



*European Economic and Social Committee*

**TEN/498**  
**Final report on the nuclear**  
**stress tests**  
**(communication)**

Brussels, 13 December 2012

**OPINION**

of the

European Economic and Social Committee

on the

**Communication from the Commission to the Council and the European Parliament on the**  
**comprehensive risk and safety assessments ("stress tests") of nuclear power plants in the**  
**European Union and related activities**

COM(2012) 571 final

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Rapporteur-General: **Mr Mordant**

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On 12 October 2012, the European Commission decided to consult the European Economic and Social Committee, under Article 304 of the Treaty on the Functioning of the European Union, on the

*Communication from the Commission to the Council and the European Parliament on the comprehensive risk and safety assessments ("stress tests") of nuclear power plants in the European Union and related activities*  
COM(2012) 571 final.

On 17 September 2012 the Committee Bureau instructed the Section for Transport, Energy, Infrastructure and the Information Society to prepare the Committee's work on the subject.

Given the urgent nature of the work (Rule 59 of the Rules of Procedure), the European Economic and Social Committee appointed Mr Mordant as rapporteur-general at its 485th plenary session, held on 12 and 13 December 2012 (meeting of 13 December 2012), and adopted the following opinion by 98 votes with six abstentions.

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## 1. **Conclusions and recommendations**

- 1.1 Although managing risk depends mainly on the robustness of nuclear power plants, the EESC believes that all of the risks relating to such power plants, including the external risks that they pose to people, the environment and the economy, must be considered.
- 1.2 The EESC considers it essential to provide for accident management in each location by training staff and informing and consulting local residents, allowing them to participate in drawing up safety instructions and taking advantage of their local knowledge, while also providing for post-accident management, an activity that continues over the long term.
- 1.3 The EESC supports the Commission's intention to undertake an ambitious revision of the Nuclear Safety Directive, and calls on the Commission to take into account not only the technical aspects, but also all the human aspects that affect workers and the public, including health, stress, psychological issues and distress.
- 1.4 The EESC notes that not all Member States have independent safety authorities with regulatory responsibilities and that there is no common approach to nuclear safety regulation among the Member States. The EESC therefore recommends that the directive harmonise these aspects.

- 1.5 In the EESC's view, public information and participation could be based on applying the Aarhus Convention – which provides for information, participation/consultation and access to justice – to nuclear matters, given that the convention has been signed by the EU and the Member States.
- 1.6 The EESC considers that the EU should follow up on the stress tests and the recommendations made by the Commission by putting in place monitoring and verification mechanisms, including the submission of periodic reports at European level by the Member States.
- 1.7 The EESC believes that close cooperation and information sharing, which the communication calls for between operators, vendors, regulators and European institutions, are important and should be extended to the public and to staff and their representatives, particularly in border areas where procedures need to be harmonised.
- 1.8 The EESC believes that it is essential that shutdown of all the reactors on a site in the event of simultaneous loss of cooling and electrical power be considered in accident scenarios. It also recommends that procedures which assume that the reactor which suffers an accident will receive power from another reactor on the same site should be reviewed, as should emergency equipment (such as external lighting allowing staff to move about and emergency diesel generators), and that the water supply to spent fuel assembly pools should be improved.
- 1.9 The EESC emphasises the fact that nuclear energy will have to remain an integral part of the EU's energy mix, since no adequate source of baseload electricity with low carbon emissions will be available in the foreseeable future, but that the supply of electricity must not be compromised by technological failures or accidents. The EESC therefore calls on the Commission to support a study on organisational and human factors, since these aspects are key elements of nuclear safety and security.
- 1.10 The EESC supports the Commission's intention to propose legislation on nuclear insurance and liability, which at present do not truly cover the risks. The EESC believes that the social, environmental and economic aspects must be covered by funds that should be set up by the producers of nuclear electricity in Europe. There is also a risk that victims will not be adequately protected or compensated.
- 1.11 The EESC is concerned about the use of sub-contracting (which sometimes involves up to 80% of staff) without proper assessment of the effect of such practices on safety. Teams are weakened by the resulting loss of skills. The Committee considers that more attention needs to be paid to the training of people who work at the various sites.
- 1.12 The lifetime of power stations is not addressed, even though it raises concerns in terms of safety. The EESC considers this to be a critical issue when it comes to assessing the safety of installations, as well as in relation to the possibility of replacing them with new generation

plants and immediate planning for such replacement. National regulators should only agree to extension of the lifetime of nuclear power plants on the basis of internationally accepted best practices.

- 1.13 The EESC recommends that the Commission introduce ingestion of stable iodine on a harmonised basis throughout the EU as a prophylaxis against thyroid damage in the event of a serious accident and that it learn the lessons of Fukushima by extending the evacuation zones around densely populated European sites to between 20 and 30 km.

## 2. **Introduction**

- 2.1 The Fukushima accident on 11 March 2011 led to a review of the safety of nuclear installations both in Europe and worldwide. The European Union has 145 reactors, of which 13 are shut down or being dismantled, leaving 132 reactors in service at 58 sites, some of them in border areas. Although no comparable accident has occurred in the EU, a review was required of all the mechanisms for ensuring the highest possible level of safety, security and radiation protection. Of the neighbouring countries, Switzerland and Ukraine participated in the stress tests.

- 2.2 In the EU, as early as March 2011, the European Council concluded that "the safety of all EU nuclear plants should be reviewed, on the basis of a comprehensive and transparent risk and safety assessment ("stress tests")". A three-stage review process has therefore taken place in all European countries, involving:

- self-assessments by nuclear operators;
- review of the self-assessments by national regulators;
- peer reviews of the national reports, conducted by national and European Commission experts in the period January – April 2012.

All the participating Member States submitted their progress reports and final reports to the Commission by the agreed deadline (COM(2011) 784 final).

- 2.3 In addition, the European Council asked the Commission to invite the EU's neighbouring countries to take part in the stress test process and for the EU to "review the existing legal and regulatory framework for the safety of nuclear installations" and to "propose by the end of 2011 any improvements that may be necessary". It should be borne in mind that this safety review could not have taken place without a mandate from the European Council to the Commission.

## 3. **Summary of the Commission communication**

- 3.1 The final report noted that in general, safety standards for nuclear power plants in Europe are high, but recommended improvements to various safety aspects in almost all of them.

- 3.2 Nevertheless, the national safety authorities have come to the conclusion that no power station needs to be shut down.
- 3.3 The tests have shown that the safety standards recommended by the International Atomic Energy Agency (IAEA) and international best practices are not fully applied by all Member States.
- 3.4 The Commission will closely monitor the implementation of the recommendations and will at the same time propose legislative measures aimed at further improving nuclear safety in Europe.
- 3.5 Besides the many specific technical improvements recommended in power stations, the stress tests have shown that international standards and practices are not always applied. The lessons of Fukushima also need to be learned, particularly in relation to risks linked to earthquakes and floods, existence and use of on-site seismic instrumentation, installation of Containment Filtered Venting Systems, installation of dedicated emergency response equipment for accidents and establishment of an off-site Emergency Control Room.
- 3.6 The national safety authorities are to draw up national action plans, with timetables for implementation, and to make them available by the end of 2012. The Commission intends to report on the implementation of the recommendations arising from the stress tests in June 2014, in full partnership with the national safety authorities.
- 3.7 The Commission has reviewed the existing European legal framework on nuclear safety and will present a revision of the Nuclear Safety Directive in early 2013. The proposed changes will mainly relate to safety requirements, the role, independence and prerogatives of national safety authorities, transparency and monitoring.
- 3.8 Further proposals will follow on nuclear insurance and liability and on the maximum permitted levels of radioactive contamination of food and feedstuffs. The stress test process has also made clear the need for further work on nuclear security (that is to say, prevention of malicious acts), for which the Member States are primarily responsible.
4. **General comments**
- 4.1 The scale of the effort and financial resources dedicated to these tests should be highlighted, as should the success with which they have been implemented. The "stress test" process has involved the 14 EU Member States that operate reactors participating in the assessments "on a voluntary basis", which is a major step towards the establishment of common safety and security rules. The assessments, however, are based on self-assessment by operators, followed by review by National Safety Authorities and peer review. The EU should follow up on the

"stress tests" and the Commission's recommendations by putting in place monitoring and verification mechanisms.

#### 4.2 **Observations on the legal framework**

4.2.1 Despite the existence of the Nuclear Safety Directive, the Member States' approach to nuclear safety and security regulation is not fully compliant. The revision of the directive should involve more thorough codification in relation to nuclear safety. The directive should be implemented strictly and the infringement procedure should be rigorously applied.

4.2.2 **Revision of the Nuclear Safety Directive.** Two countries, Poland and Portugal, have not yet fully transposed the Nuclear Safety Directive (Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations), the deadline for which was 22 July 2011. "It is crucial to ensure that the lessons learned from the Fukushima accident and the conclusions of the stress tests are properly and consistently implemented in the EU and reflected in the legislative framework" (COM(2012) 571 final). The EESC supports the revision process that is under way and, in particular, calls for a greater supervisory role for the EU. However, this must not be limited to the technical aspects covered by the "stress tests". Safety also depends on human beings: the public, workers and their representatives. It would be beneficial for the transparency and public participation clauses of the nuclear directive to be based on the Aarhus Convention, which has been signed by the EU and almost all the Member States, at least in relation to public participation.

4.2.3 It is important to emphasise the need to harmonise radiation protection and off-site emergency preparedness rules among the EU Member States: "In the EU, 47 nuclear power plants with 111 reactors have more than 100 000 inhabitants living within a circle of 30 km. This demonstrates that off-site preventive measures are of primary importance. The responsibility for these measures is shared by several national, regional and local authorities." (COM(2012) 571 final). The Committee therefore strongly supports the revision of EU legislation in this field and the necessary participation of local residents.

4.2.4 **Nuclear insurance and liability.** This matter is not dealt with at European level, but "Euratom Treaty article 98 provides for Council Directives establishing binding measures on this issue. Therefore, based on an impact assessment, the Commission will analyse to what extent the situation of potential victims of a nuclear accident in Europe should be improved, within the limits of EU competence." (COM(2012) 571 final). The Commission intends to propose legislation on this issue, an initiative which the EESC supports, since at present insurance does not sufficiently cover the risk. The legislation should cover, in particular, the social, environmental and economic aspects and "last resort" compensation, which is currently a responsibility of the state.

4.2.5 **Revising the legislation on food and feedstuffs.** "The experience gained from the events in Fukushima and Chernobyl demonstrated a need to differentiate between instruments

regulating the import of food from third countries and those for the placing on the market of food in case of an accident within the EU." (COM(2012) 571 final. This legislation should be revised.

- 4.3 The "stress test" specifications described what was to be covered in the analysis, but not what was excluded. The ageing of nuclear power plants and the impact of extending their life, the culture of safety and independence, standards and consistency among national regulatory authorities were not included and therefore not assessed. At least some of those factors could be considered to have contributed to the extent and impact of the Fukushima disaster, which was the original reason for the "stress tests".
- 4.4 In that context, the EESC supports the proposal to involve the Joint Research Centre and to create a permanent European Nuclear Safety Laboratory, but that remains a question of technical analysis. The EESC notes once again that high-level training designed for nuclear activities needs to be developed. An administrative authority responsible for nuclear safety in Europe is also needed, alongside those for radiation protection and nuclear proliferation monitoring.
- 4.5 The EESC points out the need to give thought to the training of staff who work at the various sites. Use of sub-contracting has become rather common in certain countries, without a proper assessment of the effect of such practices on safety. Teams are weakened by the resulting loss of skills.
- 4.6 **Stepping up international cooperation and improving the global legal framework for nuclear safety.** "A majority of nations participating to this working group highlighted the need to take into account the IAEA safety standards, regulatory independence and effectiveness, extended use of peer reviews as well as improved openness and transparency." (COM(2012) 571 final). It is significant that independence, transparency and openness are guiding principles of the ideas on sharing and strengthening rules, but is that enough if those rules are not applied?

## 5. **Specific comments**

### 5.1 **Transparency**

- 5.1.1 It is clear that, with the exception of a reference to transparency, informing the public is not an element of the "stress test" process, even though such information is provided for by the Aarhus Convention, whose three pillars call for consultation, participation and access to justice. However, the public is an essential part of nuclear safety and security. The involvement of the people of the EU has not been sufficient in view of the magnitude of the issues, and it has not been easy for them to contribute. The time available to examine the various files has been very limited, interpretation has not always been available at public meetings and several associations have been unable to participate for financial reasons.

Nevertheless, the degree of transparency that has been achieved has allowed certain civil society organisations to undertake a very detailed analysis of the reports.

- 5.1.2 "The occurrence of incidents in nuclear plants, even in Member States with otherwise good safety records, confirms the need for thorough safety reviews on a regular basis and for the assessment of operational experience, and highlights the need for close cooperation and information sharing between operators, vendors, regulators and European institutions, such as the European Clearinghouse of Operating Experience, maintained by the Commission Joint Research Centre (JRC)." Information-sharing should not be limited to "operators, vendors, regulators and the European institutions" (COM(2012) 571 final). The people of the EU must be involved in that process: such involvement is one of the pillars (information, consultation/participation and access to justice) of the Aarhus Convention.

For example, in France there are three bodies that exist to help citizens: the High Level Committee for Nuclear Security Transparency and Information (HCTISN), the Local Information Commissions (CLIs) and the National Association of Local Information Committees and Commissions (ANCCLI) (Law of June 2006). These bodies were involved in the French process of "Supplementary Safety Assessments". The HCTISN participated in drawing up the specifications for the assessments and tasked a working group with clarifying the working conditions of staff by way of hearings on the ground. The CLIs and the ANCCLI provided analyses of the operators' reports which fed in to the French National Safety Authority's report.

**As regards incidents, these bodies have access to inspection follow-up letters and can obtain the operators' responses. The possibilities that exist in France show how participation in incident analysis allows a more constructive dialogue to be established with the public.**

- 5.2 Significantly, the Commission observes that "regulators concluded that there are no technical reasons requiring the shutdown of any NPP [nuclear power plant] in Europe, and identified a series of good practices." (COM(2012) 571 final). However, alongside that statement, there are various recommendations and requests for improvement which must be complied with within a certain period: what will happen if those deadlines are not met? Some of the technical requirements – such as increasing the thickness of a reactor floor at Fessenheim in France and bunkering of buildings (fuel storage ponds) – may be impossible to implement: what will countries decide to do then? It is also important to bear in mind that some power plants have failed to implement the protection measures recommended following the Three Mile Island and Chernobyl accidents.



### 5.3 Findings on safety procedures and frameworks

#### Following Fukushima, the key points relate to:

#### 5.3.1 Assessment and management of external risks

The possibility of simultaneous loss of the cooling source and electrical power for all the reactors on a given site had never been anticipated. As a result, protection mechanisms such as emergency diesel generators and water tanks turned out to be ineffective, all the more so since it was the other reactors on the site that were supposed to take over the role of the failed reactor.

- 5.3.2 **Probabilistic Safety Assessments** differ "significantly" between Member States (COM(2012) 571 final). They must be harmonised on the basis of the strictest approach. One must not take false comfort from the low probabilities, since accidents usually result from a combination of small breaches occurring one after another or, worse, at the same time. Furthermore, analysis of Fukushima has shown that the risks of earthquakes and tsunamis had been played down, even though specialists pointed out that such events were not only possible, but had occurred during the 1930s. The tendency has been to consider some accidents to be "impossible".

That is in spite of the fact that the Three Mile Island accident had already shown that a reactor core could melt down. Reviews that took place several years after the accident showed that the reactor vessel had cracked, but had not been breached. At Chernobyl, on the other hand, lava (corium) spread everywhere. And at Fukushima, the three cores (nos. 1, 2 and 3) partially melted and probably attacked the reactor floors.

#### 5.3.3 Severe accident management

All situations must be anticipated, so as to try to put in place emergency measures to mitigate the accident as far as possible. **One of the most important such measures is staff training.** However, to make external management possible, preparations for accident management must be made with local residents, giving them the chance to participate in drawing up safety instructions that take advantage of their local knowledge.

Fukushima also showed us once again the importance of post-accident management. It is true that local, regional and national authorities will be responsible for such management. However, local residents must be consulted, must participate in exercises and must contribute their knowledge. Post-accident management is a matter for the long term.

## 5.4 Key recommendations from the stress tests on safety

### 5.4.1 Recommendations on safety measures in existing nuclear power plants:

- **Follow-up by participating countries**

Acquisition of mobile equipment should make it possible to prevent or mitigate serious accidents. Equipment should also be hardened (the so-called "hardened core") and staff training should be improved.

- **Action plan to ensure implementation of the recommendations**

First of all, the relative importance of the various recommendations must be assessed "to prioritise and allocate funding to those areas which bring the greatest safety benefits" (COM(2012) 571 final). New-generation reactors, meanwhile, are in principle designed to comply with all of the measures linked to the recommendations, but Europe's nuclear safety regulatory capacity needs to be improved.

- **Responsibility for monitoring and verification:**

This is the responsibility of the Member States. They must, however, provide periodic reports at European level.

### 5.4.2 Recommendations on procedures

- At European level, "guidance should be developed on the assessment of natural hazards, including earthquake, flooding and extreme weather conditions, and safety margins, in order to increase consistency between Member States." (COM(2012) 571 final). The Commission recommends that WENRA (Western European Nuclear Regulators' Association) be entrusted with this task. **It would be worthwhile to use a consultation process of the Aarhus Convention type, to involve at least residents near these sites in developing such guidance.**

- Inspections and assessments once a decade should become standard, while at the same time keeping in place maintenance programmes suited to the importance of the equipment.

- Reactor safety reports should be upgraded at least every ten years.

- Emergency equipment should be provided, protected emergency response centres established and rescue teams with mobile equipment put in place.

5.5 It is essential that the assumption of responsibility for shutting down all of the reactors on a site in the event of simultaneous loss of cooling and electrical power be considered in accident scenarios. All procedures which assume that the reactor which suffers an accident

will receive power from another reactor on the same site should be reviewed, as should emergency equipment such as external lighting allowing staff to move about and emergency diesel generators. Storage of spent assemblies in pools should of course be reviewed, and the water supply to such pools should be improved.

5.6 "The Commission considers that extending the safety assessment to off-site emergency preparedness and response arrangements is an important additional activity to improve citizens' safety." (COM(2012) 571 final). The EESC considers that procedures should also be harmonised between neighbouring countries. In relation to CLIs, Swiss and Germans are members of the Fessenheim Local Information and Monitoring Commission (CLIS), and Germans and Luxembourgish of the Cattenom CLI. Belgians take part in meetings of the Chooz CLI and can take part in those of Gravelines. It would be highly beneficial to prepare with local residents for the assumption of responsibility for incidents. When an accident takes place, the post-accident period can last for a long time and of course it is local residents who will suffer the bulk of the damage, with serious social, economic and environmental consequences. Operators' insurance is a long way from covering the costs of an accident – it is in fact states (and therefore the public) who will have to do so.

#### 5.7 **Key findings and recommendations from the security assessments**

5.7.1 The AHGNS (Council Ad Hoc Group on Nuclear Security) (Final report: <http://register.consilium.europa.eu/pdf/en/12/st10/st10616.en12.pdf>) presented its findings under five themes: physical protection, malicious aircraft crashes, cyber-attacks, nuclear emergencies and exercises and training. However, national security remains the responsibility of the Member States. It is necessary to:

- ratify the convention on the protection of nuclear materials (proliferation);
- continue work on nuclear security; and
- establish links between nuclear safety, radiation protection and security.

A gap is created by the lack of studies on organisational and human factors. **It is essential to focus on this component, which is one of the key elements of safety.**

5.7.2 Questions were raised as to whether malicious acts such as possible aircraft crashes needed to be dealt with when looking at accidents. This point was addressed at a European-level seminar. This issue of a large aircraft crash highlighted how different the approaches of the EU countries are. Nevertheless, this point needs to be considered, given the great concern about it in society. The containment of the reactors that are currently in operation would not withstand the impact of a large aircraft, but new EPR-type reactors will have to comply with new construction requirements: will those be sufficient?

### 5.7.3 Measures to improve nuclear security:

- reduction of the threat of Chemical, Biological, Radiological, Nuclear (CBRN) incidents of intentional origin, including acts of terrorism, and detection of radioactive and nuclear materials;
- revision of Directive 2008/114/EC on the identification and designation of European critical infrastructures, anticipated in 2013;
- the Commission will table a legislative proposal on network and information security by the end of the year;
- adoption of the proposal for the revision of the EU Civil Protection Mechanism, which facilitates cooperation between Member States in civil protection assistance interventions in the event of major emergencies, including radiological and nuclear accidents.

### 5.8 Next steps

5.8.1 It should be borne in mind that the organisation of "stress tests" following the Fukushima disaster was an exercise on an unprecedented scale. It is also true that a large amount of documentation has been made available to the public. However, strict monitoring remains necessary. Indeed, improvements are needed in every country, and the weaknesses in regulation must be eliminated.

5.8.2 **It also remains the case that not enough assessment has been done of the human and organisational factors** and that their importance in relation to safety has not been taken into account. As regards organisation in the event of a crisis, and dealing with such crises in the long term, consultation must genuinely be opened up to all stakeholders and involve the public at grass roots level.

5.8.3 The Commission recommends:

- **that the requests made should be implemented as soon as possible.** The Commission will monitor the implementation of those requests and will, together with the European Nuclear Safety Regulators Group (ENSREG), publish a report in 2014. It adds that the objective of the plan of action should be to implement the majority of the necessary safety improvements by 2015;
- proposing to the Council a mandate to participate actively in a **working group on transparency** (which has also been proposed by the IAEA and has been modelled by the RISCOP European research project). The EESC suggests basing this on the Aarhus Convention;
- **to contribute to the reinforcement of nuclear security** with the support of the EU Member States and institutions;

The EESC recommends participation and consultation of the public in this respect.

5.8.4 The EESC considers that the stress test process should result in the adoption of the highest possible safety standards for nuclear energy, which accounts for 30% of EU electricity production. That is essential if this important source of low-carbon electricity is to continue to contribute to the European energy mix and to achieving the objective of reducing greenhouse gases.

Brussels, 13 December 2012

The President  
of the  
European Economic and Social Committee

Staffan Nilsson

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