

# **Nuclear safety in an enlarged European Union. The European Commission's "Nuclear Package"**

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On 6 November 2002, the European Commission adopted what is known as the "nuclear package". This is a series of documents centred around maintaining a high level of nuclear safety in a soon to be enlarged European Union (EU). Included in this package were two proposals for new "EURATOM Directives" – pieces of European nuclear legislation.

## **The nuclear package**

The nuclear package contained five sets of documents. Three of these were formally adopted by the Commission:

- A Communication from the Commission to the Council and to the European Parliament on "Nuclear Safety in the European Union" [COM(2002) 605 final]
- A Communication to the Commission « Trade in nuclear materials with Russia » and a proposal for a Council decision instructing the Commission to negotiate a co-operation agreement between the European Atomic Energy Community and the Russian Federation in the area of trade in nuclear materials
- A proposal for a Council Decision to raise the ceiling for Euratom loans for nuclear installations from 4 billion euros to 6 billion euros<sup>2</sup>

The two other documents were draft proposals for new legislation that were "approved" by the Commission for submission to a group of experts from the Member States for its opinion. They were:

- A draft proposal for a Council Euratom Directive « Setting out the basic obligations and general principles for the safety of nuclear installations »
- A draft proposal for a Council Euratom Directive «The management of spent nuclear fuel and radioactive waste»

The Group of Experts gave their opinion on the drafts in December 2002 and the two proposals were formally adopted by the Commission in January 2003 [COM(2003)32 final].

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<sup>1</sup> The views expressed here are those of the author and may not represent those of the European Commission

<sup>2</sup> Proposal for a Council Decision amending Decision 77/271/Euratom on the implementation of Decision 77/270/Euratom empowering the Commission to issue Euratom loans for the purpose of contributing to the financing of nuclear power stations COM(2002) 457 final

## Two driving factors

In very general terms there were two main driving factors behind the preparation and adoption of the nuclear package. The first is the question of security of energy supply, especially with the strong links between energy production and climate change. The second was the forthcoming enlargement of the European Union and the high profile this has given to nuclear safety issues.

### Security of energy supply

In November 2000, the European Commission adopted a Green Paper on security of supply or – to give it its full title – “Towards a European strategy for the security of energy supply” [COM(2000) 769final]<sup>3</sup>. Since that date it has been the subject of an intensive debate around a number of essential questions which “shed light on the energy choices to be made”.

The Green Paper pointed out that the future of nuclear energy is uncertain, particularly in Europe and depends on several factors including:

- a solution to the problems of managing and stocking nuclear waste,
- the economic viability of the new generation of power stations
- the safety of reactors in Eastern Europe, in particular applicant countries
- policies to combat global warming.

The Commission also concluded that “Nuclear cannot develop without a consensus that gives it a long enough period of stability, bearing in mind the economic and technological constraints of the industry. This will only be the case when the waste issue finds a satisfactory solution with maximum transparency”.

This view is clearly shared by the Public in Europe. The European Commission regularly conducts EU-wide public opinion surveys during which 16 000 people are interviewed on a variety of topics. During a recent “Eurobarometer” survey, people were given a list of eight possible priority topics for government action from which they could select three<sup>4</sup>. The majority of people identified food safety (52%), but this was closely followed by nuclear safety (50%) and then by management and disposal of radioactive waste (47%). This may be compared with the fact that road accidents – that result in thousands of deaths across the EU each year – was only identified as a priority by 19%. Safety of oil and gas transport was identified by 16%.

In spite of these concerns the Commission endorses the view that there is a need to keep the nuclear option open. This is not just because it is one of our most secure energy resources – very diversified sources of supply, a fuel whose high energy density makes it easy to stockpile and extensive fuel cycle facilities within the Community result in an extremely low risk of supply interruption. But also because it is the only major source of electricity that does not produce any significant quantities of greenhouse gases.

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<sup>3</sup> Office for Official Publications of the European Commission, ISBN 92-894-0319-5

<sup>4</sup> Eurobarometer Special Survey EB57.0 “Public opinion survey on energy: issues, options and technologies” EUR 20624. Carried out between February and April 2002

## EURATOM, nuclear safety and Enlargement

The Euratom Treaty, which defines the framework for the European Union's activities in the nuclear sector, did not explicitly establish a Community responsibility for nuclear safety.

The Treaty did require the establishment of "uniform safety standards" to protect workers and the general public. This has enabled the preparation and implementation of important legislation in the fields of radiation protection under Chapter III of the Treaty. There is also extensive legislation on the safeguarding of nuclear materials.

However, legislation in the field of the safety of nuclear facilities and management of radioactive waste has not developed in parallel.

On the other hand, there is a well-developed "European safety perspective" as a result of voluntary co-operation between the main nuclear actors at EU level since the 1970s. It is built on fundamental common principles that form the basis of all the EU national nuclear safety regulations and stated in various internationally accepted documents.

This, albeit slow, route to harmonisation of regulations and practices appeared acceptable to most players until it was realised that the next proposed enlargement of the European Union – to include countries such as Lithuania, the Czech Republic, Hungary and Slovakia - could result in a number of Soviet-designed nuclear reactors being located within the Community. This brought calls for these "Candidate Countries" to meet Western safety standards.

For the first time in its history, the European Union started the process of carrying out the overall evaluation of nuclear safety in an independent State, in this case in all the candidate countries. Towards the end of 2000, a Working Party on Nuclear Safety (WPNS) was set up by the European Council's Atomic Questions Group (AQG) to undertake this assessment for those countries with civilian nuclear power plants. The Working Party adopted its report in May/June 2001. It contained a wide range of recommendations for safety improvements in the candidate countries.

This was good as far as it went, but it was soon realised that the strict requirements being imposed on the candidate countries as part of the accession negotiations could not, paradoxically, be imposed on existing Member States. Furthermore, the public needs to be reassured that the highest levels of nuclear safety are being achieved across the Union and that after the current candidate countries became Member States a high level of safety could continue to be enforced in these countries.

The main negotiations regarding nuclear safety with the countries that are now expected to join the Union in May 2004 have now been concluded. However, the debate on nuclear safety in the context of enlargement raised questions about what are Western standards for nuclear safety. These questions proved very difficult to answer – at least in a clear *and transparent* way to the non-expert.

In recognition of the importance of immediate and effective action, the Laeken European Council in December 2001 committed itself to maintaining a high level of nuclear safety in the Union and stressed the need to monitor the safety of nuclear installations in general. It called for regular reports from all Member States on nuclear safety.

As the energy commissioner, Vice-President Loyola de Palacio explained to the European Parliament, the current situation is unsatisfactory because:

- there are no equivalent standards and criteria for comparable situations across the EU;
- the strict requirements currently being imposed on the applicant countries as part of the accession negotiations cannot, paradoxically, be imposed on Member States;
- the public needs to be reassured that the highest levels of nuclear safety are being achieved across the Union and that when the current applicant countries become Member States a high level of safety can continue to be enforced in these countries.

### **The question of a legal base**

Any new European legislation must have a legal base in one of the Treaties establishing the Community. In the nuclear sector, new legislation is most commonly based on the Euratom Treaty.

However, in the past, many people expressed the view that the Euratom Treaty did not give the Community and competencies in the area of nuclear safety. This issue came very much to the fore when the Commission proposed that the European Atomic Energy Community join the international Nuclear Safety Convention<sup>5</sup>. When the Member States agreed to this they followed the line that Euratom had no specific competencies for nuclear safety and restricted the Community to only the radiation protection parts of the Convention.

The matter was presented to the European Court of Justice and, after long and extensive deliberations, the Court made a very important ruling on 10 December 2002<sup>6</sup>. The Court concluded that *it is not appropriate to draw an artificial distinction between the protection of the health of the general public and the safety of sources of ionising radiation*. It went on to rule that, in the context of the Nuclear Safety Convention, there is Community competence in each of the following areas:

- the establishment of a legislative and regulatory framework to govern the safety of nuclear installations;
- measures relating to the assessment and verification of safety;
- emergency preparedness;

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<sup>5</sup> The Convention on Nuclear Safety. (Text available from the IAEA – INFCIRC/449 of 5 July 1994)

<sup>6</sup> Judgement of the Court of Justice in Case C-29/99 (*Commission of the European Communities v Council of the European Union*)

- the siting of a nuclear installation; and
- the design, construction and operation of nuclear installations.

This ruling opened the path to greater harmonisation in the area of nuclear safety at the level of the European Union.

The new proposals of the Commission, outlining a new EU approach to nuclear safety and radioactive waste management, should be viewed in this context.

### **A Community approach to nuclear safety**

The future approach to nuclear safety at a Community level is set out in the proposed new Directive “Setting out basic obligations and general principles for the safety of nuclear installations”. This is usually referred to as the “Safety Directive”.

In brief, what this Directive would do is take the methodology that the Member States themselves used to evaluate or verify the level of nuclear safety in the candidate countries – a methodology based mainly on national reports and peer reviews by nuclear regulators - and to formalise it into European law. It could then be applied to all Member States – both old and new - in an enlarged European Union.

Member States will be required to produce regular reports on all aspects of nuclear safety in their country and these will be the subject of “peer reviews” and compiled into a regular report on nuclear safety in the EU. This reporting will be backed up by a system of verification that will rely mainly on the technical experts from national safety authorities. The focus of this verification system will be on checking the ways in which national safety authorities carry out their tasks in order to assure the Community that there is an equivalent level of nuclear safety regulation and control throughout the EU.

In addition, given the difficulties the Member States had in setting up and making the safety evaluations because of the absence of common standards for nuclear safety, the Directive goes on to propose that the Union set about building up a body of European standards. These would, at least in the first instance, be based on the standards developed at the International Atomic Energy Agency (IAEA) in Vienna.

The Directive takes over many of the Nuclear Safety Convention's basic requirements. But a Community approach to nuclear safety cannot, ultimately, be restricted simply to taking over the relevant provisions of the Convention. However, while the Convention does not contain detailed technical rules, it lays down a precise legal framework constituting the basis for a nuclear safety system. It provides a starting point on which there should be agreement since all the Member States have already to implement them, supplemented by other elements.

In practical terms, the further development of European safety standards will be done in close co-operation with experts from the Member States. It will take fully into account the results of the work of the International Atomic Energy Agency (IAEA) in the field of nuclear safety an area in which the Agency has been working for many years. It will also take into account the results of the work of the Commission's expert working group on nuclear safety over the past 28 years and other relevant bodies. The

proposals will also need to be reviewed by other committees before being formally adopted by the Member States themselves. In this context it is worth noting that the Western European Nuclear Regulators Association (WENRA) has already been studying the possible harmonisation of nuclear safety standards in Europe for two or three years

### **Decommissioning funds**

There is also a small part of the “Safety Directive” that deals with the rather sensitive – but very important – issue of decommissioning funds. This was not initially foreseen when the Safety Directive was drafted, but was inserted into the package in response to a proposal by the European Parliament.

In March 2002, the European Parliament voted with a large majority to adopt an amendment to a Directive on opening of the electricity market. This amendment called for decommissioning funds to be set up and managed in such a way that sufficient funds would be available when necessary for the safe decommissioning of all nuclear power plants, including for the management of the wastes. Moreover, the amendment said that the funds should not be used for any other purpose than decommissioning.

The primary objective of the proposed new European legislation in this area is to make sure that sufficient resources are collected over the operating lifetime of an installation to cover all end-of-life nuclear liabilities.

Normally, the necessary resources will have to have been built up by the plant operator during the active life of the nuclear installation. However, it is not simply a question of collecting money but of managing it in such a way that it is available as and when required over a long period of time. Furthermore, because of the size of the funds, there is concern that they are managed in such a way so as not to disrupt the electricity market.

In order to meet the primary objective and other concerns, the legislation aims at creating decommissioning funds that are independent from the regular accounts of the operators and specifically earmarked for the decommissioning of their nuclear installations. In other words, the funds would be “segregated” or “ring-fenced”. Only in exceptional cases, where duly justified reasons make such a separation of funds impossible, the management of the funds could continue to be undertaken by the operator, provided that the availability of assets to cover the costs of decommissioning operations is guaranteed.

The proposed legislation covers the decommissioning of *all nuclear installations* – not just nuclear power plants. While the funds are referred to as “decommissioning” funds for simplicity, they must also cover *all nuclear liabilities* that remain at the end of an installations normal life. In other words, they must cover the management of any remaining spent fuel and radioactive waste, including disposal.

The present proposal leaves a great deal of the detail concerning the size of the funds, how they are to be collected and how they are to be managed to the individual

Member States. This is reasonable given the variety of financing schemes presently in use throughout the Union which will take some time to harmonise and the fact that Member States will be ultimately responsible for making sure that decommissioning is completed to a high standard of safety.

### **Management of spent nuclear fuel and radioactive waste**

The use of nuclear energy to generate electricity results in the production of spent nuclear fuel and radioactive waste. In the European Union – as in other regions of the world - the most hazardous and radiologically toxic forms of this material are presently held in temporary storage facilities. None has yet been disposed of. In the meantime, accumulations of this material continue to grow. This situation must change. It is simply not sustainable. What in the past might have been regarded as technical reasons for delaying decisions have now become excuses for failing to make progress.

The proposed legislation – usually referred to as the “Waste Directive” - sets out to address this issue. Its objective is to bring about progress towards the safe long-term management of spent nuclear fuel and radioactive waste. While the emphasis of the Directive is on high-level waste – including spent nuclear fuel that is to be disposed of directly – it does cover all forms of radioactive waste and all spent nuclear fuel regardless of the management route followed (reprocessing, storage or direct disposal).

The Directive is very much inspired by the Joint Convention on the safety of spent nuclear fuel and radioactive waste management<sup>7</sup>. It includes a number of “basic requirements” for safe management that will be quickly recognised by all who have studied the Convention. Many of these measures are part of current policy in many Member States.

The Directive requires that each Member State establish a clearly defined programme for radioactive waste management covering all radioactive waste under its jurisdiction and covering all stages of management including disposal. The programme must also cover the management of all spent nuclear fuel that is not subject to reprocessing contracts or, in the case of research reactor fuel, take-back agreements. In particular, the programme shall specify an approach to long-term management and disposal with a definite timetable for each step of the process. Where there is no safe and sustainable alternative to disposal available, a small number decision points must be included in the programme. These include firm dates for authorisation for both development and operation of waste disposal facilities.

The Member States must report at regular intervals on their programmes and the Commission, with the help of national experts, will review these reports and publish its own report on the situation regarding radioactive waste management in the Union.

Finally, the Directive aims to encourage more – and better – research on radioactive waste management. The Commission’s concern here is two-fold:

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<sup>7</sup> The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Text available from IAEA – INFCIRC/546 (24 December 1997)

- First, the level of research on radioactive waste management is presently inadequate. From looking at the level of research being carried out in those countries that are the most advanced in management of their waste, and often closest to identifying disposal sites, a figure was estimated for the amount of research that is required relative to the amount of nuclear electricity that is produced. This appears to be a reasonable application of the “polluter pays” principle. The amount is around 500 000 euros/year for every terawatt-hour of nuclear electricity generated. Only two or three of our Member States spend this much on radioactive waste research.
- Secondly, the research that is done could be more effectively co-ordinated. The Commission plans to introduce proposals to achieve this in the coming months.

### **Summary**

The objective of the nuclear package, in particular of the proposed new legislation, is to try to provide better guarantees of a high level of nuclear safety throughout an enlarged European Union. In particular:

- It will promote the use of good practices and the development of common standards for all types of nuclear installations;
- It will require the establishment of segregated funds that will cover all nuclear liabilities that remain at the end of life of nuclear installations, including for the management of the spent nuclear fuel and waste;
- It will require Member States to establish clearly defined programmes for waste management, including a firm time scale for disposal, and encourage a higher level and better co-ordinated research across the Union.

The proposals do not depend on future decisions about the role of nuclear energy. In the Commission’s view they should be adopted by the European Council before the end of 2003. They should then be implemented as quickly as possible – preferably before enlargement takes place - regardless of any changes in policy on the nuclear option.