



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR ENERGY

DIRECTORATE D - Nuclear Energy
D.2 - Nuclear energy, transport, decommissioning & waste management

APPROACHES FOR A POSSIBLE EU LEGISLATIVE PROPOSAL ON THE MANAGEMENT OF SPENT FUEL AND RADIOACTIVE WASTE

RESULTS OF THE PUBLIC CONSULTATION

31st March 2010 – 31st May 2010

EXECUTIVE SUMMARY

1. BACKGROUND

The public consultation was carried out over a period of eight and half weeks, from the 31st of March to the 31st of May 2010. In total 510 responses were received. It was published on the website "*Your voice in Europe*" and announced to a range of key stakeholders and EU Institutions. The General Principles and Minimum Standards for Consultation of Interested Parties by the Commission¹ were respected in the elaboration and presentation of this questionnaire.

The questions presented covered the following areas:

- The characteristics of the respondents and the specific identification of the participating public authorities and radioactive waste management organisations,
- The respondents' perception of the issue of spent fuel and radioactive waste management in their country of residence together with the main challenges to be addressed in this area,
- Their preferred approach towards EU legislation in this area and in particular, whether binding or non-binding legislation would result in the greater improvement of the national situation,
- Two options for possible binding EU legislation:
 - Option 1: Strengthening the international principles and requirements laid down by the IAEA Safety Standards and the Joint Convention,
 - Option 2: Additional action over and beyond that of option 1, adding some specific requirements to be considered in the Member States' national programmes for the management of spent fuel and radioactive waste.

Regarding option 1, the respondents were asked to identify, in their view, the most important principles and requirements for spent fuel and radioactive waste management. For option 2, a list of possible contents for the national programmes was presented, with the respondents being invited to identify their preferences.

- The means by which binding legislation could be implemented and in particular how national reports and peer reviews might contribute to this process.
- The possible impacts of binding legislation.
- Additional proposals and comments.

¹ COM(2002)704

Almost all of these questions were presented in a multiple choice format, facilitating a quantitative analysis. Only the section on additional proposals and comments was presented as an open question (*intended for a qualitative analysis*).

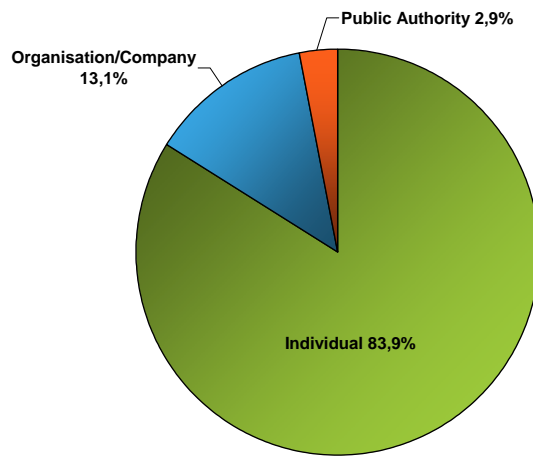
2. PROFILE OF THE RESPONDENTS

The majority of respondents to the questionnaire were individuals (428), with the remainder being organisations or public authorities (82). Represented among the collective were, NGOs (35), Public Authorities (15), Waste Management Organisations (8), Producers of Radioactive Waste (11), Technical Services (3) and Others (10).

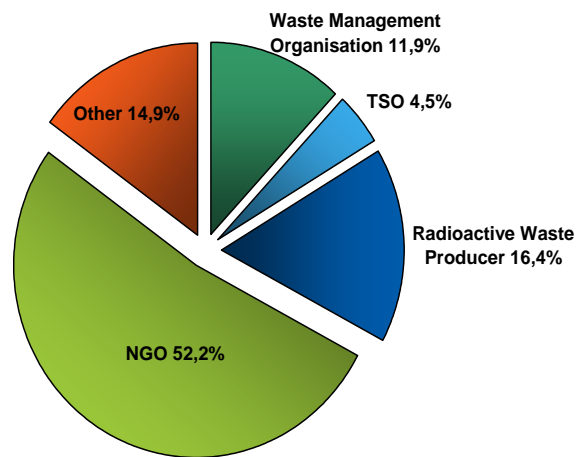
For the **individuals**, the majority (63.3%) could be defined as interested citizens having no direct professional involvement in radioactive waste issues, and 75.4% of these considered themselves to be "very well" or "fairly well" informed regarding spent fuel and radioactive waste policy in their country.

It was notable that 31.1% of the total responses emanated from Italy.

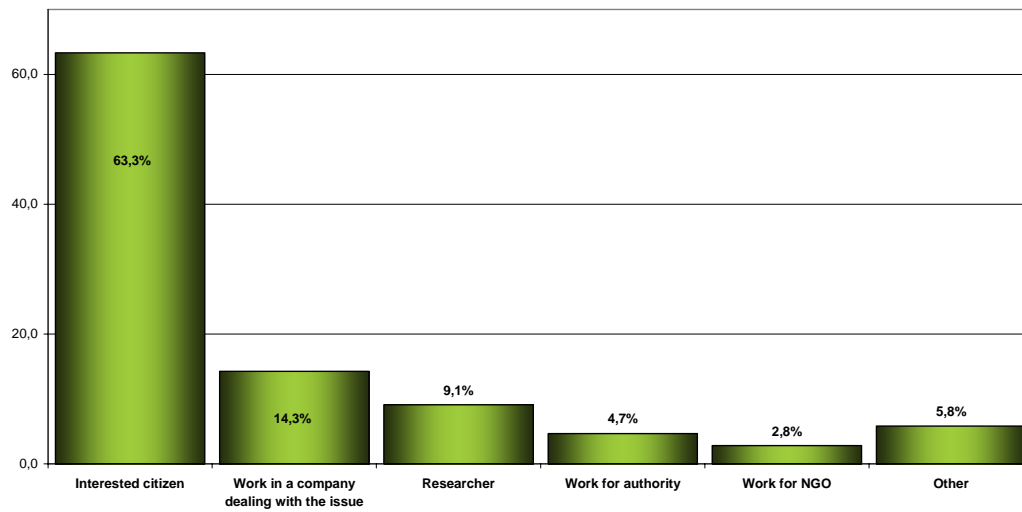
Role of Respondents



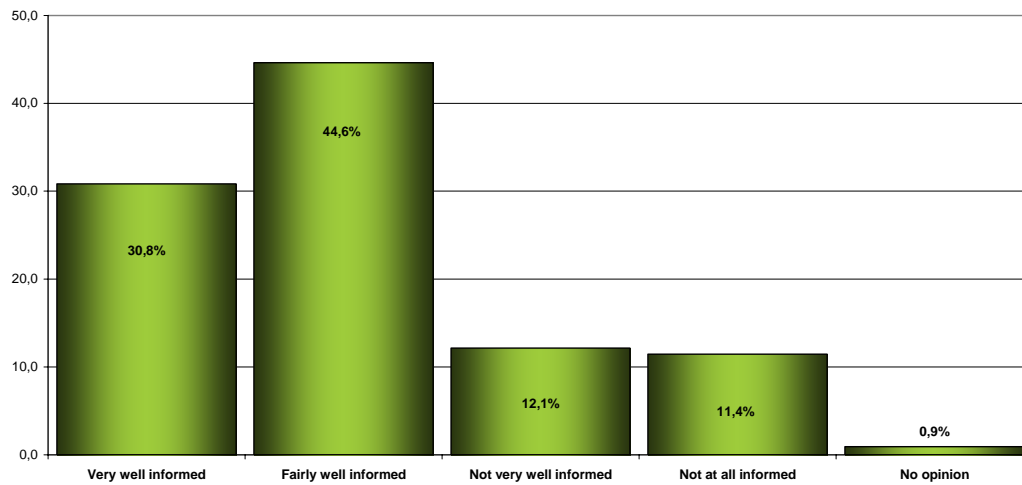
In case of Organisation/Company - Which type?



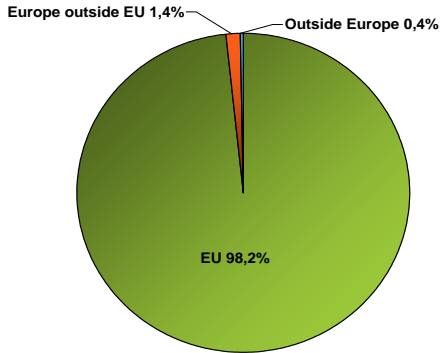
In case of Individual Respondent - From which perspective are you interested in this topic?



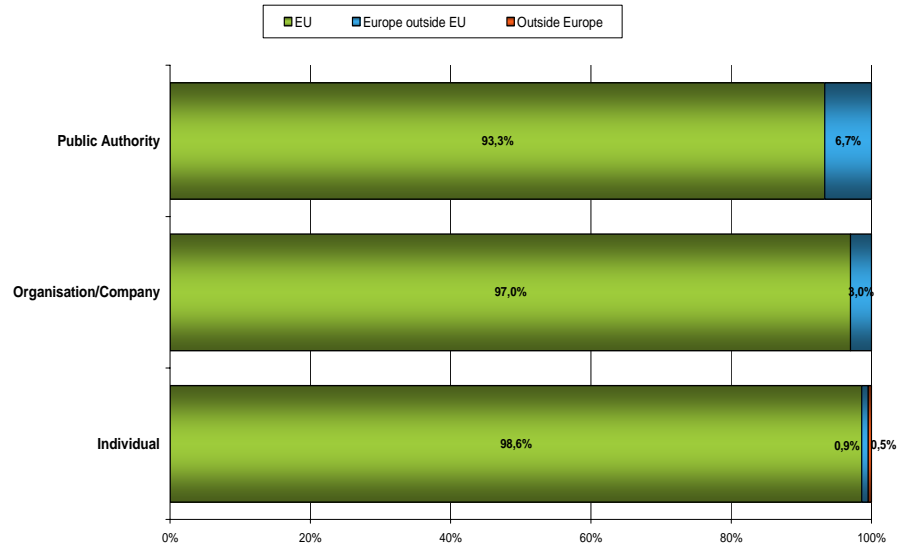
In case of Individual Respondent - How well informed you feel you are about the policy of spent fuel and radioactive waste management in your country?



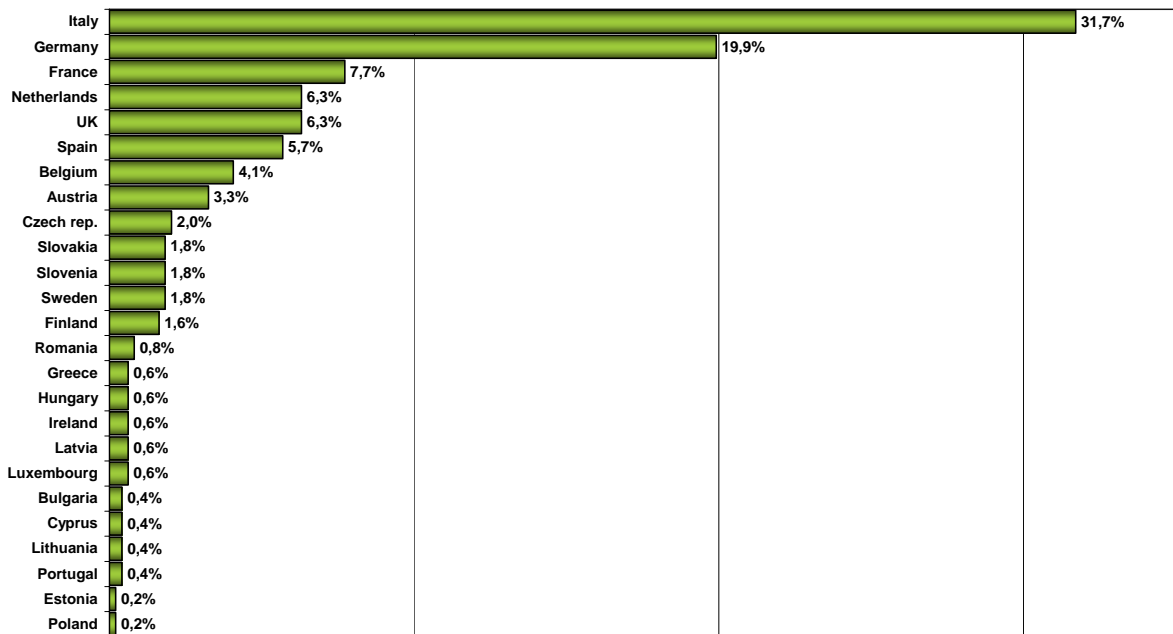
Respondents' region of residence



Region of residence



Respondents' region of residence - In case of EU country (%)



3. RESPONDENTS' PERCEPTIONS SITUATION AS A FUNCTION OF COUNTRY OF RESIDENCE

A significant majority of the **individual** respondents (69.6%) considered that the measures taken in their country for ensuring the safe management of spent fuel and radioactive waste were insufficient. They felt that in this regard, the main challenges to be address in their countries were:

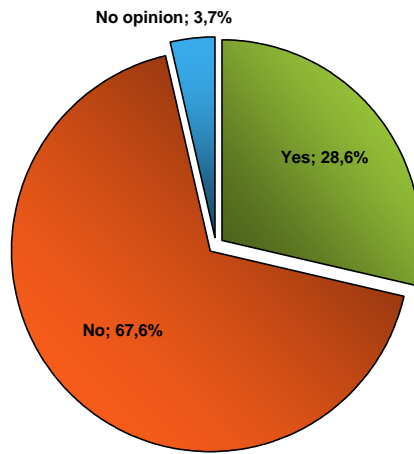
- the lack of transparency,
- the lack of a permanent and safe solution for the disposal of high level waste and spent fuel,
- and the insufficient involvement of the public in decision-making processes.

These were also the three main concerns highlighted by **NGOs**.

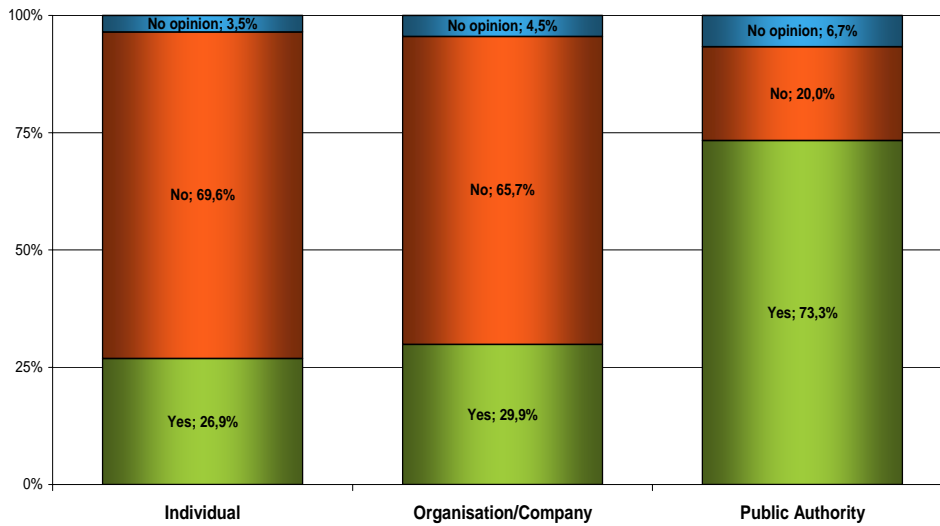
For the **public authorities**, in addition to the challenges identified above, an important concern was the current absence of a comprehensive national program. For **radioactive waste management organisations, producers of radioactive waste** and **technical organisations**, another important challenge to be addressed was the lack of clear political direction and decisions².

² Please note that in the questionnaire "lack of political decisions" and "lack of political, solution oriented leadership" were identified as two different challenges. The challenge in the first case is that no decisions are taken at all. In the second case, decisions may be taken, but they are not carried out effectively due to a failure in leadership or management.

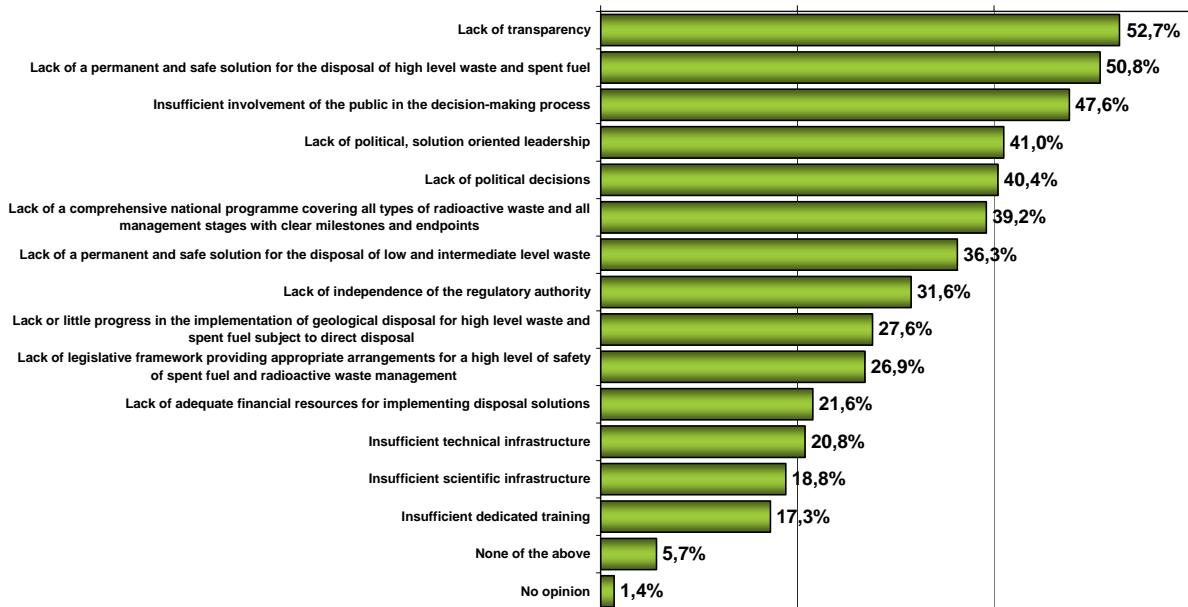
Do you consider that the measures taken in your country for ensuring the safe management of spent fuel and radioactive waste are sufficient?



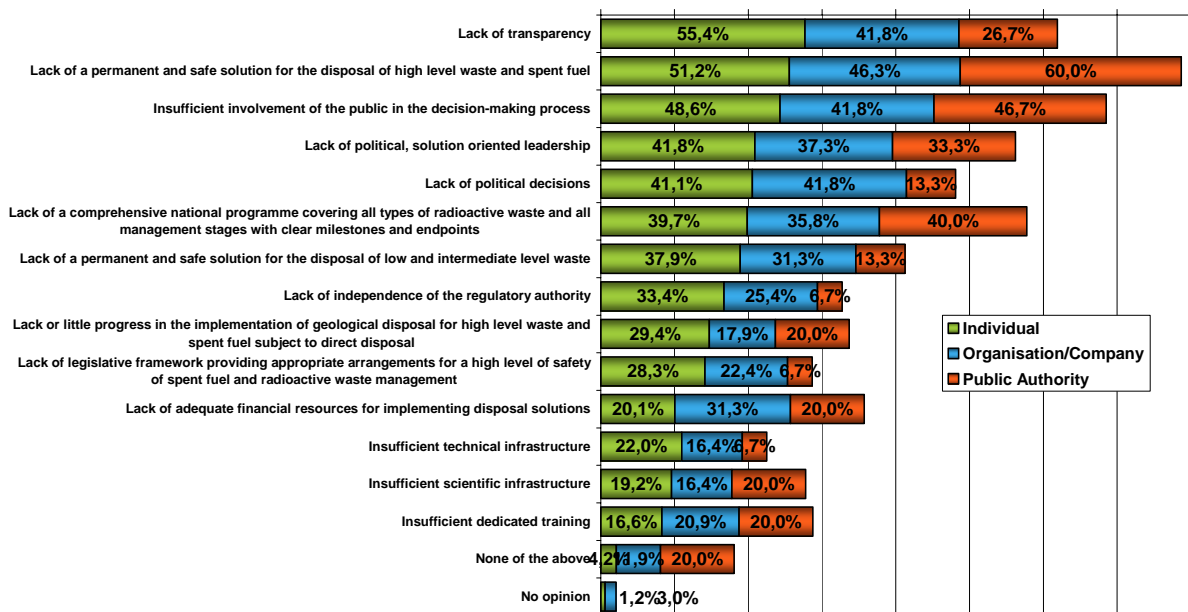
Do you consider that the measures taken in your country for ensuring the safe management of spent fuel and radioactive waste are sufficient?



What are the main challenges related to the spent fuel and radioactive waste management with which your country is still confronted?



What are the main challenges related to the spent fuel and radioactive waste management with which your country is still confronted? - %



Please note that the bars in the lower figure represent the percentage of answers in the individual groups; they therefore do not add up to the figures shown in the upper diagram

4. GENERAL PERCEPTION ON POSSIBLE EU APPROACH

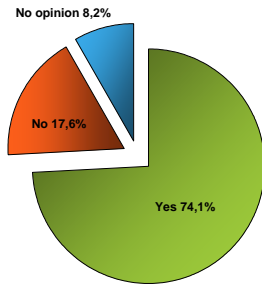
As a means to tackling the challenges identified above, 74.8% of the **individual respondents** believed in the need for a common approach within the EU. Of this group 77.6% favoured binding legislation in the form of an EU Directive as the preferred implementation route.

71% of **individuals** also considered that legal certainty would be enhanced should the principles of the IAEA Safety Fundamentals and the Joint Convention be integrated into Community legislation.

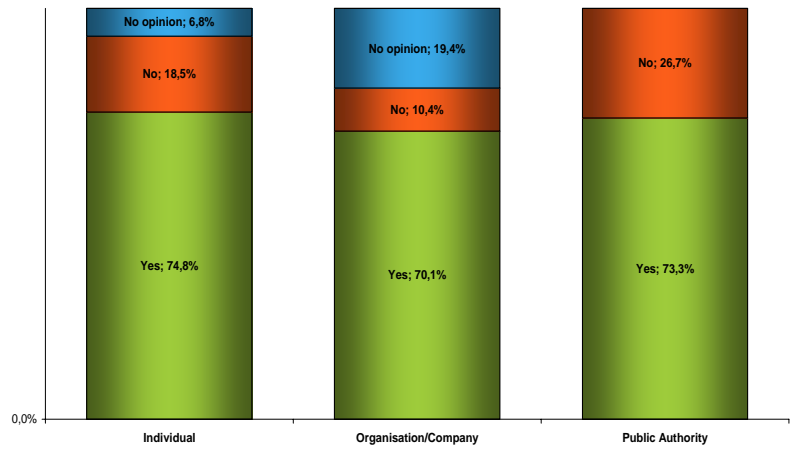
Radioactive waste management organisations, radioactive waste producers and technical service organisations responded similarly, with 75% supporting binding legislation.

The **NGO** response also showed strong support for binding legislation (88.6%), while support from **public authorities** (66.7%) was also very strong.

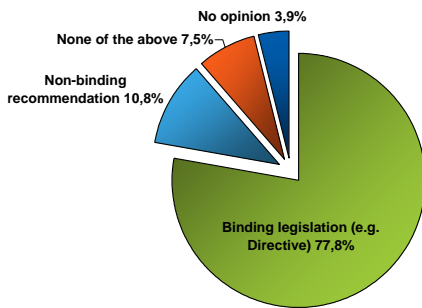
Do you consider that a common approach of all the 27 EU MSs is needed for tackling the challenges?



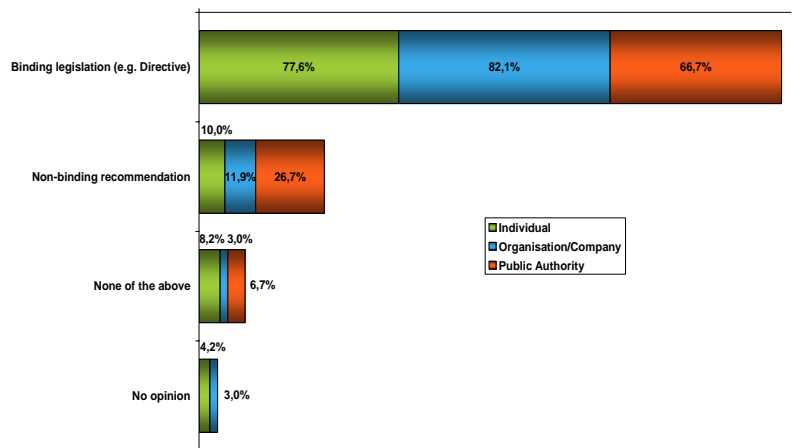
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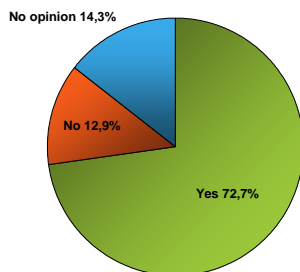
What would be your preferred instrument of Community intervention?



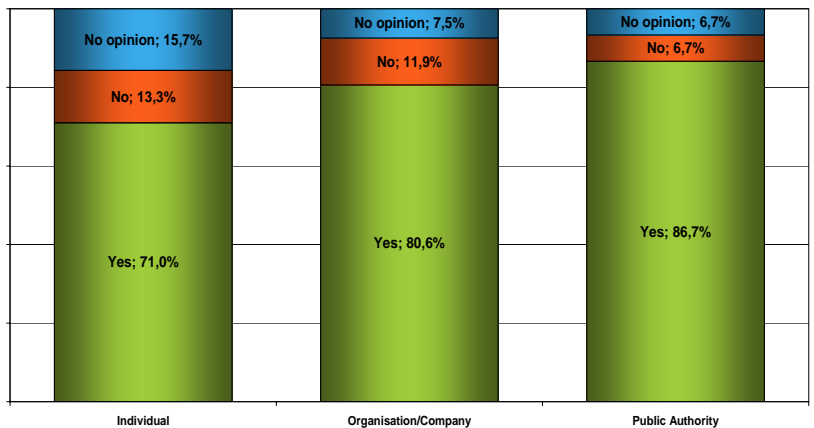
What would be your preferred instrument of Community intervention?



Do you consider that legal certainty would be enhanced if the principles of the IAEA Safety Fundamentals and the Joint Convention would become part of Community legislation?



Do you consider that legal certainty would be enhanced if the principles of the IAEA Safety Fundamentals and the Joint Convention would become part of Community legislation?



5. OPINIONS ON POLICY OPTIONS

The **first policy option** presented for Community action was a strengthening of the internationally accepted principles and requirements laid down by the IAEA. The questionnaire identified a series of main principles and requirements and requested the respondents to identify those actions which they felt were important to be complied with.

82% of **individuals** agreed on the fact that, as a fundamental principle, Member States should protect future generations from the dangers of ionising radiation effectively.

Likewise, 63.3% of the **individual** respondents agreed that transparency arrangements should be implemented. Other requirements that were identified as "very important" were; ensuring the effective independence of the regulatory authority, applying the polluter pays principle and actively involving the public in the decision making process.

These opinions were similar to those of the **NGOs** and **public authorities**, although public authorities also regarded ensuring financial resources as paramount.

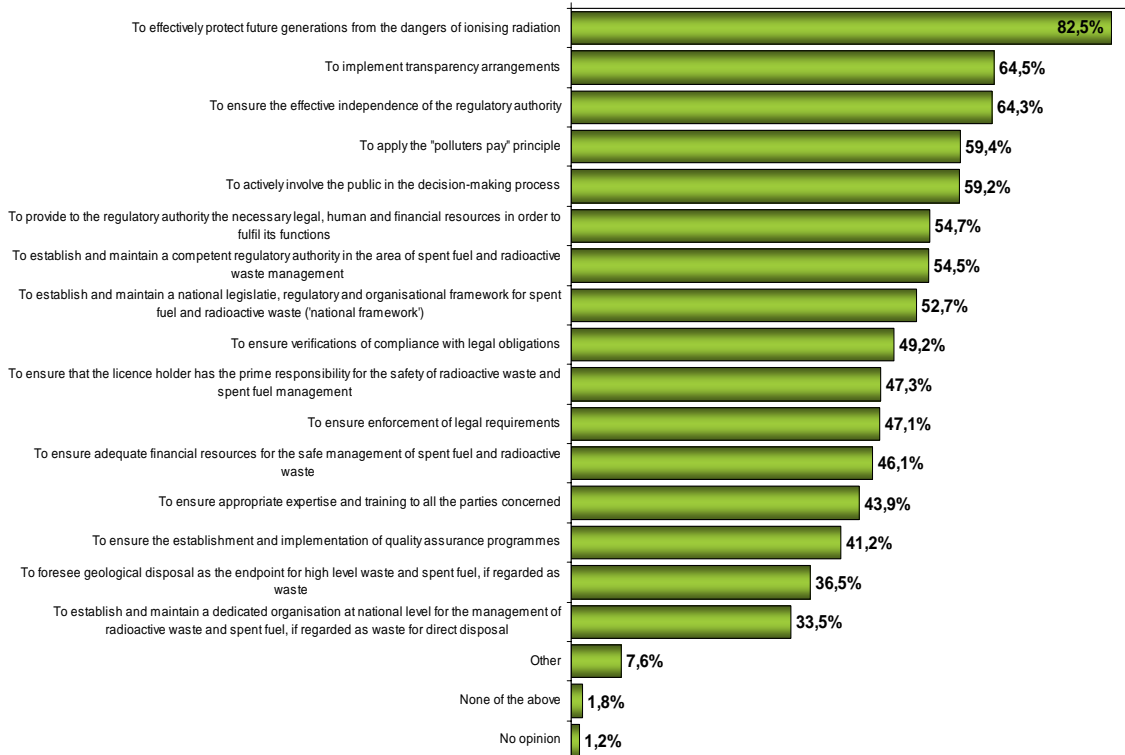
Radioactive waste management organisations, radioactive waste producers and organisations providing technical services, considered the establishment and maintenance of a national framework to be the most important issue to be addressed.

The **second policy option** proposed additional elements and issues as supplements to the existing IAEA principles and requirements, which would be implemented through the national programmes for spent fuel and radioactive waste management. In this regard, the respondents were asked which issues they felt should be included in the national programmes.

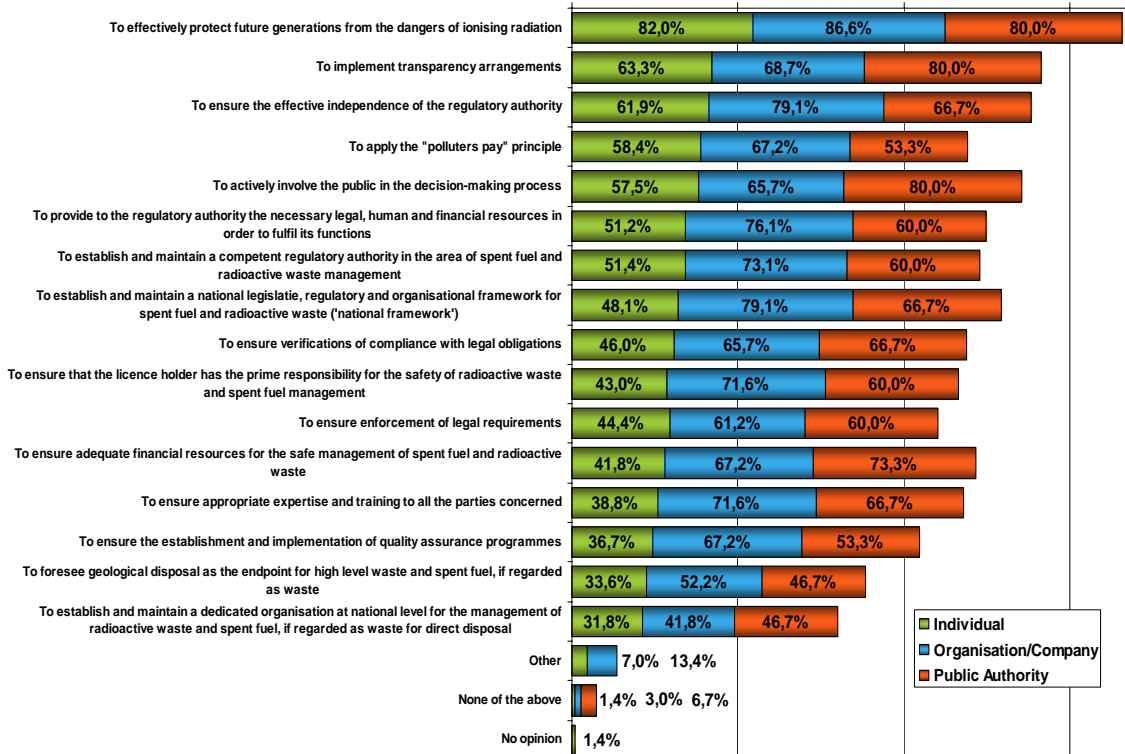
The majority of the **individuals** answered that national programmes should include an assignment of roles and responsibilities, and inventories of radioactive waste and spent fuel. They also considered that the proposal of plans and technical solutions as well as a description of the decision making processes were also among the elements that should be included in the plans. The same priorities were highlighted by **public authorities**.

The **NGOs** additionally highlighted the issue of remedial actions for legacy waste and the identification and achievement of significant milestones as key issues, while **radioactive waste management organisations, radioactive waste producers and technical service organisations** focused on the cost assessments and the identification and achievement of significant milestones achieved, as being important.

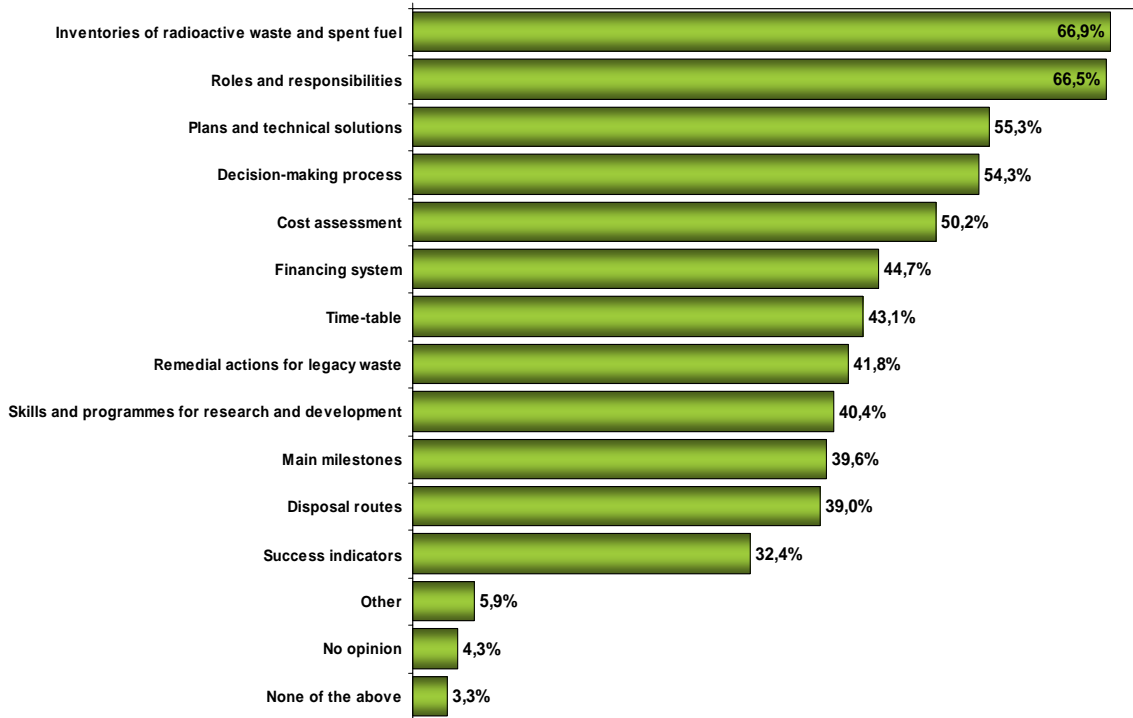
Option 1 - Which are the fundamental principles and requirements that Member States should comply with under this policy option?



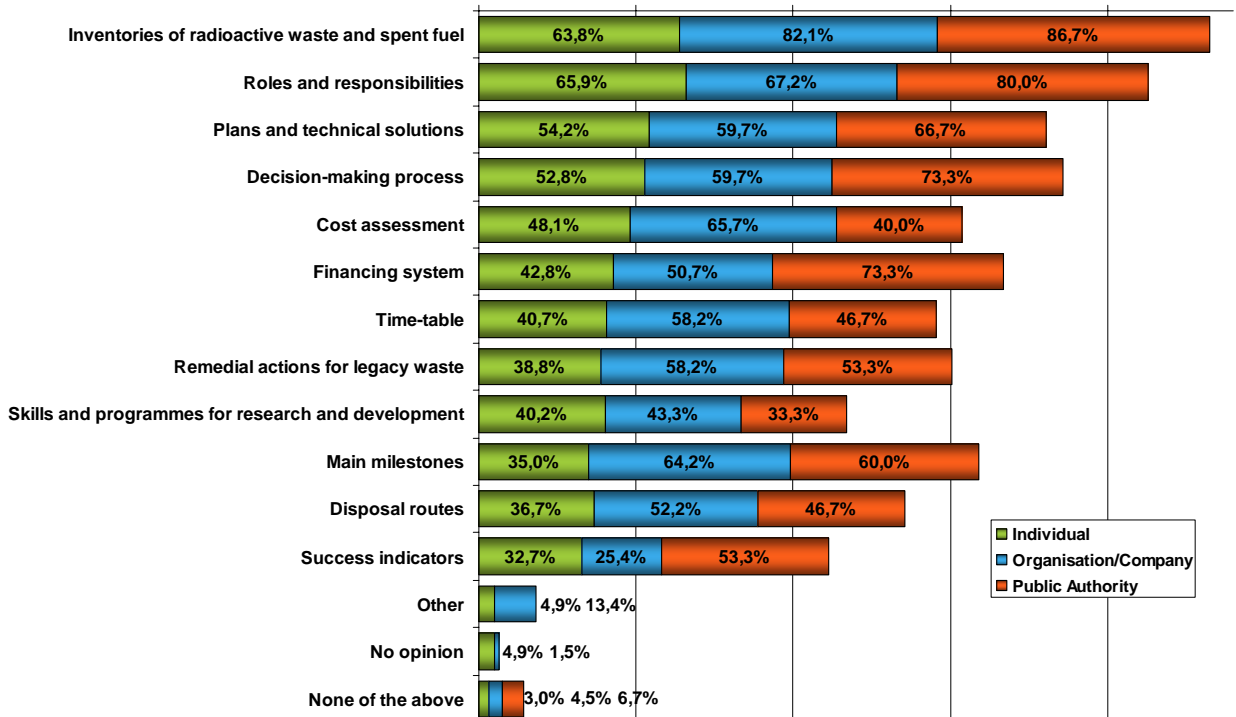
Option 1 - Which are the fundamental principles and requirements that Member States should comply with under this policy option?



Option 2 - Which elements should be included in the national programme for spent fuel and radioactive waste management?



Option 2 - Which elements should be included in the national programme for spent fuel and radioactive waste management?



6. COMPLIANCE WITH BINDING LEGISLATION

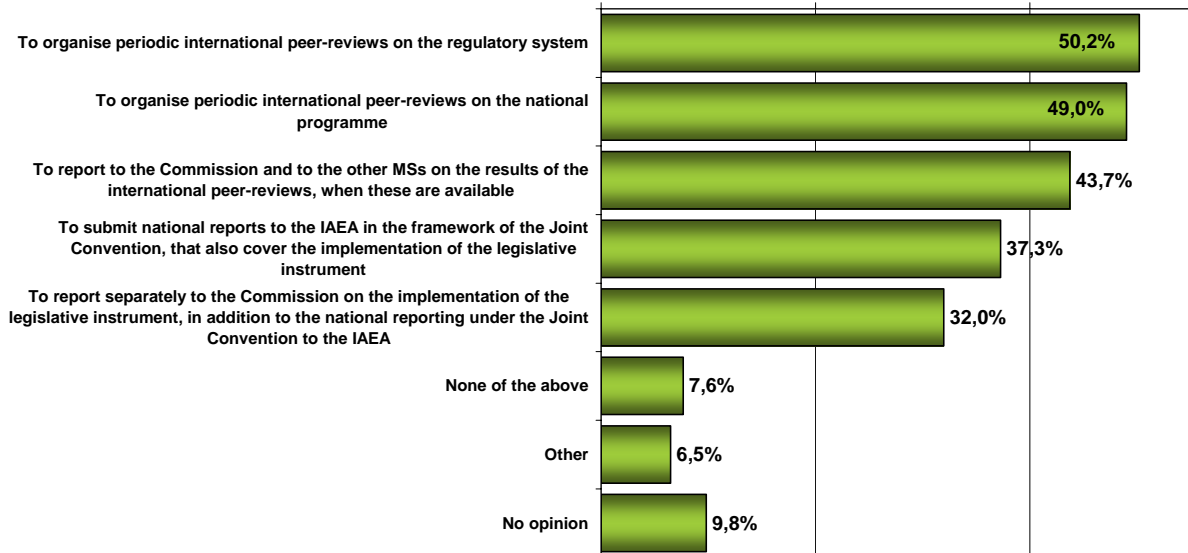
When **individual respondents** were asked for their opinions on how to ensure compliance with binding EU legislation in the Member States:

- 50.7% were in favour of organising periodic international peer-reviews on the regulatory system,
- 47.2% were in favour of examining the national programmes through peer-reviews,
- 44.2% supported reporting to the Commission and Member States on the results of the peer-reviews,
- 37.1% welcomed the idea of describing the implementation of the legislative instrument in the national reports to be submitted at the Joint Convention's review meetings,
- while a minority (31.3%) supported reporting to the Commission separately, in addition to the Joint Convention's reports.

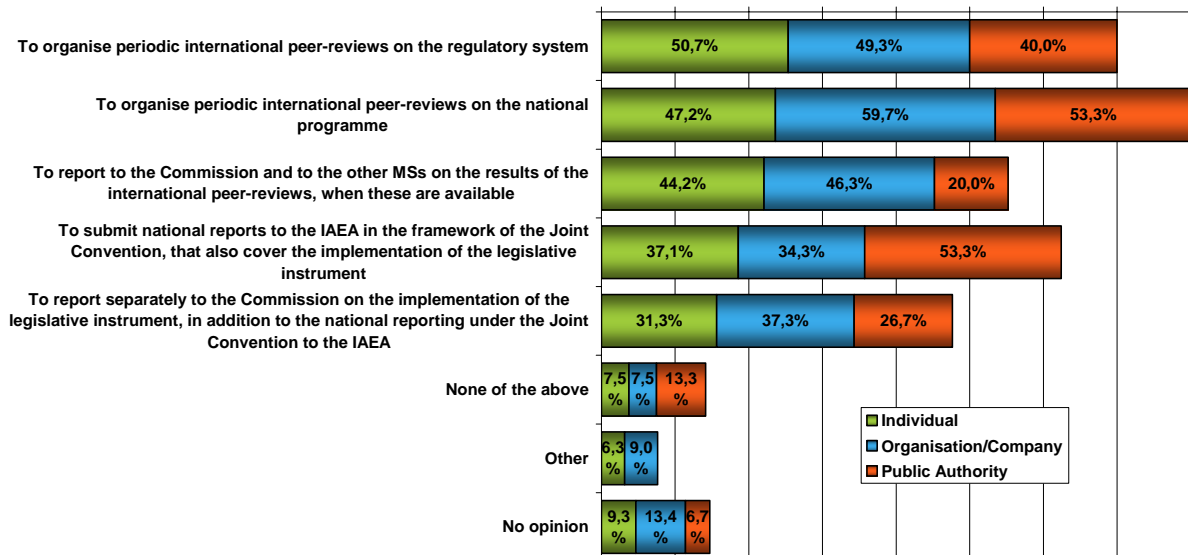
The **NGOs** expressed a desire (54.3%) to report separately to the Commission while **public authorities** (20%), and **radioactive waste management organisations, radioactive waste producers** and **technical service organisations** (37.5%) showed less support for this idea.

Radioactive waste management organisations, radioactive waste producers and **technical service organisations** were more reluctant towards the proposal for peer reviews on the regulatory system, preferring instead that they should be organised at the national programme level.

Which of the following requirements would you consider as valuable options for ensuring the implementation of binding EU legislation at the level of your country?



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7. IMPACTS

Some possible impacts of binding Community legislation were considered.

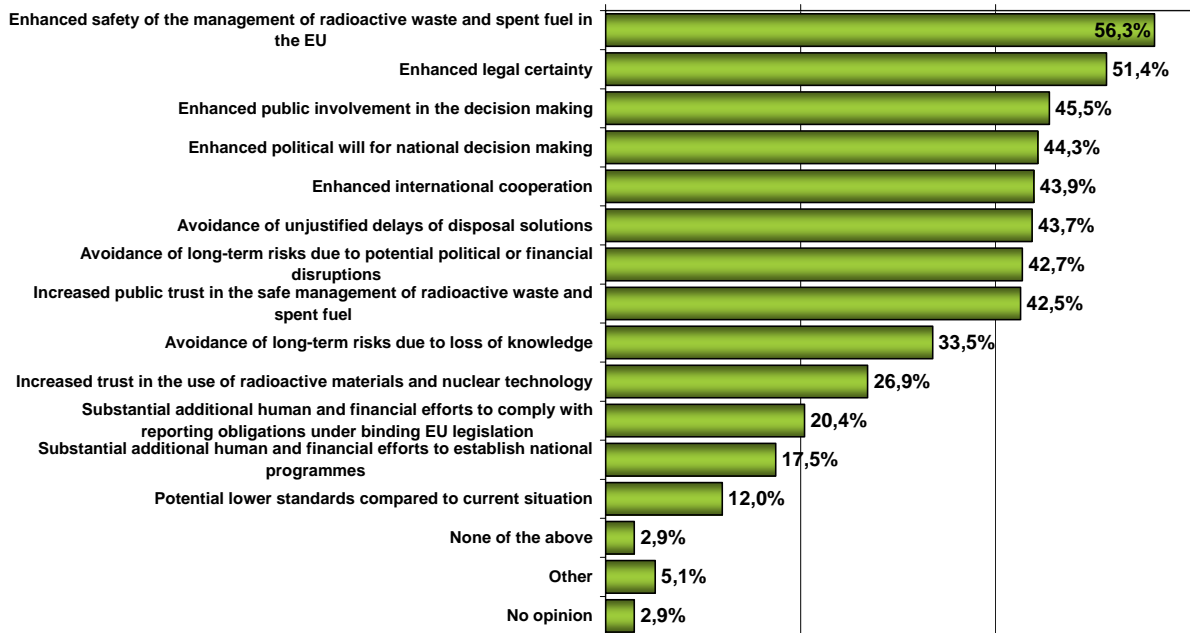
Many **individual respondents** agreed that the main outcomes would be:

- An enhanced safety and better management of radioactive waste and spent fuel,
- Enhanced legal certainty,
- The avoidance of unjustified delays for disposal solutions,
- And increased public involvement in the decision making process.

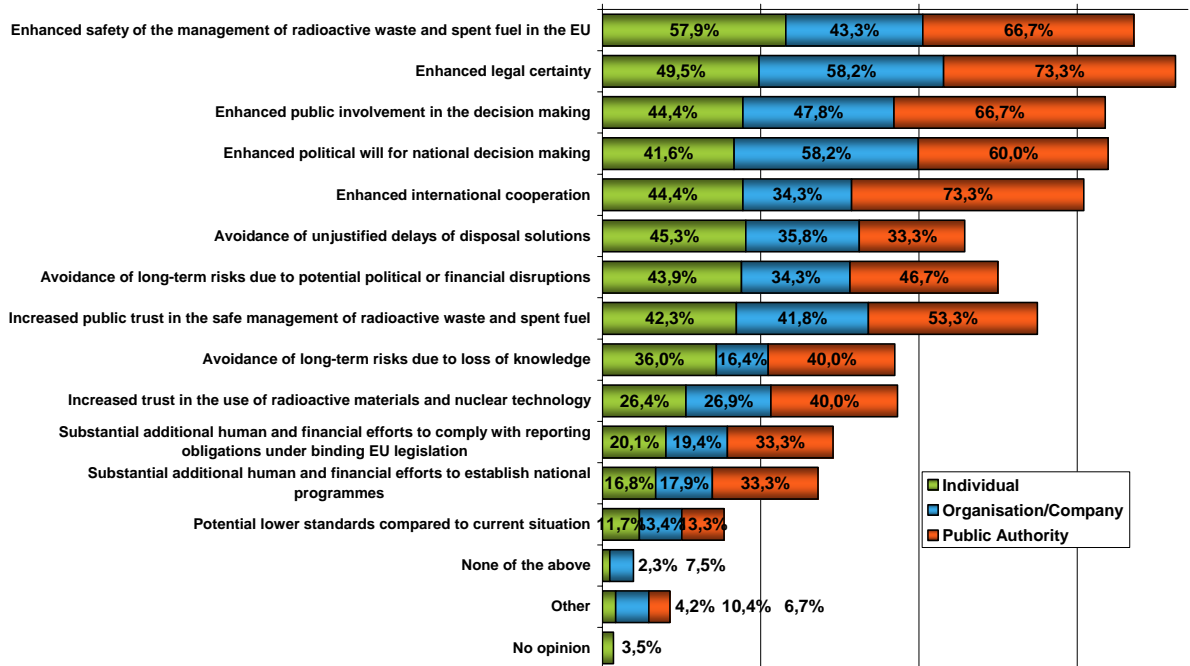
NGOs were in general agreement with this view, adding that there would be an enhancement in the political will with regard to national decision-making,

Radioactive waste management organisations, radioactive waste producers and technical service organisations also highlight similar themes, while **public authorities** were concerned about the substantial additional human and financial resources that would be required in order to establish such national programmes and to comply with the associated new obligations.

As to potential impacts, which of the following would you expect?



As to potential impacts, which of the following would you expect?



8. RESPONSES TO THE OPEN QUESTION

Regarding the open question, 186 suggestions and opinions were received, 128 of them coming from individuals, 26 from NGOs and the remainder (32) from authorities, waste management organisations, waste producers, technical services and others.

Many of the comments received from **individual respondents** expressed an outright opposition to nuclear energy (57). Many suggestions indicated a desire for increased transparency and involvement of the public in the decision-making processes as a pre-requisite to achieve the necessary confidence in radioactive waste management (24).

Some questioned the acceptability of disposal of radioactive waste as an acceptable solution (14) and underlined the polluter-pays principle at EU level (14).

A number of respondents expressed serious concerns that safe radioactive waste management could not be assured at the national level and as such it was an issue to be handled at the EU level (14).

Other common suggestions received were:

- the need to increase the activities of research and development in the area (12),
- the need to increase safety and security (9),
- and the need to introduce a ban on the export of radioactive waste from the EU to third countries (5).

The **NGOs** shared some of the views expressed by individuals, mainly the fundamental opposition towards nuclear energy (13), and the need to apply the polluter pays principle (14) and improved transparency arrangements (9).

6 NGOs expressed their disagreement with the idea of disposal of nuclear waste in geological repositories as an end-point for radioactive waste management. Instead, they suggested an increase in research into long-term storage alternatives should be prioritised.

Other concerns included

- the need to increase nuclear safety by applying the best available technologies (8)
- the need to ensure the effective independence of regulatory bodies and/or the radioactive waste management organisations (4)
- and the need to take into consideration the documents on radioactive waste management, produced by the European Nuclear Energy Forum ENEF (4).

Other concerns voiced by **Radioactive waste producers, radioactive waste management organisations, national authorities** and **others** were

- the need to improve the provision of adequate information (7),
- and the problem of an overload of work and a duplication of tasks at IAEA and EU instances (5).

9. ADDITIONAL SUGGESTIONS

A number of individual contributions were received in response to the open public consultation.

The **European Nuclear Energy Forum (ENEF)**³ is an initiative of the European Commission endorsed by the EU heads of State and Government in March 2007. Founded in 2007, ENEF gathers relevant stakeholders in the nuclear field, such as the governments of all 27 EU Member States, European Institutions including the European Parliament and the European Economic and Social Committee, nuclear industry, electricity consumers and the civil society.

A position paper "*Contribution to the Stakeholder Consultation Process for a possible EU Instrument in the Field of Safe and Sustainable Spent Fuel and Radioactive Waste Management*" was elaborated by ENEF in April 2010⁴. It states that "the EU needs to develop a common legislative framework governing the management of spent fuel and radioactive waste" and this should be achieved through a legally binding EU instrument. This instrument should apply to spent fuel and all types of radioactive waste. It should cover all stages from generation to disposal and it should be consistent with the Council Directive on Nuclear Safety.

ENEF enumerates the essential elements that such EU binding instrument should contain:

- Each Member State is responsible for its spent fuel and radioactive waste, as well as for its associated national management policy;
- The Government of each Member State should develop and implement an appropriate national spent fuel and radioactive waste management policy to protect humans and the environment and to avoid imposing undue burdens on future generations.
- The national policy should also consider the preservation of natural resources, the optimisation of the disposal concept and the waste volumes as well as the radiotoxicity of the wastes. Further, it should guarantee the necessary continuity and flexibility for the implementation of the programme to be able to cope with societal and technological changes, as well as to prevent inefficient allocation of human and/or financial resources.
- The national policy should be empowered through a legislative, regulatory and organisational framework in a timely manner with wide societal support.

³ http://ec.europa.eu/energy/nuclear/forum/forum_en.htm

⁴ http://ec.europa.eu/energy/nuclear/forum/risks/doc/waste_disposal/docs/enef_swg_waste_pp_final_080410.pdf

- The Member States should develop detailed national programs for spent fuel and radioactive waste management and should be encouraged to ensure that there is continuous progress when designing and implementing their programs.
- The implementation of geological disposal of high level radioactive waste including spent fuel, if regarded as waste, should be planned in the Member States without undue delays and applied in a step-by-step approach. In this regard, ENEF has in 2009 endorsed a "Roadmap to Successful Implementation of Geological Disposal in the EU"⁵.

In this position paper, ENEF enumerates the elements that the national programs should include: inventories of existing and expected radioactive waste, design concepts for repositories, detailed plans and technical solutions for their implementation, description of skills required to implement the program, time schedules and cost assessments.

In respect of the final solutions, it is stressed that "Technical solutions exist for the final disposal of all types of radioactive waste (LLW, ILW, HLW and spent fuel if regarded as waste). While the implementation of such solutions is progressing well for low and intermediate level waste in most Member States, the implementation of geological disposal is still posing a challenge in many Member States, although this is recognised as the only proven, practicable solution for the disposal of HLW and spent fuel, if regarded as waste. Therefore, the EU instrument must clearly require deep geological disposal for high level waste and spent fuel, if regarded as waste, as part of the national programme if applicable".

The **Club of Agencies** is a group of European radioactive waste management organisations, set up to exchange information on all aspects of radioactive waste management. In May 2010 a collective opinion of the Club of Agencies was sent to the Commission as a stakeholder contribution on the subject of a possible EU instrument on waste management.

The Club of Agencies supports the initiative of the European Commission to set up a Directive to maintain and promote the sustainable management of spent fuel and radioactive waste. The radioactive waste management should respect the fundamental principles recommended by the IAEA and defined by the Joint Convention. The national responsibility and the need to develop national programs for radioactive waste management are stressed by the Club of Agencies. They also enumerate the main elements that national programs should include.

Greenpeace sent opinions to the open consultation through their different Campaigns in UK, Germany, the Netherlands, France, Greenpeace Nordic and EU Unit. Their comments can be summarized as follows:

⁵ http://ec.europa.eu/energy/nuclear/forum/risks/doc/roadmap_final_eur.pdf

- Criticism towards the questionnaire for being too simplified and having deadlines for responses which were too short (Greenpeace UK-EU). Greenpeace UK also suggested some amendments that could be made to the questions.
- Outright opposition to nuclear power generation with the pre-condition for any discussion on a solution for radioactive waste management being the immediate termination of any nuclear power activity, thus stopping the generation of new radioactive waste. In this regard, Greenpeace UK highlighted that it is not acceptable to couple the development of "final solutions" for radioactive waste with the social acceptance for nuclear new build.
- Opposition to spent fuel reprocessing and all related activities, including transport of reprocessed material or of spent fuel for reprocessing (Greenpeace NL and EU Unit).
- Application of the environmental principles of the EU Treaty and secondary legislation⁶ to the management of radioactive waste, which would result in an abandonment of the nuclear power generation (Greenpeace EU Unit).
- In particular, the environmental rights of public information, public participation and access to justice should be guaranteed in any legal instrument dealing with radioactive waste management (Greenpeace EU Unit).
- Emphasis should be given to the polluter pays principle and all aspects dealing with decommissioning funds. This was particularly highlighted by Greenpeace UK, who enclosed a series of questions addressing the issue of nuclear decommissioning funding (in the UK in particular).
- The request for the radioactive waste to be kept at its place of origin (in the sites and countries where it is generated), thus minimising the transport of spent fuel or radioactive waste. This would require two legislative changes: a ban of any radioactive material exports from the EU (Greenpeace EU Unit), and a prohibition on the development of regional repositories within the EU (Greenpeace NL).
- The various Greenpeace Campaigns strongly encouraged the Commission to disregard geological repositories as a possible disposal solution for radioactive waste. Instead, EU initiatives should focus on the research and development towards the improvement of intermediate storage solutions, applying the best available technique and ensuring the retrievability of radioactive waste at any time.
- The Greenpeace EU Unit and the Belgian Campaign also stressed the importance of having fully accountable and independent authorities involved in radioactive waste management. This would include not only national nuclear regulators, but

⁶ The legislation referred to is: Directive 2006/12/EC on conventional waste, Directive 91/689/EEC on hazardous waste, Directive 2008/105/EC on environmental quality standards in the field of water policy, Directive 2008/1/EC on integrated pollution prevention and control, Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment and the Community Strategy Concerning Mercury {SEC(2005) 101 }

also radioactive waste management organisations, which, in the view of Greenpeace should also be functionally independent and separate from radioactive waste producers.

- Adopt EU common definitions for radioactive waste in accordance with the EU definition for conventional waste, i.e. considering all the residues from enrichment and reprocessing activities as "radioactive waste" (Greenpeace France, Belgium and EU Unit). The Greenpeace EU Unit emphasised that radioactive waste should not be treated in a less stringent manner than other hazardous waste.

Friends of the Earth Europe agrees in general terms that the EU needs to play a role in radioactive waste policies, and an EU initiative in this regard offers the possibility to improve the current situation. They stress the need for transparency and to ensure the polluter pays principle and consider that the minimum requirements for the proposal should be, a clear methodology applied when preparing final radioactive waste solutions (be it geological disposal or not); a ban on exports of radioactive waste; a ban on reprocessing, partitioning and transmutation before disposal; and the phase-out of nuclear power as a precondition to the search for nuclear waste solutions.

Fairlie Community Council, which is an association of neighbours close to the nuclear power plants Hunterston A and B (UK), expressed their objection to the proposal to dispose of intermediate level waste, rather than store and monitor it. They opposed any radioactive materials going into landfill and the transport of external waste to Hunterston.

Nuclear Free Local Authorities from the UK and Ireland rejected the concept of geological disposal and called for a phase out of nuclear power generation, radioactive waste minimisation, reduction of the transports of radioactive material and ban of any discharges of nuclear origin in the environment. The **Shetland Islands Council** sent a separate letter echoing the views of Nuclear Free Local Authorities, in particular with their opposition to geological disposal.

Radiation Free Lakeland, a NGO based in Cumbria (UK), expressed its concern about the safety of the radioactive waste management at Sellafield and its opposition to the disposal of radioactive waste.

The **Scottish Councils' Committee on Radioactive Substances (SCCORS)** stated that "Any Directive provisions requiring the adoption of deep geological disposal policies would be in conflict with current Scottish Government policies" and stressed the importance of applying the polluter pays principle to radioactive waste management.

The **Swedish NGO Office for Nuclear Waste Review, MKG**, indicated that the Swedish radioactive waste management policy should not be regarded as a model for the EU due to the existence of a number of unresolved challenges. They stressed the importance of relying upon independent regulators, the need to comply with the polluter pays principle and to implement transparency arrangements, as well as their concerns regarding the consideration of geological disposal as an end-point for radioactive waste management.

The NGOs **Terra Mileniul III** from Romania and **Energia Klub** from Hungary issued a common opinion in favour of developing EU binding legislation on spent fuel and radioactive waste management, highlighting in general terms the same principles indicated above (polluter pays, transparency, etc.). They also expressed their opposition to the deep geological disposal of radioactive waste.

A letter by **a member of the Royal College of Physicians of London**⁷ stressed the fact that neither storage nor disposal should be imposed at EU level as long as the issue of high level waste management remained unresolved.

The company **ENEL** strongly supported the development of EU legislation in the domain of spent fuel and radioactive waste management, stressing the point that neither the IAEA safety standards nor the Joint Convention were directly enforceable within the EU. Member States' national programmes should aim to strengthen these standards with disposal as their ultimate goal and should report to the Commission, including any progress made. Adequate public communication should be ensured through independent monitoring. The decommissioning funds should be managed through contributions by the operators, *"fixed in a transparent manner by an independent body and regularly reviewed during the lifetime of the nuclear plant following continuous consultations with nuclear operators"*. Finally, for the sake of a clear assignment of responsibilities, *"it should be established when the "title to" and "liability for" an operator's waste should be transferred to the Government or other bodies"*.

The waste management organisation **TVO Finland** also sent a letter in this frame, which provided an example of how the radioactive waste (in the particular case of waste from the nuclear power plant Olkiluoto 3) could be managed in a way that would satisfy the needs and requirements of all parties involved.

The nuclear industry represented by **FORATOM** submitted a paper on the wider context of the Public Consultation *"Towards a new Energy Strategy for Europe 2011-2020"*. FORATOM expressed its support to the current debate on future EU legislation on radioactive waste management taking into account the existing arrangements for ensuring safe radioactive waste management, both at national and international level, that in the opinion of FORATOM, have until now, delivered excellent results. The upcoming EC legislative proposal should aim to provide an EU legal framework for all Member States and should therefore encourage progress to be made in this area. Whilst several technical solutions for the management of spent fuel and high-level radioactive waste exist, there is a consensus on the need for deep geological repositories.

⁷ Dr Carl Iwan Clowes, FFPH Royal College of Physicians, London. This letter does not represent the opinion of the whole College of Physicians.