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COMMUNICATION FROM THE COMMISSION
TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

on

nuclear sector related activities

for

the applicant countries of Central and Eastern Europe
and the New Independent States

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1. Introduction

The European Union has undertaken a great number of activities in the nuclear sector since 1990. Specific programmes were created with considerable budgetary appropriations. The Commission was entrusted with the implementation of these programmes. This work was started against the background of a clear perception by the citizens of the European Union of the hazards resulting from nuclear installations in the countries of Central and Eastern Europe (CEEC) and in the New Independent States (NIS) and in response to the fundamental political changes in this part of Europe which offered new possibilities of co-operation.

In the New Independent States (NIS), there are at present 29 nuclear reactors in operation in Russia; 14 in Ukraine; 1 in Armenia; and 1 in Kazakhstan.

In Central and East European Countries (CEEC) there are 20 Soviet-design reactors in operation: 6 in Bulgaria; 4 in Hungary; 4 in the Czech Republic; 4 in Slovakia; and 2 in Lithuania.

In three of the countries concerned, the share of electricity produced in Nuclear Power Plants (NPP) is considerable: 85% in Lithuania, 44% in Ukraine and 40% in Bulgaria. Many of these countries, and notably Russia and Ukraine, are committed to secure the use of nuclear energy in the foreseeable future under safe conditions.

The general decline of the economy in these countries had a negative influence on domestic efforts to improve nuclear safety towards an internationally acceptable level. In most countries, the financial situation of the sector is poor as a result of payment arrears for the supply of electricity. This is a root cause for insufficient investments in safety improvements and the non-payment of wages in the sector, which in turn decreases motivation and safety.

The dissolution of the Soviet Union also impacted on the organisation of the nuclear sector: as a consequence, some countries having an important nuclear power sector suffer from an insufficient industrial base or from the absence of established industrial relations normally necessary to operate and modernise nuclear installations.

This political change has also affected the situation regarding the control system of nuclear materials which has become more fragmented. In this area, the situation has also become more acute as a number of States in the region, particularly Russia and Ukraine, have undertaken an ambitious programme of dismantling their nuclear arsenals. This combination of elements continues to represent a risk for an illicit traffic in radioactive materials, fraudulently acquired and resold secretly.

2. Objective

The objective of the present Communication is to give an overview of actions undertaken by the Community and to present ways forward with respect to programming and programme implementation.

This against the background of:

- the recently launched accession process with the candidate countries of Central and Eastern Europe;
- the entry into force of the Partnership and Cooperation Agreements with the countries of the New Independent States; and
- the experience gained in recent years in the implementation of Union programmes to enhance nuclear safety in the countries concerned

The activities in this area should be seen in the overall context of the need to achieve sustainable energy sector reform in the Partner countries based on sound economic, financial and environmental criteria. In all countries concerned there is indeed scope for relatively cheap energy saving measures due to both high level energy intensity in the economies and an installed overcapacity. The Union's assistance in this area will continue, inter alia through the Phare and Tacis programmes, in close cooperation with all other international donors.

However, this communication does not intend to cover this whole energy reform process but, as indicated, wishes to focus on the necessary adjustments of the Union's nuclear assistance programmes for the countries concerned. It deals in particular on the grant assistance programmes, while recognising the importance of loan facilities such as Euratom for the ultimate success of cooperation in the field of nuclear safety. The EU counts on their continuous efforts in this fields.

This assistance is also provided by individual EU Member States and non EU Western countries, such as the USA, who have made available know how and significant financial means (see annex 1)

3. Community instruments and means

The European Community has established a certain number of instruments to promote nuclear safety and nuclear security in the CEEC and in the NIS.

The most active of these instruments are the Phare and Tacis programmes, under which 150 MECU and 573 MECU have been committed respectively since 1990.

By Council Decision of March 1994, the Euratom loan facility has become an instrument for the financing of projects aiming at improving the safety and efficiency of the nuclear power stations or installations in the nuclear fuel cycle in the countries of Central and Eastern Europe and of the NIS. The amount available for all eligible countries (EU Member States and certain non Members States in the East) is of 1.1 BECU. This instrument, which will be implemented in close coordination with the Phare/Tacis programmes, is a potentially major instrument for the financing of the large investments necessary to achieve the upgrading of the plants. However, given the importance of the investment costs involved, co-financing from other national and international sources would have to be sought on a systematic basis. The Commission works on these matters closely with the EIB, the EBRD and other relevant international institutions.

There are a number of other Community programmes with smaller budget appropriations, such as the Synergy programme designed to foster co-operation with the CEEC and the NIS in the energy sector.

In the framework of the Euratom Framework Programmes, specialised organisations from the CEEC and from the NIS are enabled to participate in research projects under very specific conditions.

The European Community has also participated in the setting up and operation of several multilateral programmes. These are the International Science and Technology Centre (ISTC) in Moscow and the Nuclear Safety Account (NSA) administered by the EBRD.

Hence, this communication (see also Annex 2) gives an overview of all relevant instruments which apply to the CEEC and NIS in the area of improvement of nuclear safety and security. In general, the Community's policies relate to the provision of assistance, through grants, and/of loans. It is important that both these instruments are well co-ordinated but this Communication focuses mainly on the grant aspects related to our work in this field.

4. ASSESSMENT OF RESULTS

The results of the initiatives taken were assessed (see also annex 3). Three factors were in particular relevant:

- the number of nuclear installations and the amount of nuclear materials are so large that efforts from outside to improve nuclear safety and security remain necessarily incommensurate with the needs.
- it has taken time to find a common understanding between the parties on agreeing on shortcomings and defining suitable solutions. The legacy of the past of the partner countries played hereby an important role. Legal and practical approaches and needs for Community programmes were not familiar to our partners, such as nuclear liability coverage and tendering procedures.
- our own requirements for programming lead to slowness in project implementation.

Notwithstanding these obstacles, it can however be said that, on balance, the programmes have led to positive results already.

A. Achievements

Nuclear power plant safety - on site assistance programme

The Phare/Tacis on-site assistance programme is widely considered to be a unique mechanism for the transfer of safety culture and for the introduction of specific safety improvements at the Nuclear Power Plants through equipment deliveries.

Its efficiency has however been affected by the difficult economic circumstances under which the nuclear power plants have to operate. In 1996, the Court of Auditors has drawn the attention to the issue of the staff of nuclear power plants in Ukraine which does not receive regular payments of its salaries. The Commission's view is that this is indeed a sensitive issue as these operators are primarily responsible for the safety of the installations. The Community technical assistance programmes can however not compensate for such shortcomings in the functioning of the local power sector. The Community has provided support to the reform of the power sector which should eventually be in a position to provide sufficient revenues to the power plants for payment of its staff and for investing in nuclear safety.

In the area of design safety (studies), it is considered that Western European know-how and methodologies have been successfully transferred to the partner organisations. It is expected that when the programme has been fully implemented, the development of solutions to most of the safety issues rated from II to IV in the IAEA safety catalogue will have been achieved.

Regulatory authorities

So far the results of projects assisting the nuclear regulators vary. Certain CEEC countries now have effective nuclear regulatory authorities while progress in other countries has been limited, for reasons such as lack of resources, insufficient independence or reluctance to change long established practices and patterns of thought. Nevertheless it can be said that there is a general acceptance of the need for independent regulation of safety and in the longer term this is a development potentially much more far-reaching than any individual success in reforming procedures.

There is a persistent problem of inadequate funding for beneficiary nuclear regulatory authorities. With salaries low in comparison to competing industries, several have had difficulties in retaining staff.

Radiation protection

Traditionally, in most CEEC and NIS the culture governing radiation protection has not been

at the same level as in Western countries. More efforts are still needed to further improve the situation. Economic constraints also play a role, as modern equipment, fulfilling today's radiation protection requirements will have to be installed at a large number of sites. As far as the applicant countries are concerned, the Community legal acquis requires a radiation protection infrastructure comprising the following elements: environmental monitoring network, licensing regime, inspectorate for the protection of the population and of the exposed workers, system of control of radiation sources, capacity to assess incidents and accidents and of emergency response, radiation protection services (e.g. dosimetry), register and archives of occupational exposures, training programmes and institutions, capacity to evaluate the exposure of the population (including natural exposure), quality control programmes for medical X-ray equipment.

Off site emergency preparedness

A "Needs Assessment" study carried out in all the CEEC and NIS has enabled the Commission to start a comprehensive programme of assistance. At present among the several projects launched so far only few ones are near the end, so it is not yet possible to give a full appreciation of the experience in the area.

Illicit trafficking, control of nuclear materials - Safeguards

The co-operation in the field of nuclear materials accountancy control and safeguards initiated in 1992 between Euratom and the Russian Authority led to fruitful exchanges of know how.

The establishment of the Russian Methodological and Training Centre (RMTC) in Obninsk is also a success primarily due to the direct involvement of the Russian authorities.

In this area, the implementation of generic scientific and technical support measures is a complex technical process and has to take into account the problems which might arise from the present share of responsibility between MINATOM and Russian Nuclear Regulator GAN.

Community know how was also made available to CEEC with a view to combat illicit trafficking of nuclear materials.

Radioactive waste management

The radioactive waste programme is giving many CEEC/NIS organisations and institutes a wide insight into Western technology and safety culture. It has led to improve definition of a number of radioactive waste management projects.

The programme undertaken in North West Russia has helped to specify problems in this area and to better define concrete implementation projects. Work in a number of other regions in the Russian Federation (Mayak, Tomsk and Krasnoyarsk) has identified the scale of the contamination. The programme on the Chernobyl contaminated area has led to well a set of measures to rehabilitate the region.

Research on Nuclear Fission Safety

The participation of Eastern research organisations in the EC nuclear safety research programmes can be considered as successful for both sides, i.e. the Eastern organisations contributed to the EU with their high technical expertise, whereas the EU contributed to different achievements in the Eastern countries mainly related to a better comprehension of the Western safety culture, e.g. by means of the approach to the severe accident risk issue or to the coupling between experiments and codes.

Conversion of Nuclear Weapons Scientists

After 4 years of operation, the International Science and Technology Centre (ISTC) in Moscow has provided support in redirecting the talents of 19.000 scientists and engineers, 60% of whom have particular expertise in the development of weapons of mass destruction and their delivery systems. In particular, the Federal Nuclear Centres VNIIEF and VNIITF have been major recipients of ISTC funding. This is explained by the scientific, technical, and intellectual potential available in the nuclear centres which is related to the development, testing, and submission for acceptance of nuclear weapons. Currently, ISTC projects employ over 4000 highly skilled scientists and engineers from these centres.

B. Implementation

Phare/Tacis implementation

Project size - Workload

The strategy in the Phare/Tacis programmes has been to reach as many as possible nuclear power plant sites, specialised institutions and persons in order to achieve the widest possible transfer of western safety practice to all players in the sector. In particular, a large number of studies have been financed and almost all nuclear power plants have been included in the on-site assistance programme. It should be noted that the strategy selected at the outset of the programmes was largely based on the advice and the co-operation from competent EU utilities, grouped in TPEG, a European Economic Interest Group of EU utilities operating nuclear power plants. The Regulatory Assistance Management Group (RAMG) of EU Regulatory Authorities and EU Technical Safety Organisations were also closely involved. While this strategy has been broadly successful, it has given rise to a correspondingly large number of projects with a resulting difficult project management. These groups are now assisting in efforts to define fewer, larger projects, particularly in the regulatory area.

Equipment procurement

The Nuclear Safety sector is unique (at least within Tacis) in that a large portion of the budget is allocated to the procurement of equipment and, in the case of projects funded under the EU/G7 Chernobyl Action Plan, turn-key infrastructure works. This has led to the following implementation difficulties:

- the standard time from the preparation of technical specifications to the signature of the supply contract is at least 18 months.
- the supply of equipment after the signature of the contract can take several years and this delay cannot be predicted accurately because of the large number of steps involved, including licensing and certification and customs clearance.

It is clear that the duration of the procurement process was underestimated in the early years of the programmes.

Nuclear third party liability

The Commission has had to find interim solutions while the partner countries have not acceded to the Vienna Convention on Nuclear Liability and/or have not put in place appropriate national legislation. To this end, Memorandums of Understanding have been signed with the Russian Federation, Ukraine and Kazakhstan. These agreements are now systematically included in new contracts. As far as Tacis is concerned, difficulties were mostly with contracts signed before the signature of the MoU in which the Commission had to accept restrictive clauses on the distribution and use by the beneficiaries of project results.

For the smooth development of industrial relations between the EU firms and the NIS, it is

crucially important that they all adhere to the international Vienna Convention and put in place necessary domestic legislation.

Involvement of local Safety Authorities

Notwithstanding our efforts to strengthen the local Safety Authorities, it appears that the dialogue between the operators and the Regulators is not yet sufficiently in place in the partner countries. This is particularly relevant for projects including procurement of equipment, qualification of computer codes and operator training tools. Implementation was indeed made difficult by unforeseen requirements by the Regulatory Authorities due to a lack of dialogue at the national level. A further reason for these difficulties is related to a lack of resources on the part of the Safety Authorities. Their participation in projects is more and more made conditional upon adequate financing being made available in the framework of assistance projects or through licensing fees.

Agreement on terms of reference with the beneficiaries

The writing of the detailed technical specifications and their final endorsement by the beneficiaries is more cumbersome than initially foreseen. The reasons for this are partly due to the fact that, at the programming phase, the discussions on the project content remain necessarily global. Difficulties also result, in some cases, from a different perception of the objectives of the programme, with the Commission wishing to focus on safety issues while the beneficiaries are more concerned with maintaining or increasing plant availability.

Other elements

- The fees allowed by Tacis for payment to local subcontractors are seen by many organisations as insufficient. This has often led to long discussions.
- There have been cases where project beneficiaries, particularly in Russia, were reluctant to accept the outcome of the open tendering procurement, as this was not considered in line with Russian industrial policy objectives.
- In project selection, compromises had to be made with the partner organisations as there were to a certain extent differing views with the EU on the definition of safety shortcomings and on most appropriate solutions. This has to be seen against the background of exclusively national competence in nuclear safety and in the demand driven character of our programmes.
- The Commission, for its part, has tried to co-ordinate as much as possible programmes and projects in all the countries concerned: the management of the Phare and Tacis nuclear safety programme has been established in one administrative unit and technical co-ordination mechanisms were performed, e.g. through the TPEG Masterplanning.

ISTC

The ISTC has achieved full implementation of the terms of its Agreement, in particular concerning its financial and procurement activities. This includes tax exemption for equipment imported or exported and for salaries directly received by the involved scientists.

It is the view of the ISTC Parties that this smooth operation was made possible because the Parties had purposely decided to establish the ISTC Secretariat in Moscow, so that it could attend all pressing issues in a timely and competent manner. However, the Centre only operates on a presidential decree and progress still needs to be achieved on the ratification of the Agreement by the Russian Duma.

Euratom Framework Research Programme

At present, one of the outstanding difficulties for the participation of the CEEC/NIS research organisations within the present Euratom Framework Programme is that they have to bring the necessary matching funds which would allow them to participate as partners with all possible rights within multipartners projects.

Additionally, other practical problems could appear especially for organisations of the applicant countries, e.g.:

- as the individual scientists would not have very much experience in working in co-operation with other groups on a common research project, mutual exchange of research plans and preliminary results will be new and difficult for them, and

- scientists and their administrators would not be used to contracting for research and will have difficulty in setting up a budget, defining costs for man-hours, equipment, travel etc. and maintaining all the records needed for submission of documents for justification of costs and for an eventual audit.

5. The way forward - New orientations

Since 1990 the Union has assisted the Partner countries in the development of energy sector reforms taking into account sound economic, financial and environmental criteria. The aim is the establishment of an efficient sustainable market oriented energy sector well suited to the individual countries' needs. The EU will continue these activities in the coming years thereby taking account of the new context for both the CEEC i.e. the launch of the accession process with the candidate countries and the NIS i.e. the Partnership and Cooperation Agreements which have entered into force or will do so shortly.

With respect to nuclear safety – the main focus of this communication – Agenda 2000 acknowledged the need to bring nuclear safety in the candidate countries up to international standards in accordance with the approach of the G7 since 1992. This could be done through the pre-accession strategy and the necessary contributions of other partners and institutions

The new Cooperation Agreements with the countries of the NIS also put cooperation in nuclear safety issues on a broader and higher level of ambition.

It is against this renewed background that the proposals outlined below are developed.

A. NUCLEAR SAFETY IS A PRIORITY OF AGENDA 2000

The Commission's overall strategy on nuclear safety matters in the context of the enlargement is not only to reduce the risk which is actually associated with the civil use of nuclear energy in these countries, but also to bring the general standard of nuclear safety (including the management of radioactive waste) up to a level which is comparable to that which prevails in the EU.

In AGENDA 2000, the nuclear installations in the CEEC are classified in three categories:

- reactors of Western design (1 in Romania and 1 in Slovenia)
- reactors of Soviet design but which can be upgraded to acceptable safety levels (17 in total, in the Czech Republic: 4 in operation and 1 under construction, in Hungary: 4, in Slovakia: 2 in operation and 4 under construction and in Bulgaria: 2)
- reactors of Soviet design which cannot be upgraded at a reasonable cost (8 in total, Bulgaria: 4, in Slovakia: 2 and in Lithuania: 2)

As indicated in AGENDA 2000, the main objectives are:

- For the first category of reactors, to ensure that the reactors remain at a high safety level over the long run.
- For the second category of reactors, to ensure that the upgrading undertaken by the countries is rapidly and effectively implemented and leads to a satisfactory result.
- For the third category of reactors, to secure definitive closure on the basis of a realistic and agreed timetable⁽¹⁾.

Proposed action

It is necessary to find a way to work with these countries in order to enable them to give the right priority to nuclear safety and to develop realistic solutions to their energy problems, giving due consideration to the development of alternative energy sources and the more efficient use of energy.

The Commission will therefore start discussions with the countries concerned to establish road maps encompassing the whole energy sector and to develop - in close co-operation with the International Financing Institutions - financing schemes on which international financial support could be based. This will be done to the extent possible through existing mechanisms for co-operation, such as the subcommittees established by the Europe Agreements and in a way which is compatible with the process of implementation of the "Accession Partnerships" and of the "National Plans for Adoption of the Acquis" which will set out the priorities and the actions to be completed in the run-up to the accession.

Equally, for all countries concerned, support will be provided to authorities and operators in order to help improving nuclear safety and security culture. In particular:

- for all categories of reactors, continue to provide technical assistance to the nuclear power plant operators with a view to achieve and/or maintain a high level of operational safety
- for the second category of reactors, assist - where technical and economical feasible - in the preparation of safety upgrading which will need to be financed through normal domestic and/or foreign investments
- for the third category of reactors, the desired early closure of these reactors raise a number of important issues. At present, countries such as Bulgaria, Slovakia and Lithuania, can generate electricity at very low costs, but have made no or very little provision for the costs of decommissioning nuclear reactors. Until they can see means of financing alternative energy sources, radioactive waste management, the decommissioning and related social and regional aspects, they will continue to have difficulties in meeting agreed early closure timetables.

The European Union will have to specify its financial participation when a satisfactory comprehensive agreement has been reached with the countries concerned, taking into account the implications of various options in respect to future energy policies and when a proper estimate of the size of the funds which might be required will be available. Over the two years 1998-1999, a Phare allocation of 50 MECU is envisaged for both years for multi-country nuclear projects. Beyond 2000, Phare will continue to finance nuclear safety projects. The possibility to finance projects related to nuclear pollution under the environment component of the Instrument for Structural Policies for Pre-accession (ISPA) cannot, a priori, be excluded.

¹ The Nuclear Safety Account (NSA) agreements with Bulgaria and Lithuania provide for conditional anticipated closure. The situation with regard to dates is as follows:
Kozloduy 1-4 initially from 1998 till 2000, now not before 2001 depending on conditions being met Ignalina 1: 2001, Ignalina 2: 2005 (expected dates for the closure of the gap between the fuel channels and the surrounding graphite)

It will also call upon the IFIs and Euratom loan facilities which have to play an important role in this context. Equally, efforts of EU Member States and non-EU Western countries, such as the USA, would have to continue the transfer of know how and the provision of significant financial means.

B. SITUATION IN THE NIS (TACIS)

The following reorientation is proposed:

- to place nuclear safety as a priority high on the agenda of the Partnership and Co-operation Agreements and to agree on objective and measurable commitments and conditionalities, in particular with Russia;
- to sharpen priorities in the framework of the execution of the Tacis nuclear safety programme, in particular:
 - to undertake more concentrated actions to improve power reactor safety, preferably on those sites seen as more problematic
 - to address problems related to the management of radioactive waste. As a first priority, this will include the examination of the feasibility of Community participation in projects related to the management of radioactive waste in North West Russia, preferably in the context of the Barents Euro Arctic Council (BEAC).
 - to continue some general type activities (general operational assistance from EU operators to local operators, policy and institutional issues, including regulatory support, safeguards, emergency preparedness and structural reforms)
 - to support efforts to create an environment in the energy sector which is conducive to normal, domestic and foreign investments. This includes necessary reform of the power sector and of the local industry. For the latter, support for industrial co-operation projects between EU and local industry should be provided.
 - to support the adhesion to and implementation of international conventions (on nuclear third party liability, nuclear safety, waste and spent fuel convention) and
 - to continue to assist Ukraine in the closure of Chernobyl by the year 2000 in line with the G7-Ukraine Memorandum of Understanding (MoU), including through the possible provision of a Euratom loan for the completion of the two reactors at Rovno and Khmeinitzky. Progress on the implementation of this memorandum will be the subject of a separate communication during the course of the year.
- to streamline project cycle management.

C. RECOMMENDATIONS IN THE FIELD OF RESEARCH

The integration of the Eastern research organisations should be further reinforced for reasons of mutual benefit, in particular for the young generations. The instruments for doing this will differ for the applicant countries and the NIS. In both cases, the Phare and Tacis technical assistance programmes have a role to play, complementing the possibilities foreseen under the proposed 5th RTD Framework Programmes (Euratom, EC).

For the applicant countries, the Commission proposal for the Framework Programmes foresees that they can associate themselves with the programmes, i.e. contributing to the programme budgets in return for participation rights similar to those of Member States. Of the 10 applicant countries, 5 have already requested to start negotiations for this association: Estonia, Poland, Hungary, Slovenia, Czech Republic. Several of those have indicated they want association with the Euratom programme as well as the EC programme.

For the NIS and the non-candidates CEEC, the Commission proposal for the International Co-

operation activity of the 5th EC Framework Programme foresees specific joint research projects and concerted actions in areas comparable to those of the current INCO-Copernicus and INTAS (4th EC Framework Programme) as well as in the area of reactor safety research.

In the Euratom programme proposal, the possibility of mobilising Community financing to facilitate CEEC/NIS participation is foreseen.

D. RECOMMENDATIONS FOR THE ISTC

After four years of existence, the ISTC objectives to redirect the activity of weapon of mass destruction (WMD) scientists are still valid while the organisation has demonstrated its maturity. The ISTC is therefore entering its consolidation phase.

Emphasis will be put on the further development of the Industry Partnering Programme and on Contact Expert Groups bringing together ISTC Project managers and ISTC Partners with a view to promote projects in technical sectors that could offer long term job opportunities to WMD scientists.

Furthermore the Community is now completing its accession to the Science and Technology Centre in Ukraine (STCU).

E. OTHER

The Commission will take a number of other measures such as strengthening technical advice and improved internal co-ordination in order to implement the outlined re-orientations successfully.

6. Conclusion

The Commission wishes to inform the Council and the European Parliament that it intends to implement the orientations included in the present Communication in accordance with the appropriate procedures governing the different Community programmes.

Overview of technical assistance by Western donors (data from G24)

Apart from aid provided through the European Commission, considerable technical assistance is channelled to CEEC/NIS through other bilateral programmes. In addition, multilateral assistance is given through the Nuclear Safety Account of the EBRD. As outlined previously, the G-24 NUSAC database enables an overview of nuclear safety assistance efforts.

At present, details of projects to the value of 1481 MECU (including the EBRD administered Nuclear Safety Account) have been provided to NUSAC by donors. Major donors contribute as follows (as a percentage of the total):

Community	44.0%
United States	16.6%
Germany	10.9%
Japan	8.6%
France	5.8%
Sweden	2.4%
United Kingdom	2.2%

EU (Community plus Member States' bilateral contributions): 70%

These figures do not include contributions to the Chernobyl Shelter Implementation Project.

Overview of Community instruments and means to promote nuclear safety in the countries of central and eastern Europe and in the NIS

Contractual relations

a. Applicant Countries of Central and Eastern Europe

The Communities have a network of different relationships with the countries of central and eastern Europe. Ten of them (Bulgaria, Poland, Romania, Slovakia, Czech Republic, Hungary, Estonia, Latvia, Lithuania and Slovenia) are part of a process of accession which will lead in time to membership of the EU. They have all signed Europe Agreements with the European Communities and their Member States and are all beneficiaries of the Phare programme.

b. New Independent States

Partnership and Co-operation Agreements (PCAs) are starting gradually to govern relations between the Communities, their Member States and each of the NIS. The first of these, with Russia and Ukraine, have entered into force on respectively 1 December 1997 and 1 March 1998².

The Agreements contain specific provisions on co-operation in the nuclear sector. The PCA with Russia, for example, notably refers to the implementation of specific agreements on nuclear safety. The issue of nuclear safety will be thus henceforth addressed by the institutions created by the PCAs, as this was the case at the occasion of the first meeting of the Co-operation Council with Russia in January 1998.

c. Specific nuclear agreements

Specific nuclear agreements are being considered for nuclear trade, nuclear safety and thermonuclear fusion with NIS having nuclear activities (Russia, Ukraine, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, some of which are only considered for matters connected to trade materials). These agreements are at different stages of preparation. Discussions are still going on within the Community Institutions as well as with the concerned NIS before the first of these agreements can be signed. Since 1992, Russia and Euratom have been partners in the ITER (International Thermonuclear Experimental Reactor) EDA (Engineering Design Activities) Agreement, the other parties being Japan and the USA. Moreover, it is to be noted that Kazakhstan is technically involved in the ITER EDA through Russia.

These agreements are based on co-operation and, as is the case for the agreements under a and b above, do not provide for Community financing.

Community Programmes

a. The Phare and Tacis programmes

Both Phare and Tacis have included important actions in the nuclear safety sector: so far, 150 MECU and 573 MECU have been committed in total respectively under the Phare and Tacis

² OJ L327/3 of 28.11.1997 (Russia) and OJ L 49 of 19.2.1998 (Ukraine).

programmes.

The main orientation of the Phare and Tacis Nuclear Safety programme has been to support and accelerate domestic Nuclear Power Plant safety enhancement programmes.

In addition, activities have addressed issues such as:

- safety at nuclear fuel cycle installations (production, reprocessing, storage)
- nuclear waste treatment and disposal,
- safety related research,
- control of nuclear materials,
- off-site emergency preparedness.

b. Other Community actions (other than research)

Apart from Phare and Tacis, a limited number of smaller budget lines for nuclear sector activities exist.

- co-operation with CEEC/NIS based on the Council Resolution of June 1992 on "*The Community Plan of Action in the field of radioactive Waste*" which underlines the importance for co-operation between the Community and third countries, in particular those countries of Central and Eastern Europe and the former Soviet Union in the field of management and storage of radioactive waste. While most of the projects supported are independent of Phare and Tacis, a number are used to help define projects under these programmes (budget 2-3 MECU a year).
- a programme of co-operation with Russian Federation nuclear organisations, led by Minatom. This is the "*Joint EU-RF Analysis of European Challenges and Solutions in Nuclear Safety*", now entering its third phase (total EC contributions to this programme are 4 MECU).
- in the CEEC and the NIS in the area of transport of nuclear materials
- specific actions in CEEC and NIS by the Commission's Euratom Safeguards Directorate.
- the Synergy Programme with actions to foster co-operation with the CEEC and NIS in the energy sector
- activities in the area of off-site emergency preparedness (2 MECU in 1997).

c. Euratom loan facility

By Council Decision 94/179 of 21 March 1994, the Euratom loan facility initially set up for intra-Community purposes has also become an instrument for the financing of projects aiming at improving the safety and efficiency of the nuclear power stations or installations in the nuclear fuel cycle in the countries of Central and Eastern Europe and of the NIS. This instrument which is implemented in close co-operation with the Phare and Tacis programmes, is a potentially major instrument for the financing of the large investments necessary to achieve the upgrading of the plants (where it is feasible in technical and economical terms). The residual amount available for all eligible countries is of 1.1 BECU. However, given the importance of the investment costs involved, co-financing from other national and international sources would have to be sought on a systematic basis. The Commission intends to work on these matters closely with the EIB, the EBRD and other relevant international institutions.

d. Research

Community Research and Technological Development activities are the subject of two legally distinct Framework Programmes: one for the nuclear domain (based on Art. 7 of the Euratom Treaty) and one for the non-nuclear domain (based on Art. 130i of the EC Treaty). Art. 10 of the Euratom Treaty allows the Commission to entrust the carrying out of certain parts of the Community research programme not only to Member States, persons or undertakings, but also

to third countries, international organisations or nationals of third countries.

The Council Decision of 26.04.1994 on the framework programme of Community activities in the field of research and training for the European Atomic Energy Community 1994-1998 (Euratom FWP), provides presently the basis for activities in the nuclear research sector, and considers necessary that the Community continue to play an important role in the area of nuclear fission safety, in particular with the countries of Central and Eastern Europe.

In the years under consideration several Euratom actions were launched during periods coinciding with the 2nd Framework Programme 1985-1989, the 3rd Framework Programme 1990-1994 and the 4th Framework Programme 1994-1998.

Under the sphere of the mentioned present Euratom Framework Programme, organisations from CEEC and NIS may participate in projects of the Nuclear Fission Safety Programme if their participation in the project is in the interest of Community policies. That participation should normally be financed by resources of the third country concerned. However they could receive Western financing acting as subcontractors of an EU organisation.

As part of the EC RTD Framework Programme, the specific programme on International Co-operation (action 2, INCO programme) contains a budget for the support of joint research projects and concerted actions between organisations from EU and CEEC/NIS. The two Calls for Proposals issued in 1995 and 1997 respectively, under the heading INCO-Copernicus, have incorporated subjects of relevance to the nuclear domain (health and environment related). In addition, the INCO budget also provides the Community's share (ca. 95%) of the financing of INTAS, the International Association for the promotion of Co-operation with Scientists from the NIS which is essentially concentrating on basic research. INTAS supports about 20 small project of relevance to nuclear safety, funded for a total amount of 1 MECU and involving 100 scientists.

Multilateral programmes with Community participation

a. International Science and Technology Centre (ISTC)

The International Science and Technology Centre of Moscow was set up in 1994 by an international agreement between the European Communities and the Governments of the United States, Japan and the Russian Federation. In the meantime Finland (until 1996) and Sweden (until mid 1997) have acceded the Agreement independently, followed by Norway and the Republic of Korea. On the side of the beneficiary States, Belarus, Georgia, Armenia, Kazakhstan and Kirgistan are now benefiting from the programme.

The ISTCs aim is to give weapons scientists from the NIS, who possess knowledge related to weapons of mass destruction (WMD) or missile delivery systems, opportunities to work on civilian R&D projects. ISTC projects must contribute to the goals of reinforcing the transition to market-based economies responsive to civil needs, of supporting basic and applied research and technology development, in particular in the nuclear sector, and of promoting the further integration of scientists into the international scientific community

ISTC Nuclear Safety projects, financed or co-financed by the Community (Tacis), the US and Japan, represents a total of 27 M\$ (resp. 8 M\$ for the Community) for 64 projects (resp. 38 for the Community); covering most areas of Nuclear Fuel Cycle, Nuclear Reactor Safety and Nuclear Environmental Safety.

b. Nuclear Safety Account

The Nuclear Safety Account (NSA) was set up in 1993 as a Multilateral Fund administered by the EBRD and destined to complement bilateral engagements for urgent upgrading operations for the least safe reactors (of the RBMK and VVER 440/230 types).

Up to now, the NSA has received 242 MECU as firm commitments from 15 donors. The Community has contributed 20 MECU in 1994 out of the Phare and Tacis budgets.

So far, the NSA has concluded agreements with Bulgaria, Lithuania and Russia for projects at the Nuclear Power Plants of Kozloduy (24 MECU), Ignalina (40 MECU), Sosnovy Bor, Kola and Novovoronezh (75 MECU). These projects are still under implementation.

In the above total commitment, 99 MECU are dedicated to the decommissioning of the Chernobyl NPP in the framework of the G7 Action Plan for Ukraine.

c. The G7/G8

As a participant in the annual summits of the most industrialised countries, the European Commission has been associated to discussions related to Nuclear Safety since the preparation of the Munich Summit in 1992, where Nuclear Safety appeared on the G7 agenda.

The G7 endorsed at the Munich summit in July 1992 an action programme to deal with the urgent safety concerns originating from the nuclear power plants in Central and Eastern Europe and in the former Soviet Union.

The programme of actions comprised immediate measures in the following areas :

- operational safety improvements
- near-term technical improvements to plants based on safety assessments
- enhancing regulatory regimes

In addition the programme of action was to create the basis for longer term safety improvements by the examination of:

- the scope for replacing less safe plants by the development of alternative energy sources and the more efficient use of energy
- the potential for upgrading plants of more recent design.

Since Munich, the G7 has on several occasions confirmed its position on the subject of nuclear safety, most notably in April 1996 at the G7 + Russia summit on nuclear safety and security in Moscow. This summit also underlined the necessary improvement of the management and control of nuclear material, in particular those resulting from the disarmament process.

d. G24 - NUSAC

The Commission has since 1992 played also host to the G-24 Nuclear Safety Assistance Co-ordination (NUSAC) Secretariat following the 1992 G-7 Munich Summit. Following a major review in 1997, the emphasis of G-24 NUSAC has shifted from assistance to co-operation and from technical aspects to policy issues. Its unique role as a forum for a frank exchange of views between donors and recipients is brought to the fore. Underpinning the whole activity is the G-24 NUSAC database containing details of the various assistance projects and enabling the construction of a detailed overview of otherwise separate programmes.

Inventory of Community activities

The Community has undertaken a large number of actions which address a variety of specific objectives and partners. They can be summarised as follows:

- **Regulatory Authorities**

In all CEEC/NIS countries with nuclear reactors, the Community has set up Phare and Tacis projects to transfer the methodology and practices of Western safety culture. In most countries this assistance has now been running for several years. The technical content of such regulatory assistance projects is defined with the support of the RAM (Regulatory Assistance Management) Group, which comprises all EU regulatory authorities involved in delivering technical assistance. Typically these projects include advice on organisational structures, drafting and implementation of appropriate licensing system, and provision of computers or other equipment needed to improve infrastructure and to establish reliable links between headquarters and regional bodies. Small consortia of EU regulatory authorities deliver the assistance.

Assistance is also provided on more technical aspects such as evaluation of utility safety improvement programmes and the transfer of specific evaluation methodologies and tools. Typically such assistance transfers skills to the technical safety organisations assisting their national nuclear regulator. The technical content of these projects is also defined with assistance from EU technical safety organisations. In Russia and Ukraine, the focus in this area is now moving to supporting the assessment and licensing of safety improvements made with Tacis assistance to nuclear plant operators. In parallel, close contacts have been built up over several years between Eastern and Western regulators through participation in standing groups (e.g. CONCERT).

- **Nuclear Power Plants**

The *On-site assistance* constitutes the largest focus area. Concrete improvements of the safety operating conditions of 14 NPP have been obtained through the on-site assistance programme based on a twinning scheme with EU utilities. This programme includes an operational safety programme and equipment supplies.

The on-site assistance programme covers the following plants:

COUNTRY	NPP (number of units)	EU UTILITY	START YEAR
Russia	Leningrad NPP (4)	Magnox (UK)	1994
	Smolensk NPP (3)	British Energy (UK)	1993
	Balakovo NPP (4)	KKW Biblis (D)	1993
	Kalinin NPP (2)	Tractebel (B)	1993
	Kola NPP (4)	KKW Emsland (D)	1995
	Novovoronezh NPP (3)	RWE (D)	1997
	Beloyarsk NPP (1)	Nersa (F)	1993
Kazakhstan	Aktau NPP (1)	Nersa (F)	1993
Ukraine	Rovno NPP (3)	EDF (F)	1993
	South Ukraine NPP (3)	DTN (ES)	1993
	Zaporozhe NPP (6)	KKW GKN (D)	1994
	Khmelnitsky NPP (1)	DTN (ES)	1997
Armenia	Medzamor NPP (1)	ENEL (I)	1997
Bulgaria	Kozloduy NPP (6)	EdF (F)	1991

Design safety is an important focus area, under a large number of engineering evaluations and studies have been undertaken in close co-operation between specialised EU and local firms. These actions on one hand increased the capabilities of the local design institutes and scientific organisations, and on the other hand secured their existence to overcome the economic crisis.

The issue of "less safe reactors"

In line with overall G7 policy, the Community supports the closure in the shortest achievable time of those existing reactors which do not meet current safety requirements and cannot be brought to an acceptable level of safety or for which safety necessary upgradings would not be economically justified. On this basis, agreements have been signed by the NSA for the early closure of RBMK type reactors in Lithuania and of VVER 440-230 type reactors in Bulgaria. A Memorandum between the G7 and Ukraine exists on the closure of Chernobyl by the year 2000.

The current policy and practice of the Commission is as follows:

- No support is given to their longer term operation or to the prolongation of their design life.
- Proposals for improving the short term safety of these plants should be assessed at first instance by the relevant technical bodies on the basis of technical considerations, taking into account their contribution in the reduction of the risk to the population and the available budgets.
- In the light of these assessment, and the overall energy situation of the country concerned, a decision is taken on a case by case basis whether to provide financial support.

- **Nuclear fuel cycle installations and radioactive waste management**

In the areas of *fuel cycle and radioactive waste management* the projects have initially aimed at understanding the scale, the scope and safety of radioactive waste management at the present time, as well as the current standard practices and the ongoing work to improve them. Subsequently, the focus has turned to the practical implementation of the remedial measures. In Ukraine, the radioactive waste problem as a result of the Chernobyl accident is a topic of special importance.

- **Closure of Chernobyl**

In 1994, the EU took the initiative to propose a comprehensive Action Plan to Ukraine for the energy sector of the country enabling the early definitive closure of the Chernobyl NPP. This Action Plan was taken up by the G7 and formally proposed by the G7 to the Ukrainian authorities in the same year.

In June 1994, the Corfu European Council took the political decision to commit 100 MECU as grant through the Tacis programme over three years for the Action Plan in general and up to 50% of the investment as Euratom loans more specifically for the completion and upgrading at internationally acceptable safety levels of three VVER 1000 reactors.

In July 1994 at the Naples G7 summit, the other G7 members decided to commit 200 Mio\$ in support of the Action Plan. A total or partial channelling of these contributions through the NSA was envisaged.

A Memorandum of Understanding on the closure, by the year 2000, of the Chernobyl Nuclear Power Plant between the G7 and Ukraine was signed on 20 December 1995. This Memorandum includes a list of projects for the improvement of nuclear safety and the establishment of an efficient power sector in Ukraine.

Moreover, the Community is about to decide a major contribution of 100 mio USD to the newly established Chernobyl Shelter Fund. The Fund will assist Ukraine in transforming, up to 2005, the

existing sarcophagus into a safe and environmentally stable system with measures as described in the Shelter Implementation Plan. Its total cost is estimated at 750 mio USD.

- **Radiation protection**

Until now, the main activity in radiation protection has been focused on training of regulatory authorities. A number of legal training seminars on nuclear law attended by representatives of CEEC and NIS have been organised since 1993 with the support of other international organisations (IAEA, NEA).

Training courses for customs officers in radiation protection and radiation measurement in order to fight against illicit nuclear trafficking are organised on a regular basis.

In-depth legal studies to assess the exact status of approximation in the applicant countries are underway.

- **Off-site emergency preparedness**

The Commission has completed an assessment of needs in the areas of local, regional and national off-site emergency response in some 14 East European countries. This needs assessment allows, firstly, to establish priorities for assistance both within and between countries and, secondly, to provide the basis of the assistance programmes in this area for the immediate future.

On this basis a first group of projects has been launched in the framework of the Tacis, Phare and ECHO programmes. These projects concern monitoring and early warning systems, provision of material and equipment for emergency situations, communications, decision support systems, on-line data exchange and training.

Concerning the information exchange in case of a nuclear accident, in particular, much has been achieved since Chernobyl, e.g., the IAEA Convention on Early Notification of Nuclear Accidents. Notwithstanding this, the nature and size of the information to be transferred under this Convention is still limited compared to the requirements of the EC Council Decision on Community Arrangements for the early Exchange of Information in the Event of a Radiological Emergency. The technology now exists to effect the transfer of more extensive and pertinent data (e.g., monitoring data, prognoses of an accidents consequences, etc.) which would greatly enhance the capability of other States in Europe to respond in a timely, more integrated and effective way to any future accident.

- **Control of nuclear materials - Safeguards**

A co-operation in the field of nuclear material accountancy control and safeguards was initiated in 1992 between the Russian Federation and the Commission's Euratom Safeguards Directorate. A phased approach was developed and a number of concrete co-operation projects were started and implemented.

On request of several applicant countries, discussions and seminars were organised with national officials (from Poland, Hungary, Czech Republic) to inform them in detail about the Euratom Safeguards System and its relation to the Non Proliferation Treaty.

Other significant Tacis financed projects concern, in Russia, the setting up of Methodological and Training Centres (RMTC) at Obninsk and in the Ural-Siberian region, the establishment of a production strategy for specific instrumentation and the establishment of analytical and metrological capabilities. These projects have been described in detail in the annex 3 of the Communication from the Commission to the Council and the European Parliament on the illicit trafficking in nuclear materials³.

Commission JRC know-how was also made available to the Phare programme for the handling, treatment and analysis of errant nuclear materials.

³ COM 96/171 dated 19 April 1996

- Conversion of Nuclear Weapons Scientists

Since its inception, the Governing Board of the ISTC approved funding of 500 projects supporting the redirection of nearly 19000 scientists and engineers, over 50% of which are nuclear specialists from over 150 institutes in Russia and other NIS Parties, including Kazakhstan, Belarus, Armenia, Kirgistan and Georgia.

The ISTC objective of integration of NIS scientists into the international scientific community is further accomplished through the participation of non-NIS partners, including Industry. Over 300 non-NIS research establishments are already involved in projects or have expressed interest in future collaborations.

- Research and Training

Following the Chernobyl accident (26 April 1986) a revision of the Radiation Protection Research Programme coinciding with the second Euratom Framework Programme (FWP) was adopted on 21 December 1987. It mainly consisted in the addition of ten scientific post-Chernobyl activities mainly related to the transfer of radionuclides and to decontamination. The research began in spring 1988 and was carried out exclusively by the European institutions in a co-operative manner.

Under the third Euratom FWP, the "Nuclear Fission Safety" specific programme was adopted by the Council Decision of 28.11.1991 and consisted in two main actions:

- Radiation Protection to be implemented through " Shared Cost projects"
- Reactor Safety implemented through the "Reinforced Concerted Action" 1992-1995 (RCA)

One of the objectives was to provide incentives for co-operation between scientists and research institutions from the Member States with the EFTA and the Central and Eastern European Countries.

In 1992, the European Parliament took the initiative to grant special funds in order to financially support the participation of the CEEC in 5 specific programmes including the one on nuclear fission safety. Scientists of the CEEC could join existing EU projects and the applications had to be submitted by the Western co-ordinators of these projects. There were three calls for proposals (1992, 1993, 1994). In 1994 the co-operation was widened to the NIS. A total of 53 contracts on radiation protection research were implemented with Eastern organisations amounting to about 2.5 MECU. Moreover, in the framework of the RCA 1992-1995 on reactors safety, 7 contracts were implemented with Eastern research organisations for a total amount of about 1.5 MECU. Additionally, other contracts were implemented with Eastern European organisations in the field of radioactive waste and robotics for a total of 1.1 MECU.

Under the "APAS-COSU programme"⁴, a collaboration was set up in 1991 between the Commission's Radiation Protection Research Programme and the "Chernobyl Centre for International Research" (CHECIR). In order to formalise the research co-operation an "Agreement for International Collaboration on the Consequences of the Chernobyl Accident" was signed in June 1992 between the EC and the relevant ministries of Belarus, Russia and Ukraine. From 1991 to 1996 sixteen projects were implemented in collaboration with the three NIS. More than 100 NIS research laboratories participated in these projects for a total amount of about 7 MECU.

⁴ APAS-COSU = Activités complémentaires de Préparation, d'Accompagnement et de Suivi - COllaboration with Soviet Union in Radiation Protection

Presently, the specific programme on nuclear fission safety of the 4th Euratom FWP includes shared cost actions in five main areas:

- Exploring Innovative Approaches (conceptual Reactor Safety Features and Fuel Cycle Concepts)
- Reactor Safety (Severe Accidents and supplementary safety related activities)
- Radioactive Waste Management and Disposal and Decommissioning
- Radiological Impact on Man and the Environment
- Mastering Events of the Past (consequences of Chernobyl and other radiation accidents).

CEEC/NIS research organisations participate as subcontractors in different projects. Their participation amounts to about 1 MECU for reactor safety research.

As stated above, the International Co-operation programme of the 4th RTDFramework Programme addresses public health and environmental consequences of the Chernobyl and other nuclear accidents. The 1995 and 1997 calls for proposals resulted respectively in 17 joint contracts and 19 proposals presently under negotiation. The total funding for CEEC / NIS participants amounts to about 5 MECU. These projects are managed in close co-ordination with the Radiation Protection Research Action of the Nuclear Fission Safety Programme.

- **Industrial co-operation**

Since 1995, the Commission undertook to reflect with Minatom on the ways to facilitate partnerships between industrial partners of both sides. This has a direct impact on safety aspects due to the importance of developing the proper safety culture at each stage of the industrial chain of equipment fabrication. An ongoing study examines the barriers to partnership in terms of industrial structures, legal problems and financing difficulties.

As for the ISTC, the Agreement recognises the need for strong support from industry to achieve its objectives, including support for transition to the market economy and redirection of industrial-technical potential from military to peaceful endeavours. To that effect, the ISTC has launched a Partnering Programme with Industry.

- **Euratom loans**

Currently, the Commission services are considering Euratom loans for the following applications:

- Kozloduy 5 and 6: for the modernisation to Western safety standards of two VVER-1000 reactors in Bulgaria
- Rovno 4 and Khmelnytsky 2: for the completion and modernisation to Western safety standards of two VVER-1000 reactors in Ukraine (in the context of the G7-Ukraine MoU on the closure of Chernobyl)
- Kalinin 3: for the completion and modernisation to Western safety standards of one VVER-1000 reactor in Russia.

While these procedures are still under way, others had to be abandoned (new instrumentation for the Kola NPP in Russia and the completion and modernisation of two reactors at the Mochovce NPP in Slovakia).

Overview table : Community/Commission programmes and type of activities

	Phare	Tacis	ECHO	Co-operation programme	R&D FWP	ISTC	EC Safeguards Directorate	Synergy	Euratom loan
Regulatory Authorities	x	x		x					
Nuclear power Plants	x	x			x	x			x
Nuclear fuel cycle installations		x			x	x			x
Radioactive waste management	x	x		x	x	x			
Industrial cooperation		x		x	x	x			
Radiation protection					x	x			
Off-site emergency preparedness	x	x	x		x				
Safeguards	x	x			x	x	x		
Innovative actions					x	x			
Conversion of nuclear weapons scientists						x			
Chernobyl accident mitigation		x		x	x	x			
Chernobyl G7- MoU		x							x
Energy sector	x	x						x	

ANNEX 4

Data on the Phare and Tacis programmes

TACIS COMMITMENTS (MECU)

Country Year	Russian Federation	Ukraine	Kazakhstan	Armenia	Regional	Total
1991	45.80	7.20	-	-	-	53.00
1992	38.00	22.00	-	-	-	60.00
1993	48.50	32.00	-	-	7.50	88.00
1994	38.00	45.00	-	-	2.00	91.00
1995	38.00	55.50	-	-	2.50	96.00
1996	43.50	59.50	2.00	10.00	2.50	117.50
1997	37.50	21.50	2.50	1.50	5.00	68.00
Total	289.30	244.20	4.50	11.50	19.00	573.50
	51%	43%	1%	2%	3%	100%

PHARE COMMITMENTS (MECU)

Country Year	Bulgaria	Lithuania	Regional	Total
1990	-	-	3.74 ⁵	3.74
1991	12.70	0.50	3.50 ⁶	16.70
1992	16.30	-	13.00 ⁷	29.30
1993	8.90	1.40	14.90 ⁸	25.20
1994	11.40	-	19.60 ⁹	31.00
1995	7.00	-	20.00 ¹⁰	27.00
1996	6.00	-	-	6.00
1997	-	-	12.00	12.00
Total	62.30	1.90	86.74	150.94

The approximate repartition of the Phare and Tacis budget among the different areas of activity are summarised here below.

⁵ Czechoslovakia (3.5 mecu) and Poland

⁶ Slovakia

⁷ Czech Republic, Slovakia and Hungary (Out of the Regional Programme, 7 Mecu for Bulgaria are accounted in the corresponding column).

⁸ Czech Republic, Slovakia and Hungary (Out of the Regional Programme, 5.1 Mecu for Bulgaria are accounted in the corresponding column).

⁹ Czech Republic, Slovakia and Hungary (Out of the Regional Programme, 5.1 Mecu for Bulgaria are accounted in the corresponding column).

¹⁰ Czech Republic, Slovakia and Hungary

Phare and Tacis (1990-1997) -- budget breakdown

Budget Line	MECU	%
On-Site Assistance	248.3	34.3
Design Safety	166.5	22.9
Support to Safety Authorities	79.1	10.9
Fuel Cycle / Wastes	39.5	5.5
Safeguards	18.0	2.5
Off-site emergency preparedness	12.1	1.7
G7 - Action Plan for Ukraine	100	13.8
Others (Including: Chernobyl regional programme for rehabilitation ; Safety Related Research; Euratom loan preparation; programme management; and reserve funds)	61.3	8.4
Total	724.8	100

The TACIS contribution to the projects launched by the G7 Action Plan for Ukraine is shown

TACIS G7 Action Plan Budget (1994-1996, in MECU)

Project	1994	1995	1996	Total
Chernobyl	8.0	29.5	22.5	60.0
Rovno 4/ Khmel'nitsky 2	14.0	8.0	9.0	31.0
Non-nuclear energy	3.0	-	6.0	9.0
Total	25.0	37.5	37.5	100.0

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