16
Dem Rep Congo	17	0
Dominica	1	0
Dominican Rep	12	4
Ecuador	78	13
Egypt	271	39
El Salvador	18	5
Equatorial Guinea	4	1
Eritrea	13	0

Ethiopia	89	16
Fiji	5	2
Gabon	23	7
Gambia	21	6
Ghana	68	16
Grenada	1	0
Guatemala	33	8
Guinea	24	6
Guinea-Bissau	21	3
Guyana	8	2
Honduras	14	5
India	462	42
Indonesia	126	20
Iran	1	0
Ivory Coast	62	9
Jamaica	18	2
Jordan	116	23
Kenya	168	43
Kuwait	2	1
Lebanon	60	16
Lesotho	6	1
Madagascar	24	4
Malawi	34	8
Malaysia	85	10
Mali	83	22
Mauritania	9	2
Mauritius	5	0
Mexico	297	47
Mongolia	3	0
Morocco	355	54
Mozambique	62	12
Namibia	28	6
Nepal	31	2
Nicaragua	39	6
Niger	12	3
Nigeria	75	13
Oman	4	0
Pakistan	69	11
Panama	10	2
Papua N. Guinea	9	5
Paraguay	22	3
PDR Lao	7	2
Peru	148	16
Philippines	74	15
Puerto Rico	0	0
Qatar	0	0
Rwanda	3	0
Sao Tome & Pr.	6	1
Saudi Arabia	5	1
Senegal	116	32
Seychelles	1	0
Sierra Leone	6	1
Singapore	33	3
Solomon Islands	3	1
Sri Lanka	55	6

Sudan	24	9
Suriname	7	1
Swaziland	7	1
Syrian Arab Rep	67	6
Thailand	166	24
Togo	19	5
Tonga	2	0
Trinidad & Tobag	26	3
Tunesia	309	52
Uganda	77	20
United Arab Emir	2	2
UR Cameroon	113	22
UR Tanzania	129	31
Uruguay	137	11
Vanuatu	3	1
Venezuela	122	20
Viet Nam	140	19
Yemen	8	0
Zambia	52	15
Zimbabwe	126	34

PROINDC = number of DC participants in all proposals received for INCO-DC

CONINDC = number of DC participants in signed contracts for INCO-DC

Annex IV

The INCO Five Year Assessment Panel

Professor Wladimir Andreff

Born 31. 12. 1946. Professor for Economics, University of Paris 1 Panthéon Sorbonne.

1.1.1990 – 1.9. 1999: Director of the research team ROSES (Reforming and Opening post-Socialist Economic Systems), CNRS.

Has also taught at the universities of Paris 5, Paris 10, Limoges and Grenoble in France, and abroad: Universities of Istanbul, Rio de Janeiro, San Marino, Laval (Quebec City), Peking (Beida) and Moscow (Lomonosov).

Publications (in 17 languages): 8 books as an author, 9 books as an editor, 242 articles in scientific journals in the fields of Economics of transition, International economics, Economics of sports.

Co-editor of a book series on Comparative Economic Studies with the English publisher Edward Elgar and member of the editorial board of 7 scientific journals (of which 4 in English).

Adviser of the Council of Europe in economics of sports (1992-1995).

Member of the scientific council of a TACIS project named PROMETEE (co-operation between the University of Grenoble 2 and the Moscow Institute created by Yegor Gaidar, the former Prime Minister).

1995-1996 Chief economist of the TACIS project “Export-led industrial policy” of assistance to the Ministry for Economy of Belarus

1993-1996 participation in various Phare and ACE projects or adviser to various ministries in Slovenia, Hungary, Poland and Vietnam

Expert listed on the World Bank and the EU rosters

1997- 1998 President of the European Association for Comparative Economic Studies, vice president in 1995-1996, member of the executive committee since 1990

1999-2001 Vice-President of the International Association of Sports Economists

1991-1996 French representative at UNESCO-I, Vice-President of the Committee for Social Sciences of the French Commission.

Professor Anastasios Eleftheriou

Principal Scientific Officer, Marine Laboratory, Aberdeen, Scotland (1964 – 1985). Professor of Marine Biology at the University of Crete, Greece (1985 to date). Director of the Institute of Marine Biology of Crete, Greece (1987 to 1998).

External Appointments: 1971 to 1981: Royal Society (UK) International Biology Programme, India; W.H.O. (Environmental Pollution Control Project Athens); UNESCO (Biological Oceanography in Athens, Greece). 1981-86: Chairman of the North Sea Benthos Working Group ICES (International Council for the Exploration of the Sea).

1987 to date: Greek National Delegate to international organisations: International Council for the Scientific Exploration of the Mediterranean Sea (CIESM); Intergovernmental Oceanographic Commission (IOC); United Nations Environmental Programme (UNEP) in marine pollution; EU Committee MEDMARIS- marine sciences in the Mediterranean; MAST-COM Committee DG XII. National Coordinator of ICES in Barcelona Convention on Scientific Research/Technology in EU/Third countries.

From 1987 in Greece: National Consultative Committee for Scientific Affairs; National Committee for the Co-ordination of Marine Sciences (General Secretariat for Research and Technology).

EU special posts: 1995- to date: Evaluator of proposals for the Training, Mobility & Research (TMR) ^Dr. Thomas Committee. 1998-to date : Member of the TMR Review panel. 1998-to date: Expert Adviser in External Advisory Group for 5th Framework (Water & Marine Ecosystems).

Scientific interests: structure and function of marine ecosystems; stability and production of marine ecosystems; ecological and biological aspects of pollution impacts; coastal zone management; biodiversity and climatic changes; interactions of aquaculture and the environment; fisheries and fishing gear effects upon the environment.

Publications: Over 50 research papers in refereed international journals; over 25 research reports in recognized series. Scientific responsible for more than 15 EU projects.

Dipl.-Ing. Manfred Horvat (Chairman)

Director, BIT - Bureau for International Research and Technology Co-operation.

1969: Dipl.-Ing., Mechanical Engineering, Vienna University of Technology (VUT); 1969-72: research consultant; 1972-80: university assistant in fluid dynamics, VUT;

1980-93: director, University Extension Centre, VUT (university/industry co-operation, technology transfer, continuing education, international programmes in education and research); 1990-93: managing director (part-time), UETP DANUBE (COMETT); 1991-93: Co-Chairman, EC/EFTA Joint Committee for COMETT; 1992-94: KELLOGG Visiting fellow, Department for Continuing Education, University of Oxford, UK; 1993: large silver medal for special merits for the Viennese economy, Economic Chamber Vienna;

1993- : director, BIT (Austrian liaison office for information and assistance (National Contact Points) for all Community RTD programmes, EUREKA, COST, INTAS);

1994-95: director (part-time), Austrian VALUE Relay Centre; 1995- : head (part-time): INNOVATION Relay Centre Austria; 1996-1998: Austrian National Focal Point, CRAFT); 1993-99: member of several management committees for specific EU RTD programmes in the 3rd and 4th EU Framework Programme (VALUE, INNOVATION, ESPRIT, TMR); 1995-99: chairperson and member of several monitoring and evaluation panels for specific programmes of the 4th EU RTD Framework Programme (ACTS, INCO, TSER, ETAN); 1999-2000: team leader, Phare project „Polish participation in EU RTD programmes“.

Some 80 publications, author and editor of several books and conference proceedings. Lecturer for “Technology Assessment and Environmental Impact Assessment” at Vienna University of Technology and University of Linz.

Dipl.-Ing. Lieselotte Krickau-Richter (Rapporteur)

Director, International Affaires at the University of Bonn and Director EuroConsult Research & Education, University of Bonn (1991 to date)

1979: Dipl.-Ing., Urban and Regional Planning, University of Dortmund

1979/80: Robert Schuman Scholar, European Parliament – DG Science and Documentation, Luxemburg

1980–1991: Director, Office for International Relations at the University of Dortmund.

1984: Fulbright Scholarship for Higher Education Administrators, USA

1989-1990 Detached National Expert to European Commission, DG XII – Public Relations and Information Unit, Brussels.

1991: Founder of EuroConsult Research & Education

Publications: Guides on EU Research Funding (in all Community languages), Studies e.g. on Co-operation in Science and Research with Central and Eastern European Countries and Implementation of the European Credit Transfer System (ECTS) as editor, more than 40 articles in scientific publications on European RTD policies and programmes, educational and mobility programmes, ERASMUS programme and ECTS, Editor of EuroConsult-Newsletters on Research Systems and Policies in new European Member States, Israel and USA.

Rapporteur of the 1998 INCO-Programme Monitoring Panel.

Co-ordinator of European research projects in the Innovation Programme: NEICO (Network of European Innovation Co-operation 1998–2000) and USINE (University Start-up of International Entrepreneurs 2000-2001).

Dr. Thomas Nolan M. Agr.Sc., PhD

T Nolan is a Principal Research Officer in Teagasc, which has national responsibility for Agricultural Research, Education and Development in Ireland. He holds M.Agr.Sc. and PhD from the National University of Ireland for research on nutrient cycling between soil, plant and animal in the grazing ecosystem. More recently he has studied the role of mixed animal type grazing in protective and productive use of grazing land resources in temperate and semi-arid areas. He has published about 140 papers, supervised post graduate studies and acted as external examiner to PhD studies. In addition he has carried out consultancies for USAID (Niger), ILCA (Addis Ababa), ODA (Uruguay) and FAO (Iceland) and was an invited lecturer to North East America and INTA, Argentina. He is a member of the International Scientific Committee for Study of Livestock Farming Systems in a Research and Development Framework, an EAAP, EEC (DGVI) and CIHEAM joint venture. He has been a member of and chaired EU Technical Evaluation Panels for DG XII STD programmes. He has co-ordinated 3 STD Projects and been a partner in three others. From 1989 to 1993 he was European representative on the Continuing Committee of the International Grassland Congress and became its Chairman for the subsequent period 1994 to 1997.

Associate Professor Anne-Marie Pilotti

Director, Swedish Research Council for Engineering Sciences (TFR), 1990 to date.

MSc Chemical Engineering, Chalmers University of Technology, 1966, Post-graduate studies, Simon Fraser University, Canada, 1967-1968, PhD, Royal Institute of Technology/ University of Stockholm , 1971, Associate Professor ,University of Stockholm , 1973-1979, Research officer,

Swedish Council for Planning and Co-ordination of Research , 1979-1981, Director of Studies/
Director of Secretariat , Faculty of Natural Sciences, University of Stockholm , 1981-1990.

External appointments: Referee for Acta Chemica Scandinavica, 1970's, Training and Mobility of Researchers (TMR),
Member of the Programme Committee, 1994-1998.

Board member: Faculty of Natural Sciences, University of Stockholm, 1970's, National Parallel Computing Center
(PDC), 1995 to date, Forum Scientum, a Multidisciplinary Graduate School in Sensor Technology, 1996 to date,
National Graduate School in Scientific Computing, 1999 to date, Investigation at Umeå University: Strategy within
Engineering Sciences concerning Research and Education, 1998-1999.

Prof Pilotti has published more than 50 publications in international journals or at international
conferences.

Nuno Ribeiro da Silva

Born 17.09.1954. Master in Energy Economics, Technical University of Lisbon (UTL).

1983 – 2000: Professor, having held the office of Director at Instituto Superior de Economia e Gestão – Technical
University of Lisbon.

Until 1986: Board Director and Consultant at various companies.

He took part or represented his country in various official missions and negotiations.

1985 – 1996: held political offices, having been Assistant to the Secretary of State for Environment
(1985-1986), Secretary of State for Energy (1986-1991), Secretary of State for Youth / Presidency
of the Cabinet (1991-1993) and Member of the Parliament (1992-1996).

Later on, he was President of the Board of Participa, Partex, Parfinança, and board director of other companies.

Executive President of SGPS Somague.

He is Counsellor of the Minister of Mines and Energy of the Federal Republic of Brazil, is a
member of various specialised Committees to the European Union, and is Professor of the Defence
College of NATO High Studies in Rome, etc.

He published various academic and technical studies, and collaborates with national and foreign
newspapers and reviews.