REPORT BY EXTERNAL EVALUATORS ON THE PROGRAMME OF THE INTERNATIONAL ASSOCIATION FOR THE PROMOTION OF CO-OPERATION WITH SCIENTISTS FROM THE NEW INDEPENDENT STATES OF THE FORMER SOVIET UNION (INTAS) IN THE PERIOD 1993-2003 TO THE INTAS GENERAL ASSEMBLY

01 October 2004

This report has been produced by an external panel of independent evaluators at the request of the General Assembly of INTAS. The views and judgments expressed in the report are those of the independent evaluators and do not necessarily reflect those of the members of INTAS or of any of the governing bodies of INTAS.

INTAS External Evaluation Report 1993-2003

This report is an External Evaluation Report on the programme of the International Association for the promotion of co-operation with scientists from the New Independent States of the former Soviet Union (INTAS), covering the period 1993-2003.

We, the undersigned, members of the External Evaluation Panel, are pleased to present our Report to the INTAS General Assembly.

Peter IDENBURG (Chairman; Overall Rapporteur)
Delft University of Technology, The Netherlands

Per STÅLNACKE (Panel 1 Rapporteur)
Norwegian Institute for Water Research, Oslo, Norway

Klaus SCHUCH (Panel 2 Rapporteur)
Zentrum für Soziale Innovation, Vienna, Austria

Lajos NYIRI
Zinnia Group LP, Budapest, Hungary

Oleg VENTSKOVSKY
Yuzhnoye SDO European Representation in Brussels, Ukraine

Marie-Hélène MANDRILLON
Center for Russian, Soviet and Post-Soviet Studies, Paris, France

Alexander SOKOLOV
Higher School of Economics, Moscow, Russia

Henning EIKENBERG[1]
Formerly: Bundesministerium für Bildung und Forschung, Bonn, Germany

Olav Jull SØRENSEN[1]
University of Aalborg, Denmark

[1] Expert witness

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0. Executive Summary

"All things excellent are
as difficult as they are rare"

Spinoza

1. In the year 2004 INTAS completed eleven years of operation. It was conceived in 1993 as a flexible instrument of response to the critical situation faced by researchers in the NIS. That situation emerged as a consequence of the economic collapse in these countries resulting from the dissolution of the Soviet Union. INTAS was dedicated to the promotion of cooperation between scientists from its member states and from the NIS. In the course of these years INTAS' primary focus, for a variety of reasons, shifted to basic research.

This independent external evaluation of the INTAS program covers the entire period of INTAS' existence with an emphasis on the funding portfolio during the last six years (1998-2003). In addition to this review, the evaluation covers the recent external and internal developments which affect the INTAS programme and the consequences of these developments for the INTAS mandate, activities and organising structure.

2. INTAS now comprises 33 members, i.e. the European Community and 32 countries, and 12 NIS. In the period under review 55 calls for proposals were launched and 8 different funding instruments were operated between 1993 and 2003. INTAS has funded 2,726 projects, bringing together some 50.000 participants in 15.000 research teams. These data indicate that INTAS is the backbone of a powerful network, with a complex task.

3. The INTAS mandate is laid down in its statutory objectives and in the objectives approved from time to time by its General Assembly. The statutory objectives are "to promote by an international effort (i) the scientific research activities in the NIS as an essential element for social and economic progress and consolidation of democracy in those countries"; and (ii) " the scientific cooperation between scientists in those countries and the international scientific community". These objectives are pursued as follows: - preserve and promote valuable scientific potential of the NIS; - joint high quality research of innovative scientists; - assistance to established and young scientists; - security of funds, professional recognition, personal development; - taking into account the different and changing social and economic needs of the NIS regions; - offering opportunities for new working partnerships, and collaborative science in the international science community.

In the course of its operations INTAS has adjusted its offer via the launch of new instruments, particularly shown by the Young Scientists (YS) programme. This flexibility indicates that INTAS has reacted to new needs and developments in the NIS. However, the largest part of its budget has been allocated to the open calls, which hitherto is the principal INTAS instrument.

4. Since the collapse of the Soviet Union the structure of global geopolitics has undergone a reversal which has been so subtle and pervasive that it was not really obvious until recently. In the coming years the EU will be pre-occupied with the

integration of its new member states, the deepening of its political institutions and the accession of further members. In the past ten years the GNP of the NIS, and particularly of Russia, has fallen dramatically followed by significant growth rates in some NIS during the last few years. But the NIS have three major assets, a vast wealth of natural resources, a highly educated population (particularly in science and technology) and their proximity to the EU. In the coming years, Russia and some of the other NIS will become an important balancing factor for the likely disorder of the Persian Gulf.

The EU, Russia and the other NIS have high stakes in further integration and fundamentally do not have an alternative in the face of the upcoming giants China and India. Together, the EU-25 and the NIS employ in excess of 2,3 million researchers. Clearly, strengthening the collaboration in S&T is of utmost importance for the entire region, particularly in an era where Europe is challenged by global competition and major S&T breakthroughs can be expected. INTAS constitutes one of the building blocks for meeting this challenge head on and taking advantage of the opportunities presented.

5. Therefore, and in view of the changing framework conditions inside the EU and the S&T trends and reform challenges in the NIS, INTAS is currently at a cross roads. Is its mandate, as it has evolved, still appropriate in the years ahead? What future role models can be envisioned and are appropriate? Should the NIS in the future still be approached as one integrated set of countries with identical challenges? And what is the appropriate institutional framework for INTAS activities?

6. This evaluation has been undertaken by a Panel of nine specialists from INTAS member states and NIS partners. The Panel has addressed this task in two sub-panels, with the following focus:

(1) Review
"To review past and ongoing INTAS initiatives (from a scientific, management and financial point of view) in view of and against the background of INTAS' statutory mandate"; and

(2) Preview
"An evaluation of the role and future possibilities of INTAS as a funding organization in view of the changing context (evolution of the EC Framework Programmes, developments in the NIS)".

The report follows the focus of the two sub-panels and ends with an integrated set of conclusions and recommendations.

Review

7. During its period of operations INTAS has funded NIS related projects and activities for a total amount of EURO 220 million. The sources of this funding were the EC (€ 194,5 million, 88 %), some member states (€ 15 million, 7%) and some NIS (€ 10,5 million, 5%). The average annual amount was EURO 20 million, with a dip in the year 2000. In total 55 calls for proposal were launched, the annual number of calls gradually increasing since 1997. The predominant instrument was the open call, on the basis of competition throughout the entire NIS region (€ 154 million, 76 %). Throughout the years of operation INTAS launched some infrastructural calls for relatively small amounts. Collaborative calls with NIS and joint calls with European

organisations were introduced in 1994 and have continued since that time. Limited amounts were made available annually since 1997 for international exchange (summer schools, monitoring conferences etc.), whilst as from 1998 an amount of € 7 million was dedicated to the Young scientists programme. Since the year 2000 five thematic calls were launched. Thus, INTAS has throughout this period been committed to bottom-up proposals selected on the basis of excellence. A variety of new instruments with more regional or thematic focus was gradually introduced. The Innovation call in 2003 was a well targeted action to satisfy the growing demand for the commercialisation of results.

8. Funding was provided for projects in 8 research fields, of which 7 are in the natural sciences. The field of humanities was weakly represented. The field of physics was predominant, from 23 % of funded projects in 1993-1996 to 33% in 1997-2002. This is in line with the number of applications received per field, with an average success rate per field of 16,5%. By far most contracted teams are from Russia (70 %), primarily from Moscow, St. Petersburg and Novosibirsk. The Ukraine and Belarus account for 16 % of the funded research teams. The number of teams funded from other countries was relatively small. This distribution is not surprising as it is in proportion to the total number of researchers in the NIS, with a high score for Armenia and a comparatively low score for Azerbaijan and Turkmenistan.

9. After some problems in the early years, INTAS has developed flexible procedures for the processing, evaluation and selection of large numbers of applications. The mechanism for contracting with and the transfer of funds to researchers, not their institutes, is generally well administered. Post evaluation of selected projects is structurally organised and ensures proper audit procedures and feedback for future work programmes and calls. The CS, in its present working mode, is not as dynamic an institution as envisioned at the inception of INTAS. Recommendations for improvements are made. The formal agreements on cooperation with ten NIS are an important element of the INTAS programme, ensuring exemption of income tax and customs duties, but also providing a platform for policy dialogue. Such formal agreements are currently not in place with Russia and Ukraine, due to the non-governmental status of INTAS. In the case of Russia similar agreements were concluded with the Russian Foundations for Basic Research and for the Humanities.

10. INTAS now operates Information desks in 11 NIS, providing information and assistance to the local science communities. The visibility of these Information desks is low, probably as a result of the limited resources which have been made available. In the Moscow region, surprisingly, there is no such desk in operation.

Since 2002 INTAS has supported the participation of NIS researchers in the EU FP, through promotion, training and brokerage activities. In 2003 this resulted in the establishment of FP6 NIS Information Network (ININ). This was a late start and it is too early to judge its success but hitherto the participation of NIS research teams in FP6 is disappointingly low. The panel believes that full NIS integration in the ERA and the FP will as yet take many years.

The local representatives of the INTAS Information desks and the FP6 National Information Points, in many cases, were not identical and communication between them was found to exist only on an ad hoc basis. There is a clear need for improvement in quality and effectiveness of both networks and merging those activities would be beneficial to that purpose. At the publication date of this report this process is in fact being implemented.

11. Since the early 1990s many other multilateral and bilateral funding schemes for S&T in the NIS have been in operation, of which INTAS is probably the best known, although not the largest. Since 2002 the EU FP is open to participation from NIS but for most research teams this is as yet clearly a bridge too far. Our interview and questionnaire results indicate a very favourable perception of the INTAS programme. Closer coordination between the various funding schemes may provide mutual benefits.

12. The Panel concludes that the activities and results during the period 1993-2003 indicate beyond doubt that INTAS has achieved its statutory objective of the promotion of scientific cooperation between NIS scientists and the international scientific community. INTAS has been an efficient builder of S&T bridges between Europe and the NIS. All instruments applied have been useful tools to continue, strengthen and establish ties of science collaboration. In many occasions INTAS project teams have continued their collaboration after their initial project and found follow-up funding from INTAS or other schemes. There are many reports about the development of new technologies or scientific methods. For a majority of NIS scientists INTAS was the first exposure to international cooperation and has been or is their principal means to stay in science. Other positive effects relate to the opportunity to conduct research on modern high quality equipment, not available in the NIS. Proof of the INTAS achievements constitute the statistics on dissemination of research results: 18.000 publications in international refereed journals, 22.000 presentations at international conferences and workshops, 500 patents.

INTAS project applicants have suffered from strong competition and selection. The open call had an average success rate of 7 %, with surprisingly higher success rates of up to 40 % and 70 % for joint and thematic calls. It is the opinion of the Panel that a large percentage of high quality applications did not receive funding due to the limited financial resources.

13. As regards the other INTAS statutory objective to promote scientific research in the NIS as an essential element for social and economic progress and the consolidation of democracy the Panel observes that this is an ambitious target which does not depend only or decisively on European research funding of a fairly low amount. Although the INTAS programme has been successful in the preservation of a research infrastructure, it has not been able to trigger major and often badly needed reforms of the NIS national innovation systems.

14. All INTAS projects involved at least two teams from different INTAS member states and, since 1995, at least two teams from the NIS. Since 2004 it is required that these teams come from at least two different NIS. It is a rule that the project coordinator comes from one of the member states. From our interviews and the response to the questionnaires it must be concluded that the majority of proposals are initiated by a NIS partner. Our interviews repeatedly indicated that the low share of a maximum of 25 % of the project budget allocated to researchers from member states, forms an impediment to initiatives and strong commitment from these researchers. This may also prevent excellent researchers from member states to participate in INTAS funded projects. Collaboration between INTAS and national research funding organisations, as in the case of the Aral Sea call, is an effective solution for this serious problem of the INTAS programme. Only a future increase of the INTAS budget would justify the allocation of larger funding sources to non NIS researchers.

15. Although some collaborative, joint and thematic calls focused on specific NIS, regions or thematic priorities, INTAS has in principle not made a distinction in terms of the social, economic and – most essential - scientific potential of the NIS, following a "one size fits all" approach.

Although this approach was clearly indicated in the early years of support, this seems no longer valid. Significant differences between the NIS in economic development and prospects, in S&T policy and support, in researcher's income levels and access to equipment have become visible. Reforms of the national innovation systems are taking place according to different time scales and priorities. Commercialisation of research and funding by private enterprises is as yet rare in all NIS. It is the considered opinion of the Panel that in its future choice of funding policy and priorities INTAS should take these differences into account.

16. One of the most acute problems for S&T throughout the NIS has been brain drain (departure abroad) and brain waste (move to financially more rewarding areas of employment), particular of YS. INTAS developed different fellowships aimed at YS, which met with a high response. Due to the increase in applications the success rate dropped from 60 % in 2000 to 20 % in 2003. Despite the success of this programme, the Panel is of the opinion that INTAS cannot prevent the outflow of YS to more rewarding positions in the West. The INTAS YS programme has often been the only way to keep these scientists at their home institution and to offer them perspectives for a continued career in S&T. Further support of YS in general INTAS programmes and specific programmes should receive high priority.

Preview

17. Since the collapse of the Soviet Union the number of researchers in the NIS decreased by more than half and in some countries even by three quarters. Despite this downsizing a huge research potential still exists in these countries, in number exceeding that of the EU-25. Local funding of S&T activities dropped even more dramatically and only in Russia and Ukraine reaches a level above 1 % of GNP. Unfortunately none of the NIS was able to convert this potential into high-tech export and economic growth, particularly due to the fact that the level of innovation by industrial enterprises is extremely low. At the same time there has been a strong growth in higher education, postgraduate education and the number of (post) graduates entering the labour market. However, only a very small share of science graduates and PhD's is inclined to pursue a research career. Therefore the age structure of researchers is steadily deteriorating.

18. In the field of S&T increasingly a differentiation can be observed between, on the one hand, Russia, Ukraine and - to a lesser extent - Belarus and, on the other hand, the Caucasian and Central Asian countries, which between themselves are certainly not homogeneous. In all countries there are major challenges of reform related to the policy processes, the priority given to S&T policy, the functioning of national innovation systems, the dominance of the academies of sciences and the generation change. Revitalisation of S&T is urgently needed due to the low demand for R&D from industry, the strong emphasis on basic research and the lack of interdisciplinary and applied research activities. Also a stronger knowledge base in economics, social sciences and the humanities must be developed whilst the physical research infrastructure becomes rapidly outdated. Besides this need most NIS S&T communities have a marginal position in the international science community due to their lack of funding. Previous strong S&T links between the NIS have been severed and need to be rebuilt.

19. When it launched its first activities in 1993 INTAS was at the forefront of systematic funding support for S&T in the NIS, as emergency help. After the initial period, most funding organisations followed a similar pathway towards co-operation, matching, institutional funding and reform and, since 1998, the initiative to bring the NIS researchers closer to the EC FP. Recently, the EU, within its neighborhood policy increasingly focuses on the western NIS, comprising Russia, Ukraine, Belarus and Moldova as well as the South Caucasian Republics, leaving the Central Asian countries outside its focus. In addition, the joint EU-Russia action plan on the four common spaces, envisions a common space in S&T between the EU-25 Research Area and Russia. Some of the EU-25 do have bilateral agreements with some of the NIS. INTAS, on the other hand, as a multilateral organisation runs a cost- effective programme, more effective than the sum of bilateral programmes could do and spans all the NIS. As such INTAS offers the opportunity for stronger coordination and synergy between various European programmes.

20. FP6 introduced new S&T policy instruments which challenged NIS research teams more than the tools under previous FPs which are more selective. FP6 participation results from the NIS hitherto are disappointing. It is evident that, as yet, the INTAS programme, with its comparatively small instruments, is more suitable for international S&T cooperation of most NIS research teams and will continue to be needed in the years to come. Under FP7 these new policy instruments are likely to be continued in a slightly modified way, and this will remain a bridge too far for most researchers in Russia, Ukraine and Belarus, and for nearly all researchers in the less developed NIS. The European Commission has announced that FP7 will put more emphasis on space and security research, areas in which the NIS are advanced and competitive globally. So the top NIS teams will be able to benefit from the FP6 and FP7 instruments. Even in their case a more deliberate effort in training and bridging will have to be made.

21. As a dedicated organisation to S&T funding INTAS enjoys a well known and respected brand name in the NIS. In addition its autonomous position with the flexibility to fit the requirements of operating in the NIS, its membership organisation with 32 member states, bilateral agreements with most NIS, in situ presence in these countries and its four year funding cycle commensurate with the EC FPs are strengths of the INTAS institutional fabric. However, this institutional fabric has been challenged due to its status as a private legal entity subject to Belgian law, the unsatisfactory legal, organisational and administrative arrangements between the EC, as primary source of income, and the General Assembly as INTAS decision making body, the absence of a formal governing body which supervises and advises the Secretariat on a regular basis and the weak coordination with other EU authorities responsible for NIS relations and programmes. The Panel is of the opinion that a solution for these challenges needs and can be found which maintains the strengths of the current institutional fabric. This can be assured by either a special contractual INTAS mandate from the European Commission or by the organisation of INTAS as an (executive) agency of the Commission, whilst preserving the current membership and scientific advisory structure. Examples in place are EEA (Copenhagen) and EMEA (London), an example under discussion is the European Research Council.

22. Although its mandate and instruments have been slightly adjusted during the past ten years, in principle INTAS has been successful in its pursuit of the objectives originally formulated. The Panel is of the opinion, on the basis of its assessment of the external developments since that time and under inspiration of many interviews with INTAS executives, EC-, member state- and NIS representatives and other

stakeholders, that there is an urgent need for INTAS to redesign its future mandate and instruments. In order to facilitate the required discussion about the INTAS future, three possible role models are introduced. Although the Panel expresses a preference, it is of the opinion that further discussion inside INTAS is required before a definitive course of action can be charted. The role models described for the future of INTAS are the funding model, the bridging model and the "intelligence" model. Although aspects of these models might be combined, particularly by a differentiated approach towards the NIS, the continued effective and efficient functioning of INTAS requires that pertinent choices be made.

23. In the option of the funding model INTAS would remain an autonomous funding organisation for S&T collaboration between its member states and the NIS. However, stronger emphasis will be laid on problem oriented and thematic research and on the exploitation of scientific results. Closer coordination with the competent S&T policy makers in the NIS will be required to assist and support the reform of national S&T policies. In this model, a differentiation between the NIS will be made with primarily open calls targeted at the least developed countries, a mix of open, collaborative and thematic calls targeted at countries with a stronger S&T infrastructure and mainly thematic and collaborative calls targeted at the best developed countries, aiming at their further integration in the ERA and participation in the EC FPs.

24. In the option of the bridging model INTAS would function as a bridge towards FP7 and other initiatives of explicit interest regarding the ERA. In this approach its programme would depend strongly on EU S&T instruments and there would be a need for stronger coordination with the EC. The ININ network would be fully exploited. Concentration on the Western and Caucasian NIS, envisioned by the EU neighborhood policy, and a concentration on the FP7 thematic priorities would ensue. In addition INTAS would be involved in S&T policy dialogues with the relevant NIS and support the transfer of innovation management best practices in a dedicated effort to close the gap with the ERA.

25. In the option of the "intelligence" model INTAS would no longer serve primarily as an S&T funding organisation but would function as an "intelligence organization" serving its member states in their policies aimed at the restructuring of the innovation systems of the economically less developed NIS. The range of INTAS activities would comprise an information network, policy coordination support for the EU and the member states, policy advice regarding structural and management reforms of the innovation systems, particularly of the Central Asian and Caucasian NIS and a resource function (program management, peer review, project identification and partner search, monitoring etc.) for selected customers, including the EU and its member states.

26. There are arguments in favour of and against each of these three different potential future INTAS roles. The Panel is of the opinion that the current state of S&T and innovation systems in the NIS will demand in the foreseeable future a continuation of INTAS as a funding organisation in accordance with its statutory objectives as formulated ten years ago, be it with changes in its approach hitherto through differentiation between the NIS and through thematic and problem oriented calls. In addition more emphasis should be laid on bridging activities and, where appropriate and useful, on S&T policy dialogue. This role will serve the direct interest of the European Community in close collaboration and integration with the excellent S&T resources in the NIS as well as the indirect European interest of the economic development of the NIS through a strong S&T sector.

1. Brief on INTAS

Summary description

The International Association for the promotion of co-operation with scientists from the New Independent States of the former Soviet Union (INTAS)[1] is an independent International Association formed by the European Community, European Union's Member States and like minded countries (e.g. accession and FP associated states) acting to preserve and promote the valuable scientific potential of the NIS partner countries through East-West scientific co-operation.

INTAS was founded as an international not-for-profit association in June 1993 by the European Community and its 12 member states at that time. INTAS membership was subsequently extended to include Austria, Finland, Norway, Sweden and Switzerland, and later also Iceland and Israel. At the beginning of the 21st century, INTAS was further enlarged by the membership of the 10 EU-accession countries and by Bulgaria, Romania and Turkey. The Association now comprises 32 member states and 12 partner countries (Table 1), thus further widening INTAS' geographical outreach and creating new opportunities for forming international scientific partnerships.

INTAS was originally conceived as a rapid and flexible instrument to respond to the critical situation faced by researchers in the NIS as a result of the political disintegration and economic collapse at the beginning of the 19s. It was dedicated to the promotion of co-operation between scientists from INTAS member states and from the NIS. In the course of these years INTAS, for a variety of reasons, shifted its primary focus to fundamental research based on excellence.

Table 1: Present INTAS members and partner countries

INTAS members	Austria, Belgium, Bulgaria, the Republic of Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, The Netherlands, Malta[1], Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, European Community
Partner countries	Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

1) After completion of accession formalities

Organisation and structure of INTAS

INTAS consists of three main formal bodies.

The *General Assembly* (GA) is the decision-making body, consisting of representatives from each member. Until 2003, a representative of the European Commission (EC) chaired the GA and no INTAS decision could be taken without the agreement of the Commission. The [implicit] veto power of the European Community

[1] INTAS has a legal status as an independent and international association registered under Belgian law.

representative was laid down in the INTAS Statutes, according to which all decisions by the GA had to include the vote of the EC.

After the changes of the INTAS statutes in 2003, the EC has - as all other INTAS members - one vote. All members of the GA can veto decisions on budgets as (most) budgetary decisions have to be taken by unanimity. The only appointment that the GA itself makes is the appointment of the Executive Secretary, but this does not need to be made by unanimity. Admission of new members of the Association must be done by unanimity.

The *Council of Scientists* (CS) acts as the principal scientific advisory body and consists of no more than 40 senior scientists from both NIS and INTAS member countries. At present it comprises 35 members. The CS is headed by a Chair who is elected from amongst the CS members by the CS itself.

The *Secretariat* is the Association's executive body located in Brussels, which is responsible for the day-to-day running of the INTAS programme and, based on guidelines from and consultation with the GA and the CS, responsible for the development of the INTAS scientific policies. There are approximately 30 staff, around 10 of whom are seconded to the Association by various INTAS members. It is headed by a GA-appointed Executive Secretary.

The *Co-ordination Bureau* (CB) consists of the Chair and the two Vice-Chairs of the GA, the Chair of the CS, and the Executive Secretary, and serves as an informal management tool to ensure good coordination and dialogue between the formal bodies of INTAS in-between GA and CS sessions. It is a transparent body in whose meeting (typically a few weeks prior to a GA meeting) all GA and CS members may (but rarely do) participate. Traditionally, however, the European Commission, as the main financial contributor to INTAS, has attended all CB meetings.

INTAS has received the bulk of its funding (93%) from the EC Framework Programmes, with the remaining funding from contributions of countries not associated with the Framework Programme (e.g. Switzerland prior to its FP-association) and additional voluntary contributions from some INTAS members. In addition, several member states have provided staff on loan to the Secretariat.

2. The INTAS external evaluation – terms of reference and outline of the report

Two external evaluations of INTAS have previously been conducted: in 1994 by Coopers and Lybrand and in 1997 as part of the five-year assessment of the INCO-programme of the European Commission.

Late in 2003, the General Assembly of INTAS decided to launch a third external evaluation, to be completed by the summer of 2004.

The Coordination Bureau of INTAS (CB) appointed nine experts, from different countries which included representatives of member and partner countries, to form an evaluation panel working in two separate sub-panels, namely:

Sub-Panel 1: to review past and ongoing INTAS initiatives (from a scientific, management, and financial point of view) in view of and against the background of INTAS' statutory mandate

Sub-Panel 2: an evaluation of the role and future possibilities of INTAS as a funding organisation in view of the changing context (evolution of EC Framework Programmes, developments in the NIS).

The full Panel met in Brussels twice. Each sub-panel also held one meeting. The applied methodology consisted of the following tools:

- relevant documents: e.g., annual INTAS progress reports, official GA and CS documents, EC documents, former evaluation reports, publications related to the topic, analysis of the NIS and other papers (see Annex 2)
- Statistical data analysis based on data provided by the INTAS Secretariat at the request of the Panel (see the full Statistical Analysis report in Annex 4)
- Interviews with stakeholders relevant to INTAS (GA and CS members, leading members of the Secretariat and scientific officers, EC officials) see Table 2.
- Questionnaires sent electronically to INTAS funded project team leaders in the NIS, Young Scientist Fellowship programme participants, and their supervisors (see Annex 3)
- Site visits to five locations – interviews with project team leaders, local INTAS information points, local policy stakeholders (heads of academies, high level government representatives, heads of research institutions and universities, members of parliament etc.) and representatives of other R&D funding schemes active in the NIS region. The projects were randomly selected by the Panel.

Table 2: Overview of interviews conducted by the INTAS evaluation panel members

Category of persons interviewed as part of INTAS External Evaluation 2004		No. of persons interviewed
INTAS network	General Assembly members	**13**
	Council of Scientists members	**11**
	Employees of the Secretariat	**5**
	Scientific Officers at the Secretariat	**8**
	INTAS information desk officers in the NIS	**9**
	FP6 NIP at the NIS	**5**
	Individual evaluators in INTAS	**2**
Researchers	INTAS project team leaders	**106**
	Young scientists and their supervisors	**10**
Policy makers	Members of the legislation of the NIS	**4**
	Members of national, regional and local government in the NIS	**6**
	EU Commission administrators	**9**
	Other research funding organisations in the NIS region	**14**
		202

The evaluation covers the entire period of INTAS' lifetime with an emphasis on the funding portfolio during the last six years (1998-2003). Issues related to the functioning and effectiveness including the funding instruments and calls are analysed in Chapter 3. The achievements of INTAS in relation to its statutory objectives are given in Chapter 4.

A list of abbreviations used is presented in Annex 1.

An overview of the materials and data sources used, and the applied methodology, is given in Annex 2-4.

3. The functioning and effectiveness of INTAS

From 1993 to 2002, INTAS has funded 2,726 projects, bringing together 15,287 research teams. Between 1992 and 2003 the total cumulative budget of INTAS funding for scientific projects and other related activities in the NIS partner countries, known as the scientific budget, was €189.9 million. The European Union provided the major funding for the INTAS budget, 93% of the total; while the remaining 7% came from the member states, partner countries (when INTAS launched joint calls with some of the NIS) and European organisations (like AIRBUS, CERN etc.). Approximately 91% of INTAS' total budget has been devoted to scientific activities within the Member States and the NIS partner countries. The remainder was spent on administrative costs.

More than 75% of the teams supported belonged to the traditional academic community (academies, institutions, and universities). Less than 2.5% of the participants came from profit-oriented organisations.

On the basis of statistical data, the replies to the questionnaires and the interviews, the functioning and effectiveness of INTAS can be assessed as follows:

- **Funding instruments as tools for policy implementation**

Between 1993 and 2003, INTAS launched 55 individual calls for applications. No strong correlation between the annual available budget and the number of calls launched was observed. For example, in the year 2003 ten different calls were launched, compared to seven in the years 1997 and 1999. Before 1997, the number of calls hardly exceeded three per year.

Figure 1 shows all the instruments implemented between 1993 and 2003, their size, and their share of the annual budget. The largest proportion of the total budget (€155.6 million; 82% of the scientific budget) was allocated through Open Calls[2]. The second largest proportion of the budget was spent on Collaborative Calls with partner countries (total funding was €15.8 million; 57% of this amounts to €8.6 million. 4,5% of the total scientific budget was covered by INTAS, the remaining paid as contributions by the partner countries). Three joint calls were launched with Russia, namely with RFBR in 1995 and 1997 and with RFH in 1997. There have been two such calls directed to Kazakhstan and Belarus, and one to Georgia and the Ukraine. In 2004 a third joint call was launched with Kazakhstan as well as a joint call with Uzbekistan.

INTAS has co-funded calls with other European organisations (CERN, CNES, ESA and Airbus Industries). These types of calls formed the third largest funding instrument, accounting for €7.4 million. These European multinational or national organizations have run 9 funding calls jointly with INTAS on a 50%-50% financial contribution base. INTAS spent €3.7 million, 1.9% of the total scientific budget, on this type of call.

[2] The Open Call invites applications with no geographical, thematic or any other priorities or preferences; decisions on the selection of grantees are based only on scientific excellence

One of the fastest growing funding instruments is the Young Scientists Fellowship programme, which has received €6.3 million (3.3% of the total scientific budget) between 1998 and 2003. The annual funding level increased drastically from €260,000 in the first year to €2.5 million in 2003.

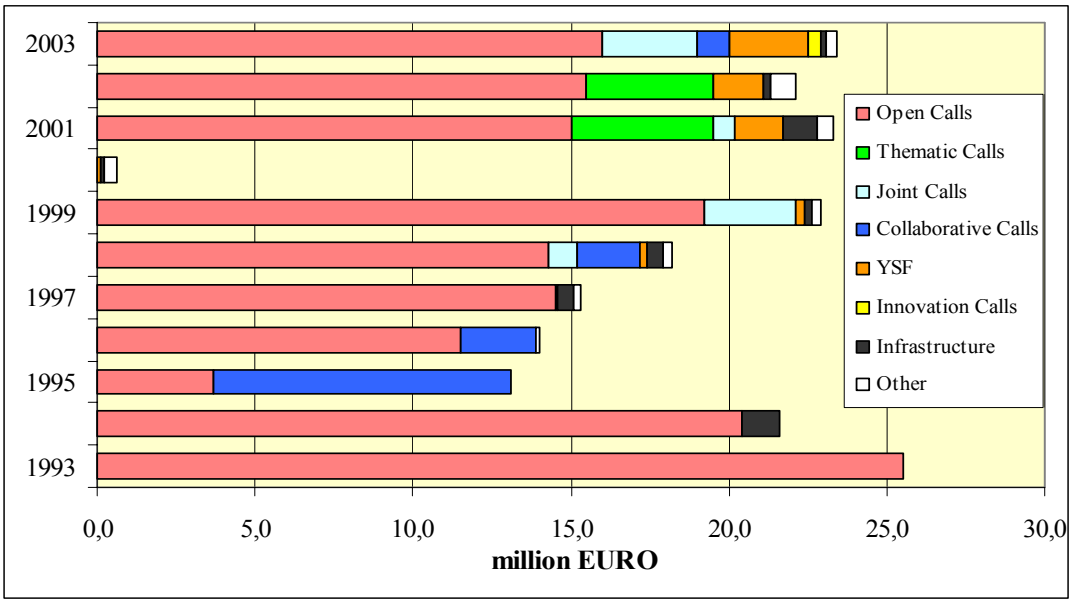
In an effort to focus on more target-oriented activities with more direct economic and social relevance, INTAS launched four Thematic Calls in 2000 and 2001 with the themes of information technology, pollution, food, and nano-sciences. Another INTAS call targeted the Aral Sea Basin as a research topic, in conjunction with CNRS of France and DFG of Germany. The total budget allocated for these Thematic Calls was €8.5 million, which represented 4.5% of INTAS' total scientific budget.

Other instruments have also been applied by INTAS (like summer schools, monitoring conferences etc.). Their demands on the total funding are low. A new instrument, introduced first in 2003, was the Innovation Call. This is still in its early development stages (requiring only €0.5 million in 2003), but it is a good signal for well-targeted reactions to satisfy growing demand in the partner countries for the results of INTAS projects to be applied commercially.

In summary, INTAS has been able to adjust its provision continuously by launching new instruments and calls. This flexibility indicates that INTAS has successfully adapted quickly and appropriately to new needs and developments in the NIS, as is particularly illustrated by the expansion of the Young Scientist programme (see Chapter 4). On the other hand INTAS has allocated a large majority of its budget to open calls, which indicates a certain hesitation to initiate changes in its policy and *modus operandi*. At the same time, this underlines the commitment of INTAS to follow an approach from the bottom up based on the pursuit of excellence (see Chapter 4) and therefore closely aligned with its statutory objectives.

The variety of instruments launched and implemented by INTAS between 1993 and 2003 (different types of collaborative calls, Young Scientist Fellowships, Innovation and Infrastructure related activities, Summer Schools and Conferences) are covered by and are in line with its broad mandate. All in all, INTAS has made a substantial contribution to its mission with its range of instruments.

Figure 1: INTAS instruments for funding research activities between 1993 and 2003



- **Strong focus on physics**

INTAS projects are categorised according to the following eight research fields: Astrophysics, particle and plasma physics (1a); condensed matter physics (1b); mathematics, information technologies (2); chemistry (3); life sciences (4); earth sciences, environment and energy (5); space, aeronautics and engineering sciences (6); and economics, social sciences and humanities (7). This breakdown is intended only for the purposes of handling applications. The distribution of available funding sources among these fields was shown to be approximately proportional to the numbers of applications received for the particular field.

Physics has proved to be the scientific field receiving most funding from INTAS (Table 3). One third of the teams that submitted applications between 1997 and 2002 represented physics. This is higher than the corresponding figure reported for calls in the period 1993-1996 (23%).

The highest number of teams that applied for grants were from the area of condensed matter physics, followed by earth science and environment, chemistry, and life sciences. The least attractive fields, according to both the number of submitted proposals and contracted projects were economics, social sciences and humanities.

The average success rate (the ratio between the number of contracted teams and the number of teams that submitted applications) was 16,5% (Table 3). Three areas, astrophysics, space & aeronautics and economics, social and human sciences proved to have higher success rates than others (around 20%).

In Russia three research areas were relatively low-represented. Two of these areas, Space & Aeronautics, and Mathematics and Information Technology cannot be considered as scientifically weak fields in Russia. The low interest for INTAS projects in Russia in the field of “Space and Aeronautics’ can most likely be explained by the fact that such projects normally require funding above the maximum allowed funding level in INTAS (i.e., €300,000). Better funding possibilities from other funding bodies or better ‘global market’ in those fields may also add to the explanation. Nonetheless, a deeper analysis examining this phenomenon and the general over-representation of physics could offer additional insights.

Table 3: Breakdown of the number of research teams from the NIS region by scientific areas between 1997 and 2001

Scientific areas	Number of research teams		Success rate (contracted/all submitted in %)
	In all submitted projects	In all contracted projects	
1a	1,695	351	20.7
1b	4,103	604	14.7
2	1,312	230	17.5
3	3,260	522	16.0
4	3,178	496	15.6
5	3,347	481	14.4
6	1,400	281	20.1
7	1,099	233	21.2
Total	**19, 394**	**3198**	**16.5**

- **70% of the funds allocated to Russia**

The INTAS programme is presently open to 12 NIS partners. These countries differ from each other in many respects, e.g., size, scientific strengths, traditions in international research collaborations, political and social transparency, political and economic stability in the given period, which might explain the main findings of the following statistical data analysis.

It is not surprising that Russia's share in INTAS funding has been far ahead of all NIS (Figure 3 below): more than 70% of all research teams funded by the programme are Russian. However, a clear geographical imbalance of INTAS funding between regions within Russia can be observed. The Moscow region has been most successful in terms of the number of INTAS funded projects, followed by the St. Petersburg and the Novosibirsk regions. It should be particularly noted that other scientifically strong and important regions, like Nizhni Novgorod, are poorly represented in the Russian INTAS project portfolio.

Besides Russia, Ukraine and Belarus are the next two countries that have benefited in terms of the amount of financial support and number of participating teams. However they accounted only for about 16% of the total number of contracted teams (Figure 3). Azerbaijan, Tajikistan and Turkmenistan show very low INTAS participation with e.g. fewer than 26 successful teams in total between 1997 and 2002 (i.e. less than 5 contracts per year). Kyrgyzstan, Moldova and Uzbekistan also show poor INTAS representation in projects. These six countries can be regarded as being out of the scope of the programme. It should however be noted that the success rates for these 6 low-represented countries are in the same range as for the three most successful nations (Figure 3; see points in red).

When the number of applications and contracted projects are related to the number of personnel in R&D in each of the NIS, a different picture emerges. More precisely it can be observed that the low participation from the smaller NIS and high participation from Russia can be expected (Fig. 3.3). For example, Armenia has been the most successful NIS in INTAS in relation to its R&D personnel. The only exception from this is *Azerbaijan* which shows particularly low interest in INTAS and participation in relation to its research 'volume' in terms of man-power.

Figure 2: Number of research teams contracted by countries and their success rate (number of contracted teams/all teams applied for grants) between 1997 and 2002

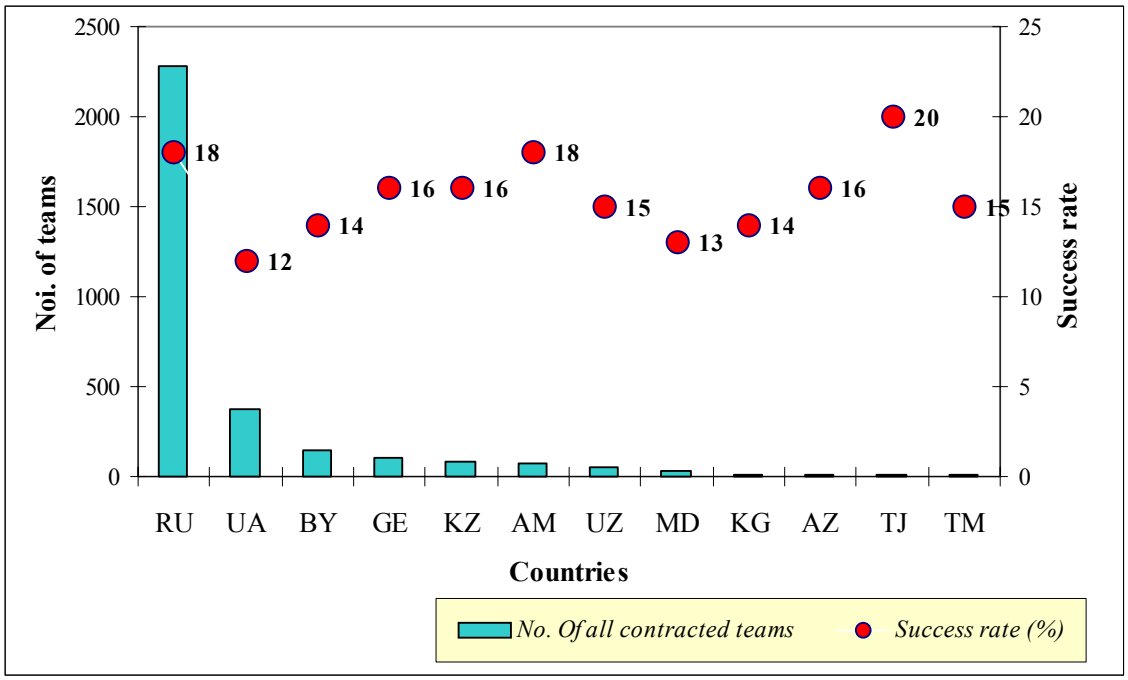
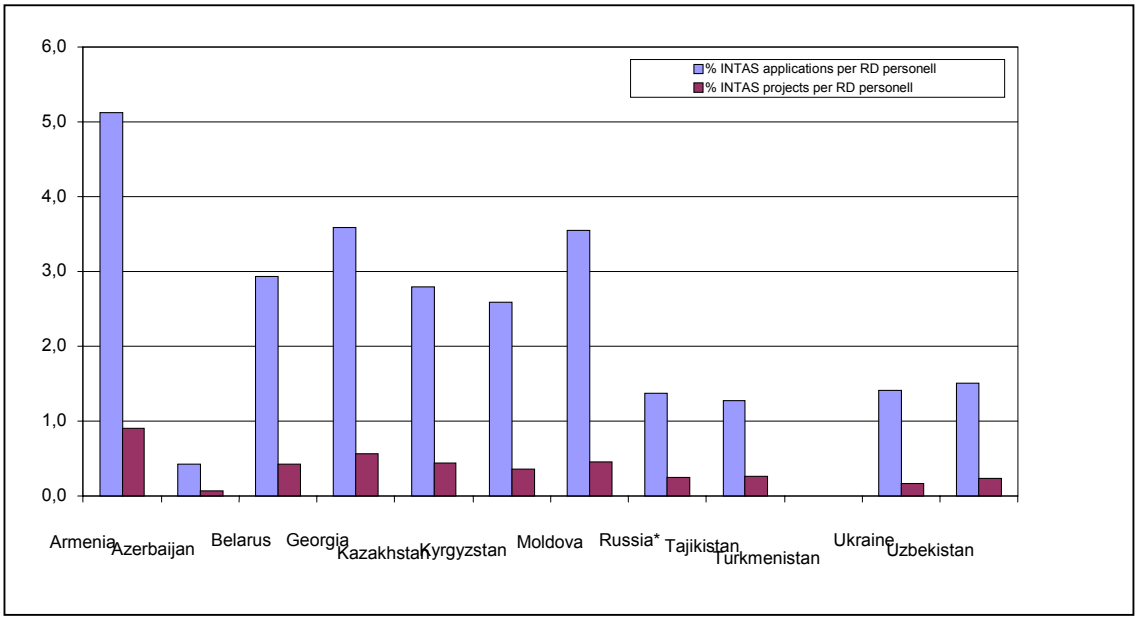


Figure 3: The number of applications and contracted projects in relation to the R&D personnel (average 1995-2002)



- **Efficient processing of application but less developed follow-up and monitoring of projects**

In the view of the Panel, INTAS has developed efficient methods of dealing with the bulk processing of responses to calls through a compact and well-integrated administration and database facility, expert staff with an understanding of the specific problems of the NIS, and generally good flexibility. However, many of the Scientific Officers interviewed expressed concern about the high workload which does not allow them to monitor the progress and results achieved by the projects beyond the written reports handed in by the project coordinator. This was also supported by the interviews conducted with the NIS project team leaders, who claimed that the monitoring of INTAS projects is essentially report based, and always channelled through the co-ordinator only.

- **Control of funds to individual NIS researchers**

INTAS has fully centralised and generic procedures for the administration of projects including the transfer of funds to project participants. A key feature of INTAS projects are the contractual agreements that are concluded with each of the participating NIS scientists in each project. These principles, together with the special agreements with banks in the NIS, avoid delays in transfer, and significantly reduce the risks surrounding (non) payments, which then enables project participants to concentrate on their scientific work, and ensures that INTAS has full control over the distribution of all funds in a project.
This personal contract provision is an additional strength of the efficiency and effectiveness of INTAS and its operating procedures.

- **Formal agreements with INTAS partner countries have proved to be efficient**

With input from ten NIS partner countries, INTAS has produced 'Agreements on Scientific Cooperation', which, for example, enable (i) tax exemptions of INTAS grants, (ii) duty free import of equipment purchased with INTAS funds and (iii) an official contact person in the relevant Ministries or State Committees. These bilateral agreements have been particularly important and are one of the particular strengths of INTAS compared to other international funding schemes including FP6. With the two largest beneficiaries – Russia and Ukraine – such agreements are currently not in place, due to the non-governmental status of INTAS. However, agreements between INTAS and the Russian Foundation for Basic Research (RFBR) and the Russian Foundation for the Humanities generated similar conditions for the implementation of INTAS funded projects in Russia.

- **Post-project evaluation procedure important**

The post -project evaluation procedure conducted on a regular basis for selected projects by experts from an independent assessment panel (for a particular scientific field) is important for ensuring that the objectives of INTAS have been met, as well as for future potential INTAS work programmes and improvements to the calls procedure. The evaluations are normally presented and discussed at the CS meetings.

- **CS members' potential not sufficiently utilised**

Among the three formal INTAS bodies, the *Council of Scientists (CS)* acts as the principal advisory body to the General Assembly on scientific, professional issues. The entire preparation, including logistics and meeting papers, is conducted by the Secretariat. A report with recommendations from the CS-meeting is presented to the GA. The CS, together with the Secretariat, is responsible for the design of evaluation methods and procedures, application evaluations, and preparation of priority lists to the GA. The CS, in the beginning, met and assessed all applications and prepared a priority to be submitted to the GA for final approval. Due to the high number of applications in one call – up to 2000 – INTAS changed the system to one based on external evaluators. This gave the CS more time to focus on INTAS development matters – although our interviews showed that not all CS-members were satisfied with not being more directly involved in the assessment of applications.

Our interviews have shown that the CS, in its present form and mode of working, is not as dynamic an institution as envisioned when INTAS was established. Some of the CS members interviewed felt that their personal role (besides representing a scientific field and their home country) is unclear, with little activity between the CS meetings, and that this perhaps falls short of the statutory CS mandate.

However, it is obvious that the CS, through its advisory role and due to its composition with both INTAS and NIS researchers as members (a unique meeting place for two distinct research cultures), has a good opportunity to influence the INTAS-agenda. The CS is in the position to get first hand information on the situation in the NIS and gets such information, but in an informal and unsystematic manner. A more systematic reporting could be easy to design and implement, e.g., an annual national reporting to the CS according to a standard agenda, including science policies, reforms, science funding and working conditions for scientists.

The CS meets 2 or max 3 times a year. This low frequency seems to have prevented the CS to play a very active role in INTAS affairs. The use of CS-working groups has, however, shown that it is possible to cover more ground and make the CS in conjunction with the Secretariat able to play a very active role in the development. It would be purposeful to stipulate more clearly the work mode of the CS so that it can fulfil its role.

According to our interviews, the CS needs to be more dynamic in other areas as well, such as related to interdisciplinarity and a focus on socio-economic development. The GA should provide the necessary impetus to the CS to make proposals that assure that INTAS lives up to its objective of international collaborative research at a high level.

- **Low awareness in NIS of INTAS Information Desks**

In the mid 90s, INTAS had already established informal contact points in several NIS. Not until 2000, however, were formal contracts established by INTAS, with 13 organisations. These contracts formed the first INTAS official Information Desks, with the primary goal to assist INTAS in providing on-site advice and assistance to the local scientific community. Info Desks are supposed to act as:

- distributors of information received from INTAS;

- facilitators of communication for local scientists and a source of information on issues such as policy process and decisions, local promotion, specific questions from scientists etc; and
- promoters of all INTAS Calls in the region.

Having previously served as an INTAS "information supplier" for Moscow and Russia in general, in 2003 the Russian Foundation for Basic Research was also formally appointed to provide the first INTAS Information Desks serving Moscow and the central Russian regions. In total, INTAS has now established a formal network of local 'INTAS Information Desks' in eleven of the twelve NIS partner countries.

The Evaluation Panel noted on its visits to NIS-countries that the visibility of the Info Desks in several places was surprisingly low. Thus actions to remedy the low awareness in the NIS of the national Information Desks should be immediately undertaken.

- **Late INTAS start to contributing to ERA and FP6**

Since the launch of FP6 in 2002 INTAS has developed a series of actions and strategies to encourage the involvement of NIS scientists in FP6. The most important action was to establish a new network, called *FP6 NIS Information Network* (ININ) in 2003. It also included establishment of *FP6 National Information Points* (NIPs) in the NIS upon the initiative of INTAS.

This instrument is crucial for increasing the awareness of NIS participation in FP6 by various training activities, the arrangement of brokerage events, and other promotional actions. In spite of the local FP6 NIPs existence, many NIS scientists interviewed were not aware of the opportunities that FP6 can offer them. Those who did know pointed out that they were quite often over-taxed and deterred by the complicated mechanisms, large-scale projects and procedures of FP6. Some also claimed that the information in the Russian language is too limited.

By setting up the FP6-NIP system, INTAS has started to manage two networks running in parallel for the same market. The local points of these networks are not necessarily the same; the communication between the contact points is only on an *ad hoc* basis. The financial support for the NIPs, and the very limited resources dedicated to the INTAS Info Desks do not contribute well to the improvement of EU-related servicing capacities and may decrease the quality of both networks. Their merger which is currently pursued, should be an effective response to this challenge.

- **INTAS vs. other funding schemes**

There are many other international S&T funding schemes in the NIS-countries (e.g., ISTC/STCU, CRDF, NATO) in addition to purely bilateral ones (e.g. BC, DFG). For example, in Georgia international S&T organisations have funded projects during the last 10 years with a total value of €40 million. INTAS' contribution was 'only' €3 million. The largest contribution came from ISTC (€11 million) while the funding from NATO and CRDF respectively was at about the same level as INTAS.

The Panel's comparative analysis of INTAS against other major international funding schemes is primarily based on the results from the interviews conducted in the NIS-countries, and from the panel members' own knowledge (Table 4).

Table 4: 'Strong' and 'weak' features of the INTAS programme compared with other international funding schemes

INTAS strengths	INTAS weaknesses
Flexibility (e.g. money can be redirected from one budget position to another within the project)	Only a low level of financial support is possible
Person-oriented due to personal grants and without involvement of national governments	Possibilities to buy research equipment are limited
High level of trust (in terms of reporting)	Low success rate as a consequence of high competition
The country benefits financially	Motivation for western scientists to participate is sometimes discouraged because of their low share in the grants
Programme is well targeted and understood	Not enough focus on applied research (where input and output could be clearly defined)
The only organisation that also supports "pure" basic research	More focus needed on humanities and social sciences
Equal partnership, colleagues from different countries participate	'Free-rider' problem exists
Teams are involved in cooperation	Initiation very often arises only from the NIS
Low bureaucracy for applicants (limited paperwork)	Low quality of internet access, outside the sphere of influence of INTAS

4. INTAS achievements in the period 1993-2003 in relation to its statutory objectives

As indicated before, INTAS statutory objectives are (Article 2, Paragraph 1): *"to promote by an international effort:*

- *"the scientific research activities in the NIS as an essential element for social and economic progress and consolidation of democracy in those countries,* and
- *the scientific cooperation between scientists in these countries and the international scientific community"*

In addition, INTAS *"shall give priority to the scientific merit and the internationality of the research activities envisaged, taking into account any activities undertaken by the Members of INTAS"* (Art. 3, Par. 2).

The evaluation panel has reviewed the past and ongoing INTAS activities in view of and against the background of INTAS' statutory objectives.

➢ INTAS has not been in a suitable position to trigger overall social and economic progress in NIS

Promotion of scientific research activities as an essential element for social and economic progress was one of the major, and more ambitious, objectives of INTAS according to its statutes. Keeping such an ambitious aim in mind, an average budget of approximately €20 million a year for the whole science sector of the former Soviet Union is a comparatively modest resource. Therefore it is no surprise that INTAS has not been able to trigger major and substantial reforms of the outdated scientific system in the NIS, which consists of some 1.1-1.5 million researchers[3]. On the other hand, INTAS projects have been of immense relevance for the economic and scientific situation of individual scientists and their institutes. In addition, INTAS support has at least encouraged NIS researchers to progress towards a more independent approach from the bottom up.

➢ Different and changing social and economic needs of NIS regions

It is a view shared by many of the NIS scientists interviewed that INTAS was/is very supportive during the - still ongoing - transition period of their economies. The research system as a whole suffered particularly during this period. The vast majority of the scientific and research institutions in the NIS receive support only from their governments, and only rarely from other sources, e.g. private organisations and enterprises.

The average salary in the NIS is very low (e.g. for the senior scientific researchers it is 130-150 USD per month at best); research equipment is either old or, more or less, at an appropriate level, but money is urgently needed to keep it up to date. Thus, INTAS financial support was/is important in terms of: 1) salaries; 2) participation in

[3] Refers to the number of RD personnel in NIS 1995-2002

conferences and experiments abroad; 3) opportunities to buy inexpensive equipment; 4) fixed, contributions, however limited, to overhead costs at the institutional level.

It is also important to note INTAS' stimulating effects on the local authorities (along with other funds' activities). This could be seen particularly in some NIS governments co-financing joint calls. On the other hand, INTAS has not paid close enough attention to the significant differences in social, economic and – most importantly – scientific realities and potential of the NIS, instead following a "one-size-fits-all" generic approach.

- **INTAS - an efficient bridge builder between Europe and the NIS**

According to the rules of INTAS, all research projects supported by INTAS must involve at least two teams from different Member States and at least two teams from the NIS, since 2004 from at least two different countries. The coordinator of a project must be from one of the Member States. From the interviews with the NIS teams-leaders and the questionnaire results, it was clear that the majority of the project proposals were initiated by a NIS-partner, usually with little input from the INTAS-member participants. The low financial share allocated to the INTAS members (maximum 25% of the budget) may explain this factor.

Almost all the instruments provided by INTAS have been major tools to enable existing collaborations to continue and to strengthen the scientific ties with Western European countries as well as within the NIS. Many of the projects have found follow-up funding and have continued the cooperation after the INTAS project has ended. The label of INTAS has been helpful in securing further funding possibilities.

Thanks to its autonomy and its flexible approach, INTAS has been a successful bridge builder between European and NIS scientists. The majority of those NIS and European scientists with successful applications regarded their cooperation as fruitful and inspiring. In the majority of cases the cooperation was of mutual benefit.

In some cases it was reported that new technologies had been developed or even new scientific methods discovered as a result of the projects. It is also important to note that several respondents mentioned the positive impact INTAS had in terms of their institutes' attempts to commercialise scientific outcomes.

The projects allowed research forces from almost all the NIS to merge successfully, thus renewing cooperative links which existed during the Soviet times.

- **Scientific excellence initiates a high volume of competition**

Within the promotion policy of INTAS, excellence has obviously played a decisive role. INTAS received more than 14 times more requests for financial support than it could ultimately fund. The average 7% financial success rate is extremely low in international comparison. Despite this high competition, the low success rate has remained at a remarkably stable level over the years. For example, the success rate was at 8% in 2003.

Out of all the funding instruments the Open Calls generated the highest competition, with an average success rate of only 6% (the lowest level was 3 %!). Thematic Calls and especially Joint Calls with European organisations have generated the lowest

level of competition. More precisely, in the Joint Calls the average success rate (by funding) was over 40%. For individual calls there were even higher success rates: the Joint Call with CERN in 2000 and 2003, and with GSI in 2003, was 72%. Surprisingly the Thematic Call for Information Technology also showed very low competition.

Overall, however, we have to conclude:

Because of the limited financial resources of INTAS – compared to other international funding schemes - a large percentage of applications meeting the criteria to qualify were unsuccessful, or had to be submitted a second or a third time in order to receive a grant. The general lack of resources and limited funding possibilities for research activities in the NIS may explain the ongoing high motivation of the science communities in the NIS region and indicate the need for support by organisations such as INTAS.

- **Strong dissemination of scientific results**

One of the most tangible pieces of evidence in support of INTAS' scientific achievements are the figures for the scientific outcomes of the projects (publishing, lectures at international conferences, patents etc.). The statistics show a high number of joint publications in virtually all the scientific areas, from 2 to more than 10-15 publications per project. Based on the reports of the INTAS contracts, the projects have resulted in almost 18,000 publications in international journals, more than 22,000 presentations at international events (scientific conferences and workshops) and more than 500 patents. Half of all patents have been introduced in the areas of mathematics and information technology. The patent concentration is also relatively high for astrophysics, particle and plasma physics. Economics, humanities and social sciences, which received the smallest amount of resources and had by far the lowest number of participants, have produced the highest number of book monographs (320). Physicists provided almost half of all publications resulting from INTAS support (about 43% of the total).

Even though not all of the publications and presentations mentioned are based on INTAS projects alone, the high proportion of INTAS projects in international refereed journals, usually with acknowledgement of INTAS funding support, may be regarded as a good indicator of high quality science conducted in the funded projects. Joint experiments, numerous joint presentations at international conferences are additional evidence that INTAS has given enough priority to the scientific merits (Art. 3, Par. 2 of the Statutes) in its activities.

Overall, this clearly indicates that INTAS has contributed significantly to the preservation and promotion of valuable scientific potential in the NIS.

- **Professional recognition, personal development**

INTAS projects have given individual researchers and institutions the opportunity to become more "visible" internationally, and to compare their own level of expertise with the Western one. This comparison appeared to be favourable in many cases. Other positive effects relate to the opportunity to conduct research using Western partners' high-quality, modern equipment, and through expedition/field work, allowing research activities that would otherwise be impossible due to very scarce local resources. Internal INTAS competition helped to clarify the place and the role of the

research team within the respective institute/university; successful applications raise the profile of this team thus, for example, being more attractive to YS.

INTAS offers excellent experience in project preparation and management. For many scientists it has been the first experience of international co-operation. For many researchers INTAS was and still is the major means to stay in science.

- **Assistance for Young Scientists**

One of the most acute problems for the NIS research institutions is the brain drain, especially in the case of young scientists. Between 1993-1999, 260 INTAS projects were linked to Young Scientific Fellowships. The total value of those grants to young NIS scientists exceeded €500,000. In 2000, INTAS expanded its fellowship scheme to include young scientists not necessarily involved in existing research projects and launched two other types of postdoctoral fellowships. Thus, INTAS offered 4 types of fellowships: project linked fellowships; PhD fellowships for those in the first year of a PhD programme; newly qualified postdoctoral fellowships; experienced postdoctoral fellowships.

The response from the YS community was high. For example, the success rate decreased from approximately 60% in the year 2000 to only 20% in the year 2003. The popularity of YS grants has increased dramatically in recent years, perhaps indicating that conditions are presently deteriorating for this group, but at the same time, better promotion by INTAS of the YS fellowships. In many cases a significant number of dissertations were prepared thanks to participation in the INTAS projects; PhD students have often presented their theses soon after the end of a project.

The importance of INTAS' YS programme was also strongly emphasised by a significant majority of the local interviews. INTAS did provide important financial support, doubling or even tripling the scientists' salary for the duration of the project. INTAS is sometimes regarded as the only way of keeping YS at their home institutions, (at least until the PhD qualification) and preventing talent from moving to less intellectual but more profitable areas.

Despite these successes the prevailing opinion is that INTAS, with its limited resources, cannot prevent the outflow of Young Scientists to the West or to other non-science jobs in the home economy. Moreover it was claimed that the grant allows YS, due to participation in the projects, to attain higher levels of expertise and thus to become more attractive to the western institutes as a potential employee. In addition, the established contacts with western colleagues also facilitate greater opportunities for departure. Unfortunately, we had no data to document those statements empirically, which were made by many of the respondents.

5. Science and technology in the NIS: an overview of trends and policy challenges

In this chapter the main trends in RTD employment, RTD expenditure and human resource supply are sketched with reference to certain prominent S&T indicators in section 5.1. In section 5.2., the main problems in S&T policy in the NIS are summarised.

5.1. Overview of Major Trends

➢ RTD Employment

The USSR was one of the major contributors to the world's wealth of knowledge. The extensive growth in RTD manpower and investment during this period allowed the development of an extremely large RTD base (particularly in the military complex and space research) - greater, in absolute terms, than that of most of the industrially developed nations. The collapse of the Soviet Union, and the transition to a market economy, radically affected the national RTD sectors inherited by the NIS from the ex-USSR. The S&T asset was very large, centrally directed, government financed - and therefore ill-suited to a market economy.

During the transition to a market economy – especially in the early years under conditions of economic crisis - S&T capacities in all NIS were drastically downsized. Due to the overall collapse of the economy, industrial and applied RTD were affected most. RTD employment (see Table 5) decreased in all countries more than by half and in some countries by three-quarters. The downsizing was especially dramatic in governmental RTD organisations and industrial in-house RTD labs. Universities were least concerned by this decline. Since 1999, however, signs of recovery and even growth (in Russia) in terms of RTD employment have been observed. For Russia this can be explained by the improved macroeconomic situation, certain structural shifts and institutional rearrangements in the attempts to respond to the challenges of the market economy.

Table 5: Employment in the RTD Institutions*

	1990	1995	1998	2002
Armenia	35,918	97,93**	8,133	6,737
Azerbaijan	25,775	16,926	15,299	16,019
Belarus	107,296	39,300	32,477	30,711
Georgia	303,45	21,497	17,009	16,031
Kazakhstan	50,626	25,372	17,593	15998
Kyrgyzstan	10,028	4,558	3,748	3,440
Moldova	23,195	8,688	7,515	5,102
Russia	1,943,432	1,061,044	855,190	870,878
Tajikistan	8,542	3,062	4,018	3,294
Turkmenistan	8,121	n.a.	n.a.	n.a.
Ukraine	494,197	293,121	214,926	177,983
Uzbekistan	59,691	27,310	22,195	n.a.

Sources of data in all tables: for Russia – the State Committee on Statistics of the Russian Federation and the State University – Higher School of Economics; for other NIS – the Interstate Statistical Committee of NIS.
* RTD personnel (only researchers and engineers involved in research).
** 1996.

The sum of all RTD personnel in the NIS in 2002 (except Turkmenistan and using the 1998 data for Uzbekistan) comes to 1,168,388 which even surpasses the current

number of RTD personnel in the EU25 (i.e. 1,084,726[4]). Russian data alone constitutes 75 % of the total figure. Although some of these resources may be more nominal than real, huge research potential exists in the direct vicinity of Europe, which is considerably larger than, for instance, the research potential measured in RTD personnel in the MEDA countries, which potentially could also be accessed for the benefit of the EU.

➢ RTD Funding

RTD funding has decreased even more drastically than RTD employment. In particular, business expenditures on RTD dropped considerably in the countries under observation. For most of Central Asia and the Caucasus, RTD funding is negligible when compared to economically developed countries in real terms, and it is well below the benchmarks of developed countries if measured as a percentage of GDP (see Table 6). Only Russia and Ukraine have a GERD/GDP ratio above 1 %, comparable to that of the Czech Republic. All the others have very low ratios (< 0.50 %), except for Belarus which sits between the two groups with a ratio of 0.64 %.

Table 6: RTD Expenditure as a Percent of GDP in 2002

Armenia	0.24
Azerbaijan	0.31
Belarus	0.64
Georgia	0.17
Kazakhstan	0.26
Kyrgyzstan	0.20
Moldova	0.45
Russia	1.24
Tajikistan	0.05
Turkmenistan	n.a.
Ukraine	1.02
Uzbekistan	n.a.

Source: for Russia – the State Committee on Statistics of the Russian Federation and the State University – Higher School of Economics; for other NIS – the Interstate Statistical Committee of NIS.

Unfortunately, none of the NIS was able to convert their S&T capacities into high-tech export and economic growth. The level of innovation activities initiated by industrial enterprises is very low (even for Russia it is only around 10%)[5].

➢ Higher Education and Human Resource Supply for RTD

At the same time, higher education has been characterised by a growing number of institutions, increased student enrolment and a greater proportion of graduates in most NIS, with just a few exceptions (notably in Uzbekistan as regards the number of higher education graduates; no data for Turkmenistan available). This trend can be partly explained by the establishment of private universities. The main reason for this trend is that a diploma is becoming a prerequisite for finding a job (even where the professional skills obtained are not directly required). In 2002, for instance, 840,400 young people graduated from institutions in Russia compared to 403,200 in 1995.

[4] Source: DG Research, Eurostat Databook, Key Figures 2003-2004

[5] See (2004) Indicators of Innovation Activities. Data book. State University – Higher School of Economics, Moscow, p.10 (in Russian).

Another trend is the growth of the postgraduate population, especially in Armenia, Kyrgyzstan and Russia (see Table 7). A negative trend can only be observed in Azerbaijan. With regard to the impact of post-graduate qualifications on the RTD sector, one has to state, however, that only a very small proportion of new PhD recipients are inclined to continue their research careers in their own countries. Most of them move into business, administration and other areas, some go abroad to work in foreign research centres, often starting as visiting scientists and continuing later on a temporary or permanent contract basis. Many governments declare keeping young people in S&T as one of their policy priorities but hitherto no effective measures have been taken.

Table 7: Graduates from Postgraduate Courses

	1995	1998	2002
Armenia	135	285	344
Azerbaijan	339	368	202
Belarus	601	885	1,152
Georgia	428	536	602
Kazakhstan	536	988	1,154
Kyrgyzstan	145	368	479
Moldova	116	214	243
Russia	11,369	17,972	28,101
Tajikistan	95	143	190
Turkmenistan	155	n.a.	n.a.
Ukraine	3,372	4,656	5,550
Uzbekistan	762	953	877*

Source: for Russia – the State Committee on Statistics of the Russian Federation and the State University – Higher School of Economics; for other NIS – the Interstate Statistical Committee of NIS.
* 2000.

5.2. Overview of Major Challenges to Policy Reform

Working on the basis of the main S&T indicators, widening discrepancies between the NIS in the field of S&T can be observed. The Russian Federation, the Ukraine, and perhaps Belarus, belong to one side; the other NIS, which are far from homogenous, belong to the other. This segmentation is also justified by the degree of participation in INTAS' and the FP's projects. Russia, Ukraine - and to a minor extent Belarus - have scientific capacities at their disposal that are internationally, or at least regionally, recognised. They have some limited resources of their own for basic funding of the major RTD institutions; human and financial capacities to support international S&T co-operation; and an economic structure which has a certain, though still limited, capacity to make use of RTD results.

Nonetheless, even these three countries are still experiencing a transitional crisis in the sphere of S&T, which is generic to all NIS, but on different levels. In particular, the NIS located in Central Asia and Caucuses are experiencing many difficulties, which was the case in Russia 5-6 years earlier (for some countries the situation is even worse). Based upon our findings derived from interviews, policy papers and documents, the main generic problems are linked to

- the reform of S&T policy and RTD structures,
- the revitalisation of RTD activities and
- the internationalisation of RTD.

- ***Reform of S&T policy and RTD structures***

The major problems in these areas concern:

- disruptive S&T policy formulation processes and the overall marginal status of S&T in governmental policy priorities,
- the weak policy delivery systems in terms of institutional structures and capacities,
- the lack of sufficient public budget allocations for RTD,
- the timid reform of the Academies of Science and the corresponding struggle in competition for funding and
- generational change (retirement of the 'Sputnik'-generation), related conflicts and the problem of internal and external brain drain.

At the very beginning of the transitional period, most countries were foremost concerned with preserving existing RTD capacities. Since then, there has been a disrupted development towards more sophisticated S&T policies targeting socio-economic goals.

In Russia, S&T has been officially recognised as strategically important for economic and social progress[6]. The Government has clearly expressed its desire to promote RTD and innovation as a foundation for Russia's economic and social development. Major challenges are the creation of favourable legislative and institutional conditions for innovation, such as raising venture capital, the improvement of the IPR system, the development of an adequate infrastructure, e.g. technology transfer centres in universities and research institutes, as well as capacity building measures designed to train RTD managers on research and innovation management etc. Smaller countries, such as Belarus or Armenia, have also recently adjusted, or are in the process of adjusting, priorities in their S&T policies. Most of them, however, lack agreed strategies, policy delivery capacities, adequate instruments and financial means to implement the objectives of their S&T policies.[7]

Private and public expenditures of RTD are very low in most of the NIS. It is still the case that the Academies of Science, which remain the strongholds of scientific research, consume most of the available funds and channel them through their internal distribution mechanisms to their numerous institutes. Governmental S&T policies, however, are increasingly concerned with priority setting and in introducing efficient implementation methods, which often causes conflict. One frequently-quoted strategy is to supplement institutional funding with flexible mechanisms of co-financing based upon competitive calls for proposals and on contracted research from businesses. In Uzbekistan, for instance, the distribution of governmental RTD funding was radically shifted from institutional funding towards competitive tender based funding via the national programme. Additionally, indirect incentives for RTD and innovation as well as structural support interventions for the creation of an adequate innovation infrastructure in universities and public RTD centres can be found on the agenda of NIS' S&T policies.

The age structure of RTD personnel in most NIS is steadily deteriorating: half of Russian researchers, for instance, are over 50 years old, the average age of

[6] see *'Grounds of the Policies of the Russian Federation in the Field of S&T Development for the Period until 2010 and Beyond',* approved by the President of the Russian Federation in 2002.

[7] see for instance Smallborne, D., Welter, F., Egorov, I. and Slonimski, A. (2002*): Innovations, Small and Medium Enterprises and Economic Development in Ukraine and Belarus: A Position Paper.* Schriften und Materialien zu Handwerk und Mittelstand, Heft 13. Essen: Rheinisch-Westfällisches Institut für Wirtschaftsforschung

candidates of science is 53, while that of doctors of science (i.e. full professors) is 61. Due to low salaries and a shortage of modern research facilities, many of the researchers remain in their positions only nominally, while actually having jobs elsewhere. One challenge to S&T policy makers in the NIS is to implement a range of measures to promote job placement at RTD units, S&T education, grants for young researchers, etc. A problem in this respect is the small salaries, which often are too small for employees to live on. Consequently governments are not able to prevent that even the best research teams and young people leave science for business or go abroad. Large research institutes are half empty. The only teams at research institutes which can keep themselves "in the picture" are those with projects funded by private industries or international funds.

- ***Revitalisation of Research and Development***

The major problems in this respect concern

- the very low demand from industry for RTD results,
- the imbalance between basic, interdisciplinary and applied research,
- the need to build a stronger knowledge base in social sciences and humanities and
- the deterioration of physical RTD infrastructure.

Due to the low demand for RTD results from industry, the share of applied, especially industrially relevant, research in the NIS is still comparatively low. In some countries, such as Georgia and Armenia, it is hardly even possible to develop the science-industry links due to insufficient capacity of the industrial structure to make use of RTD research, because of the lack of technology-oriented industrial enterprises. The business expenditures in RTD in Russia amount to 20 %. In the other NIS this figure is even lower[8]. Structural reform has been concentrated on the government RTD sector, with the aim of adapting it to a market environment. The scarce public resources that are available are just enough for a limited number of RTD organisations. There is a danger that basic research, which provides the foundations of knowledge for the entire innovation system, could suffer most from the shifts in priority setting. Belarus is undergoing such a concentration process, which is to a certain extent mistrusted by scientists operating in the field of fundamental sciences as well as by scientists working on critical topics (especially in the field of ecology and social sciences).

The NIS have a stronghold in certain RTD topics, most of which relate to the former Soviet military complex, including aeronautics, space research, theoretical physics, astrophysics, material research, nuclear energy, mathematics etc., but they also have a number of weaknesses, to which the broad field of humanities, social and economic sciences belong. For various reasons, ranging from an ideologically burdened past, low-profile lobbying power of these research communities, the assumed lack of applications of their results, even due to political reasons (e.g. Uzbekistan, Turkmenistan, Belarus), this field is rarely a high priority of the NIS S&T policies, and its international reputation still suffers. INTAS addressed this field explicitly by a thematic call launched in 2004. It would be worthwhile to direct more attention to this issue in the future.

[8] Just for comparison: the OECD average is 60 %.

The level of interdisciplinary research collaboration is also low in the NIS. In Kazakhstan for instance, the national RTD programmes are so strongly focused on particular thematic areas, that programmatic barriers for interdisciplinary research are created. INTAS supported interdisciplinary research collaboration explicitly under its Aral Sea programme.

Another problematic issue for the revitalisation of RTD activities is the increasing deterioration of the physical research infrastructure in most NIS RTD locations. NIS researchers frequently needed access to the research infrastructures of their European partners in the course of their INTAS projects. The poor condition of their own research facilities increasingly makes their own attraction for international research co-operation more and more marginal. One should, however, also emphasise, that there are a few outstanding NIS research infrastructures available, which also attract researchers from the INTAS member states.

- **Overcoming the International Isolation of the RTD Communities**

The major problems in this respect concern

- the marginal position of most NIS scientific communities vis-à-vis other international scientific communities in terms of R&D funding and research output and
- the rebuilding of S&T links between the different NIS.

Despite a large dependency on foreign funds for international RTD collaboration, some of the NIS governments are becoming increasingly aware that they also have to provide their own legal and economic incentives for RTD organisations to take part in international research and innovation programmes on equal financial footing, as well as to remove corresponding obstacles, such as tax and customs barriers, etc. After the disintegration of the Soviet Union, RTD teams in most of the NIS lost their collaborative links with Russia. This break up of the RTD networks seriously damaged S&T capacities of smaller NIS that were not able to support large projects because of limited funding and a lack of expertise. Therefore, there is a strong need to re-establish those links as well as to create broader research networks with the global RTD community. INTAS successfully serves both purposes.

6. Changing Framework Conditions for RTD Relations between the European Union and the NIS

Since the start of INTAS a number of external framework changes have occurred, both in the NIS and the EU (respectively the INTAS member countries). To name the most important ones:

- Gaps have widened in the field of S&T between the NIS as outlined in chapter 5.
- A shift in international organisations' support activities towards S&T in the NIS can be observed.
- A differentiated foreign policy of the EU towards the NIS has been formulated.
- A highly selective bilateral S&T approach between EU member countries and a few NIS can be identified.
- There has been a considerable instrumental change between the 5th and the 6th European Framework Programme for RTD.
- A new outline for the forthcoming European Framework Programme for RTD has been proposed.
- There have been changes in the institutional fabric in which INTAS operates.

➢ Shifts in the support activities of international organisations towards S&T in the NIS

Together with the ISF (International Science Foundation), INTAS was at the forefront of establishing scientific relations with researchers from the NIS in a systematic manner when it launched its first activities in 1993. Since then, certain other instruments emerged with specific scope and different rules and regulations, like INCO-COPERNICUS, CRDF, NATO for Peace Programme, ISTC and STCU. Additionally, more capacity-building oriented programmes (such as TACIS) and a few accompanying initiatives in S&T targeting the NIS (e.g. a couple of specific support actions implemented under FP5 and FP6) have been developed.

Although it is not easy to detect trends in the policies and priorities of foreign organisations towards NIS research, a certain periodisation can be identified[9]:

1992-1994: emergency help to scholars – mostly in the form of individual and group grants

1995-1996: growth of co-operation, the appearance of the concept of matching funding, and the active support for the scientific infrastructure (telecommunications, libraries, travel grants)

1997: growing support for the idea of funding for institutions (rather than individuals) and institutional reform in Russian science, for strengthening the bond between basic and applied research, and between research and education; also, the first discussions of special support for young scholars

[9] according to the periodisation for Russia established by Dezhina, I. and Graham, L. (2002*): Russian Basic Science After Ten Years of Transition and Foreign Support*. Carnegie Endowment Working Paper Nr. 24, February 2002

1998 to the present: implementation of support for reform and initiatives to bring NIS researchers closer to the European Framework Programmes for RTD

INTAS itself has contributed to most stages of this development with certain initiatives (e.g. joint calls in the mid 90s; introduction of the Young Scientists Fellowship Programme in 1998; launch of ININ in 2003). In general, however, this development lacks co-ordination between the international donors. A good illustration is the closure of travel grant programmes by a number of foundations simultaneously, which is causing a clear shortage of such grants in the NIS today.

- **A Less Generic Foreign Policy Framework of the EU towards the NIS**

Differentiation between the NIS is expressed in the new preferential foreign policy of the EU, which is explicitly directed towards the bordering West NIS, namely Russia, Ukraine, Moldova and Belarus[10] - and – since June 2004 – the South Caucasian Republics Armenia, Azerbaijan and Georgia[11]. Evidently, this group of countries have few common features. The welfare levels of these countries, for instance, vary considerably: in the year 2002[12], the GDP per capita of the poorest neighbour Moldova was a mere € 417 or USD 1,743 measured in PPP (purchase power parities), while that of Russia amounts to € 2,382, respectively USD 7,924 in PPP (purchasing power parity). The policy relations with Belarus are still under severe tension.

Under this new foreign policy, the opening up of the European Research Area for researchers from these four countries is explicitly formulated as a field of activity. The promotion of joint RTD collaboration within the European Framework Programme for RTD as well as within national (e.g. Russian) programmes is explicitly mentioned. In the EU-Russia Action plan, for instance, support for the creation of a common EU-Russia Information Society, increased participation in relevant scientific programmes, such as the IST area of the EU's 6th Framework Programme for RTD is envisaged. Also more innovation related activities are foreseen. INTAS is explicitly referred to as one of the EU initiatives in the sphere of research, science and technology in the *'Main Lines of a Joint EU/Russia Action Plan on the Common Spaces (EU Proposal)'.*

- **Changed Framework Conditions for INTAS Member States**

Since 1 May 2004 six new European Union member states (Estonia, Hungary, Latvia, Lithuania, Poland and Slovak Republic) share a common border with the West NIS. Cross-border interregional co-operation in the field of S&T will most probably be positively affected by this new situation.

It should also be mentioned that some INTAS member states have meanwhile established bilateral intergovernmental scientific and technological co-operation programmes, first and foremost with the Russian Federation and Ukraine. These

[10] see Kommission der Europäischen Gemeinschaften: Mitteilung der Kommission an den Rat und das Europäische Parlament. Größeres Europa – Nachbarschaft: Ein neuer Rahmen für die Beziehungen der EU zu ihren östlichen und südlichen Nachbarn. KOM (2003)104 endgültig, Brüssel, 11.3.2003

[11] see Council of the European Union, Press Release of the 2590th Council Meeting, Published 14 June 2004

12 source for PPP values: Goskomstat of Russia

bilateral activities usually run in parallel. A more co-ordinated effort (e.g. under an ERA-NET) would make sense to avoid double tracking activities and to add critical mass to some endeavours of common interest. In this respect, it is important to note that INTAS - through its multilateral design - also addresses those NIS who do NOT have bilateral science and technology agreements with INTAS member states. It is highly probable that – even if INTAS did not exist – only very few bilateral S&T agreements would subsequently come into existence, and there is good reason to assume that INTAS is more effective and efficient than the sum of other multiple bilateral programmes for these NIS. The direct participation of INTAS member states in the institutional set-up of INTAS offers potential for establishing more synergies between activities carried out on the level of member states and on the level of INTAS.

- **An Instrumental Change between the European Framework Programmes for RTD**

The new instruments established under the 6th European Framework Programme for RTD challenged the RTD co-operation between the EU and the NIS much more than the traditional instruments applied under FP4 and FP5. The vision - that 3rd countries such as the NIS, should be able to participate more easily under the priorities of FP6 - turned out to be a rather complicated issue in reality. The new instruments overcharge the research communities in the NIS considerably. The low level of participation of 3rd countries in FP6 is dramatic evidence of this and poses serious questions to the appropriateness of the concept of international co-operation under FP6. While NIS participation in FP6 is very low, calls for proposals launched by INTAS are confronted increasingly with over-subscription. The small project approach of INTAS is without doubt more suitable for EU-NIS RTD co-operation than the new instruments of FP6.

On the other hand, considering the huge potential of the NIS scientific communities, the new instruments have in certain cases a very valid *raison d'etre,* namely, to facilitate inclusion of the most suitable research teams from Russia, Ukraine and other countries. If the best NIS teams are to be approached by FP6 (and in future by FP7), much more effort needs to be placed on bridging activities and on making these research communities confident with the rules and regulations of FP6/FP7. ININ is a logical instrument for such an activity. Furthermore, the 6th European Framework Programme is much more selective in terms of research areas and application requirements and procedures than INTAS as regards international RTD co-operation. The less economically developed NIS would hardly benefit from the opening up of the priorities of FP6 and FP7 to international 3rd country participation due to internal structural reasons.

- **A First Proposal for the Design of FP7**

According to the first communication from the European Commission regarding the future shape of science and technology in Europe[13], the forthcoming European Framework Programme will continue the new instruments introduced under FP6 in a slightly modified manner (e.g. ERA-NET+), but would probably put more emphasis on

[13] see Commission of the European Communities (2004): Communication from the Commission. Science and Technology, the key to Europe's future – Guidelines for future European Union policy to support research. COM(2004)353, Brussels, 16.6.2004

the so called STREPS, if the Marimon-report is taken into consideration[14]. Additionally, the introduction of new topics and instruments is being discussed. The possible two new topics, namely *'space research'* and *'security research'* could be of utmost interest for some of the NIS, especially Russia and Ukraine. Closer co-operation would make sense. Another important new initiative, and potentially influential factor for the operations of INTAS, could be the establishment of a European Research Council, designed to actively promote fundamental research.

- **Changes in the institutional fabric in which INTAS operates**

One of the strengths of INTAS is its perception as a European S&T funding organisation with a well known and respected brand name in the NIS. This success is partly due to:

- its quasi-autonomous status *vis-à-vis* the EU administration, and consequently its flexibility to meet some of the requirements and realities of the scientific communities in the NIS,
- if agreed during the preparation of the FPs, its guaranteed 4-year funding horizon, as concerns the 4th and 5th European Framework Programme for RTD,
- its membership organisation with direct communication between 32 INTAS member countries (including non-EU member states) and contributions and strong commitment from some of these countries,
- its low organisational costs with low programme overheads,
- its accumulated knowledge of the NIS in general and the field of S&T in particular,
- its bilateral agreements with most NIS, which allow bank transfers and tax exemptions and
- its in-situ presence in the NIS with INTAS information points.

However, some issues are being raised increasingly and are a cause for concern, affecting the entire institutional fabric of INTAS. First of all, the legal position of the EC and its embedding within INTAS has changed in recent years, also based upon an assessment of the EU Court of Auditors, which points to the incompatibility of the EC as primary source of INTAS funding and its chairmanship of INTAS. The retreat from this position has been causing conflicts of control, not the least as regards INTAS' spending since – according to the viewpoint of the EC – there is a need to comply with the financial rules of the 6th Framework Programme for RTD[15]. To solve this institutional problem, several ideas are under discussion, which range from a special mandate for INTAS given by the EC on a contractual basis to transforming INTAS into an executive agency of the EC with or without maintenance of its current member structure.

In recent years, the unsatisfactory communication and co-ordination between INTAS and other EC programmes (primarily the international co-operation under FP6) has become a matter of concern and explains to a certain degree the low level of information exchange between INTAS and the EU delegation representations in the NIS. Additionally, the two most powerful NIS, Russia and Ukraine, do not recognise INTAS as a contract partner, due to its status as a private legal subject under Belgian

[14] see Report of a High-level Expert Panel chaired by Professor Ramon Marimon (2004): Evaluation of the effectiveness of the New Instruments of Framework Programme VI. Published on 21 June 2004

[15] The yearly INTAS work programme was recently treated as a concerted action by the EC and subjected to an evaluation by external experts, which gave negative results overall. This caused a lot of discomfort.

law. They consider the EC as their formal counterpart, which again calls for improved co-ordination, that we consider to be the task of the EC.

Although we consider in principle the internal institutional fabric of INTAS to be appropriate, including the division of labour between the Secretariat, the Council of Scientists (CS) and the General Assembly (GA), this has been challenged in the last few years too. First of all, INTAS grew larger and consequently more unwieldy. Not only from a legal point of view but also from an operational one, a formally entitled governing body, which supervises and advises the executive Secretariat on a more regular and frequent basis, would be helpful to speed up processes. In particular, decision making with respect to politically sensitive and programmatically decisive issues could be improved. For the time being, the INTAS secretariat seems to be more concerned with these issues than the GA, but it is, according to its statutes, not entitled to operate on this level alone.

As already stated in the review section of this report (p. 23), the division of labour between the CS and the GA, and respectively between the CS and the Secretariat, could also be improved. The Council should be more engaged in counselling, with respect not only to funding decisions, but also to fact finding and status analysis in the NIS, for instance, regarding the introduction of new instruments. We witness a certain dissatisfaction of some CS members towards their perceived marginalised status. We were also confronted with a strong concern of the CS to keep the flag of scientific excellence flying straight and true, and observed a conservative attitude towards instrumental changes.

7. Potential Future Models of INTAS

Facing changed and changing framework conditions, we have identified a paradox which could nevertheless become an opportunity: that INTAS, as a very successful programme (and organisation), is in need of change, despite its past merits and the ongoing demand for its well-accepted traditional instruments. This calls for a fundamental discussion of the future mission of INTAS as well as for the strategies and instruments, which should be clearly derived from the mission in order to realise its (new) objectives. The competence for discussing these fundamental issues lies with the respective INTAS bodies, first and foremost the General Assembly supported by the INTAS Secretariat and the CS and in a constructive dialogue with INTAS' major donor, the EC, in its capacity as S&T policy maker and administrator of European tax payers' money.

In order to facilitate this change we will introduce future potential models of INTAS, which are characterised by different main functions. They should primarily serve as inspiration for open discussions and food for thought.

These role models are structured along the following scheme (see Table 8). Needless to say, other potential role models can also be identified. We refer here to those whose major characteristics and elements have mostly been mentioned during the discussions which we conducted with policy makers, policy delivery systems, and researchers during the recent months. A classical role model assignment would show a diagonal starting from the upper left. In other words, the funding model would deal with supporting joint RTD co-operation, the bridging model with supporting RTD organisations to apply under FP7 and the 'intelligence' model with supporting S&T dialogue, policy formulation and eventually policy implementation.

Table 8: Overview of Potential Future Models of INTAS

	support for joint RTD co-operation between researchers from 'East' and 'West'	support for RTD organisation management and bridging institutions	support for S&T policy formulation and implementation
The funding model	**X**		x
The bridging model	x	**X**	
The 'intelligence' model		x	**X**

Since we believe that none of these pure role models would sufficiently justify INTAS in the future, we have already enriched each of these basic role models with additional functions.

The first model promotes INTAS basically as it is: INTAS remains an independent funding body for scientific research collaboration between the INTAS member states and the NIS, though with a stronger emphasis on targeted problem-oriented research and some flanking measures regarding the exploitation of scientific results and the involvement of young scientists. As regards the definition of co-operation priorities it works closely with the relevant S&T policy makers in the NIS. Thus, the programme of INTAS is not primarily defined by European S&T policies, but reflects the needs of the scientific communities in the NIS by open competitions and by calls for proposals which are increasingly designed on a basis of dialogue with the NIS policy makers.

The individual scientists would directly remain the primary beneficiaries of this approach.

The second potential future model sees INTAS as a bridge towards the European Framework Programme for RTD. Under such an approach, the INTAS programme policies would strongly prioritise the encouragement of NIS institutions and researchers to make better use of the FP and to associate themselves more closely with the ERA. INTAS and the EC would have to interact with each other and achieve much closer co-ordination. The ININ terms of reference established by an independent expert group[16] could be fully exploited. National Information Points, research managers of excellent RTD organisations and consequently their researchers would be the main beneficiaries. Such an approach makes particular sense for those NIS whose internal RTD systems are more developed or are targeted by the new preferential foreign policy of the EU. Under this role model, European S&T policy should set the agenda and a more thematic orientation towards FP7 priorities should be encouraged.

The third role model features INTAS as an 'intelligence organisation' which services the INTAS member states' policies and activities towards the NIS. Under this approach, different functions could be realised:

- First, a co-ordination support function, for instance via an ERA-NET.
- Secondly, an information platform function (e.g. via revitalisation of ISCONIS).
- Thirdly, a policy advice function with a focus on the economically less advanced NIS.
- Fourth, a resource function for selected customers.

In general, under this model, INTAS could specifically support development policies relevant to S&T in Central Asia and the Caucasian Republics. Although researchers remain indirectly the final beneficiaries, policy and programme makers are mainly targeted via policy dialogue, information exchange and capacity building measures. With such an approach INTAS could most likely contribute to establishing the foundations for a knowledge-driven economic and social development of the NIS.

Eventually, all role models need to be well discussed and formulated in detail. We consider this primarily as the task of the responsible INTAS management. In particular, the following four questions need to be strategically answered for each model discussed:

1. Does the chosen model find political acceptance?
2. Does it contribute to the development of Science and Technology in the NIS?
3. Is it economically reasonable?
4. Is it comprehensive and coherent?

As regards the last question, we like to give a word of warning: although aspects of these role models can (and maybe should) be combined, a sheer conglomeration of all role models and functions would perhaps affect the perception of INTAS negatively, both externally and internally, since the impression of a 'supermarket for all needs' could emerge. Due to the different goal systems inherent in the models, the balance of interest will become more problematic amongst the INTAS members, and

[16] See GA-543 annex 4.

the internal management much more complicated. This might create the need for additional resources and increase the overhead costs.

Model A: INTAS as funding institution for international research collaboration and promoter of a more dedicated S&T Co-operation between the INTAS member states and the NIS

As illustrated in part 1 of this report, INTAS has over 10 years of experience within its mandate, and is proven to be both an effective and efficient promoter of international research collaboration between researchers from INTAS member states and the NIS. As experienced during all NIS-visits, INTAS has become a brand which can be further exploited to deepen research collaboration. However, INTAS has to take into account certain developments on the NIS- and EU-side, notably the need for more structured S&T activities in and with the NIS, and a better reflection of European policies *vis-à-vis* the NIS, determined by the ultimate goal to bring NIS researchers closer to the ERA.

Taking into account this ultimate goal, the (revised) INTAS objective under this role model is threefold:

a. to fund excellent international research collaboration,
b. to assist and support the reforming of the S&T-policy, structures and practices in the NIS-countries via co-ordinated funding activities,
c. to be in line with, but run parallel to, the EU policies on S&T, Neighbourhood policy, etc.

In pursuing these objectives, the NIS should not be considered as a homogeneous group, but instead recognised as having different needs, which call for a differentiation in instruments too. INTAS has over the years developed a number of research activities and instruments for implementation, though it has not deviated from its emphasis on 'Open Calls'.

Given the ultimate goal to bring NIS researchers closer to the ERA, the activity programme and instruments could be reviewed and tailored in the following way:

1) In those NIS where the integration of researchers into the ERA is weaker[17] (Stage 1 Countries), funding priority should be given to open calls, which forces competition and allows the participation of the best research teams from these countries in joint RTD projects with researchers from the INTAS member states. However, up to a third of the call budgets should be earmarked for thematic calls, which are identified together with the S&T policy and programme makers of these Stage 1 Countries. A certain emphasis should be given to social and economic sciences in order to contribute to a knowledge base for social and economic reform. Thematic priorities should focus on the local needs and do not need to be derived from European S&T priorities. Policy advice for S&T reforms could be pursued as an extension for these countries (see Model C). Since preservation of scientific capacities still matters as a fundamental goal in these countries, particular attention should be given to the attraction and involvement of young scientists.

[17] Measured for instance in number of participation in INTAS projects or FP6 projects.

2) In Stage 3 Countries, whose best research teams are already – at least partially - integrated into European RTD projects, priority should be given, firstly, to thematic calls with a view to inter-disciplinarity, which are also in the explicit interest of the EU (e.g. related to the FP7 priorities such as, potentially, space research or security research), and, secondly, to collaborative (but open) calls, which are equally co-funded, and which give opportunities to the top researchers of these countries to compete together with their European counterparts for excellency in all scientific fields. Russia and Ukraine belong to this category. These instruments should be accompanied by targeted bridging measures designed to enable the participation of the very best researchers of these Stage 3 Countries in other European RTD programmes, especially FP7 (see Model B). As regards involvement of young scientists, a good instrumental division of labour with the Marie-Curie Programmes should be established.

3) Stage 2 Countries are in-between (such as Azerbaijan, Belarus and Kazakhstan). Not more than half of the available budget for these countries should be earmarked for open calls. Increased attention should be given to collaborative calls and thematic calls as well as young scientist fellowships.

The user integration, dissemination and exploitation of research results, especially as regards the thematic calls, should be more prominent in the future than it is now.

Under this scenario, INTAS will continue as an independent institution in close co-operation with the Commission (programmatically and financially). If INTAS continues its present set-up (GA, CS and a Secretariat), the decision making must be strengthened through a stronger and explicit mandate, to a new lean governing body of INTAS. This is especially necessary in view of the identification of thematic calls and the political preparation of collaborative calls in dialogue with the NIS. The Council of Scientists should be more strongly involved by the GA and by own initiative in preparing a neutral knowledge and decision-making basis on scientific policy issues (e.g. fact-finding).

As a funding organisation, INTAS will continue to depend primarily on financial allocations by the EU, but contributions from member states should be actively sought, notably the secondment of personnel and the co-funding of researchers from INTAS member states in INTAS projects.

Table 9: Test of feasibility for Model A

Political acceptability:	European Commission has to clarify the division of labour between INTAS and INCO
Contribution to S&T development:	If the revisions are implemented, the programme is in line with present S&T-thinking.
Financial feasiblity:	Yes, with funding from the European Commission. The INTAS member states are called upon to prolong and even increase their commitment.
Legal issues:	Some legal issues have to be resolved. INTAS should remain independent outside the EC administration to continue its flexible approach and management.
Organisational feasibility:	Yes, the secretariat is the key combined with more IT. Policy support from a lean governing body should be provided.
Comprehensive, logical, consistent:	As it builds on more than 10 years of experience, it can be considered as a consistent construct.

Model B: INTAS as a Bridging Organisation towards FP7

The second model for INTAS focuses on an organisation promoting better links between European and NIS research communities within EU programmes, notably FP7.

With ten years experience of promoting RTD collaboration between researchers from NIS and INTAS member states, and dozens of calls involving several hundred research teams, INTAS has become a sustainable gate to European research communities and created a brand name which is better known in NIS than FP6. Under its ININ initiative, INTAS established FP6 NIPs in the NIS and prepared a number of activities aimed at involvement of NIS researchers in FP6 to bridge the gap between NIS research communities and the emerging European Research Area (ERA). Such a combination of brand name organisation and active promotion of FP6 in the NIS makes it feasible for INTAS to extend its role from a funding institution towards a full scale bridging organisation providing deeper integration of best NIS research teams into FP7.

Under this role model, INTAS will pursue the following major objectives:

- to continue funding of world-class collaborative research projects with participation of researchers from the NIS, which are of explicit European interest (e.g. via stepwise integration into networks of excellence or via specific thematic calls which are in European interest),
- to develop instruments for better informing and training NIS research managers and researchers on FP7 activities and other initiatives under ERA,
- to contribute to the creation of sustainable NIPs/NCPs for FP7 in the NIS,
- to develop a policy dialogue on S&T co-operation with relevant NIS institutions and
- to support transfer of EU best practice (such as benchmarking of S&T policies and RTD organisations) and policy-making mechanisms (such as foresight exercises) to the NIS, thus helping to close the gap between ERA and NIS' S&T systems.

INTAS could efficiently contribute to a number of FP7 priorities (as stated in the Communication from the Commission from 16 June 2004)[18] in the following ways:

- providing information on opportunities available in FP7 for co-operation between EU and NIS,
- supporting the shift from pure assistance towards building a better justified division of labour by involving the best research teams from NIS in research conducted under FP7,
- raising return of the EC's R&D funding by providing the desired research results which are better, or at least more policy driven, for the same or lower costs,
- increasing human resources for ERA by well-targeted research mobility activities,
- raising quality of European centres of excellence by involving, on a temporary basis, best researchers from NIS,

[18] see Commission of the European Communities (2004): Communication from the Commission. Science and Technology, the key to Europe's future – Guidelines for future European Union policy to support research. COM(2004)353, Brussels, 16.6.2004

- contributing to achieving a critical mass for traditional and new priorities,
- involving the NIS in technology transfer activities,
- utilising and developing research facilities in NIS which are of European interest and
- organising and funding specific research, which is crucial in EU-NIS relations (e.g. environmental studies; climate research; extending scale of clinical trials, etc.).

Major instruments under this role model are:

- thematic calls in fields of explicit European interest,
- bridging funds for integrating the best research teams of the NIS in NoEs and IPs,
- assistance in S&T policy advice and dialogue with NIS national S&T authorities,
- institutional support for the creation and maintenance of sustainable NIPs and NCPs,
- capacity building in R&D management in NIS through information and training on rules and regulations of FP7, its thematic priorities, training in partner search, project preparation and project management,
- informing NIS researchers on relevant EC activities via dissemination of information, briefs in the national languages, organisation of infodays, presentations, road shows, brokerage events, etc;
- analysing successes and failures, problems and opportunities, with respect to NIS participation in framework programmes.

Under this scenario, a further autonomous and independent existence of INTAS in parallel to the EC is possible, but questionable. INTAS should rather be transformed into an executive EC agency, which would underline the preferential status of the NIS in European S&T policies. Its operations have to be in full accordance with European S&T policies. In any case, the existing regional and operational know-how of INTAS (expressed by the competence of its staff) should be safeguarded and used.

Since INTAS will act under this role model as an explicit bridging instrument towards FP7 and ERA, its operations should be fully financed by the European Commission. The logical rationale for further additional contributions of the INTAS member states (besides the tax payer's contributions to the overall EU budget) has ceased.

Table 10: Test of feasibility for Model B

Political acceptability:	Resistance from the INTAS member states.
Contribution to S&T development:	If INTAS can secure its flexibility and efficiency, the programme explicitly supports actual European S&T priorities.
Financial feasibility:	Yes, with funding from the European Commission. No rationale for additional member states' funding.
Legal issues:	INTAS would rather act as an instrument than an organisation. Thus intermediary status as an executive agency of the EC would fit.
Organisational feasibility:	Possible, if the know-how of the existing staff is used and enlarged by FP7 knowledge. Reduction of staff is likely.
Comprehensive, logical, consistent:	Partly; INTAS started with ININ, but – although the brand of INTAS should be used – this activity could be continued within DG research.

Model C: INTAS as an EU-NIS Intelligence Organisation

The third potential model features INTAS as an 'intelligence organisation' with different functions. The basis for such a model is the knowledge and social capital, as well as the potential for exploiting the good reputation which INTAS, as a reliable, long-standing partner in the NIS has earned, with a view to serving the INTAS member states' policies at the same time. The good knowledge base of INTAS about programme management and NIS S&T policies, as well its strong network in the region, are additional assets.

Under this model, INTAS would not primarily serve as a funding channel, although funding operations may be still directed towards institution and capacity building measures aimed at restructuring the S&T systems of the NIS (especially those which are less economically developed), which we consider as core activity of this model.

Objectives of this role model would be

1) to operate an information platform on European-NIS RTD issues
2) to assist in co-ordination of its member states policies towards the NIS
3) to provide policy advice and measures for NIS S&T systems' restructuring and
4) to act as a resource agency for third parties.

The instruments for achieving these objectives are many and varied. Most of them would be new for INTAS.

1) INTAS could recall its past initiative ISCONIS to organise a discussion and information forum of public and private funding organisations targeting the NIS. Such a forum could include agencies and research (funding) organisations such as CNRS or DFG, national research foundations, representatives of national Councils of Science and of ministries, private donors such as the Volkswagen Stiftung, European initiatives such as ISTC and STCU or even a possible future European Research Council, other sponsors such as NATO or CRDF etc. The vanishing of ISCONIS was mainly due to the absence of an active co-ordination office. In view of the co-ordination deficit in international RTD co-operation with the NIS, a good information network could generate European added value.

2) INTAS could strengthen its co-ordination support function. It could, for instance, set up an ERA-NET (and ask for additional EC funding under article 169) to co-ordinate the bilateral (intergovernmental) RTD programmes of its member states (or some of its member states in a variable geometry) established with certain NIS (mostly Ukraine and Russia) in order to add critical value, avoid double track activities and initiate multilateral activities. Three regional ERA-NETs designed to co-ordinate bilateral intergovernmental RTD programmes are already on the way to be established: one targeting the West Balkan countries (i.e. SEE-ERA-NET), one targeting the developing countries (with a special focus on Latin America) and one targeting China. Given the potential and actual importance of the NIS for the ERA, there is a clear rationale to have an ERA-NET for this region too. Evidently, this activity would be based on the concept of variable geometry, which means that not all INTAS member states are likely to participate. For the time being, the budget of an ERA-NET is limited to € 3 million. However, since ERA-NETs might grow in importance under FP7 (ERA-NET+), it can be assumed that the budget allocations for this scheme will increase.

3) INTAS could contribute to structural and management reforms of S&T systems in the NIS by launching co-operation oriented development capacity building measures to modernise and upgrade the research and innovation systems of the NIS, especially those which are most in need. With such an approach, INTAS could occupy a niche, which is usually not addressed by member states initiatives and which is also not considered as a core task of TACIS. A diversified set of measures supported by INTAS funding (i.e. introduction of benchmarking activities; institutional change management; commercialisation of research results; support for selected Centres of Excellence etc.) could complement the ongoing structural S&T policy activities of the target countries and add a European dimension to them.

4) INTAS could eventually offer to potential customers (e.g. the ISCONIS group) or for other comparable new regional initiatives elsewhere (e.g. West Balkan countries or MEDA countries) its programme management capacities and its extensive knowledge of the NIS via policy advice or operational services (such as programme management, peer-review organisation, project identification, partner search, monitoring etc.). Evidently, this point has the potential to entitle INTAS to secure co-funding of its operations.

Under this scenario, INTAS could continue its operations as an independent institution. It would be in a position to serve its member states rather than the EC. Its focus would shift from being a funding body to becoming a policy support institution, which acts on behalf of its member states. Under this role model, a Council of Scientists would not be necessary any more. Rather, external experts on certain policy issues should be contracted on a temporary basis. It is also unlikely that the staff number can be maintained. For the information platform, just a few persons would be sufficient. The same is true of the co-ordination of an ERA-NET. With regard to the core issue of this model, namely the support for capacity building measures to modernise and upgrade the research and innovation systems of the NIS, five to ten in-house experts (including administrative personnel) are deemed to be necessary.

The financial structure of such a model could be a mixed one. Although there is enough impetus for the EC to continue its funding (in particular for the core activity), additional financial support from the INTAS member states would be necessary. INTAS members will only opt for this model if a high enough number of member states see a justified need for it. Additional money could be raised by INTAS through participating in calls for proposals launched by the EC (e.g. ERA-NET+; concerted actions under the international co-operation in order to revitalise ISCONIS etc.) or by trying to sell some of its expertise to third parties. Given the very limited number of potential customers, however, the latter does not sound very promising.

Table 11: Test of feasibility for Model C

Political acceptability:	Possible hesitation from the INTAS member states and the EC. Awareness-raising could become necessary.
Contribution to S&T development:	In line with present S&T thinking. Better co-ordination of INTAS member states' policies.
Financial feasibility:	Difficult; more mixed funding deemed necessary. Variable geometry might lead to different funding commitments.
Legal issues:	Some membership issues have to be resolved ('variable geometry'). INTAS should remain independent outside the EC administration to continue its flexible approach and management.
Organisational feasibility:	Reduction of staff is likely. Additional know-how must be introduced in the organisation.
Comprehensive, logical, consistent:	Shift to more of a patchwork approach under one roof

It should be emphasised again, that these potential models have been introduced as food for thought.

The evaluation panel clearly favours Model A, which builds on the established social capital and knowledge of INTAS. INTAS' activities should continue to be primarily financed under the European Framework Programmes for RTD. It is necessary, however, that INTAS puts more emphasis on a sound and appropriate differentiation between the NIS, and, derived from this differentiation, a better identification, definition and application of instruments. We do not consider it appropriate to treat Russia and Armenia equally as regards co-financing issues, for instance. Also the dominance of 'open calls' should be lowered in order to give more room for a better exploitation of other instruments.

Also desirable aspects of the other role models (B and C) should be integrated in the new programmatic layout of INTAS. Especially the bridging function towards FP7 (e.g. by exploiting the ININ terms of reference) should be emphasised vis-à-vis those countries, whose internal S&T capacities can complement and compete best with those of the EU member states. This relates especially to the economically most advanced NIS, Russia and Ukraine. On the other hand, policy support activities (as described under model C) aiming to restructure and upgrade S&T systems should be well targeted for those NIS, which are most in need for such a support, provided that there is real offer (by INTAS) and demand (most probably by the economically less developed NIS).

8. Conclusions and Recommendations

After 10 years of INTAS activities, much has been achieved for NIS science and NIS scientists:

- *Scientific excellence* was preserved through the funding of excellent teams whose survival was seriously endangered. INTAS has efficiently preserved and promoted valuable scientific potential in NIS. Particularly during the first years of its existence INTAS was essential for the survival of NIS scientists and still is today for the economically less developed countries.
- INTAS has "activated" many research groups in the NIS and assistance was given for the development of scientific capacity, in particular by including promising younger NIS scientists in almost all collaborative projects and offering fellowships to them.
- INTAS has helped NIS scientists to enjoy *more scientific freedom and independence* through their handling of project administrative matters, while enabling scientists to define their own research agenda.
- INTAS funding has contributed largely to the maintenance of previously strong contacts and/or establishment of new partnerships with European laboratories and research institutes.
- Together with other international funding organisations INTAS has contributed to *shaping a new generation of NIS scientists* with better international awareness, who are better prepared for substantial pending and necessary reforms of the scientific structures in the NIS.

General review conclusions

- Implemented INTAS activities have been strongly in line with its statutory mandate
- INTAS has become an efficient bridge builder between Europe and NIS
- INTAS has made major contributions to increased co-operation between scientists in the NIS and the international scientific community
- Scientific excellence has been a successful cornerstone for INTAS
- While INTAS was successful in promoting scientific research activities in the NIS, INTAS was not asked to and was not in a position to turn this promotion into a strong instrument of direct social and economic progress
- Until now the impact of INTAS activities on the participation in FP6 projects has been very limited
- INTAS has been unable to prevent a considerable proportion of Young NIS Scientists from leaving their research establishments.

Organisational aspects of INTAS

- INTAS has reacted quickly to new demands in NIS
- Formal agreements between INTAS and its partner countries in NIS are an efficient mechanism
- The good control of funding for individual NIS researchers has served the mission of INTAS efficiently
- The post-project evaluation procedure has been important
- The CS members' potential is not being exploited sufficiently
- In several NIS, there is low awareness of INTAS Information Desks

Views on INTAS project participation

INTAS-funded projects resulted in the following major benefits for NIS scientists:

- Increased professional recognition, personal development, and improvements in the knowledge of research staff
- Increased international recognition and visibility
- Creation of a platform for new partnerships and future international research collaborations
- High quality joint research projects among innovative scientists
- Co-operation between the Western and NIS scientific communities
- Participation at international meetings (keeping contacts alive)
- Stimulation of interdisciplinary thinking and ways of breaking down existing barriers between institutes
- Flexibility to adjust to new initiatives and funding opportunities during the implementation of projects
- Security of funds
- Potential access to high-quality, modern equipment at European laboratories
- Making special infrastructure and equipment in NIS available for the global scientific community (e.g., telescope and accelerator in Armenia, Dubna in Russia etc.)

General preview conclusions

- During the 90s the gap in S&T as well as innovation among the NIS region has widened.
- The preservation of excellent science is no longer the first priority in the more economically developed countries, but it will remain a high priority in the less economically developed countries for at least the next four to six years.
- The reform of the national system of innovation and the research system is being more intensively discussed by more and more NIS governments, and some of them have already launched reform programmes, but much still has to be done to achieve a substantial reform.
- In several countries the exploitation of research results is becoming more and more important. The challenge is to create structures inside and outside the research system and to offer incentives and opportunities for the exploitation of research results.
- The need to improve research infrastructure and the generation change caused by the retirement of the ‘Sputnik-generation’ urges immediate policy responses.
- NIS science is not yet in a position to make wider use of the European Framework Programme for RTD. The region needs special treatment. A ‘one size fits all’ approach is not appropriate.
- Integration of the top scientists in joint projects with European researchers has already been achieved within INTAS (though not yet within FP6), but there are other groups of scientific excellence in more remote regions and in certain scientific areas, which represent a potential value for Europe that has not yet been addressed.
- INTAS has proved to be a fair and reliable broker with a good brand name. Closing the door on INTAS would cause a severe reduction in RTD collaboration opportunities between researchers from the NIS and Europe, and give a negative political message.

- INTAS gained its merits as a funding organisation and not as a policy advice organisation.
- INTAS is well accepted by researchers, but less prominent in the perception of European and NIS policy makers.
- Although the priorities and focus of its activities should be adjusted, there is no urgent need for change in the general overall statutory mandate of INTAS.

Recommendations

Based upon the findings of our evaluation, we present the following recommendations:

Programmatic Issues

a) We recommend the pursuit of the two main statutory objectives of INTAS (i.e. in short: *'to promote scientific research activities in the NIS as an element for social and economic progress'* and *'to promote international RTD collaboration'*) under an overall goal, which is to support better integration of NIS research communities (both from academia and industry) into the European Research Area.

   Although the main two statutory objectives of INTAS are still valid, they are to some extent also self-perpetuating: there is a need almost everywhere to preserve scientific capacities, and there will be an ongoing need to contribute to economic and social progress. One could argue that the ongoing unbroken demand for co-operation between scientists from the INTAS member states and the NIS is system immanent. Basic research always finds curiosity driven, highly interesting and sometimes promising research questions and applied research will easily find problems in the NIS which need to be tackled in a systematic manner. In fact, this is what basic and applied research should do. With more than one million researchers both in the NIS and INTAS member states, it is not surprising that the demand for resources and the over-subscription in response to open calls will continue. By focussing closely on the overall goal, INTAS activities can be seen in the light of more specific European motivation and potential benefit and, moreover, could and should be measured by objective milestones (e.g. number of research organisations from NIS in European FP projects; existence and size of co-funding agreements; existence of S&T agreements; implementation of these agreements etc.). Data on FP6 integration clearly show that the ERA integration is still at the very beginning. The transition phase is continuing, and it differs considerably from country to country.

b) Different integration phases require different instruments. We recommend improvement of the instrumental design of INTAS by building on its proven strengths. Based upon a differentiated approach towards the NIS, we recommend a move to exploit and enlarge the ININ terms of reference in a more active way, especially concerning the more economically advanced NIS to pave the way for swift and smooth integration of their best NIS research teams into the ERA. We further recommend a shift in the focus from open calls to more thematic, regional and collaborative ones. INTAS could support its bridging function, e.g. by launching thematic calls on topics relevant for FP7, and by establishing networking mechanisms with NoEs and IPs. Particularly in the less economically advanced NIS, the open call system should remain dominant, but complemented by thematic calls. Collaborative calls with these countries seem unlikely due to

unsecured co-funding. S&T policy support measures for the less economically advanced NIS, however, could be supported, if justified and demanded. Despite the fact that a less generic approach should be pursued, we do not support fragmentation, which would be counter-productive to regional intra-NIS RTD co-operation. More economically advanced NIS should have greater involvement in financing calls for proposals (e.g. via the collaborative call scheme).

c) More emphasis should be given to calls intended to improve the cultural, social and economic knowledge base of the NIS and the relations between the NIS and the European Union.

d) Support for young scientists throughout all NIS, especially for those from the less economically developed NIS, should be prioritised in the future to contribute to the preservation of scientific potential and the necessary change of generations. As regards Russia and Ukraine, a good instrumental division of labour with the Marie-Curie Programme should be sought. In general, young scientist participation should be mainstreamed as a generic approach across all INTAS instruments.

e) As regards the S&T dialogue and support for S&T reforms, meaningful targeted co-operation with the NIS should be realised also on low-scale level via a thematic call and/or a series of conferences on S&T policies and structures, the establishment of joint advisory groups in universities and Academies of Sciences and other research organisations (e.g. via twinning mechanisms) or training activities targeting policy makers, policy delivery systems and managers from RTD organisations.

f) The deterioration of scientific infrastructure is extremely crucial in the NIS, and this calls for urgent funding response. We recommend that this is done via TACIS. If this cannot be realised, we recommend that INTAS puts more emphasis on this issue (for instance via support for a few dedicated Centres of Excellence in the NIS or the attempt to find co-funding for scientific infrastructure from other national or international donors). A serious contribution by INTAS to the improvement of this pressing problem depends, however, on a clear increase of INTAS' financial resources.

g) A large number of qualified NIS scientists are now *well integrated in the wider international community* at the highest level maintaining previously strong contacts or building new partnerships with European laboratories. However, there is another, probably even larger, group of excellent scientists, who are still in need of more intensive contacts abroad, more opportunities for research collaboration, and more mobility, in order to stabilise their economic and scientific situation at home. Those researchers, including young scientists, have typically made some international contacts and may have already received international support in some cases, but are still suffering from major difficulties: e.g. low salaries, brain drain, lack of information, no autonomy within their research units and above all no prospects for change, and lack of international research project management skills and capabilities. This sub-community represents real value for Europe, and its contribution to both international and national scientific achievements could be crucial. The main factors which make its integration difficult at this time are:

   - The lack of well-developed networks with European (or US) partners; in general, this is not always perceived as a benefit;

- There is no system of multiplicators in existence (project facilitators, service providers, especially to the EU actions etc.), who may serve the international application process.
- The majority of scientists have no experience of how to utilise the information available and the opportunities provided by the different programmes.
- The expensive and low speed internet connections.
- A lack of knowledge of languages beyond Russian.
- Links to European partners through previous Russian partners are not always feasible as the Russians are not able to support them financially, and this approach may create wider gulfs to bridge, which may actually worsen the position of non-Russian NIS researchers.

This group will, therefore, remain a major challenge for future INTAS activities. The majority of NIS scientists are not yet in a position to be integrated on a broader basis into the existing mechanisms of the EU-FP. There is still a need for special instruments, procedures and treatment of the NIS in the R&D field.

Communication and Co-ordination

h) In order to respond to the reform processes launched by NIS governments and to establish a common ground for future INTAS activities (e.g. collaborative and/or thematic calls), INTAS should involve the NIS policy makers and scientists more in the decision preparation phase. This could be done via an upgraded CS and a more active policy dialogue with the NIS (and the EC). This also calls for an improvement of the monitoring and analytical capacities within and around INTAS. However, the S&T dialogue between the Secretariat and the GA is also far from being fully exploited. The GA, eventually via a lean governing body, should co-operate more actively with the Secretariat in matters of internal and external policy dialogue.

i) In order to raise the commitment of researchers from the INTAS member states, which is not reaching its full potential due to the low level of genuine INTAS funding, INTAS projects should be better and more easily linked with national funding schemes. The INTAS member states should develop appropriate co-funding mechanisms.

j) The international RTD co-operation sector in the EC and INTAS should improve their communication. The EC should be more active in programmatic co-ordination by way of a benevolent win-win approach. Such an approach should be generally welcomed by all INTAS bodies. If the European Union desires to realise its Action Plan with Russia in the field of S&T, the experiences and competencies of INTAS should be fully exploited. INTAS, on the other hand, currently does not have co-operation agreements with the two most powerful NIS in the field of S&T, Russia and Ukraine. Although both countries appreciate the activities of INTAS, the status of INTAS as an association under Belgian law creates a problem. This also calls for improved co-ordination and co-operation between DG research and INTAS if maximum effectiveness is to be achieved.

Institutional Fabric

k) We recommend that INTAS remains outside the European Commission administration in order to continue its operation in a flexible and efficient manner, but it should continue to be financed by the EC on a stable basis with a secured horizon of at least 4 more years. This funding, however, should comply with FP financial rules. If this does not urge INTAS to implement a totally new organisational set-up (e.g. as an executive agency of the EC), we strongly recommend that the INTAS member states remain an important element in the institutional fabric of INTAS and increase their commitment (also in the form of financial contributions and/or secondments). We further recommend review of the role of the Council of Scientists. The CS should be more involved in preparing a knowledge base for decision-making besides issues related to evaluation and funding of research projects. Such an enlarged, dedicated scientific advisory structure calls, however, for a new composition of experts with basic, applied and industrial research management background.

Other Issues

l) The involvement of user groups, the dissemination and exploitation potential of research projects funded by INTAS, especially as regards the thematic calls, should be improved. INTAS should raise awareness on this issue and support dissemination activities (e.g. thematic conferences). It should be more active in inviting European researchers into these dissemination processes and building bridges towards NoEs and IPs funded under FP6 and FP7. INTAS should publish lists of funded projects (including contact details and abstract) on its web-site.

m) Provided that the European Research Council starts its operations under FP7, and that INTAS continues its present instrumental orientation, we recommend early dialogue between the ERC and INTAS in order to identify spheres of mutual interest and synergetic potentials.

n) INTAS should increase the visibility of its programme towards policy stakeholders in the INTAS member states and the NIS.

o) INTAS should improve the quality of its information desks and link them closer with FP6-NIPs funded under the ININ initiative (which has meanwhile started).

p) NIS science is still in need of a broader integration into the FPs of the EU. More precisely, the vast majority of NIS scientists are not yet in a position to be integrated into the existing mechanisms of the EU-FPs on a broader basis. It is in Europe's interest to accelerate their integration into the ERA. There is a need to facilitate this process by the application of special instruments, procedures and treatment of the NIS in R&D.

q) Many of the NIS have overcome the profound social and economic crises of the 90s. Their science systems have, at least, progressed beyond the "life or death" situation. Several countries have started to launch reform programmes. The renewal of the scientific system has to be initiated by the countries themselves. The improvement of the national systems of innovation is more and more on the agenda of these governments. The transition period is still continuing. Future

INTAS activities should respond proactively to the reform process in the NIS. In countries where the research funding is extremely low, the preservation of excellent scientific teams should remain a task of INTAS. We believe that the decisive impulses for a renewal of the science system have to come from inside the NIS in order to enable science to play a major role for social and economic progress in these countries and initiate truly sustainable changes in this direction. By its support activities INTAS and other international funding organisations have planted the seeds which may work step by step towards a more stable base for an efficient science system in the NIS. This work has to go on, in order to address the challenges of the transition period, which is still continuing.

Annex 1. Abbreviations and acronyms

BC	British Council
CB	Coordination Bureau
CERN	The European Organisation for Nuclear Research
CNES	Centre National d'Etudes Spatiales
CNRS	Centre National de la Recherche Scientifique
COPERNICUS	EU Programme of RTD cooperation with CEE/NIS
COST	European Cooperation on S&T
CRDF	U.S. Civilian Research & Development Foundation
CS	Council of Scientists
DAAD	Deutscher Akademischer Austauschdienst
DFG	Deutsche Forschungsgemeinschaft
DG	Director General
EC	European Commission
ERA	European Research Area
ERA-NET	An FP6 instrument
ERC	European Research Council
ESA	European Space Agency
EU	European Union
FP	Framework Programme
GA	General Assembly
GNP	Gross National Product
INCO	International Cooperation, the Second Activity of the FP concerning S&T cooperation with third countries and international organizations
INFODESK	INTAS Information Desk in the NIS
ININ	INTAS FP6 NIS Information Network
INTAS	International Association for the Promotion of Cooperation with Scientists from the New Independent States of the Former Soviet Union
IPs	Integrated Projects (an FP6 instrument)
ISCONIS	Network of Funding Organisations dealing with the NIS
ISTC	International S&T Center based in Moscow
IT	Information Technology
MEDA	The Euro Mediterranean Partnership
NCPs	National Contact Points for the European Framework Programme for RTD
NIP	National Information Point
NIS	New Independent States

NoEs	Networks of Excellence (an FP6 instrument)
RFBR	Russian Foundation for Basic Research
RTD	Research and Technological Development
S&T	Science and Technology
SME	Small or Medium-sized Enterprise
STCU	Science and Technology Centre in Ukraine
TACIS	Technical Assistance for the Commonwealth of Independent States
TEMPUS	Trans-European Cooperation Scheme for University Studies
YS	Young Scientist

Annex 2. Panel evaluation materials and methodology

Coverage and scope of evaluation

The Evaluation covers the entire ten year period of INTAS' lifetime with an emphasis on the funding portfolio during the last six years (1998-2003), including the funding instruments and calls all in relation to the achievement of INTAS statutory objectives.

Documents and data sources

The following sources of information and documents were compiled and used in the evaluation:

- Self evaluation documents by the INTAS Secretariat
- A random selection of past and ongoing projects funded by INTAS
- Official INTAS documents provided by the Secretariat (Annual reports, scientific evaluations, management reviews etc.)
- Questionnaires distributed to INTAS projects leaders, YS, and their supervisors
- Statistical data provided by the Secretariat at the request of the External Evaluation Panels
- Face to face interviews.
- Participation of observers at CS and GA meeting (March 14-15 and March 24-25, respectively)

Meetings

The Panels met three times in Brussels from the period of February to July 2004. In addition, the Panel Rapporteurs and the chairman of the evaluation team attended one GA and CS meeting as observers. Interviews with individual GA and CS members were conducted in connection with, and outside, those meetings (see Table 2).

On-site visits and interviews in NIS-countries

The Panel members visited 8 NIS regions:

- Russia (Moscow and Novosibirisk/Tomsk),
- Belarus (Minsk),
- Ukraine (Kiev),
- Kazakhstan (Almaty),
- Uzbekistan (Tashkent),
- Armenia (Yerevan) and
- Georgia (Tbilisi).

In the course of these visits, team-leaders from a number of projects selected by the visiting Panel members were interviewed. In addition, interviews were conducted with policy makers (e.g. academies and public administration, ministries representatives), other funding organisations (e.g., British Council, DFG, DAAD, ISTC, CRDF and TACIS) and local INTAS-representatives (e.g., INTAS Information Desks).

Other interviews

Interviews were also conducted with INTAS Scientific Officers working at the Secretariat, the staff members of the INTAS Secretariat, and GA and CS members.

Web-based questionnaires to project leaders, YS and their supervisors

Two types of web-based questionnaires were created by the Evaluation Panel.

The first questionnaire was distributed by e-mail (with the URL link + explanation and background about the survey) to 5582 COs, CRs (contractors) and TLs (NIS team leaders) covering finished and ongoing projects funded between 1997 and 2002. Out of the 5582 email addresses, around 20% were returned due to unknown server/e-mail address, etc. Approximately 10% did not answer because they had moved to another organisation, did not wish to participate, did not have time or were abroad. In total, only 327 replied to the questionnaires. The low response certainly hampered solid and firm conclusions and the cross-section of results reported here should be interpreted with extreme caution.

The second questionnaire targeted the Young Scientist Fellowship and the supervisors of the grantees. The questionnaire was sent to 504 fellows from current and completed fellowships obtained between 2000 and 2003. The years 1998 and 1999 were left out due to missing contact details in the INTAS database.

Around 20% of the emails were returned due to unknown server/e-mail address, etc. This is most likely a conservative figure. Approximately 10% did not answer because they had moved to another organisation, did not wish to participate, did not have time or were abroad. In total, 126 YS and 45 supervisors answered the questionnaires.

ANNEX 3.

QUESTIONNAIRES

ANNEX 4.

STATISTICAL DATA