



# Assessment of latest EU Nuclear Package

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30 March 2009

## Executive summary

The draft directive on nuclear safety, published in 2008, states its objective is to *“achieve, maintain and continuously improve nuclear safety in the Community and to enhance the role of the regulatory bodies”*. However, the proposal does not seek to introduce powers that would enable it to achieve this objective and will have no additional safety value.

The Commission and the other EU institutions are in a difficult position regarding nuclear power due to the establishment and authority of the EURATOM Treaty and the failure to reform the Treaty over the subsequent 50 years. The result is that **the EU does not have binding nuclear safety standards that would help ensure that the best available technology and practises are operated throughout the Union**. This is despite the environmental, economic and public and occupational health and safety justifications for having such standards. There appears to be no intention to introduce standards on these lines.

The present Commission proposal is the third attempt within a decade to introduce new rules on nuclear safety. However, **the successive legislative proposals on EU nuclear safety rules have gotten progressively weaker**. The first, in November 2002, called for the *‘the establishment of common standards and control mechanisms in order to guarantee a high level of safety’*. However, the 2002 proposal was quietly withdrawn and in the revised proposal in 2003 this requirement was removed and replaced by Community mechanisms to ensure adherence to common nuclear safety principles, notably including a Community verification scheme. However, the latest proposal for a directive has now excluded this mechanism and there will be no Community verification. Instead the draft directive will only enforce the requirements of the International Atomic Energy Agency’s Convention on Nuclear Safety (CNS). This requires only the publication of an annual report on the status of the nuclear sector and subjecting the report to peer review by other contracting parties of the Convention. All Member States that operate nuclear power plants are already contracting parties to the Convention. The Commission supplies no examples of where an EU Member State has failed to comply with the Convention.

**The main criticism of the current draft is that it will bring no additional safety requirements** and seems to be legislation only for the sake of legislating, and that it. This view was even raised by the Commission’s Impact Assessment Board, which twice voiced concerns over the lack of added value of the directive.

**There are real and justified concerns over nuclear safety standards and practices being deployed in the EU**. As a general trend, the safety margins of nuclear facilities decrease as they approach the end of their design lives. As the Commission has noted, *‘a large number of currently operating plants in the EU will come to the end of their originally foreseen lifetimes before 2030’*.<sup>1</sup> Consequently, there is a real need for measures which help reduce nuclear risks.

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<sup>1</sup> European Commission 2008; Commission Staff Working Document, Accompanying document to the Proposal for a Council Directive (Euratom) setting up a Community framework for Nuclear Safety Impact Assessment, SEC (2008) 2892, 26<sup>th</sup> January 2008

If the Commission believes it should act on nuclear safety and that “uniform safety standards as required by Article 2(b) of the Treaty are applied” then it must propose legislation to achieve this for example by *'the establishment of common standards and control mechanisms in order to guarantee a high level of safety which takes into account technological developments'* as originally proposed in 2002. The European Council has clearly called for action in this area, notably stating that nuclear safety must be enhanced “*so it reaches a level corresponding to the technological, regulatory and operational state-of-the-art in the Union*”<sup>2</sup>.

It has been argued that the introduction of some legislation, however weak, is better than no legislation and that the current directive is a first step to greater harmonisation of European nuclear safety standards. However, **as the directive as presently drafted will in fact undermine nuclear safety in the EU** as it:

- Creates the impression that common EU safety standards are in place, when they are not, and thus reduces the incentive for their introduction.
- Gives rise to an inconsistency and potentially undermines other IAEA conventions to which Member States are signatories. For example, are the other Conventions now perceived as of secondary importance or does the Commission intend to bring forward similar directives for the Nuclear Waste Convention, the Early Notification Convention etc?
- Introduces a two-tier enforcement mechanism within the CNS, one that is based on peer review and the other on multinational legislation.

Rather than introduce an enforcement mechanism of questionable value for an existing international convention, **the draft directive must propose a mechanism which will introduce and enforce common safety standards that require 'state of the art' or 'best available' technology and practices.** It must also ensure that regulatory regimes on these lines are introduced to all nuclear facilities in operation in the EU. Only then can EU citizens be confident that all that can be done is done, in order to reduce the risk of nuclear accidents. Unless this is achieved the directive should not be adopted.

On a procedural note, it is stated that the basis for this proposal is Article 31 of the Euratom Treaty, in connection with Article 32 thereof. Article 31 requires that the basic standards are worked out by the Commission, ‘after it has obtained the opinion of a group of persons appointed by the Scientific and Technical Committee’ known as the article 31 Group of experts. It appears, from the Impact Assessment Report, that the Article 31 expert group has not been consulted on this directive. This is clearly an oversight and its opinion must be sought prior to the formalisation of the proposal and the granting of an opinion by the Parliament.

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<sup>2</sup> European Council - Justice and Home Affairs, Press Release Information: Brussels (24-09-1998) - Document 11282/98 (Presse 302).

## 1. Introduction

In 1957 when the European Atomic Energy Community (Euratom) was founded any references to the need for universal nuclear safety standards was conspicuous by their absence. The 1995 White Paper on Energy Policy makes this much clear as it states: -

*“The European institutions have responsibilities under the Euratom Treaty, which permit the development of nuclear energy in conformity with the rules and policies at a national level”<sup>3</sup>* - (emphasis added).

It has been said that ‘Seveso’ Directive - ‘On the Major Accident Hazards of Certain Industrial Activities’- is the section of the EU Acquis that nuclear safety standards would most comfortably fit. However, Article 2 of the 1982 Directive states that the Directive does not apply to “nuclear installations and plant for the processing of radioactive substances and material”<sup>4</sup>. Later revisions of the Directive have left in place this exclusion for nuclear installations. However, in 1975 the Council of Ministers did adopt a resolution “The technological problems of nuclear safety”<sup>5</sup> which is said to remain important for promotion of co-operation in the field of nuclear safety, as the resolution calls for:

*“The progressive harmonisation of safety requirements and criteria in order to provide for an equivalent and satisfactory degree of protection of the population and of the environment against the risk of radiation resulting from nuclear activities and to assist the development of trade”.*

The lack of definitive safety standards for accession countries has been noted by a number of EU institutions and reports. The Court of Auditors, in its February 1999 report, comments by saying:

*“At the end of 1997, owing to the absence of a binding legal basis, there was still no formal consensus at [the] European level concerning technical standards in the area of the design and operational safety of nuclear installations. The 25 basic nuclear-safety principles published by the IAEA are still implemented in accordance with each Member State’s own technical standards and regulations, which has not facilitated the action the EU has been taking with regard to the safety authorities in the CEECs and the NIS”.*<sup>6</sup>

The European Parliament also noted the lacking in safety standard and made the following as statement in their resolution of March 1999:

*“Calls on the Commission to seek an accord on nuclear safety standards and regulations for the construction and operation of nuclear power stations, the fuel*

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<sup>3</sup> An Energy Policy for the European Union, White Paper, Com (95) 682.

<sup>4</sup> Council Directive 82/501/EEC of June 24 1982 ‘On the Major Accident Hazards of Certain Industrial Activities’, Official Journal L 230, 5/8/82, pp 1-18

<sup>5</sup> Council Resolution of 22<sup>nd</sup> July 1975 (OJ C185 of 14<sup>th</sup> August 1975)

<sup>6</sup> Court of Auditors Special Report 25/98, 9<sup>th</sup> February 1999, page 10, paragraph 3.1

*cycle and transport conditions with the CEEC and NIS, within the framework of the International Convention on Nuclear Safety and with EURATOM, if and when EURATOM guidelines are established”<sup>7</sup>*

The lack of a definitive safety standard, International or Western European, has impacted on the wording of the Commission and Council of Ministers positioning on the required safety standard and has resulted in a number of different pronouncements.

- Agenda 2000 (July 1997): *“Where the safety of Soviet-designed nuclear power stations, which are in operation or under construction, can be upgraded to meet International Safety Standards, modernisation program should be fully implemented over a 7-10 year period”<sup>8</sup>.*
- Commission’s Document (March 1998): *“to bring the general standard of nuclear safety [including the management of radioactive waste] up to a level that is comparable to that which prevails in the EU”<sup>9</sup>.*
- Council of Ministers (September 1998): nuclear safety must be enhanced *“so it reaches a level corresponding to the technological, regulatory and operational state-of-the-art in the Union”<sup>10</sup>.*
- Council of Ministers (December 1998): *“to cooperate to help improve nuclear safety in the candidate States with the aim that they ensure that the technological and operational safety levels are aligned with current prevailing safety practice in the Union”<sup>11</sup>.*
- In November 1999 the EU, through EURATOM acceded to the 1994 Convention on Nuclear Safety.<sup>12</sup>
- Communication on Nuclear Safety (2002): *It is, however, undeniable that maintaining a high level of nuclear safety is one of the tasks assigned to the European Atomic Energy Community. Nuclear safety and radiation protection are now two closely linked concepts serving a common health protection objective. Consequently, it is now no longer possible or desirable to separate these two disciplines. Hitherto, the Community has not made full use of its powers with regard to nuclear safety”<sup>13</sup>.*

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<sup>7</sup> European Parliament Resolution, Nuclear Sector related Activities for Third Countries, 11<sup>th</sup> March 1999

<sup>8</sup> Agenda 2000, 1. For a Stronger and Wider Union, European Commission, July 1997, page 67

<sup>9</sup> Com 134, page 9

<sup>10</sup> European Council - Justice and Home Affairs, Press Release Information: Brussels (24-09-1998) - Document 11282/98 (Presse 302).

<sup>11</sup> General Affairs Council: Reaffirming its commitment to assist applicant countries to improve nuclear safety and to develop medium and long term energy strategies for the replacement of the less safe nuclear power reactors: 6<sup>th</sup> December 1998

<sup>12</sup> 1999/819/Euratom: Commission Decision of 16 November 1999 concerning the accession to the 1994 Convention on Nuclear Safety by the European Atomic Energy Community (Euratom) (notified under document number C(1999) 3223) Official Journal L 318 , 11/12/1999 P. 0020 - 0020

<sup>13</sup> COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT Nuclear safety in the European Union Brussels, 6.11.2002 COM(2002) 605 final

## 2. History of nuclear safety standards in the EU

Nuclear power has a different relationship to the European institutions than that of the other energy sectors; in fact the relationship is quite unlike any other industrial activity. This is due to the existence and rules of the Euratom Treaty. As one of the founding treaties of the now European Union, the Euratom Treaty was designed to support the development of nuclear power, citing it as '*an essential resource*'. Despite, the ongoing process of reform and merger of the EU Treaties and institutions in general, the Euratom Treaty has remained a separate legal entity to the rest of the Union. Examples of this include nuclear power having its own rules for the adoption of legislation (no co-decision with the European Parliament) and its own research and development budget. While the other founding Treaties of the EU have lapsed (the European Coal and Steel Treaty) or been replaced (the Treaty of Rome) the remit and scope of the Euratom Treaty has not significantly changed and surprisingly does not include a responsibility for the setting of nuclear safety standards, instead it regulates the health and safety of workers and the general public.

The lack of binding nuclear safety rules in the EU was highlighted during the largest enlargement process, when ten new Member States joined in 2004, as a number of candidate countries operated nuclear reactors that raised significant safety concerns. As a benchmark, during the unification of Germany, the entire fleet of Soviet designed reactors which were in operation or under-construction were closed or abandoned. This affected all generations of the light water reactors, the VVER 440-230s (Greifswald units 1-4, operating); VVER 440-213 (Greifswald unit 5, operating); and at Stendal (VVER 1000, under construction). Their closure was based on a recognition that to attempt to bring them to those standards in operation in former Western Germany would be either technically impossible and/or economically unjustifiable.

In the candidate countries there were Soviet designed reactors in operation in Bulgaria, Czech Republic, Hungary, Lithuania and Slovakia, while reactors built by Western contractors were also in operation in Slovenia (Westinghouse, US) and Romania (AECL, Canada). Despite the experience in former Eastern Germany the Commission made clear, in the document '*Agenda 2000*', its views on nuclear safety in accession countries, when it stated:

- The first generation of reactors: the VVER 440-230 and RBMK designs cannot be economically upgraded to an acceptable safety standard and need to be closed. The reactors in question were already the subject of agreements that laid out closure dates and conditions. Agenda 2000 called for these agreements to be abided by.
- The second generation of reactors: the VVER 440-213 and VVER 1000 designs that are in operation or under construction can be economically upgraded to meet international safety standards. The Commission stated that an upgrading program should be fully implemented over the next ten years.
- Western design reactors in operation and under-construction in accession countries require monitoring and assessments need to be undertaken to

ensure that the operation and construction was in line with the appropriate safety standards.

In three of these countries first generation designs were in operation; in Bulgaria four VVER 440-230; in Slovakia two VVER 440-230 and in Lithuania two RBMK reactors. For a number of years the G7 and the EU had sought the early closure of these reactors and the accession offered an important political leverage to achieve this objective. Therefore, part of the Accession Partnership Agreements included specific closure dates for these reactors. The table below gives details of the accession partnership dates as well as those originally proposed. As can be seen the reactors in question were granted on average seven years additional operational life.

Nuclear Power Plant	Reactor	Original Closure Dates in Agenda 2000	Accession Partnership Date
Kozloduy: Bulgaria.	Unit 1 and 2 Units 3 and 4	Spring 1997 End 1998	2003 2006
Ignalina: Lithuania.	Unit 1 Unit 2	1998 2002	2005 2009
Bohunec-V1: Slovakia	Units 1 and 2	2000	2006-8

Whilst the closure dates were signed into the Accession Partnership Agreements, for the upgrading requirements for the other reactors designs, the Commission and the EU in general, had little or no enforcement requirements, especially once the countries had joined the European Union. The Commission also noted that *'A new Community reference framework on nuclear safety standards is therefore indispensable. It would be inconceivable for the Union to monitor nuclear safety in just the new Member States but not in the rest of the enlarged Union'*.

The Commission sought to rectify this situation and in November 2002 published a draft proposal *'Setting out basic obligations and general principles on the safety of nuclear installations'*. This stated that:-

*"In order to attain the Community objectives regarding radioprotection (...), it is essential as a first stage to define the basic obligations and general principles on the safety of nuclear installations (...). This will at a later stage be complemented by the establishment of common standards and control mechanisms in order to guarantee a high level of safety which takes into account technological developments"*.

These standards would be legally enforceable and applied throughout the EU. The proposal was for a framework directive, which would lead to the introduction of a number of directives addressing nuclear safety.

The proposed safety legislation was, when drafted and discussed internally by the Commission, one of three new nuclear related directives. The others were to be on

the financing of nuclear decommissioning and on nuclear waste management and timetables. The draft decommissioning directive never saw the light of day as the Commission's legal services deemed that its legal base would have to be Article 203 of the Euratom Treaty (which relates to the introduction of new areas of competence). However, Article 203 requires the unanimous approval of Member States, rather than qualified majority requirements for other areas of the Treaty, and this was thought to be impossible to achieve. Consequently, the draft directive was abandoned and some elements were incorporated into an annex of the safety directive.

The draft directive on the management of spent nuclear fuel and radioactive waste was the most demanding of the proposed pieces of legislation. In particular the directive proposed clear timetables for the disposal of radioactive waste: -

- Authorisation for the development of appropriate disposal sites should be granted no later than 2008.
- Authorisation for the operation of sites to dispose of low level radioactive waste should be completed by 2013.
- Authorisation for the operation of sites to dispose of high level radioactive waste should be completed by 2018.

On nuclear waste export the draft directive stated *'the [waste management] programme may include the exports of radioactive material of spent fuel to another Member State or third country, if such exports are fully in compliance with existing EU legislation'*. Some feared that this will result in the construction of regional radioactive waste dumps in the EU or the export of waste to countries such as Russia or Kazakhstan.

The legal base for these draft directives was Article 31 of the Euratom Treaty, which requires that the Commission seek the opinion of an expert group (known as the Article 31 Expert Group) and the Economic and Social Committee (ESC), prior to the formal introduction of the legislation. This was initially done at the end of 2002 and led to the publication of revised directives in January 2003. While the comments of the Article 31 Expert Group and the ESC were important, their engagement also enabled further consultation with Member States, which had significant influence on the redrafting.

On the fundamental point of the introduction of nuclear safety standards a key shift took place, with the removal of any reference to the introduction of a framework Directive. As the Commission later explicitly noted<sup>14</sup>:

*The proposal for a Directive setting out basic obligations and general principles on the safety of nuclear installations, approved by the Commission on 30 January 2003, is not a framework directive entailing the drafting and implementation of sub-directives under it.*

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<sup>14</sup> Council of the European Union, Proposal for a Council Directive on basic obligations and general principles on the safety of nuclear installations, Proposal for a Council Directive on the management of spent nuclear fuel and radioactive waste, reply to delegates questions, as received from DG TREN of the European Commission, 19<sup>th</sup> September 2003, 12727/03

Therefore, the intention to introduce common nuclear safety standards was withdrawn and instead the new draft legislation required:

- Each Member State must ensure it has a safety authority, which is independent from bodies that promote or utilise nuclear energy.
- The safety authority shall regulate and supervise safety of nuclear installations and grant the necessary licences.
- Each Member State shall require the operator to run the facility in accordance with 'common safety standards' and give priority to nuclear safety.
- Ensure that the regulator carries out nuclear safety inspections.
- Each Member State shall take the appropriate steps to ensure adequate financial resources are available to support the safety of facilities.
- Establish procedures for reducing accidents and incidents and that adequate notification is occurring.

In order to verify that these activities were implemented the Commission would oversee verification missions. Experts from Member States, probably two per mission, would visit the safety authorities in Member States and on the basis of a pre-arranged schedule would verify their activities.<sup>15</sup> The results of these missions would not necessarily be made public in full and there was no mechanism laid out for ensuring that any action is taken as a result, even in cases of non-compliance.

In the radioactive waste directive the timetable for the disposal of radioactive waste in the 2003 draft version remain largely unchanged, as did most of the key provisions.

The formal publication of the draft directives now enabled consultation with the Parliament to begin and negotiations within the Atomic Questions Working Group of the European Council. The nuclear package, as the directives became known, created unusual fissures in a normally predictable, pro and anti-nuclear, landscape. Many of the non-nuclear countries, such as Austria and Ireland, while recognising the weakness of the draft directives were supportive, suggesting, that despite the removal of reference to the framework directive, that the legislation would generally increase nuclear safety and was potentially a first step on the road to EU nuclear safety standards. Also supportive of the directives were the French Government, which did not see them as overly burdensome and considered them beneficial, in particular in increasing public confidence in nuclear safety and therefore gaining support for nuclear power in particular for potential new build projects.

Strongly opposing the draft directives were four countries, Finland, Germany, Sweden and the UK. Again there were differing reasons for opposing the directive. The UK stated that *'We do not believe that the management of radioactive waste and spent fuel is an area where national policies should be dictated at the Community level in the way the Commission proposes'<sup>16</sup>*. While the German Government stated that *'The proposal for a Directive laying down common standards for the safety of*

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<sup>15</sup> This process could be similar to the IAEA's Integrated Regulatory Review Service (IRRS). It remains unclear what its added value would be.

<sup>16</sup> Council of the European Union, Proposal for a Council Directive on basic obligations and general principles on the safety of nuclear installations, Proposal for a Council Directive on the management of spent nuclear fuel and radioactive waste, Comments from the UK delegation, 6<sup>th</sup> June 2003, 10236/03

*nuclear installations lacks direction in its current form. Much of it is modelled on the IAEA Convention on Nuclear Safety, which has already been ratified by all Member States. If European legislation is to represent added value in this area, it must ensure a high level of safety in EU nuclear installations<sup>17</sup>.*

During 2003, discussions in the Atomic Questions Working Group led to considerable changes, including the dropping of the waste management timetables. Despite these changes the opposition of the four countries remained and they formed a blocking minority within the council. Meanwhile, the Parliament gave its opinion on the draft directives, basically endorsing the Commission's approach.

The enlargement of the European Union in May 2004 offered a new opportunity for the safety package and the revised voting weights within the Council meant that four countries alone could no longer form a blocking minority. However, some new Member States opposed the draft directives and in June 2004 a number of countries, including, Czech Republic, Finland, Germany, Hungary, Slovakia, Sweden and the UK rejected or abstained on the legislation.

However, instead of undertaking a '*wide ranging consultation*' as requested by the Council, the Commission re-tabled the Directives in September 2004, stating that they were '*vital for the safety of nuclear energy within the enlarged European Union*'.

This third revision of the nuclear safety directive further reduced the involvement of the EU institutions. Most importantly, the draft directive proposed a new Committee of Regulatory Authorities, instead of the verification missions required in the previous version. The Committee, to be made up of representatives of Member States was designed to encourage best practice in Member States and to give an opinion on national reports, including recommendations to the Commission.

In the nuclear waste directive, the community wide timetables for the establishment of disposal or storage facilities were removed and instead called for national management programmes to include timetables for the management of low, intermediate and high level waste.

The Council did not hold detailed discussions on these drafts and responded by establishing three working groups to look at safety, waste and decommissioning, with the objective of reporting towards the end of 2006. This effectively pushed the issue off the agenda for at least a couple of years.

In October 2006 the Commission adopted a recommendation the management of financial resources for the decommissioning of nuclear installations, spent fuel and radioactive waste. While not binding on Member States, the recommendation stated that segregated funds were the preferable vehicle for the accumulated waste management funds and that all new installations should introduce them. However, it did not call for their introduction for currently operating facilities.

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<sup>17</sup> Council of the European Union, Proposal for a Council Directive on basic obligations and general principles on the safety of nuclear installations, Proposal for a Council Directive on the management of spent nuclear fuel and radioactive waste, Comments from the German Delegation, 5<sup>th</sup> June 2003, 10166/03

In November 2008 the Commission published a revised directive setting up a Community Framework for nuclear safety, but not a new draft on the waste directive. The latest proposal for a safety directive has no Community verification or Committee of Regulators. Instead the draft directive will enforce the requirements of the International Atomic Energy Agency's Convention on Nuclear Safety (CNS). This requires the publication of an annual report on the status of the nuclear sector and subjecting the report to peer review by other contracting parties of the Convention. All Member States that operate nuclear power plants are already contracting parties to the Convention.

The main criticism of the current draft is that it is proposing legislation only for the sake of legislating, and that it will bring no additional safety requirements. This view was even raised by the Commission's Impact Assessment Board, which twice voiced concerns over the lack of added value of the directive

It appeared that this, the fourth draft of the directive, would now gain the support of the majority of Member States and that there would be insufficient opposition to form a blocking minority. With a realisation of this some of the Member States that have previously opposed the legislation are now working to have their views incorporated. In this regard the Commission must initially have been satisfied with its redraft.

However, in mid February 2009 the Atomic Questions Working Group in the European Council began discussions. Top of the agenda was the exact wording that would make reference to the IAEA's Nuclear Safety Convention. The Council Presidency has presented the working group with three options:

- The Directive could not mention the IAEA Safety Fundamentals at all;
- The Directive could reference the IAEA Safety Fundamentals as non-binding guidelines;
- The Directive could reference the IAEA Safety Fundamentals as binding provisions.

The Parliament has also started its deliberations in both the Environment and Industry Committees. Whilst, as previously noted, the Parliament is only able to give its opinion and doesn't have co-decision, it still has a role to play. In particular some Parliamentarians, notably Rebecca Harms, who is the draftsman for the report in the Environment Committee has raised procedural questions about the role of the Article 31 Expert Group.

Prior to the publication of the 2008 draft of the safety directive the Commission has not consulted the Article 31 Expert Group. The Commission has put forward the view that because this is a redraft of an existing proposal, which the Council did not act upon, under Article 119 of the Euratom Treaty they are free to alter the proposal. However, the key question will be if the legal services of the Parliament share this opinion as to whether or not the Council has acted, by rejecting the previous draft.

### 3. Comparison of the draft nuclear safety legislation

2008	2006	2003	2002
<p><b><i>A key change in draft directive is found in the recitals and demonstrates the clear changes from the first draft to have binding safety standards across the EU, to one where at best measures are put in place to ensure that the existing safety regimes are fully implemented.</i></b></p>			
<p>(15) In order to ensure the effective implementation of safety requirements for nuclear installations, Member States should establish regulatory bodies as independent authorities. Regulatory bodies should be provided with adequate competence and resources in order to be able to discharge their duties.</p>	<p>13) In order to attain the Community objectives regarding radioprotection mentioned above, it is essential to define the basic obligations and general principles on the safety of nuclear installations</p>	<p>10) In order to attain the Community objectives regarding radioprotection mentioned above, it is essential as a first stage to define the basic obligations and general principles on the safety of nuclear installations.</p>	<p>10) In order to attain the Community objectives regarding radioprotection mentioned above, it is essential as a first stage to define the basic obligations and general principles on the safety of nuclear installations in this framework Directive. This will at a later stage be complemented by the establishment of common standards and control mechanisms in order to guarantee a high level of safety which takes into account technological developments.</p>
<p><b><i>The 2008 draft of the directive makes a fundamental shift in its safety requirement as it places at the forefront of EU safety measures the fully adoption of the obligation of the IAEA's Nuclear Safety Convention. However, Member States that have nuclear power and Euratom are already signatories to and have ratified the Convention. There are therefore doubts over the added value of making it compulsory under EU legislation and it raises questions over the lack of ambition for significantly raising nuclear safety standards in the EU. Secondly, there are concerns that by creating a regional enforcement structure for the IAEA's Nuclear Safety Convention it undermines the non-binding requirements of the convention in other parts of the world. The Convention's enforcement mechanism is based on a non-binding requirement that is enhanced through a peer review process, the Commission's proposal undermines the spirit of this mechanism.</i></b></p>			
<p><i>Article 6</i>  <b><i>Safety requirements and regulations for nuclear installations</i></b>            1. Member States shall respect the IAEA safety fundamentals (IAEA Safety Fundamentals: Fundamental safety principles, IAEA Safety Standard Series No. SF-1</p>	<p><i>Article 5</i>  <b><i>Safety in nuclear installations</i></b>            Member States shall ensure that all reasonably achievable measures are implemented to ensure a high level of safety in nuclear installations.            In particular, Member States shall take all the appropriate steps:            (a) to establish and maintain</p>	<p><i>Article 5</i>  <b><i>Safety in nuclear installations</i></b>            Member States shall take all the measures necessary :            (a) to establish and maintain effective arrangements in nuclear installations against potential radiological hazards in order to protect individuals, society and the environment</p>	<p><i>Article 6</i>  <b><i>Safety in nuclear installations</i></b>            Member States shall take all the measures necessary in order:            (a) to establish and maintain effective arrangements in nuclear installations against potential radiological hazards in order to protect individuals, society and the environment from harmful effects of</p>

<p>(2006)). They shall observe the obligations and requirements incorporated in the Convention on Nuclear safety (IAEA INFCIRC 449 of 5 July 1994). They shall in particular ensure that the applicable principles laid down in the IAEA safety fundamentals are implemented to ensure a high level of safety in nuclear installations, including <i>inter alia</i> effective arrangements against potential radiological hazards, accident prevention and response, ageing management, long term management of all produced radioactive materials and information of the population and the authorities of neighbouring States.</p> <p>2. As regards the safety of new nuclear power reactors Member States shall aim to develop additional safety requirements, in line with the continuous improvement of safety on the basis of the safety levels developed by the Western European Nuclear Regulators' Association (WENRA) and in close collaboration with the European High Level Group on Nuclear Safety and Waste Management.</p>	<p>effective arrangements in nuclear installations against potential radiological hazards in order to protect individuals and society from harmful effects of ionising radiation from such installations;</p> <p>(b) to prevent accidents with radiological consequences and to mitigate such consequences, should they occur;</p> <p>(c) to ensure the long term management of all radioactive materials, including radioactive waste and spent nuclear fuel, produced in the course of operation and decommissioning, in accordance with the basic standards for the protection of the general public and of workers against dangers arising from ionising radiation;</p> <p>(d) to ensure effective information to and, where appropriate, consultation of their population, as well as the competent authorities of the States in the vicinity of nuclear installations under the jurisdiction of the Member State concerned, insofar as they are likely to be affected in the event of a radiological emergency at that installation, on issues related to safety of such nuclear installations.</p>	<p>from harmful effects of ionising radiation from such installations;</p> <p>(b) to prevent accidents with radiological consequences and to mitigate such consequences should they occur;</p> <p>(c) to implement all further measures to guarantee safety in nuclear installations; and</p> <p>(d) to ensure the long term management of all materials, including radioactive waste and spent nuclear fuel, produced in the course of decommissioning, in accordance with the basis standards for the protection of the general public and of workers against dangers arising from ionising radiation.</p>	<p>ionising radiation from such installations;</p> <p>(b) to prevent accidents with radiological consequences and to mitigate such consequences should they occur;</p> <p>(c) to implement all further measures to guarantee safety in nuclear installations; and</p> <p>(d) to ensure the long term management of all materials, including radioactive waste, spent nuclear fuel <b>and conventional waste</b>, produced in the course of decommissioning, in accordance with the basis standards for the protection of the general public and of workers against dangers arising from ionising radiation.</p>
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***The 2008 draft of the directive fundamentally changes the responsibility for ensuring that nuclear safety inspections are carried out, away from both the regulator and Member States to purely the regulator. Such a shift can only be justified in cases where there is absolute confidence in the authority, staffing and competence of the regulator or regulatory authorities.***

<p><i>Article 8 - Supervision</i></p> <p>1. Nuclear safety assessments, investigations, controls and, where necessary, enforcement actions shall be carried out by the regulatory body in nuclear installations throughout their lifetime, including during decommissioning.</p> <p>2. The regulatory body shall have the power to withdraw the operating licence in case of serious or repeated safety rules breaches in the nuclear installation.</p> <p>3. The regulatory body shall have the power to order the suspension of operations of any nuclear plant if it deems that safety is not fully guaranteed.</p>	<p><i>Article 8 - Inspection</i></p> <p>Member States shall ensure that nuclear safety inspections are carried out by the regulatory body, or by experts designated by the regulatory body, in nuclear installations throughout their life, including during their decommissioning, and that the licence holder submits to such inspections.</p>	<p><i>Article 8 - Inspection</i></p> <p>Member States shall ensure that nuclear safety inspections are carried out by the safety authority in nuclear installations, including during their decommissioning, and that the undertaking responsible for the nuclear installation submits to such inspections.</p>	<p><i>Article 10 - Inspection</i></p> <p>Member States shall ensure that nuclear safety inspections are carried out by the safety authority in nuclear installations, including during their decommissioning, and that the undertaking responsible for the nuclear installation submits to such inspections.</p>
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***The 2008 draft have removed all reference to the financing aspects of decommissioning. This would be justified if there was binding legislation on this area. However, this is not the case, rather the Commission have published a recommendation, which is non-binding on Member States.***

	<p><i>Article 9 - Financial resources</i></p> <p>Member States shall take the appropriate steps to ensure that adequate financial resources are available from the regulatory body and the operators to support the safety of nuclear installations throughout their life.</p>	<p><i>Article 9 - Financial resources</i></p> <p>(1) Member States shall take the appropriate steps to ensure that adequate financial resources are available to support the safety of nuclear installations.</p> <p>(2) Member States shall ensure that financial resources</p>	<p><i>Article 11 - Financial resources</i></p> <p>1. Each Member State shall take the appropriate steps to ensure that adequate financial resources are available to support the safety of each nuclear installation <b>throughout and after its working life.</b></p> <p>2. Member States shall ensure that financial resources</p>
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		<p>sufficient to cover decommissioning costs of each nuclear installation, taking into account the length of time required, are available as decommissioning funds at the time envisaged. These funds must meet the minimum criteria set out in the annex.</p> <p>(3) In the case of nuclear installations whose main purpose is other than the sale of products or services, in particular research reactors, Member States determine the means of meeting the specific decommissioning resource requirements.</p>	<p>sufficient to cover decommissioning costs of each nuclear installation, taking into account the length of time required, are available as decommissioning funds at the time envisaged. These funds must meet the minimum criteria set out in the annex to this Directive.</p> <p>3. In the case of nuclear installations whose main purpose is other than the sale of products or services, in particular research reactors, each Member State shall determine the means of meeting the specific decommissioning resource requirements.</p>
<p><b><i>The mechanisms to monitor nuclear safety and the directives requirements have fundamentally changed over the past five years. Initially, it was proposed that the Commission would oversee inspections of the safety authorities in Member States. Note this would not have required inspection at actual nuclear facilities, only with pre-announced visits to the regulator. However, the 2006 version dropped this requirement and suggestion the establishment of a Committee of Regulatory authorities that would encourage exchange of best practise, advise the Commission and make comments on the reports from Member States. However, even this requirement has been removed in the 2008 version, which is now only relying on the reporting structure of the IAEA's Nuclear Safety Convention.</i></b></p>			
	<p><i>Article 12 - Committee of Regulatory Authorities</i></p> <p>1. A Committee of Regulatory Authorities (hereinafter "the Committee") is hereby established</p> <p>2. The Committee shall be composed of representatives of the regulatory bodies designated by each Member State.</p> <p>3. The Committee shall adopt its rules of procedure and</p>	<p><i>Art. 12 - Application monitoring</i></p> <p>1. In order to ensure the maintenance of a high level of nuclear safety in Member States, the Commission shall carry out verifications of safety authorities. Member States shall ensure that safety authorities comply with these verifications.</p> <p>2. Member States shall send the Commission a list of experts, indicating their fields of</p>	<p><i>Article 14 - Monitoring of application</i></p> <p>1. In order to ensure the maintenance of a high level of nuclear safety in Member States, the Commission shall carry out verifications of safety authorities.</p> <p>2. Member States shall send the Commission a list of experts, indicating their fields of expertise, on whom the Commission shall call to carry out the verifications provided for in paragraph 1.</p>

	<p>designate a chairman from among its members. The Commission shall act as the Secretariat of the Committee.</p> <p>4. The Committee shall:</p> <p>(a) encourage exchange of best practice among regulatory authorities, with a view to ensuring progressive harmonisation of approaches to safety, in the framework of this Directive;</p> <p>(b) advise the Commission on all matters concerning nuclear safety, including the summary reports submitted as per Article 14;</p> <p>© define guidelines on the content, form, structure and timetable for national reports as in Article 13, with a view to ensuring, as much as possible, coherence with the reports which must be prepared under Article 5 of the Convention on Nuclear Safety;</p> <p>(d) assess the national reports prepared under Article 13, give an opinion, possibly containing recommendations to the Member State concerned, on each of the national reports, on request of the Commission.</p>	<p>expertise, on whom the Commission shall call to carry out the verifications provided for in paragraph 1.</p> <p>3. The experts shall obtain prior approval from the safety authorities in the Member State where the verification is to be carried out before they may carry out the verifications provided for in paragraph 1. Experts shall not be allocated for verifications within their Member State of origin.</p> <p>4. Prior to the verification , the Commission shall inform the Member State concerned of the verification , specifying the subject-matter, the purpose of the inspection, the date on which it is to begin and the names of the approved experts.</p> <p>5. The Commission shall forward the verification reports to the Member State concerned which, within three months of receipt, shall indicate the measures taken to remedy any shortcoming.</p> <p>6. The Commission may submit comments to the Member States or request further information following verifications in order to clarify all or part of the reports.</p>	<p>3. The experts must obtain prior approval from the safety authorities in the Member State where the check is to be carried out before they may carry out the inspections provided for in paragraph 1.</p> <p>4. Prior to the inspection, the Commission shall inform the Member State concerned of the inspection, specifying the subject-matter, the purpose of the inspection, the date on which it is to begin and the names of the authorised experts.</p> <p>5. The Commission shall forward the inspection reports to the Member State concerned which, within three months of receipt, shall indicate the measures taken to remedy any shortcoming.</p> <p>6. The inspection reports and the answers of the Member States shall be confidential.</p> <p>7. The Commission may submit comments to the Member States or request further information following inspections in order to clarify all or part of the reports.</p>
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#### 4. What does the current draft mean for European nuclear safety?

As has been seen in the previous section the various drafts of the legislation have gradually reduced the new measures and requirements that would be placed on the nuclear sector in Member States if the directive were adopted.

It is clear that the 2002 draft would have, if adopted, introduced measures that would have led to EU wide nuclear safety standards. It is possible and even probably that initially these would not have led to an overall increase in nuclear safety within the EU, as the 'lowest common denominator'. As pointed out by the German Government in 2003:

*'The proposal for a Directive laying down common standards for the safety of nuclear installations lacks direction in its current form. Much of it is modelled on the IAEA Convention on Nuclear Safety, which has already been ratified by all Member States. If European legislation is to represent added value in this area, it must ensure a high level of safety in EU nuclear installations. In particular, we would point out that:*

- *no procedure has been planned for framing future safety standards;*
- *the establishment of a dynamic safety principle should be considered (for example, best practice or a similar approach)<sup>18</sup>;*

Instead of modifying the proposal to address these concerns and ensure that best practice was introduced, the Commission, in its subsequent two versions, has removed all significant requirements from the draft legislation except those referring to the IAEA Convention on Nuclear Safety. Consequently, as previously noted the 2008 version is therefore effectively only ratifying into EU law what Member States have already ratified on the national level.

There are real and justified concerns over nuclear safety standards and practices being deployed in the EU. As a general trend the safety margins of nuclear facilities decrease as they approach the end of their design lives. As noted *'a large number of currently operating plants in the EU will come to the end of their originally foreseen lifetimes before 2030'*.<sup>19</sup> Consequently, there is a real need for measures which help reduce nuclear risks.

However, in order to gain the approval of a sufficient number of Member States the Commission have removed any requirement that could raise objections. In doing so, the draft directive has been emptied of anything of additional value. Nevertheless, the key question, and is the reason why a number of Member States support the initiative, is if its introduction will on the long term set a precedent for the EU adopting rules on nuclear safety? The history of this Directive, demonstrates that this is highly unlikely, at least on the short to medium term and that there is no appetite for this type of legislation.

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<sup>18</sup> German Government Submission to the Atomic Questions Group 5 June 2003 (10.06) Inter-institutional File: 2003/0021 (CNS) 2003/0022 (CNS) 10166/03 ATO 122 ENER 175

<sup>19</sup> European Commission 2008; Commission Staff Working Document, Accompanying document to the Proposal for a Council Directive (Euratom) setting up a Community framework for Nuclear Safety Impact Assessment, SEC (2008) 2892, 26<sup>th</sup> January 2008

This must be recognised publicly, otherwise there is a real danger that the impact of the directive will be oversold and inferences made that the EU has adopted new rules that will impact on the safety standards of nuclear facilities.

## 5. Recommendations and conclusions

Nuclear safety is probably the most important issue facing the industry. Experience, inside and outside the EU, has shown that low safety standards, resulting from bad design, low levels of operation and maintenance and inadequate regulation can have serious environmental, health and economic implications not just on those in the locality but internationally. Given this, as well as the implication for varying safety standards on the economics of nuclear power and therefore its impact on the electricity market, it seems remarkable that in 2009 there is no common nuclear safety standard to which power plants in the EU must comply.

While, thankfully, the occurrence of nuclear accidents with transboundary impacts is relatively low, there is no room for complacency as a variety of 'near misses', such as in Davis Besse in the United States in 2002 have shown. Furthermore, the twin and, in some instances, conflicting processes of approving life extensions for operating reactors - while key components are experiencing ageing-related problems, such as embrittlement of pressure vessels - can and does lead to reduced safety margins.

In these circumstances, it would be preferable to put in place pan-European, binding nuclear safety standards for currently-operating and future reactors that require facilities to operate the highest common denominator, or 'state of the art', as requested by the European Council. However, it is clear that neither the nuclear industry nor the majority of Member States are in favour of such standards, as is clear by the rejection of the 2002 version of the draft nuclear safety directive.

Rather than continuing to argue its case for binding safety standards the European Commission has attempted to have legislation adopted that has significantly less requirements for the nuclear industry and will not bring any new safety standards for the EU. The latest version of the draft directive requires conformity to an international convention to which all Member States with operating reactors are already signatories. This has questionable value from a nuclear safety perspective, but its value may be more in the field of public relations and the desire to communicate to citizens of Europe that higher nuclear safety requirements are in place.

Nuclear safety standards are too important to be dictated by public relations: clear and honest messaging must be deployed. Either the EU must adopt clear safety standards that lead to the operation of only those nuclear facilities that comply to 'state of the art' criteria or the EU should not attempt to gain competence in the field of nuclear safety standards and leave this solely in the hands of Member States. There should be no half measures for nuclear safety.