

# **NUCLEAR ISSUES**

## INTRODUCTION

The EU's nuclear affairs are conducted under the umbrella of the European Atomic Energy Community (Euratom) which is one of the three legal Communities, established by Treaty, which make up the European Union. Unlike the European Coal and Steel Community Treaty, which will expire in 2002, the Euratom Treaty has no expiry date and will thus continue to set the legislative framework for all of the EU's nuclear business for the foreseeable future.

At the time of its signature, in 1957, the Euratom Treaty provided a forward-looking and ideological cornerstone for the future of Europe. Not only did the then six Members sign up to joint cooperation on research, safeguards, health and safety measures, joint promotion of investment and the dissemination of information, but they also agreed to a nuclear fuel supply agency and to a "nuclear common market".

Apart from changes to the institutional structure, made necessary by the development of the other Treaties, Euratom remains almost identical to the Treaty signed forty years ago. During the 1970s and early 1980s, up until Chernobyl, the Treaty did provide strong backing for the maturing nuclear industry in Europe. However, today, with half of the Member States eschewing nuclear energy completely and all the rest, bar one, declining to consider nuclear energy in their future energy plans, much of the Euratom Treaty looks out of date.

The range and depth of the Euratom Treaty are best summarised through listing the "Tasks of the Community" as set down in Article 2: "*The Community shall:*

- a) promote research and ensure dissemination of technical information;*
- b) establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied;*
- c) facilitate investment and ensure, particularly by encouraging ventures on the part of undertakings, the establishment of the basic installations necessary for the development of nuclear energy in the Community;*
- d) ensure that all users in the Community receive a regular and equitable supply of ores and nuclear fuels;*
- e) make certain, by appropriate supervision, that nuclear materials are not diverted to purposes other than those for which they are intended;*
- f) exercise the right of ownership conferred upon it with respect to special fissile materials;*
- g) ensure wide commercial outlets and access to the best technical facilities by the creation of a common market in specialised materials and equipment, by the free movement of capital for investment in the field of nuclear energy and by freedom of employment for specialists within the Community;*
- h) establish with other countries and international organisations such relations as will foster progress in the peaceful uses of nuclear energy."*

The tasks of  
Euratom

With the exception of the provisions on research, this chapter surveys those areas of Community nuclear policy and the Euratom Treaty which are relevant today and very much in use. A first section looks at the overall policy framework for the development of nuclear energy, largely on the basis of the most recent illustrative nuclear programme (PINC). A second section provides details on the important trade agreements with other regions of the world, and examines the role of the Supply Agency. Although not strictly related to energy, Euratom's significant safeguards are examined briefly since they are of great importance to the nuclear industry in general. A final section on safety gives an introduction to the wide range of issues that fall within Euratom's competences, both inside the European Union and with respect to policy towards the ex-Soviet bloc countries.

## POLICY FRAMEWORK RELIES ON ILLUSTRATIVE NUCLEAR PROGRAMME

Given the hostility of some Member States to the use and development of nuclear power, the Commission has a chronic difficulty in making any general policy statements on the subject; even the important 1995 white paper on energy touched on it only briefly. It said: "*Given the contribution of nuclear energy to all the Communities' energy objectives, this option has to be kept open but its future depends to a large extent on its acceptability by society and political leaders.*" The white paper also outlined the various problems associated with nuclear waste, safety, transport

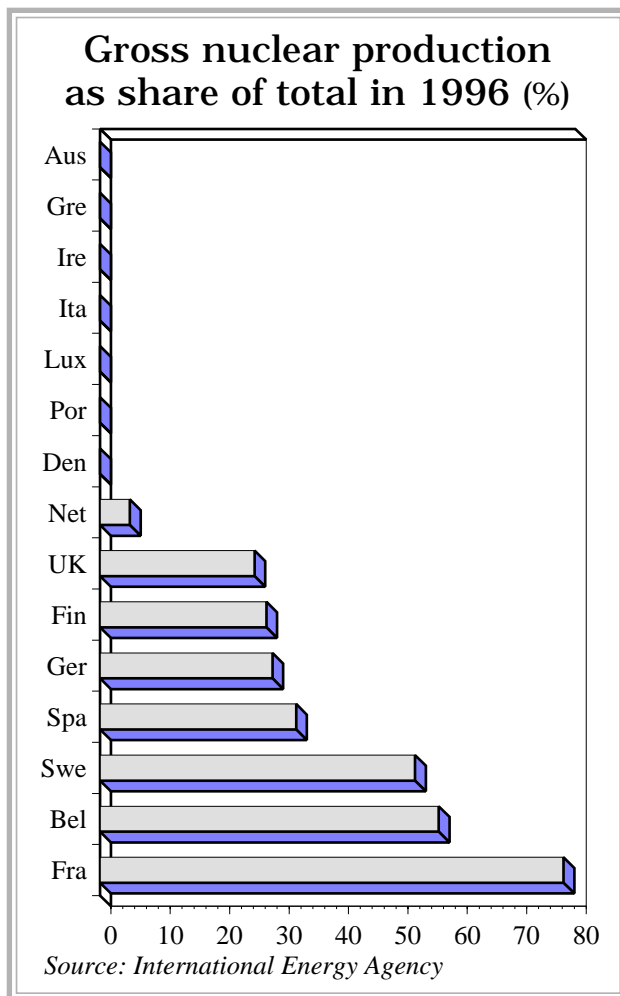
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and non-proliferation but concluded: "The choice between energy technologies or fuels is always a matter where policy appreciation intervenes but nuclear should remain part of this choice."

Most significantly, the white paper said the EC should respond to these concerns by:

- ensuring that all Member States with a nuclear programme continue to apply standards and procedures that give adequate guarantees;
- linking development of external relations with third countries to their accession to the IAEA Convention on Nuclear Safety;
- conducting R&D for safe reactors and waste disposal;
- supporting nuclear fusion, such as ITER;
- pursuing the improvement of nuclear safety in Eastern Europe;
- keeping open the option of reprocessing nuclear fuel;
- promoting progress in the management of radioactive waste;
- improving the safety of transport of radioactive materials;
- pursuing statutory activities regarding safeguards;
- promoting an international action programme aimed at preventing illegal traffic of nuclear materials;
- assuring the best management of nuclear trade and R&D agreements.

Energy policy white paper comments on nuclear energy



Parliament's frustration at lack of powers

The same critical polarisation of views on nuclear energy that makes it difficult for the Commission to develop policy also serves to ensure there is never a consensus to make any changes to the Euratom Treaty. Thus, although the EEC Treaty has been amended very significantly with the Single European Act and with the Maastricht Treaty, there have been no meaningful changes to the Euratom Treaty. One of the features of the Euratom Treaty is that it gives the Parliament very little say over nuclear issues. This has led to a deepening sense of frustration at being unable to reflect public opinion properly in this one isolated sector. In preparation for the intergovernmental negotiations on revisions to the Maastricht Treaty, the Parliament argued very strongly for a "common energy policy framework" in which should be integrated "the energy policy aspects of the ECSC and Euratom Treaties".

**Revision of Euratom proposed by Ireland**

During the second half of 1996, Ireland, which, historically, has always been concerned about radioactive discharges from the UK into the Irish Sea, argued for the strongest possible safety policy at EU level. It put forward a discussion paper suggesting key changes to the Euratom Treaty. They are worth summarising, since they voice the kind of concerns felt by some, if not all, of the non-nuclear Member States, especially with regard to the forthcoming enlargement of the EU.

- In its discussion paper, Ireland suggested the Treaty should be adapted so as to include:
- an obligation on each Member State to have an independent, effective and credible nuclear regulatory authority;
  - mechanisms to enable 'peer review' of the regulatory framework and supervision arrangements in each Member State;
  - a binding agreement on each State that existing nuclear reactors which do not meet internationally-recognised standards should be closed, or, if this is not feasible for social or economic reasons, a commitment for the plants to be upgraded or modernised to meet those standards;
  - a commitment by Member States that operators of nuclear installations are made liable to the victims of nuclear accidents and for any damage by nuclear accidents;

- an Article allowing for a prior consultation procedure in respect of the proposed construction of nuclear installations likely to affect the territory of another Member State (Ireland argued that such a procedure already exists for the disposal of radioactive waste - see below - but should be broadened);
- a policy that sets out to avoid damage to the environment by adopting the precautionary principle (by which preventive measures are to be taken when there are reasonable grounds for concern about hazards to human health or damage to the environment); and the polluter pays principle (by which environmental damage should be rectified at source); and by making use of the latest technological developments and practices designed to prevent damage to the environment.

By early 1997, some months before the final IGC conference in Amsterdam, it was already apparent that there was, once again, no consensus among the Member States for any revisions to Euratom (Chapter Two).

On the basis of the existing Treaty, though, the Commission does have one particular instrument to guide policy for nuclear power. Under Article 40, it is obliged to publish periodically, illustrative programmes “indicating in particular nuclear energy production targets and all the types of investment required for their attainment”. These programmes, known as PINCs, are supposed to “stimulate action by persons and undertakings and to facilitate coordinated development of investment in the nuclear field”.

*Euratom Treaty  
Article 40*

Production targets were the basis of the first three PINCs, in 1966, 1972 and 1984, but, by 1990, when the Commission put forward an “Update” of the 1984 PINC to accommodate the Single Market, the idea of actually promoting nuclear energy was already out of date. Every year since 1992, Energy Commissioners said they would bring forward a new PINC, but this promise was only realised, finally, in 1996. In the new PINC, the Commission explained that it was not feasible to assign quantitative production or investment targets beyond the year 2000. Nevertheless, it said that, if, in the future, “economic or political pressures modify the present framework, a longer term approach may be needed again”. As an example, it suggested that, if new political choices are made in order to combat greenhouse gases emissions, “it may as a result be envisaged to establish nuclear electricity production targets at a more distant horizon”.

*Earlier PINCs and  
the delays in  
adopting  
a new one*

### **The fourth illustrative nuclear programme**

A draft PINC was adopted by the Commission in September 1996, and formally adopted with very minor changes in September 1997 after the Economic and Social Committee had given its Opinion, as required by the Treaty. The Commission said it recognised that “the nuclear issue is a highly controversial one in the Union” but noted the industrial reality: 140 nuclear reactors are operating in eight Member States making the EU the world’s leading producer of nuclear generated electricity.

The 25-page document was divided into six parts with an additional 10 pages of tables largely taken from the OECD’s Nuclear Energy Agency and the Commission’s own forecasting work (such as that which lay behind the 1996 DGXVII report “European energy to 2020”). In the first main section, the Commission examined the use of nuclear energy in relation to the three main policy objectives: competitiveness, security of supply and protection of the population and the environment.

In terms of competitiveness, the Commission concluded that decommissioning, waste transport and storage have a relatively small impact on the total cost of electricity, that economic attractiveness of nuclear energy is critically connected to the level of interest rates, and that export markets are essential for maintaining EU companies’ fuel cycle and equipment capabilities. Security of supply was discussed from several aspects. Clearly, the Commission said, nuclear energy is one option to relieve energy supply constraints, both within the Union and among the potentially largest energy consuming nations. Recycling of nuclear fuels makes sense, it added, if technological solutions are found which are safe and economically viable. The Commission also reiterated Euratom’s non-proliferation and safeguards credentials. Basic safety standards, reduction of CO<sub>2</sub>, emergency preparedness, waste management and technological safety issues were all briefly discussed as relevant to protection of the population and the environment. Moreover, the Commission suggested that an international convention on the management of nuclear waste would be useful.

*Competitiveness,  
security of supply  
and protecting the  
population*

### **Seven main features and challenges for the future**

In the most interesting section of the PINC, the Commission discussed seven main features and challenges for the future (most of which are discussed later in the chapter). These can be briefly summarised as follows:

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Nuclear industry activities and business opportunities. The scope for new construction in Europe is limited even though modernisation and upgrading programmes will allow the nuclear industry to develop its RTD base. European industry, though, must be ready to grasp every opportunity to operate in other areas of the world.

Nuclear fuel supply conditions. In the short and medium-term there is no foreseeable risk of supply disruption but there are serious concerns that the EU is reducing its own supply potential and developing an overdependence on the CIS. (The PINC drew attention to the policy of diversification applied by the Commission and the Euratom Supply Agency, and it noted that a recent increase in world prices could encourage more mining activity.)

Avoiding technical barriers in the Single Market

Technological challenges of nuclear safety. There are three approaches to this challenge: efforts to establish consensus within the industry on the key technical issues in operational and design safety; a concerted effort between Member States and the Commission for the safety assessment of important European nuclear plant projects; and the establishment of equivalence regarding safety for those technical codes which are significant for the mechanical integrity of nuclear plant. *“The combination of these actions should contribute towards finding consensus on key safety requirements, thus avoiding technical barriers to the free movement of goods and services.”* (The PINC reiterated the need for coherence between the use of best safety practices in the EU and the transfer of know-how to the CEEC and NIS; and it stressed that as many states as possible should be encouraged to take part in the IAEA’s Nuclear Safety Convention.)

Spent fuel, nuclear waste and decommissioning. “Industrial processes exist for nuclear waste treatment, the decommissioning of nuclear plants at the end of their lifespan and the reprocessing of spent fuel.” Storage and disposal methods are constantly being improved through RTD programmes, and these should be pursued systematically. There is some experience in decommissioning although most plants have not yet reached decommissioning stage because they have been modernised and upgraded; and, where nuclear power plants are being designed in the EU and the US, attention is being paid to reducing the cost of their future decommissioning.

Transport of radioactive materials. Packages of radioactive materials have been shipped safely worldwide and “the excellence of these results can be put down to the existence of stringent, uniform regulations that have been rigorously enforced for several decades. . . such an excellent safety record cannot, however, give cause for complacency”. (The PINC referred to a 1992 Council Directive on radioactive waste shipments and to a more recent Communication.)

The challenge is to ensure plutonium recycling is safe and economic

Use of plutonium. Plutonium is successfully recycled in light water reactors in several Member States, and plant operators are satisfied with the results. Moreover, fast neutron reactors are theoretically able to incinerate plutonium although they have not yet been tested. *“The challenge facing the nuclear industry is to ensure that plutonium recycling is safe and economic. . . The presence of plutonium in the civilian nuclear fuel cycle has important implications for worldwide non-proliferation policy.”*

Future nuclear RTD. The European Pressurised Water Reactor project is being undertaken by industry, and there is a possibility of a prototype within the next two or three years, as is the fast neutron reactor which is proceeding at a slower pace. (In this section, the PINC summarised the aims of the Euratom R&D Framework Programme - Chapter Eight - and the priority routes for demonstrating a full nuclear safety capability. Two short paragraphs were reserved for the fusion programme mentioning that, given the extreme difficulties, the EU has chosen to work in cooperation with major world partners - *“It offers an important potential for the very long term energy future but absorbs a large share of the public budgets devoted to RTD.”*)

### The Opinion of the Economic and Social Committee

The Economic and Social Committee, which must provide an Opinion on the PINC before formal adoption, said the document did provide a basis for a wide debate in the EU and that the principles of the programme should be supported. Nevertheless, it identified a number of flaws in the Commission’s approach.

While nuclear power currently produces one third of the EU’s electricity, this situation is set to change, the ESC said. Public concern, the arrival of competitively priced natural gas, and the deregulation of the electricity market “make it unlikely that nuclear generation will be continued in most Member States when existing plants come to the end of their operating lives in the years after 2005-2010”. This prospect, therefore, raises serious strategic questions for EU energy policy,

which the Commission has failed to take into account: *“The loss of most of its nuclear generation would not only compromise the EU’s ability to ensure satisfactory security of supply conditions in respect to the future import of fuel for electricity generation, it would also powerfully counteract the EU’s efforts to reduce its CO2 emissions.”*

The ESC Opinion pointed to the dangers which may arise from nuclear facilities to the East of the EU, and the effect on public attitudes another major accident would have. It called on the Commission to review urgently the Phare and Tacis programmes “in so far as they deal with nuclear safety”. It also asked the Commission to consider including attention to dangerous nuclear military installations within the scope of its activities, and to add action to alleviate concerns about nuclear safety to its proposed set of principles. Finally, the Opinion pointed out that “nuclear generation in the EU faces major challenges, not least to its future existence”. It highlighted the need to make nuclear power more acceptable to the public. In particular, it said, “finding a way to satisfy the public about the transport, handling and disposal of radioactive waste is seen as the key issue”.

*ESC concerns about the need to make nuclear more popular*

### **The Parliament’s failure to agree an Opinion**

Given the Parliament’s persistent demands for more say on nuclear issues, the Commission made it clear that, although formally it was not required to ask the Parliament for its Opinion, it would take note of any Resolution the EP adopted. A draft report, prepared by the French Christian Democrat MEP Andre Soulier on the PINC was adopted in the Parliament’s research/energy committee. Although acknowledging the difficulties of nuclear energy, it did also say that the EP was of the opinion that, “as long as there is no alternative energy source to nuclear power . . . investment must be continued, while strengthening the existing economic and legal framework”.

When it came to voting on the report in plenary, the majority Socialist Party managed to win approval for a number of significant amendments which switched the tone of the Resolution to one more critical of the future for nuclear energy. Soulier was unable to accept the amended Resolution and recommended its rejection. The Parliament followed his advice, and the report failed to be adopted - a rather unusual event - by 211 votes to 129.

## **SECURITY OF FUEL SUPPLY AND THE ROLE OF TRADE AGREEMENTS**

Security of nuclear fuel supply has been a major concern of the European Community since its very beginnings. The Euratom Treaty set up detailed provisions for a Euratom Supply Agency with “a right of option on ores, source materials and special fissile materials” produced in the Member States, and “an exclusive right to conclude contracts relating to the supply of ores, source materials and special fissile materials coming from inside the Community or from outside”.

The Agency, which operates under the supervision of the Commission, keeps a rather low profile, partly because it is dealing with commercial matters and partly because the Euratom Treaty does not encourage transparency; but, once a year, it does release an annual report with details of its own activities, related developments at Community level, and the supply situation in the various Member States.

During much of the 1990s, the influx of cheap nuclear fuels from the former countries of the Soviet Union was one of the Agency’s chief concerns. The Commission and the Agency considered that the diversified situation, which had existed in 1990 when Russian imports were still zero, was threatened by “massive imports at extremely low prices”. It therefore operated an informal policy of limiting imports from the CIS to around 20% of the overall deliveries - a figure that has since been stretched considerably.

*Concerns over imports of Russian material*

### **KLE’s challenge to the Euratom Supply Agency**

By 1994, this policy came under severe pressure. A German utility, Kernkraftwerke Lippe-Ems (KLE), took the Commission to Court over its Decision to uphold the Agency’s rejection of an import contract involving supplies from Russia. The case, which was instructive in terms of policy, had its origin in a tender, by KLE in June 1993, for the supply of natural uranium in the form of uranium hexafluoride. The following November it concluded a supply contract with British Nuclear Fuels (BNFL) and, in December, BNFL informed the Euratom Supply Agency that the uranium would come from the CIS.

The Agency then informed the contract parties of its policy of diversification aimed at confining the proportion of supplies from the CIS to 20-25% of individual Community users’ needs. Subsequently, the Agency approved the contract but with the addition of a condition that the natural uranium should not be supplied directly or indirectly from the CIS. KLE complained to the

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Commission over a range of issues and the Commission made two Decisions, on 4 February and 21 February 1994, supporting the Agency's actions. In April, KLE challenged both Decisions in the Court of First Instance. The judgement came three years later in February 1997; (KLE appealed shortly afterwards but a final ruling was not expected before the end of 1998).

In the first case, centred largely on procedural issues, the Court concluded that KLE was itself the cause of the Agency's administrative difficulties in coming to a decision, and that the lapse of time, before making its decision against the use of CIS material for the imports, was reasonable. In the more important second case, KLE attacked, among other things, the actual policy being implemented towards the import of CIS material as well as breaches of general principles of Community law.

### *The Commission's justification for refusing KLE's contract*

The Court fully upheld the Commission's arguments for using the Euratom Treaty's Article 61, whereby the Agency is obliged to meet all orders, unless prevented from so doing by legal or material obstacles. The Commission argued that there were three such obstacles: one deriving from the requirements of the policy of diversification of external sources of supply, one relating to the level of prices stemming from the Trade Agreement with Russia, and one deriving from the obligation to ensure equal access to resources.

Firstly, the Court concluded that, at the time when the Commission adopted its Decision, the possibility could not be ruled out that ensuring a regular and equitable supply of uranium could be jeopardised if imports of nuclear materials from the CIS were permitted to continue in unlimited quantities, and replaced supplies from other sources for a certain time without there being any guarantee of continuity of supplies in the long term.

### *Court backing for Commission role*

As regards the second obstacle, the Court concluded that, because KLE attempted to cover not merely occasional requirements but its basic needs for a 15-month period by the supply contract in question, that contract, concluded at a price which was even lower than the average spot market price, did not comply with the rule that supplies are to take place at market-related prices. Equally, the Court rejected pleas alleging breach of the principle of legal certainty and of the principles of equal treatment and proportionality. It found that a reasonably diligent trader could have had access to the necessary sources of information on the Commission's policy and that, although the 25% degree limit of permissible dependence was not published as such, that circumstance in itself could not make the Commission's Decision unlawful.

## Uranium imports from the NIS continue to rise

By 1996, imports of natural uranium from the NIS had, in fact, reached the order of 5,900tU with a further 900tU acquired as a result of exchanges and return of loans. Thus, according to the Agency, NIS material accounted for about 43% of total deliveries to EU utilities, a considerable increase over the 33% in 1995. This figure slipped back to 33% in 1997. Deliveries of enrichment services of Russian origin, however, fell from 23% in 1995 to 18% in 1996 and 20% in 1997.

### *Euratom Agency satisfied with supply situation*

The Agency concluded, in its 1996 report (published in 1997), that "although questions remain about the size of the civil uranium stockpiles in Russia", it was not contracting for the large quantities at very low prices which were such a feature of the uranium market in the early 1990s. However, deliveries under old contracts continued to take place at prices some way below the Supply Agency's current average price. It also reported that the Commission would like "to deepen the dialogue" with Russia on a number of issues including its capacity to maintain current levels of natural uranium and supply enrichment services (see below). The 1997 report (published in April 1998) expressed no particular fears about the supply situation, which it said was "satisfactory".

## ENU's challenge to Euratom's supply policy

The Agency also came under pressure from another angle, although one similarly related to the weak market conditions prevailing in the 1990s. The Portuguese uranium producer, Empresa Nacional de Uranio (ENU), brought two cases to the Court of First Instance in 1993 regarding complaints first made in the 1980s. In essence, ENU claimed that, under the terms of the Treaty, the Euratom Supply Agency should have taken responsibility for finding a market for its uranium production.

Much of the case rested on the legality of a special action programme for disposing of the uranium discussed between the then Portuguese Energy Commissioner Antonio Cardoso e Cunha and the Supply Agency. ENU claimed that the programme was legally binding, but the Court disagreed. Indeed, the Court dismissed all ENU's allegations and claims for compensation and found for the Commission on all particulars.

ENU then appealed to the higher court, but, in a final judgement delivered in March 1997, the Court of Justice fully supported the reasoning of the Court of First Instance. The judgement was somewhat involved and depended on the interpretation of various aspects of Chapter 6 of the Euratom Treaty, especially Articles 53, 60 and 66. Nevertheless, the key finding remained that the Agency was not obliged to guarantee the disposal of ENU's uranium production.

### **Supply of HEU a particular concern**

Another concern of the Agency in recent years has been the supply of highly enriched uranium (HEU) to the EU's research reactors and the disposal and reprocessing of spent research reactor fuel. There are five research reactors in the European Union - in the Netherlands, Belgium, a new one in Germany, and two in France - which require HEU for their operation. Historically, the HEU has been sourced in the US but, since 1992, the US has clamped down on exports in an effort to phase out its civil use. During the Euratom-US negotiations (see below), the subject of HEU was one of several controversial issues. The final agreement contained statements to the effect that the US opposed the continued use of HEU but also, on the insistence of Euratom, a recognition that specific research reactors in the Union might need to use it.

A decision in 1996 by the US Department of the Environment, to start accepting and managing spent nuclear fuel from foreign research reactors containing uranium enriched in the US, enabled large quantities of US origin irradiated fuel to be returned. Its storage at reactor sites had been "creating serious difficulties for the operators and raising questions, in some cases, about the continued operation of their reactors", the Agency reported. In the longer term, specialised reprocessing within the Community will, though, be required when the current US policy expires after May 2006.

*Restrictions imposed by the US*

Long-term supply of HEU for the five reactors also continues to pose problems. They have been able so far to operate on the basis of existing inventories and new sources of supply, not least in Russia (a France-Russia agreement on HEU was signed in April 1996, for example), although the US has tried to hinder such trade. The Agency has also reported that the US is in a position to supply HEU to those reactors which commit themselves to convert to the use of low-enriched uranium.

*Long-term supply of HEU still a problem*

As is apparent from the foregoing section, two international relationships - those with the US and with Russia - are of particular importance for the Community with regard to nuclear fuel supply (although both cover a far wider spectrum of activities). Moreover trade is certainly among the most politically sensitive aspects of the respective agreements currently in force between the Community and the two nations. In the case of the US, there is a newly negotiated broad-ranging and detailed nuclear agreement, but in the case of Russia, trade provisions are still covered by the very general 1989 Trade Agreement signed with the Soviet Union.

### **Negotiating the complex Euratom-US nuclear agreement**

With the 35 year old Euratom-US agreement due to expire at the end of 1995, the Council of Ministers approved, in December 1991, a mandate for the Commission to negotiate a new accord. Although the agreement covered a wide area of cooperation (including trade, industrial and commercial operation, nuclear R&D and nuclear safety), the issue of US consent rights came to dominate the negotiations.

Under the terms of the US's 1978 Nuclear Non-Proliferation Act, the US must retain 'prior consent rights' for transfers and re-transfers of US-origin materials. Although the US President has authorised an annual waiver for the Community since 1978 in order to honour the existing agreement, the US made it clear that no new agreement could ignore the 1978 law, nor could there be any question of making a deal with the EC which would weaken application of the law in the US's agreements with other trading partners.

For their part, the EU Member States, especially those with important nuclear industries, refused to grant the US any such rights over activities within the Euratom jurisdiction. The Commission claimed, on behalf of the Council, that Euratom had its own sufficient and stringent system of safeguards and that any agreement which implied the European Atomic Energy Community was less responsible than the US authorities, or set any kind of precedent along those lines, would be unacceptable to the Member States.

*Council's insistence on jurisdiction of Euratom*

Towards the deadline for agreement, considered to be the end of 1994 because of the time the US would take to ratify the agreement, the issue became highly politicised. US Vice President Al Gore was quoted as saying in February 1995 that if talks broke down it would cause "a major transatlantic rift". Even the embarrassment and the threat of sending such a poor signal to other

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countries at the major non-proliferation conference in New York during April and May 1995 was insufficient incentive for the great powers to resolve their differences.

Under the somewhat partisan leadership of the French Presidency in the first half of 1995, a number of issues remained outstanding, related to the conditions under which the long-term generic consent rights could be suspended, for example, and the principles regarding contamination of material under the agreement by material not under the agreement. But, finally, under the Spanish Presidency, the Council reached formal agreement (with Belgium voting against and France abstaining) on a text that, by exquisitely careful language, managed to meet virtually contradictory conditions from both sides.

*Agreement in force  
from 12 April 1996*

The agreement was formally signed on 7 November the same year. It took until 10 March 1996 for the US to complete its internal ratification procedures. Following an exchange of letters between the Commission and the US, the agreement came into force on 12 April. It brought to an end five existing bilaterals between the US and Spain, Portugal, Sweden, Austria and Finland, dating from between 1969 and 1985. Some of these bilateral arrangements imposed stringent conditions on the US partner, and had a significant impact on trade by the country concerned with other Member States of the EU.

The Euratom Supply Agency noted that, under US law, no licences could be issued for nuclear items during the “gap period” (i.e. between the end of 1995 and 12 April 1996) but, because the industry had expected and prepared for it, there were no major problems. (The Commission drafted a mechanism for trade to continue in the gap period, but this was blocked by Belgium). The Agency further reported that, despite the complexity of the agreement, there were no more than “the routine teething problems that might be expected with a new agreement”. An Administrative Arrangement, to formalise the operational procedures, became formally effective in January 1997.

### Details of the Euratom-US agreement

Three areas of cooperation are defined in Articles 2 to 4 of the agreement: R&D, industrial and commercial, and trade. The nuclear trade Article says that authorisation procedures “shall not be used to restrict trade” and, in a side letter, a maximum time of four months is specified for deciding on authorisations. This should be an advantage to the Euratom members since the procedures in the US were usually rather slow. Article 6 on the detailed regime for safeguards is a key one for the US. It defines the application of the Euratom and IAEA safeguards, and procedures to follow if IAEA safeguards are not being applied.

Article 8, which is also crucial and is supplemented by a detailed minute (including an annex which lists all the facilities in the European Community and in the US to which Article 8 applies), covers nuclear fuel cycle activities. According to a Commission summary, it defines the following procedures:

- any non-sensitive nuclear activities, as well as enrichment up to 20%, irradiation of fissile materials and post-irradiation examination involving chemical dissolution or separation of irradiated nuclear material, will be freely and unconditionally allowed;
- retransfers to third countries will be authorised on a long-term basis according to the procedures set out in the Agreement;
- storage of sensitive fissile material will be possible in any facility that meets the usual physical protection levels;
- reprocessing and alteration in form of content of sensitive fissile materials will take place under a generic programmatic consent, in facilities forming part of the list of nuclear facilities delineated by each party. This generic consent will be valid in practice for the entire life of the Agreement.

*Details of Article 8  
provisions on  
nuclear fuel trade*

The terms of the Agreement are to be implemented in good faith, says Article 10, and with due regard to legitimate commercial interests, whether domestic or international. This is fundamental for Euratom since, in effect, both parties agree to the principle of non-interference, despite the authorisation procedure. Also important for the European Union is Article 13 which deals with suspension and termination of the Agreement. Among other clauses it effectively gives the EU the right to terminate the Agreement if the US should pass a new non-proliferation law restricting further trade.

### MEPs’ frustration at lack of consultation on the agreement

Under repeated demands for more regular information on the status of the negotiations with United States, the European Commission briefed MEPs in camera on several occasions. This was not sufficient, however, to allay the Parliament’s frustration at being unable to influence the outcome of the agreement. Some of this frustration came out in a Resolution, not adopted until April 1997.



The Parliament said the agreement “achieves its objective of enabling peaceful nuclear cooperation under the recognised international standards relating to safety and safeguards” and that it is “an important milestone in transatlantic cooperation on issues of nuclear safety”. However, the EP warned that its own weak involvement in current, similar cases of international cooperation under the provision of the Euratom Treaty was unacceptable. It demanded more involvement in the negotiations on agreements with the US, Russia, Argentina and Japan.

In legal terms, the Parliament asked the Council to recognise Article 203 of the Euratom Treaty and Article 235 of the EC Treaty “as a relevant and valid legal base for formal consultation and involvement of the European Parliament in all matters relating to nuclear energy”, and it reserved the right to use the provisions of Euratom Article 107a (which permits the EP to ask the Commission to submit proposals) “as a way of overcoming the democratic deficit”. Although watered down from committee drafts, the Resolution also noted that “some non-proliferation advocates are now warning of the dangers of a global plutonium economy and the commercial spread of nuclear materials”, and that “this plutonium economy could become a cause for concern, irrespective of proliferation risks, if current standards of health protection of professional workers, nuclear safety and security in all stages of the nuclear fuel cycle, including reprocessing, manufacturing, transport, effluents and waste management are not maintained”.

*The Parliament's proposal for more consultation*

### **Other nuclear agreements with Western partners**

Nuclear material received from Australia and from Canada is also governed by separate agreements with Euratom, in place since 1981 and 1959 respectively. Both agreements were adapted during 1996 to take account of the accession by Sweden and Finland to the EC and their pre-existing bilateral agreements. Euratom does have a number of other nuclear arrangements, although they are rather minor by comparison and relate largely to research (with Canada and Switzerland on nuclear fusion for example). However, in June 1996, a new agreement was signed with Argentina and this came into force in October 1997. It specifies cooperation on research, nuclear safety, waste management, radioprotection, decommissioning and nuclear fusion.

Given the importance of the Japanese nuclear business, and the increasing relationship between EC and Japanese nuclear interests, the European Commission began exploratory talks with Japan, in the mid-1990s, over a possible future nuclear agreement. Initially, Japanese ideas were for an extensive agreement, however the Commission considered a less ambitious initiative, not on the scale of the Euratom-US accord, would be more in keeping with the Member States' wishes. The Commission suggested four areas to be covered by the agreement: framework conditions for cooperation; transfer of nuclear materials; performance and receipt of services at every stage of the nuclear fuel cycle; and cooperation in other areas such as research and development, safety and safeguards. A draft mandate was forwarded to the Council in January 1998.

*Mandate for Euratom-Japan agreement*

As a preliminary measure, the government of Japan and the European Commission exchanged diplomatic notes on 10 February 1997 laying down the conditions by which nuclear material owned by a Japanese undertaking could be processed in Belgium. The notes confirmed that, while in Belgium, the material concerned would be subject to Euratom and IAEA safeguards, would not be used for anything other than the peaceful purpose of fabricating mixed oxide (mox) fuel in specified facilities, would not be transferred from those facilities except for the purpose of returning the mox fuel to Japan, and would be subject to internationally agreed norms for physical protection.

### **No formal development in nuclear relations with Russia**

Relations between the EC and Russia are governed by the Partnership and Cooperation Agreement (PCA) which came into force on 1 December 1997. Nuclear trade was one of the major issues which held up the PCA's negotiation during 1993 and 1994. The EC's Council of Ministers had given the Commission a mandate for a separate three-part (fusion, safety and trade) nuclear agreement. There were heightened concerns at the time over the possibility of massive imports (see above). Russia, though, wanted a liberal trade regime incorporated into the PCA. By mid-1994, the two sides had agreed to leave untouched the terms of the Trade Agreement already reached between the EC and the USSR in 1989.

The PCA (and an Interim Agreement which was valid in 1996 and 1997 prior to the PCA's coming into force), therefore, defers on nuclear issues to the 1989 agreement, which itself is very unspecific. It does, though, contain a provision which allows the EC to invoke restrictions on imports only if it can show they have increased greatly or are causing injury to EU uranium producers. The PCA also refers to an exchange of letters in which Russia confirms it will act as a stable long-term supplier of nuclear materials, and the EU acknowledges that commitment. Furthermore, the PCA states that the parties will endeavour to negotiate a separate accord on nuclear fuels by January 1997. This has not, however, been achieved.

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A draft negotiating mandate for such an agreement has been under preparation for some years, but continuing political uncertainty in Moscow and some prevarication by the Commission has meant that, as of April 1998, no proposal had yet gone forward to the Council. Five other draft mandates, however, for accords with Uzbekistan, Ukraine, Tadjikistan, Kyrgyzstan and Kazakhstan, are on the Council's table, but several Member States have said they will only agree on them alongside one for Russia. Thus, in all cases, the 1989 EC-USSR agreement continues to govern any trade in nuclear materials.

### NON-PROLIFERATION/SAFEGUARDS - PRESERVING EURATOM'S STATUS

The European Community engages in a very active non-proliferation policy, both through the fact that fuel supply is monitored by the Euratom Supply Agency and through the strict provisions of international agreements, or through the activities of Euratom's own safeguards operation. Moreover, under the terms of the Maastricht Treaty, the Member States can agree Common Positions on non-proliferation issues as part of the Union's Common Foreign and Security Policy.

*No reports from the Euratom safeguards division*

Under Articles 77-85 of the Euratom Treaty, the Commission is obliged to satisfy itself that nuclear materials "are not diverted from their intended use". The fulfilment of these terms is carried out by the Luxembourg-based Euratom Safeguards Directorate. Most public information about its activities is revealed in a report published every two or three years, but none has been published since mid-1994.

#### **The extent of the Community's safeguards operation**

*Stocks of safeguarded materials at end of 1996*

However, during a speech delivered in 1997, Pablo Benavides, the Director-General for DGXVII, gave an indication of the scope of the Commission's ongoing work on safeguards and the challenges for the future. He said stocks of nuclear material safeguarded at the end of 1996 comprised: 180,000t of depleted uranium, 57,000t of natural uranium, 48,000t of low enriched uranium, 10.9t of HEU, 434t of plutonium and 4,600t of thorium. These materials were used, processed, handled or stored in some 390 major installations and 400 smaller ones. The Euratom inspection effort during 1996 involved 9,600 man-days in installations and more than 2,300 inspections. Reports from operators were running at about 1.4m data records each year, all of which had to be rigorously analysed and evaluated under the Euratom safeguards system, Benavides said. Moreover, much of that information has to be formatted into a suitable form for onward transmittal to the International Atomic Energy Agency (IAEA).

Because of the worldwide status of the IAEA and the Community's interest in upholding its systems, Euratom ensures that it meets all of the necessary IAEA requirements. However, the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) specifically endorses regional systems, and a close relationship between the IAEA and Euratom has built up over many years of working together. Until 1992, cooperation was based mainly on arrangements known as Observation, Participation and Joint Team. A revision, known as the New Partnership Approach (NPA), was agreed in April 1992.

*Euratom shouldering burden for IAEA*

The NPA enabled the IAEA to align its inspection activities with those of Euratom better, and thus to avoid over-inspection, as had occurred under previous regimes, Benavides noted in his 1997 speech. This harmonisation led to considerable savings for the IAEA and enabled it to deploy more of its resources in IAEA Member States where independent regional safeguards systems were not in place. "I regret to say, however, that the same level of savings has not been evident for Euratom", he added; "nevertheless, by shouldering a large measure of the burden for the IAEA in the EU, Euratom can truly be said to not only be ensuring the rigorous application of safeguards in the EU but also to be contributing to worldwide non-proliferation safeguards". He went on to suggest it was essential for the IAEA to get away from mechanical implementation of its criteria in those of its Member States, or groups of states, with a low non-proliferation risk.

*Member State agreements with Euratom and the IAEA*

The implementation of IAEA safeguards under the NPT in the EC is governed by three agreements: these are between the IAEA and Euratom and, respectively, the 13 non-nuclear weapons States, France, and the UK. New negotiations between Euratom, the Member States and the IAEA began in late 1997 to amend all three agreements to take account of a new accord within the IAEA designed to improve the detection of clandestine nuclear programmes. The new accord was largely a consequence of the IAEA's failures in Iraq and North Korea. At the start of the negotiations, the Council of Ministers issued a statement saying that the EU "hopes that its initiative will serve as an example to other countries so that they also conclude additional agreements with the IAEA".

## The future challenges for safeguards policy

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In recent years, the complexity of the task facing Euratom has changed with the advent of the large, automated plutonium handling facilities, both for reprocessing and for MOX fuel fabrication plants. The Treaty says that “the Commission must approve the techniques to be used for the chemical processing of irradiated materials” and this has allowed Euratom to enter consultations with operators at an early stage in a plant’s design and thus ensure safeguard requirements are included in a project.

New technology is, though, being developed to meet the more complex tasks. According to Benavides, again speaking in 1997, one of the most exciting techniques being developed for safeguards applications is that of High Performance Trace Analysis/Environmental Sampling. This has the potential to improve the effectiveness and efficiency of safeguards in, for example, enrichment plants, while at the same time reducing the exposure of inspectors to sensitive technology, he said. Unattended measurement facilities is a second area where technological improvements are being introduced in parallel with changes in working methods. When implemented under the NPA such facilities have the potential to reduce the inspection effort in safeguarding low-enriched uranium fabrication plants.

*The role of new technology*

There are two new challenges for Euratom, according to Benavides: the safeguarding of excess weapons material released from the weapons programmes in France and the UK; and the possible need for measures to ensure that the IAEA, in cooperation with Euratom, can effectively safeguard all civil plutonium plants in the EU if and when a Fissile Material Cut-off Treaty is signed.

With the implementation of the Maastricht Treaty, the EU was given a new instrument to develop its non-proliferation policies. In fact, the first CFSP Joint Action in the sphere of security policy was agreed in July 1994, during the run-up to the 1995 conference on the extension of the Non-Proliferation Treaty. In particular, the EU called for, and won, an indefinite and unconditional extension of the Treaty. It also allowed for more efforts, largely through EU Presidency demarches, to convince States not party to the Treaty to accede, and for the possibility of assistance for countries wishing to accede.

*1995 Non-Proliferation Treaty conference*

More recently, in April 1997, the Council agreed a Joint Action to participate in actively promoting transparency in nuclear-related export controls, and, specifically, to contribute Ecu75,000 for the Nuclear Suppliers’ Group seminar which took place in October 1997.

### Efforts to clamp down on nuclear materials smuggling

During the mid-1990s, the issue of nuclear smuggling erupted into the headlines of Europe’s papers. Although instances of illicit trafficking in nuclear materials had been reported as early as 1991, it was the seizure of plutonium at Munich airport in August 1994 that triggered action at the EU level. The Germans, who were strongly suspected of manipulating the incident and who held the EU Presidency at the time, organised a ministerial meeting in Berlin with Bulgaria, Poland, the Czech and Slovak Republics, Hungary and Romania. They all agreed to:

- the preparation of a joint comprehensive assessment of the situation regarding the illegal handling of radioactive and nuclear substances;
- improve cooperation on protection and safeguarding of existing radioactive and nuclear stocks;
- set up rapid coordinated reporting channels;
- provide for mutual assistance between prosecuting authorities;
- establish intensified border controls;
- impose penalties for the theft of and illegal trade in radioactive materials;
- adopt regulations on the forfeiture of illicit proceeds from such crimes.

Moreover, at the Essen Summit in December 1994, the European Council voiced its concern regarding nuclear smuggling and approved a number of measures, as advised by the Commission, to combat it. The summit called on the Commission and Member States to step up their cooperation and effectively to assist countries of origin and transit in taking action on the ground. It also called on all states which had not yet done so to place their sensitive civilian materials under international safeguards. The measures agreed concerned two aspects: cooperation within the EU and with third countries in which nuclear material has been or may be seized, and cooperation with external countries from which the materials are sourced.

*Cooperation within the EU and with external countries*

Measures for internal cooperation included: better exchange of information and contacts with the IAEA; assistance for identifying the nature and origin of material; Member State membership of a convention on customs information systems; an action plan for the external frontiers strategy; and an enlargement of a convention on mutual assistance between customs authorities.

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For cooperation with external countries, the Council identified a number of possible actions: assistance through Phare and Tacis for improving nuclear material accountancy/control and for physical protection; the specific mention of the prevention of illicit traffic in future appropriate agreements; higher priority to nuclear accountancy and physical protection within the projects of the International Science and Technology Centre (ISTC) in Moscow; and an EC contribution to the Ukrainian Centre for Science and Technology.

### Commission report on results of anti-smuggling actions

In April 1996, the Commission produced a report for the Council and the Parliament, in which it provided details of a wide range of actions undertaken since 1994 to halt the illegal trafficking of nuclear materials. It claimed that "to a certain extent" it had fulfilled the mandate given it by the Essen European Council. The Communication noted that cases of nuclear trafficking were dropping but that incidents of dumping of radioactive sources and blackmail were on the increase. It examined the existing controls on nuclear materials and the roles played by the CFSP, the Safeguards Directorate, the Joint Research Centre, the Phare and Tacis Programmes, the ISTC, and actions by the Member States and the US.

The report said that the Euratom's Safeguards Directorate had stepped up its administrative activities and continued implementation of a programme of cooperation with the Russian Federation to develop a modern nuclear materials accountancy and control system; and Phare and Tacis funding has been used for training in nuclear materials controls and accountancy in countries which so requested. The report gave details on the drive to harmonise national regulations concerning the import of radioactive substances, civil protection measures and the information to be given to the public and to professionals who may risk exposure. It also pointed to the training programmes for professionals, cooperation with other international organisations, and the setting-up of an informal network of contacts.

*The drive  
to harmonise  
national  
regulations*

In terms of customs cooperation, the Commission said it had undertaken a twin-track intra-Community action programme for tighter controls at external frontiers, and for measures to combat trafficking in the framework of cooperation with the CEEC, the NIS and the US, based on the Phare and Tacis programmes, protocols of mutual assistance, and customs cooperation agreements. In the context of justice and home affairs policy, the Communication noted that the Council had extended the mandate of the Europol Drugs Unit to cover trafficking in nuclear materials and radioactive substances.

### Community contributions to the ISTC in Moscow and KEDO

The Community contributes financially to a number of international centres designed to promote the peaceful uses of nuclear power - notably in Moscow and in Korea. Following an agreement signed by the EC, the US and Japan with the Russian Federation in November 1992, the Moscow ISTC began operation in 1994. Its main aim is to provide employment for scientists made redundant by the rapid decline of the weapons industry and who might otherwise move to 'rogue countries' eager to develop nuclear potential. A Commission Communication in 1996 described the centre as a success: over 300 projects employing 15,000 scientists had been supported with nearly Ecu100m (about 40% of which went to energy and nuclear projects). The EC contributed Ecu20m in 1994, Ecu10m in 1995, Ecu15m in 1996 and continues to support it through the Tacis programme with about Ecu17m/yr.

The EC has also committed itself to providing a similar amount - Ecu15m/yr for five years - for the Korean Energy Development Organisation (KEDO). KEDO was set up in March 1995 by South Korea, Japan and the US amid growing fears over safety and nuclear proliferation connected with North Korea's nuclear energy programme. It aims to provide North Korea with new and proliferation-safe light water reactors, using improved technology and safety features. KEDO's funds will also be used to provide ancillary supplies of heavy fuel oil as an interim energy alternative.

*Ecu15m/yr for  
KEDO promised*

During 1996 and the first half of 1997, the European Commission negotiated, with the other KEDO partners, for the EU's full and equivalent membership on the KEDO board. There were a number of difficulties along the way. Despite an ad referendum agreement in 1996, South Korea indicated some reluctance to give the EU full rights; Germany argued the liability regime was inadequate; and the European Parliament threatened to upset the budget procedure because it had not been consulted sufficiently. Nevertheless, in July 1997 the Council of Ministers accepted the agreement, negotiated by the Commission, and the EU formally joined the following September.

There was also considerable discussion between the Member States and the Commission over who physically should represent the Community in KEDO and how that representation should be conducted. The decision was taken that the Commission would remain the main point of contact with KEDO, but, according to a Common Position agreed under the CFSP, also in July 1997, should KEDO discuss a matter outside of the competences of Euratom, then it will be up to the Council to decide what position to take and its position should be expressed by the acting EU Presidency.

## NUCLEAR SAFETY - ALWAYS AN ABSOLUTE PRIORITY

Nuclear safety is an absolute priority for the European Community. The Parliament never fails to reiterate its concerns and the Member States have no difficulty in reaching a consensus in the Council on calling for the highest possible safety standards. The responsibility for nuclear safety issues within the Community lies largely with DGXI, which has four main lines of action: radiation protection, safety of nuclear installations, radioactive waste management and civil protection. DGI takes the lead with regard to technical assistance to the CEEC and NIS, and DGXVII looks after nuclear policy in general and monitors the transport of nuclear materials.

### **Basic nuclear safety standards for radiation protection**

The most important EC legislation, in terms of radiation protection, is the highly detailed and technical Directive setting basic nuclear safety standards. In 1993, the Commission put forward a proposal for updating the existing provisions, dating from 1980 and 1984, and these took until mid-1996 to be adopted by the Council. The new Directive, which must be implemented by May 2000, is aimed at reinforcing those provisions to ensure that the general public and workers receive the best possible protection against the harmful effects of ionising radiation.

The scope of the Directive is defined in Title II. It applies to all practices involving a risk from ionising radiation emanating from an artificial source or from a natural radiation source in cases where natural radionuclides are or have been processed in view of their radioactive, fissile or fertile properties. Title III sets out the reporting and authorisation practices.

Title IV defines the dose limitation. For exposed workers, the effective dose is to be 100 millisieverts (mSv) during a consecutive five year period, subject to a maximum effective dose of 50 mSv in any one year, with Member States able to decide an annual level. For members of the public, the limit for an effective dose is to be 1 mSv in a year. However, in special circumstances, a higher effective dose may be authorised in a single year, provided that the average over five consecutive years does not exceed 1 mSv per year. Title V sets down the mechanisms for estimation of the effective and equivalent doses.

*New dose limits for workers and the public*

The provisions in Title VI set down the fundamental principles governing the operational protection of exposed workers. Title VII deals with how to tackle a significant increase in exposure due to natural radiation sources, and Title VIII deals with implementation of radiation protection for the population in normal circumstances. Title IX applies to intervention in cases of radiological emergencies, or cases of lasting exposure resulting from either the after-effects of a radiological emergency or from a former practice or work activity. In April 1998, the Commission published a Communication in the Official Journal to assist the Member States in transposing the basic safety standards into national law.

### **Additional rules on radioactive shipments**

These basic safety standards are supplemented by a 1992 Directive on shipments of radioactive waste, inspired by the Transnuklear affair, which requires the prior consent of the State of destination and a legal transaction between competent authorities. The Directive came into force in January 1994. A further Regulation, dating from 1993, on shipments of radioactive substances (excluding waste), is also temporarily in force to bridge the gap between the start of the Single Market and the introduction of new basic safety standards which will, once approved, provide harmonised systems. The Regulation prohibits frontier controls and imposes an administrative mechanism between the holder of the nuclear substance and the consignee. Further legislation exists on public information in emergencies, and on radiation protection for outside workers.

*Temporary rules on shipments of radioactive substances*

On a more ad hoc basis, the Commission provides largely formulaic Opinions, under Article 37 of the Euratom Treaty, on new radioactive waste disposal schemes. These are published in the Official Journal. In 1996 and 1997, for example, plans were approved for Windscale and Sellafield in the UK, Civaux and Centraco in France, and Loviisa in Finland. In mid-1995, the

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Commission adopted a report on the application of Article 37 from July 1990 to June 1994. It noted that some 13 positive Opinions had been issued: i.e. in which the Commission concluded that routine discharges of radioactive effluents were not liable to result in radioactive contamination, significant from the point of view of health, of another Member State. As regards potential accidents, the Commission had recommended in two cases that intergovernmental bilateral information agreements be concluded, it said.

### The Community's radioactive waste management strategy

The Community's radioactive waste management policy is based on an action plan, proposed by the Commission and endorsed by the Council in 1992. This was embellished by a Commission report and a further Council Resolution in 1994. The aims include: defining, classifying and minimising radioactive waste; ensuring an effective regulatory system for shipments (as above); developing a coordinated approach on disposal; and improving public information.

*The important 1994 Council Resolution on a waste strategy*

The 1994 Council Resolution accepted that each Member State "is responsible for ensuring that the radioactive waste produced on its territory is properly managed", but provided for the possibility of cooperation between Member States. The Council said it:

- considered the option of recycling low level waste and equipment should be explored further;
- reaffirmed the importance of efforts to reduce the volume and radiotoxicity of radioactive waste;
- took the view that research cooperation should be intensified between States;
- considered that the optimum use of national facilities should be made, bearing in mind political aspects, and that various approaches should be examined which might result in a minimisation of transport;
- considered that the management of radioactive waste should take into account the risks of long-term toxicity;
- reaffirmed that appropriate controls were needed on shipments of radioactive waste;
- emphasised the need to objectively inform the public regarding management of waste;
- considered that financial and economic instruments could play a useful role in implementing an effective strategy.

*Two DGXI budget lines for studies*

In order to carry out these tasks, DGXI has two small budget lines for studies, inside the EU and for cooperation with the ex-Soviet Bloc countries. The only widely available information on these activities emerges through triennial reports to the Council. A new report - complete with detailed statistics on each Member State - should be adopted by the Commission during 1998. One of the main conclusions of the report will be that the disposal of intermediate and high-level waste remains the main bottleneck in the industry.

A more specific policy paper on the waste disposal problem and options for long-term solutions is also expected in 1998. The Communication, assuming it achieves a consensus in the Commission, might take the same line as that put forward in a 1996 report from the OECD's Nuclear Energy Agency; i.e. that the only ethically and environmentally sound solution is geological disposal, and that governments need to be ready to take such a decision.

DGXI's programme for actions in support of a safe and efficient radioactive waste management strategy in the NIS and CEEC operates with about Ecu2-3m/yr. In the CEEC, for example, there have been studies looking at disposal facilities and whether they reach acceptable standards of safety, and at the storage of research reactor fuels. Further studies have been charting the characteristics of waste around Chernobyl, and, with the assistance of other donors, ways to decommission the Lepse nuclear icebreaker.

*International convention on irradiated fuels and waste management*

The Commission was actively involved in the negotiations for an International Convention on Irradiated Nuclear Fuels and the Management of Radioactive Waste, which opened for signature in September 1997. The UK and France, though, held out against allowing the Commission to negotiate membership for the Community. The Commission believes the EC has a range of competences which should be handled jointly rather than individually by the Member States and it may prepare, in 1998, a draft mandate for consideration by the Council.

### DGXVII's contribution to nuclear safety activities

Although DGXI manages most of the Commission's nuclear safety competences within the EU, DGXVII has around Ecu2m/yr to fund projects aimed at the safe transport of nuclear materials. The activities include the functioning of the Single Market and harmonisation; the investigation of transport incidents; emergency provisions relating to transport; assistance to the CEEC/NIS; and improving public perception of the issue. Annual calls for tender are made and projects selected by the Commission with the help of a standing working group of national experts.

In 1997, the Commission proposed embracing this annual budget, along with a budget line for work on safeguards, within the overall Energy Framework Programme (EFP) concept (Chapter Two). The proposal put forward by the Commission was called "Multiannual actions concerning nuclear safeguards and transport of radioactive materials" and required, for the 1998-2002 period, Ecu0.5m/yr for transport studies, and Ecu2.5m/year for safeguards. The inclusion of this quasi-programme within the EFP was causing, in the first half of 1998, some difficulties for a few Member States.

### Promoting the nuclear safety of installations

As with radioactive waste management, DGXI operates a small budget line to study and promote the safety of nuclear installations within the EU. The grants go to studies on topical nuclear safety issues, usually to do with harmonising safety criteria and practices between regulators or the operating utilities. In 1997, for example, special attention was paid to the reliability of water supply systems and the granting of licences for programmable systems with safety functions. In mid-1997, the Commission put out a call for tender for new projects to cover the following areas: level one of probabilistic safety assessment; determination of off-site releases of design basis accidents; safety critical software; and fuel cladding failure criteria.

*Studies on harmonising safety criteria*

By far the most important and high profile actions taken by the EU with regard to nuclear safety are the programmes and projects aimed at the ex-Soviet bloc built reactors. DGXI does support some actions directly - one cooperation project with Russia, for example, is looking at the safety aspects of the design of evolutionary pressurised water reactors (a call for proposals was published in October 1997); another invitation, published at the same time, concerns projects aimed at promoting cooperation between the nuclear regulatory authorities of the EU and the CEEC. There is also ongoing support for the Concert group, which brings together the chief regulators from both sides.

However, most of the Community's efforts are funnelled through the Phare and Tacis programmes, for which DGXI and DGXVII provide much of the technical back-up. The Commission, said in early 1998, that Ecu150m had been provided for nuclear safety projects through Phare and Ecu573m through Tacis since 1990.

DGXI also provides the secretariat for Nusac, the G24 Nuclear Safety Coordination activity. The general goal of Nusac is to promote the efficient use of available resources for improving the safety of Soviet-designed reactors in the CEEC and NIS, and to ensure complementarity of actions and avoid duplication.

*The G24 Nuclear Safety Coordination activity*

Nusac took on the objectives of the action programme approved by the G7 at Munich in 1992: operational safety improvements; near-term technical improvements to plants based on safety assessments; enhancing regulatory regimes; examining the scope for replacing less safe plants; and examining the potential for upgrading more recent plants. These objectives were reconfirmed by Nusac in July 1997 in order to steer the coordination process towards the end of the century. The Nusac participants also agreed to focus on policy issues rather than technical matters and to move from technical assistance to cooperative ventures. Nusac operates a database on nuclear safety improvement projects which remains a key element for the coordination.

### Nuclear safety a priority for Phare and Tacis

Although the Phare programme (Chapter Nine) became actively involved in upgrading the safety of nuclear plants in the CEEC quite quickly, Tacis (Chapter Ten) was slower in getting off the ground. There was an inertia in Russia where the industry found it difficult to accept that its safety standards were not up to Western safety standards. There were also more practical problems. The duration of the procurement process was severely underestimated. The recipient states were not members of the Vienna Convention covering liability so that Western contractors were unwilling to work on site. This problem has been solved only temporarily by Memoranda of Understandings with Russia, Ukraine and Kazakhstan. There were also some administrative problems with the programmes, ranging from overcoming the language barriers to internal management problems.

#### Phare/Tacis budget 1990-97 (Ecu m)

On-site assistance	248.3
Design safety	166.5
Support to safety agencies	79.1
Fuel cycle/wastes	39.5
Safeguards	18.0
Off-site emergency preparedness	12.1
G7 action plan for Ukraine	100.0
Other	61.3
<b>Total</b>	<b>724.8</b>

*Source: COM/98/134*

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*Criticism by Court of Auditors*

Following early criticism by the EU's own Court of Auditors, the separate Phare and Tacis nuclear programmes were combined into a single administrative unit in DGI; and the assistance projects, previously directed at single reactors, evolved to focus more on multi-country studies. Later, in 1997, the Court of Auditors again criticised the slowness with which Tacis-sponsored projects had been implemented in Ukraine. It noted that, faced with the ongoing inadequacies of the Tacis coordination unit for Ukraine, despite previous criticisms from the auditors, "the Commission increased project support and monitoring activities indiscriminately". This led, it said, to a diversity of bodies becoming involved in preparing and monitoring operations, causing confusion, inefficiency and a dilution of responsibilities.

*Interim evaluation of the Tacis programme*

An interim evaluation of Tacis, published by the Commission in mid-1997, found that the establishment of independent regulatory bodies in Russia and Ukraine should be seen as "a considerable achievement". It criticised activities in Russia because of the absence of a joint management unit, and developments in Ukraine because of the lack of a national policy or nuclear programme. In all countries, it said, there were still problems of nuclear liability and lack of funds to pay even wages because of non-payment by end-users. It concluded: "There is a vast potential for synergy in the assistance programmes, especially in the dissemination of the project results, but this has not yet been exploited fully."

**Moscow summit on nuclear safety**

There was an important summit in Moscow on nuclear safety between the G7 leaders and Russian President Boris Yeltsin on 19-20 April 1996. A joint Declaration issued after the meeting stated that the eight countries "are determined to act together to guarantee the safety of nuclear energy and to promote greater security of nuclear materials". It also said: "The security of all nuclear materials is an essential aspect of the responsible and peaceful utilisation of nuclear energy. In particular, the safe management of fissile materials, and comprising the materials from the dismantling of nuclear arms, is imperative, notably as a guarantee against the risk of the illicit traffic of nuclear materials."

*G8 Declaration on nuclear safety*

The statement covered a number of linked issues: safety of reactors, civil responsibility, nuclear waste, and safety of civil and military nuclear materials. The joint Declaration said: "We reaffirm our commitment to the highest internationally-defined safety levels concerning the establishment, conception, construction, operation and organisation of electro-nuclear installations. It is essential to promote a genuine culture of nuclear safety in every country with nuclear installations. . . Existing reactors which do not meet the safety levels ought to be transformed to reach an acceptable level of safety, or closed."

**The West's persistent efforts to close Chernobyl**

Of all the nuclear safety projects in the ex-Soviet bloc, it is the closure of Chernobyl which is most important to the West and to the European Community. The G7 committed itself, at Naples in 1994, to supporting Chernobyl's closure, and a formal MoU was finally signed in December 1995. It covered cooperation in power sector restructuring; the preparation of loan-financed projects "based on least-cost planning principles" for the completion of the Khmel'nitsky Unit 2 and the Rovno Unit 4 reactors; and projects for the short-term safety of Chernobyl 3 and the decommissioning of the Chernobyl plant, including the shelter for Chernobyl 4.

<b>Tacis funds committed for environment/nuclear safety (Ecu m)</b>							
	<b>91</b>	<b>92</b>	<b>93</b>	<b>94</b>	<b>95</b>	<b>96</b>	<b>Total</b>
Armenia	0.3	-	-	-	-	-	0.3
Russia	12.89	-	-	-	-	5.5	18.39
Ukraine	3.54	-	-	20.54	37.5	37.5	99.04
Regional - Armenia	-	-	-	-	-	10.0	10.0
Regional - Kazakhstan	-	-	-	-	2.5	2.0	4.5
Regional - Russia	32.61	38.0	48.5	41.0	38.0	43.5	241.61
Regional - Ukraine	3.66	22.0	30.5	24.5	18.0	22.0	120.66
Regional	-	-	21.0	2.0	12.0	21.0	56.0
<b>Total</b>	<b>53.0</b>	<b>60.0</b>	<b>100.0</b>	<b>88.0</b>	<b>108.0</b>	<b>141.5</b>	<b>550.5</b>

*Source: Tacis 1996 annual report*



The MoU said nothing specific on funding, but Ukraine and the G7 said they would “cooperate in the identification of international and domestic Ukrainian funding sources and the mobilisation of international finance in support of appropriate programme activities”. By early 1998, the international community had promised \$1.5bn (quoted figures change because of exchange rate fluctuations). At the time of the G7 commitment, the EC said it would provide Ecu100m in grants - this money was allocated through the Tacis programme between 1994-96.

Moreover, in September 1997, the Commission put forward a draft Council Decision to provide Ecu100m for making the sarcophagus over Chernobyl’s Unit 4 safe. A feasibility study, financed by Tacis and completed in 1996, estimated the cost of the project at around Ecu560m. The G7 endorsed a multilateral fund mechanism to assist Ukraine by raising finance of \$300m. The project, which aims at transforming the existing Unit 4 sarcophagus into a safe and environmentally stable system - the so-called Shelter Implementation Plan (SIP) - is composed of some 22 tasks to be executed over a period of 8-10 years. The European Bank for Reconstruction and Development (EBRD) is managing the programme finance - with Hans Blix, former director general of the IAEA in charge - through a special account called the Chernobyl Shelter Fund.

*Specific actions to assist with safety of Chernobyl Unit 4*

The EBRD is also heavily involved in the future of Chernobyl through its role as administrator of the Nuclear Safety Account. It had been planning to administer Western finance, through the Account, to Ukraine for the completion of the 1,000 MW reactors at Khmelnytsky and Rovno as part of the G7-Ukraine MoU. However, an independent panel of experts, set up by the EBRD to look at the least-cost viability of the projects, concluded, in early 1997, that the units should not be built on economic grounds. The financing therefore was put on hold. However, in 1998, it looked as though the EBRD would bring out a new study in support of completing the two reactors.

*Independent panel’s judgement of need for new Ukraine reactors*

The EBRD decision also affected the Ecu400m in Euratom loans promised by the EU. (The general principle of making over Ecu1bn in Euratom loans available for nuclear safety projects outside of the Community, of the kind promised to Ukraine, was approved by the Council in March 1994. By early 1998 no loans had yet been made although several others - for Kalinin 3 in Russia and for Kozlodui 5 and 6 in Bulgaria - were still under consideration.)

### **Western initiatives in Bulgaria, Slovakia and Lithuania**

Other individual nuclear reactors, built by the Soviets and considered to be below Western standards, have been the focus of much Western attention, and often controversy. Bulgaria has received substantial aid for the safety of the Kozlodui plant: Ecu17.75m for operational safety, Ecu11m for design safety, Ecu7.5m for support to the regulator, Ecu8.4m for waste, Ecu3.8m for support to the programme implementation unit, and Ecu3.5m for the Unit 1 reactor pressure vessel testing programme.

Bulgaria has also received funding for alternative energy supplies in winter months when units have had to be shut down, although in the 1995-96 winter Bulgaria refused to shut down Unit 1, and this caused a dispute with Brussels. During 1997, some MEPs expressed concern over the fact that despite the aid, none of the units had yet closed. The External Affairs Commissioner Hans van den Broek said there was an agreement for Bulgaria to close down Units 1-4 but only when other specific energy sources were in operation.

In the mid-1990s, there was a highly public row over EBRD and EU funding - DM412.5m and DM366.3m respectively - for completion of two partially built reactors at Mochovce in Slovakia. The loans were due for final approval in the spring of 1995 but, following its accession to the Union, Austria, with the support of other Member States, called for a delay to the financing decisions until proper assessments had been carried out. The European Parliament held an emergency debate in February 1995 and passed a Resolution asking for the financing decision to be postponed. It then convened a public hearing at which a number of significant flaws in the project deal, developed by Slovakia in collaboration with Electricite de France, were exposed.

*Row over funding for Mochovce plant in Slovakia*

Slovakia’s commitment to closing the older and relatively unsafe Bohunice plant, a pre-condition of support for the new plant, was considered less than 100%. Most significantly, though, the ability of the project to meet Western safety standards was questioned. In a second Resolution, the EP said financial aid from the EBRD and EU should only be granted under a number of conditions including verification by Euratom that EU safety standards were strictly applied; and the establishment of a contractually binding timetable ensuring the closure of Units 1 and 2 of Bohunice nuclear power plant.

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In March, the EBRD announced that the Slovak government had withdrawn its application, and that its own decision on the funding had therefore been postponed. The Euratom loan, too, was put on hold. Six months later, after more negotiations, the Slovak government said it had rejected further overtures by the EBRD because it could not accept the conditions on the closure of Bohunice and that it intended to proceed with Czech contractors and Russian financing.

### Commitments by Lithuania over Ignalina

Lithuania is in a similar position to Bulgaria and Slovakia in that it is an applicant for EU membership and will, ultimately, need to meet the Community's harsh requirements on nuclear safety. In February 1994, Lithuania signed an agreement with the EBRD for an Ecu35m grant for urgent safety upgrades to the Ignalina plant. This deal followed Lithuania's signing of the Vienna Convention and protocols on third party liability, and came with a number of strict conditions, not least that operation of both units at the plant should not be prolonged beyond the time when the reactor channels will have to be changed (i.e. after 15-20 years of operation). In addition, it agreed to submit the plant to an in-depth safety analysis under the supervision of a panel of international experts.

In fact, the international panel concluded, in early 1997, that neither of the two reactors should be restarted after their maintenance shut-downs later that year. However, Ignalina supplies up to 80% of the country's electricity and the government is unlikely to make an early decision to close it down. The Commission, though, stressed in its Opinion on the country's accession that Lithuania must follow the agreed timetable on closure of the plant (Chapter Nine).

### Developing a more refined strategy towards Eastern Europe

In March 1998, the Commission put forward a Communication aimed at sharpening its nuclear safety policy in the CEEC through the Accession Partnerships, and in the NIS through the PCAs. The activities in the nuclear area, the Commission said, "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". There is scope for relatively cheap energy savings measures, the Commission advised, and support for these would be continued through Phare and Tacis.

On nuclear safety itself, the Commission put forward new policy ideas in a section called "The way forward". As regards the applicant states, the Commission said "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". For all the countries concerned, support would be provided to authorities and operators in order to help improve their nuclear safety and security culture, it indicated. In particular, the Commission said, it would continue to provide technical assistance for all categories of reactors, to help achieve/maintain a high level of operational safety. For reactors of Soviet design which could be upgraded to acceptable safety levels, it would assist - where technically and economically feasible - in the preparation of safety upgrading which will need to be financed through normal domestic and/or foreign investments.

### The EU will have to specify its financial participation

However, the Commission also said there were a number of important issues raised by the desired early closure of the Soviet designed reactors which could not be upgraded at reasonable cost (four in Bulgaria, two in Slovakia, and two in Lithuania). These countries could generate electricity at low cost, but they had so far made no provision for decommissioning, it said. "The EU will have to specify its financial participation when a satisfactory agreement has been reached with the countries concerned, taking into account the implications of the various options in respect to future energy policies and when a proper estimate of the size of funds which might be required will be available." It noted that a Phare allocation of Ecu50m was envisaged for multi-country nuclear safety projects in 1998-99.

With respect to the NIS, the Commission proposed the following reorientations:

- to undertake more concentrated actions to improve power reactor safety, preferably on those sites seen as most problematic;
- to address problems related to the management of radioactive waste. As a first priority, this would include the examination of the feasibility of EU participation in projects related to the management of radioactive waste in northwest Russia, preferably in the context of the Barents Euro Arctic Council;
- 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 continue to assist Ukraine in the closure of Chernobyl by the year 2000 in line with the G7-Ukraine MoU including, through the possible provision of a Euratom loan, the completion of the two reactors at Rovno and Khmelnytsky. Progress on the implementation will be the subject of a separate Communication during 1998;
  - to place nuclear safety as a priority high on the agenda of the PCAs and to agree on objective and measurable commitments and conditionalities, in particular with Russia.

## ASSESSMENT

Although informal attempts are being made to make nuclear issues at the Community level more democratic and more transparent, there is still a very long way to go. Consider the Euratom Treaty's sole anachronistic objective, as defined in Article 1: "*It shall be the task of the Community to contribute to the raising of the standard of living in the Member States and to the development of relations with other countries by creating the conditions necessary for the speedy establishment and growth of nuclear industries.*"

Unlike the ECSC Treaty which expires in 2002, the Euratom Treaty has no expiry date. Nevertheless, one could put forward a quasi-legal argument that the Treaty has already expired. Because 14 of the 15 Member States have now come to reject any growth in nuclear power, the Article 1 objective can no longer be considered valid. Alternatively, one could say, as the Commission does in its latest PINC, that the nuclear industry in Europe is a mature industry. By that argument, the objective in Article 1 is also more than outdated, it is invalid - there is no need to create the conditions for it to grow, if it is already mature. The consequence of this line of reasoning is straightforward. Whichever way Article 1 is viewed, it is invalid. Therefore, if the Treaty's objective has been removed, the Treaty itself cannot be considered valid. It must be considered defunct.

*An argument suggests the Euratom Treaty has already expired*

Although this particular argument is not common currency, there is a growing movement, led by the European Parliament, for a revision of the Treaty. The main difficulty MEPs have with it is that it gives them very little say over nuclear policy issues. It does not even require the Commission to consult the EP over the illustrative nuclear programmes. (In fact, the Commission made a point of consulting MEPs over the most recent PINC, but it was a wasted gesture. The Parliament's failure to adopt an Opinion was a poor signal - if it wants more responsibility on such matters, it needs to have something to say.)

A specific grievance is that, although the Treaty does call for consultation of the Parliament on international agreements (in Article 206), the Council almost always completely ignores the EP's views. The Parliament's foreign affairs committee, for example, was furious because it had not been consulted over the KEDO agreement. A committee working document in preparation for an own initiative Opinion in 1998 said: "*This neglect of Parliament by Council and Commission should be seen in the light of persistent criticism by Parliament of its lack of a role in matters falling under the Euratom Treaty and its unheeded calls for revision and updating of that Treaty.*" In spring 1998, the committee was debating the possibility of withholding payments (one area in which the EP does wield power) for KEDO in order to persuade the Council and the Commission into an inter-institutional agreement on consultation over Euratom agreements.

*Parliament's grievances over lack of consultation*

Indeed, the Parliament pushed hard in the run-up to the Amsterdam IGC for a revision of the Treaties with tentative support from the Commission. However, there was never any discussion or concrete proposals (at least not in the public domain) about how this might be done. Within the Council there was some support for a revision of Euratom. Ireland made a useful point in the IGC about the need for change before the accession of new Member States from Eastern Europe. At the end of the day, though, the IGC never got near amending Euratom. One or two Member States, not least France, have consistently refused to consider changes because they fear any tampering, in the present climate, would only weaken the existing pro-nuclear terms. Thus, the so-called democratic deficit remains.

There is also an important point about transparency. Nuclear issues at the EU level still remain unnecessarily confidential, even though there is little to warrant such a special attitude. The Commission, or at least some elements within it, are trying to allow, if only informally, a more transparent attitude to Euratom business. It is certainly taking a more flexible attitude in its dealing with the Parliament, to the point of holding briefing sessions for the committees in camera. But this is a smokescreen. Such secret briefings do not allow the committee any more

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influence in the outcome of the Council's deliberations, they simply make it feel more involved. The MEPs should not be taken in - they should no more accept closed briefing sessions on nuclear affairs than on any other issues. Any other approach would only undermine their constant calls for transparency.

Despite two serious challenges in the Court of Justice, the Commission's nuclear fuel supply policy has survived the decade intact. Neither KLE's challenge to the unofficial limits on imports of CIS material, nor ENU's claim that the Agency should be responsible for all EU production found a flaw in the way the Euratom Supply Agency operated. However, it is interesting to note that, between 1994, when KLE's contract was denied (because of the 20-25% limit on CIS imports) and 1996 when CIS material accounted for over 40% of supplies, there was no change in the formal/legal status of EU-Russian nuclear trade.

Indeed, even though the EU's PCA with Russia called for the two sides to fix a nuclear agreement by the end of 1997, there was not even a draft mandate for negotiating such an agreement on the Council's table by April 1998. The Commission has repeatedly asked Moscow for comments on pre-drafts of what such an agreement could include, but, over the years, there has been so little response that the Commission has been unable to make progress. The hope is that, through the PCA dialogue (Chapter Ten), it may be possible to bring more pressure to bear.

### *Future challenges for Euratom safeguards*

A lot of DGXVII personnel are employed in the Euratom Safeguards Directorate although this is an aspect of the Commission's work which is rarely publicised. The Directorate cannot even find the time and/or money to produce regular reports on its work. Things are, though, apparently changing, in three ways - all of which, it is explained, will place constraints on the necessary human and financial resources! Firstly, Benavides, the Director-General, has said the geographical basis will be expanded as more countries join the Union, so that the EU's "centre of gravity" will move closer to Vienna, the IAEA's base. Secondly, Euratom's workload is set to grow because of the need to safeguard ex-weapons material. Finally the complexity of the task facing Euratom will increase as more large plutonium handling plants are commissioned or reach full throughput.

### *Difficulty of funding replacements for old nuclear plants in the CEEC/NIS*

Nuclear safety in Western Europe is a relatively run-of-the-mill policy area (at least compared with other nuclear affairs). There are limited competences, some with small budgets to help study and improve waste management or installation safety. However, the nuclear safety of Soviet-designed reactors in Eastern Europe remains a major and high profile policy objective of the European Community. Nuclear safety is among the top priorities in the Accession Partnerships of those countries with installations considered at risk - Lithuania and Bulgaria for example. And because of their anxiety to become Member States, the Commission will certainly be able to keep up pressure on these countries, through the accession negotiations, to close reactors. But, it will be far from easy for them to find and fund replacement energy supplies. Similarly, the EU's determination to see Chernobyl closed dominates its relations with Ukraine. Again, money and international favours are offered up as bribery, but 2000 is just round the corner and there was still no agreement on backing for the replacement reactors by April 1998.