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TO THE EUROPEAN PARLIAMENT AND THE COUNCIL**

**Second Report on the use of financial resources earmarked for the decommissioning
of nuclear installations, spent fuel and radioactive waste**

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TABLE OF CONTENTS

1.	BACKGROUND.....	3
2.	METHODOLOGY.....	3
2.1.	Decommissioning Funding Group.....	3
2.2.	Studies.....	4
2.3.	External Cooperation.....	4
3.	RESULTS.....	4
3.1.	Decommissioning of nuclear installations.....	5
3.2.	Legislative, Institutional and procedural aspects.....	6
3.3.	Decommissioning Funds.....	6
3.4.	Cost Estimation and Fund Adequacy.....	7
3.5.	Use of Funds.....	7
3.6.	New Nuclear Construction.....	8
3.7.	Transparency.....	8
3.8.	Way Forward.....	9
4.	CONCLUSIONS.....	10

1. BACKGROUND

In October 2004, the Commission presented its first report to the European Parliament on the use of financial resources earmarked for the decommissioning of nuclear power plants¹. The report was drafted partly, as a result of concerns regarding potential safety implications should adequate decommissioning funds not be available when needed and concerning possible fund mismanagement and the potential for distortion of competition.

The 2004 report was well received and led to an own-initiative report² from the European Parliament. It was acknowledged within the report that decommissioning was a complex issue and that more detailed information was required in order to progress the issues raised. With this in mind the Commission has completed an extensive consultation process involving independent technical studies (one of which included a detailed questionnaire) and detailed consultation with experts of the Member states.

In addition, the Commission adopted a Recommendation³ on decommissioning funds in 2006 following consultation with Member State experts and taking advantage of its research in the field. This second report provides for a normal progression of the Commission's work comparing EU nuclear operators and Member States funding practice with that detailed in the Commission Recommendation.

2. METHODOLOGY

In 2004 the Commission set up an ad-hoc expert group - Decommissioning Funding Group (DFG) - in order to improve consultation with the Member States and to ensure better input to the work of the Commission. .

2.1. Decommissioning Funding Group

The DFG assisted the EC in:

1. Promoting a clear understanding of the decommissioning policies and strategies and the attendant tasks and activities;
2. Providing an up-to-date knowledge on decommissioning cost estimates and the management of the provisions/funds;
3. Exploring the ways ahead in terms of further co-operation and harmonisation at European level.

The DFG met twice and provided an open forum for the exchange of views on national approaches. This body was consulted during the drafting of the Commission's 2006 Recommendation³ on decommissioning funding.

¹ Report on the use of financial resources earmarked for the decommissioning of nuclear power plants, COM(2004)719 Final of 26.10.2004

² European Parliament resolution on the use of financial resources earmarked for the decommissioning of nuclear power plants (2005/2027(INI)), P6_TA-PROV(2005)0432

³ OJ L 330 (28.11.2006)

2.2. Studies

Technical studies have been completed providing essential input to this report and addressing a wide range of issues related to nuclear decommissioning. The studies addressed the following issues:

- Analysis of the factors influencing the selection of strategies for decommissioning of nuclear installations;
- Decommissioning funding methodologies in the European Union;
- Inventory of best practices in the decommissioning of nuclear installations;
- Analysis of environmental, economic and social issues linked to the decommissioning of nuclear installations;

Copies of the main reports for these studies can be found on the relevant Commission website⁴.

The response from Member States to specific requests for information and in particular the questionnaire varied, affecting sometimes the conclusions of the relevant study. This issue is further elaborated in section 3.7 of this report.

2.3. External Cooperation

The Commission has continued to work with the IAEA and NEA in the field of nuclear decommissioning through the dedicated groups such as TEGDE⁵ and WPDD⁶.

A group was established by the Working Party on Nuclear Safety as part of the Council's consultation process organised under the auspices of the Council Working Party on Atomic Questions. The Commission services have actively participated in the work of this group whose work was based primarily on the results of the Commission questionnaire referred to in section 2.2 above.

3. RESULTS

The work of the Commission over the past two years reinforced considerably the general conclusions from 2004 that there were wide variations in decommissioning strategy and funding methodology across the Member States. While harmonisation can have significant positive political advantages, due account is taken of the potential consequences of imposing a one-size-fits-all policy of harmonisation.

The Commission's work has provided reasonable confidence that Member State operators act responsibly in the creation and management of decommissioning funds. There are many examples of good practice that can be highlighted in countries such as Finland and Sweden where the polluter-pays-principle is enshrined in national legislation. The new law adopted in

⁴ Web page: http://ec.europa.eu/energy/energy_policy/index_en.htm

⁵ TEGDE: Technical Group for Decommissioning (IAEA)

⁶ WPDD: Working party for dismantling and decommissioning (NEA)

France in 2006 provides another more recent example, demonstrating awareness by governments of the need to address an aspect of the nuclear industry which is of clear public concern.

The Commission's work has also highlighted areas of concern. Results are summarised below making reference to the relevant part of decommissioning fund Recommendation³ in [] brackets.

3.1. Decommissioning of nuclear installations

In all Member States, strategies are decided upon following an assessment of numerous factors ranging from cost and, availability of waste repositories, to social consequences. In no single case is it stated that a particular decommissioning strategy has been selected due to the absence of adequate funding. It is however noted that for several installations a deferral period has been significantly reduced following an increased availability in funding. In some Member States a government authority is responsible for deciding upon the decommissioning strategy whereas in others the decision is left to the operator subject of course to regulatory approval.

Strategies are categorised according to the three basic types of immediate, deferred or entombment with the latter considered as a possible option but not actually foreseen in any EU nuclear installation. The strategy selected often varies within Member states with significant variations in deferral period the longest being for the UK gas graphite reactors, which have a final site clearance 130 years after plant closure. While the UK strategy is officially determined by the benefits of radioactive decay, it is to be noted that the recently formed government organisation (NDA) now responsible for this legacy has a stated objective of reducing this period to 25 years. In other Member States a strategy of immediate dismantling is being implemented over a relatively long timeframe (Italy, France).

Information provided by Member States confirm that the issue of nuclear installation decommissioning and management of waste is addressed with activities that do not result in undue risk to the health and safety of workers and the general public [1,2].

Whatever strategy a Member State chooses for decommissioning, insufficient funding by the plant operator can run counter the polluter-pays principle [3]. Furthermore, it can result in an unjustified economic advantage, amounting to State aid which distorts competition between electricity producers.

Some member States such as the Czech Republic, Hungary, and the Netherlands have opted for a strategy of deferred decommissioning. While there are many assessments that conclude that the overall cost is relatively unaffected by strategy choice, a deferred strategy does not require sums as large as those needed for immediate decommissioning to be made available as soon as a plant is shut down. It is essential, however, to ensure that the chosen mode of management guarantees that the financial resources will be fully available and adequate when required. In other countries some significant evolutions are ongoing: in the UK the NDA has proposed to reduce the deferral period from over 100 to 25 years. Slovakia and Bulgaria have both indicated an intention to move from deferred decommissioning to immediate or, as in the case of Kozloduy 1-4, a solution falling somewhere between the two is proposed. In such cases, the availability of additional funding from sources other than the operator's fund plays a key role in strategy selection and long term financial security is an area that appears to require further development.

3.2. Legislative, Institutional and procedural aspects

In all Member states there is clear legislation in force requiring the creation of a fund with varying specificities regarding management and use. In France, such legislation was adopted in 2006 with a new law that provides a good example of best practice and makes mention in its explanatory memorandum of the European Commission's work in this area.

All Member States have set up a national body [6] for the review and assessment of decommissioning fund management and cost estimates. The role of such bodies however, is rarely detailed. This is still an evolving process which needs to be closely monitored through the national reports foreseen in the Recommendation in order to ensure that an effective method of review, assessment and control is being implemented.

3.3. Decommissioning Funds

Most decommissioning funds are segregated [8] with revenues obtained on the basis of nuclear activities – primarily through a levy – during plant operational life. There are however several notable variations:

- In several member States funding for decommissioning and waste management is provided by more than one system. This is the case for example in Italy, UK, Slovakia, Bulgaria and Lithuania.
- In Germany funds are held and managed internally by commercial operators. It is to be noted that whereas the system operated by German utilities has in the past been singled out for criticism by many stakeholders, this system of fund management has a demonstrable performance from the viewpoint of providing adequate funds.
- Shared ownership requires a specific solution to funding issues especially where the part-owner is from another Member State. Of particular note is for example the situation in Slovakia with the ENEL purchase of Slovenske Elektrene and, the joint responsibility between Croatia and Slovenia for the Krsko NPP. The latter has resulted in an under-resourced fund due to the absence of a dedicated fund in Croatia. Particular attention needs to be paid to the aspect of funding in future with proposals for new power plant construction with ownership shared by several countries.
- There are many instances where a dedicated fund has not been created but instead there is a basic assumption that treasury funds will be made available when required. While the liabilities for most installations are small compared to power reactors this is not the case for reprocessing and plutonium handling facilities.

The establishment and operation of a decommissioning fund is rarely accompanied by any assessment of the inherent risks associated with long term operation, liability assessment, governance and investment. The study on decommissioning funding methodologies has provided a useful and rare insight into fund risk management which given the uncertainties that exist in these areas should be subject to further evaluation.

3.4. Cost Estimation and Fund Adequacy

There have been several attempts by International organisations aimed at comparing decommissioning cost estimates with a view to harmonisation in this area but, with little success to date. There are justified reasons why estimates may vary from one Member State to another due for example to manpower costs or national policy on clearance levels. Since 2004 further detailed information has been obtained however, many operators are reluctant to provide all details on such calculations.

Slovenia has a well defined fund which meets the best practice outlined in the Recommendation however, the responsibility for the Krsko power plant is shared with Croatia with the latter yet to establish a similar system. As a consequence, and through no fault of the Member State, only 50% of the required funding for decommissioning is currently being set aside.

The Ignalina reactors in Lithuania, Bohunice V1 in Slovakia and Kozloduy Units 1-4, are covered by an early closure commitment negotiated as part of the EU enlargement process. The consequences of early closure were acknowledged during accession negotiations with the Community committing to provide adequate financial assistance which takes into account the long term nature of the subsequent decommissioning process. International funds administered by the EBRD have been set up and in December 2005 the Union agreed to significant continued Community financing over the 2007-2013 financial perspective. A regulation to implement this financing was adopted for Ignalina⁷ in 2006 and for Bohunice in May 2007⁸, in line with the commitment made in the relevant protocol to the Act of Accession. Implementation of the Community assistance to Bulgaria in respect of the Kozloduy units 1-4 closure is provided through the relevant Act of Accession until 2009.

The basic assumptions made regarding discounted costs vary considerably across the EU which is an area that should be addressed through future harmonisation. A combination of a long deferral period and an inappropriate use of discounting rates give rise to a concern over long-term fund adequacy [13].

It is recognised by all operators that the decommissioning liability estimate needs to be reassessed over the lifetime of the installation concerned and with increasing precision. The uncertainties involved in this process are significant with potential for a serious shortfall in funds when required should it not be properly addressed. Inaccurate decommissioning cost estimates, poor fund performance (whether due to low return or high risk investments) are key concerns which require independent fund oversight at both financial and technical levels. A question remains as to the adequacy of such oversight in several Member States [11].

Insurance against early closure is only foreseen in a few cases whether as initial guarantees, provisions or specific insurance policies. In several Member States, it is an assumption that the State will underwrite any financial shortfall related to early closure problems.

3.5. Use of Funds

There are several examples within the EU where financial resources are used for purposes other than decommissioning and waste management [15]. A particular concern arises for

⁷ OJ L 411/10 (30.12.2006)

⁸ OJ L 131/1 (23.5.2007)

treasury funds where financial resources are not segregated with the consequent potential lack of long-term financial stability which is essential for safe decommissioning. In Italy, the funds obtained from a tariff on electricity price are placed in a State fund and the part not required for decommissioning used for other purposes of State interest. Approximately half of today's funding for civil installations in the UK is provided from the State budget based upon a three year commitment. The current shortfall in operating profits which provides the remaining funding and absence of a segregated fund results in a potential requirement to reorganise short-term decommissioning activities.

Belgium has recently drafted a new law which will see decommissioning funds used to finance totally unrelated power investment projects in a manner which could be seen as preferential to the project rather than prudent fund management [16].

Lithuania has used in some cases its national fund to co-finance energy sector projects to provide replacement capacity for the early closed reactor.

In addition, using funds intended for decommissioning purposes as a cheap financing resource, can lead to major distortions on the EU's internal market

3.6. New Nuclear Construction

Within the EU the choice on the use of nuclear energy remains open to those Member States that so wish and, a significant rise in the number of new nuclear power reactors must be considered in assessing the need for Community action in areas such as decommissioning finance.

The polluter-pays-principle requires operators to set up adequate funds which are available when necessary. This principle is not always strictly applied usually for well defined historical reasons. Following the Recommendation, no such situation should be allowed to occur for future constructions. Several member States have addressed this issue; in the case of France through new legislation and with the UK and the Netherlands expressing similar positions. Construction of a new power plant in Romania will be completed in 2007 with three other partially constructed plants foreseen for completion in the near future. The provisions made by Romania in order to address decommissioning liabilities are in process to be further defined on the basis of the recent 2006 and 2007 legislation. Several other Member States have expressed an intention to construct new nuclear facilities and the Commission needs to play a role in ensuring best funding practice is applied.

The Commission's Recommendation [5] makes special mention of decommissioning funding regimes and recommends the funding modalities being reported as part of the Article 41 of the Euratom Treaty concerning the construction of new nuclear installations. This voluntary process which is without prejudice to the provisions of Article 41 of the Treaty is consistent with 'soft-legislation' provided by the Recommendation. This method of declaration and consultation will have to be assessed by the Commission in order to conclude on the need or not for further community legislation.

3.7. Transparency

The issue of transparency with regard to funding issues from both the Member States and individual operators needs to be assessed at the level of both cooperation and, publicly available information. In terms of information within the public domain the situation is far

from satisfactory in many member States. The UK's NDA represents an example of best practice in this area with its dedicated website and Lifecycle baselines which provide a major improvement to the level of public information normally made available.

In general, the communication between the Commission and Member States takes place in a spirit of good cooperation and this situation has been significantly improved in recent years. The Commission has maintained the Member State as its main interlocutor but where contact has been made with individual operators a similar situation has been demonstrated. There are some notable exceptions to this situation of general good communication:

- Bulgaria did not reply to the Commission's questionnaire or react to specific requests for information. A similar remark was often provided by tenderers as feedback during the course of the studies. It is noted that the early closure of the Kozloduy 1-4 power reactors has led to important funding issues.
- The information provided by the UK was quite sparse especially compared to most Member States and disproportionate to the size of its nuclear industry. The detailed information made publicly available by the NDA on its website provides a counterweight to this criticism.
- Germany respond to the Commission's questionnaire some time after the study had been completed thereby removing an important element from the comparison being undertaken in one of the targeted studies.
- A number of operators maintain a confidentiality clause over the release of either liability estimates, funds collected or, both. The argument most commonly cited being that the information is commercially sensitive. Given the detailed information available in this domain and the willingness of many operators to provide such information, this argument is not considered valid.
- Romania adopted legislation which requires the creation of two segregated funds, one for decommissioning of nuclear facilities and the second one for spent nuclear fuel and radioactive waste management. Further information on the implementation of the new legislation will be required from Romania.

3.8. Way Forward

It is to be noted that in the annex to its 2002 Communication⁹ the Commission drew special attention to the funding systems in France and Germany as being the only cases which required special attention. Arguments were based upon the impact of the proposal to set up external funds and, the conclusion would be little affected following the last two EU enlargements.

A more detailed analysis of the situation in Member States and wider consultation with stakeholders has resulted in a significantly different understanding of the situation. Funding methodology cannot be simply divided into internal or external funds; there are large variations in methodology and the degree of ring fencing provided by the various mechanisms especially in the case of external funds. Where an operator maintains full responsibility for

9 Nuclear safety in the European Union. COM(2002) 605 final of 6.11.2002

decommissioning and waste management, the operator argues for maintaining its right for the financial management of funds created for this purpose. This situation may be unacceptable and the attention should be focussed on the various factors that affect fund adequacy, liquidity and security and, combined with close restrictions on fund use and transparent management.

It seems that current concerns are largely due to the lack of application of national legislative requirements and best practices. These concerns could be better addressed by independent oversight of the decommissioning funds, rather than further legislation - whether national or supranational.

The recent change in relevant French law highlights the role that an external body plays in overseeing such issues. The reports of the Court of Auditors were influential in the changes to legislation and the Commission's work was also recognised in the explanatory memorandum that accompanied the new law. A similar strengthening of the role of external oversight can be perceived in other Member States. A notable feature of the new legislation is that it requires practice based on requirements regarding prudence and secure management which are not clearly defined but rather subject to independent oversight.

The Commission is aware that there is a need for improvements to assure the availability of adequate funding when required and their transparent and secure management. The Commission will address these issues as follow-up action to the publication of the Recommendation together with the advisory group representing all Member States.

4. CONCLUSIONS

The decommissioning of nuclear plants is set to become an increasingly important issue in the years ahead. It is a fair assumption under the present policies that about one third of the reactors currently operating in the European Union will need to be decommissioned by 2025.

Despite specific national legislation, there are grounds for progress in several aspects of fund adequacy, management and use, in particular through detailed monitoring and reporting at both national and EU level.

Differences in decommissioning strategies and fund management may lead to a distortion on the liberalised EU energy markets. Decommissioning costs including the final disposal of the waste has to be seen as part of the electricity production costs and should be compatible with state aid rules.

Member States need to ensure more transparency in reporting on the financial resources for decommissioning. Liability assessments should follow agreed accounting principles with publicly available estimates and provisions.

Differences between Member States are partly due to the structure and ownership of energy utilities before the creation of the internal market in electricity. The liberalisation of energy markets has brought an increased need for transparency and more harmonisation in the management of these financial resources. The Commission believes it is important to continue the effort and the cooperation with all parties concerned. The main scope is to ensure both that financial resources are set aside to meet the requirements of nuclear plant decommissioning and that they will actually be available as and when required. The resources need to be managed with full transparency ensuring adequate funds for a high level of nuclear safety

with respect to decommissioning and radioactive waste management. The information on decommissioning financing cannot be retained on the basis of confidentiality. The benefits of harmonised decommissioning funding methodologies should be explored in the EU. This assessment should take into account the differences in strategies between the Member States avoiding compromising safety and security. Common approaches in the case of new constructions should be rigorously pursued.

The Commission should focus on the adequacy of funding, its financial security and the ring fencing that is required in order to ensure the funds are only used for the purposes intended. For future nuclear constructions a common approach to methodology should be progressed but for currently operating systems the Commissions activities need to be based upon independent evaluation and reporting.

The working document accompanying this report contains a table of accumulated funds in relation to total liability and plant operational lifetime. The content of the working document is based upon the information provided by the Member States collected via reference studies undertaken since 2004. Member States are requested to correct, if necessary, the information provided and the Commission will reissue the document at appropriate intervals.

The accompanying working document will be used as a basis for future continued consultation with Member State experts.

Sources for the information in this report can be found in the Commission's Staff Working Document: EU decommissioning funding data¹⁰.

¹⁰ SEC(2007) 1654.