Joint Convention
Questions Posted To France in 2015

	Country	Article	Ref. in National Report
	Italy	Planned Activities	K, 209
Question/ Comment	With regard to legacy waste the report anticipate an ASN resolution regarding La Hague installation to be issued in 2014. Could France provide an updating on this point?		
Answer	On 9th of December 2014, the ASN took a resolution setting 60 milestones for 17 different projects scheduled up to the final 2030 date. This mandatory schedule is based on an AREVA proposal. The resolution distinguishes 3 classes of priority depending on the radioactivity, the physical state and the number of containment barriers of the legacy wastes.		

	Country	Article	Ref. in National Report
	Australia	General	Page 13
Question/ Comment	What measures have been put in place to ensure the LLW-LL facility will be established the second time around – either at the site of a nuclear installation or a location of 2008 candidacy?		
Answer	After the difficulties encountered in 2008 - 2009 for the selection of a site to host a future LLW-LL disposal facility, the High Committee for Transparency and Information on Nuclear Security (HCTISN) has launched an analytical work to understand the reasons for the failure of this first approach. The main conclusions of the HCTISN are as follows: - the initial number of communes (3,115) was too important to conduct an adequate prior information approach; - the duration of the research process was too restricted and too binding to allow a satisfactory dialogue; - the lack of involvement of the State was evident; - the communal level was not suitable; - the announcement of the choice of 2 selected communes was considered political and too late; - The 6-month latency between January and June 2009 contributed to block the dialogue, making possible clashes. In addition, the HCTISN issued several recommendations including a summary which is presented below: - on the site selection: the safety must be the first factor for the choice of a site. A limited number of territories must be selected by the State on the recommendation of Andra. The choice of territories already hosting nuclear facilities must be privileged for sociological reasons; - on time constraints: it is necessary to give time to conduct the process successfully by establishing a realistic timetable and to provide a number of milestones, as well as opportunities for adjustments;		

- on responsibilities: the State must commit itself clearly and must display the character of public utility and service rendered to the nation within LLW-LL disposal;
- on the interlocutor at the local level: a minimum intercommunal scale must be favoured with the support of the State and large communities;
- information to the public: a wide information must be delivered to the population with particular technical information (nuclear risks, waste, inventory, financial, social and economic aspects), the expected conduct of the process, issues of appointments, the presentation of the role of the stakeholders, the development of the project implementing;
- on dialogue: such a dialogue must be real to be effective. The project must be sufficiently robust while adapting to the territory and proceeding to certain developments. The consultation must have a guarantor on the local level;
- on the project's support: the project of disposal must be accompanied by a number of real economic benefits and a territorial development, allowing more promising, which implies to discuss with the territories and performed with them the development of their own projects, cultural, industrial or other. Accompanying measures must be fairly distributed between the municipalities located near the site of settlement. Administrative borders should not constitute an obstacle.

The 2013-2015 national Plan of management of radioactive materials and waste (PNGMDR) asked Andra to issue by mid-2015 a feasibility study of a LLW-LL disposal facility under revised cover, the perimeter of the waste to be disposed and the timetable for its implementation.

According to the operator's point of view, feedback from the previous siting campaign has been taken into account, in particular a number of recommendations issued by the French High Committee for Transparency and Information on Nuclear Safety (HCTISN) on October 2011 (these recommendations can be downloaded from the following address:
http://www.andra.fr/download/site-principal/document/l_andra/rapport_gtfavl_2011.pdf in French).
This Committee has recommended in particular that the French Government selects a limited number of territories based on results of the 2008 call for volunteer communities. It has considered that local level to be considered for interaction should be a minimum "intercommunal" with the support of the Government and larger communities. It has recommended preferring areas where nuclear facilities already exist. The High Committee has also recommended conducting a process of consultation and public information. It stressed that the disposal project should be accompanied by a number of real benefits on the economic and territorial development.

Country	Article	Ref. in National Report
Australia	General	1

Question/	France is to be commended for their informative and comprehensive report; they are progressing well with the proposed deep geological repository for their HLW. Good progress and vehicle to maintain public confidence in the French NPP program and in Europe in general.
Comment	Good account is being taken of lessons learned from the Fukushima accident.
Answer	France warmly thanks Australia for these encouraging comments.

Country	Article	Ref. in National Report
Austria	General	A, page 19

Question/	According to EC waste directive (2011/70/Euratom) the public must have access to all necessary information relating to the management of spent fuel and radioactive waste and must be able to participate effectively in the decision-making process concerning the management of spent fuel and radioactive waste, pursuant to the national legislation and international obligations.
Comment	How does France fulfil this obligation? Which requirements do you have in your national legislation?
Answer	One of the most important area of the Management Policy for Radioactive Materials and Waste consists in maintaining a democratic dialogue at all levels, as follows: • at the local level and on a continuous basis, thanks to the implementation of a local commission of information for each treatment and disposal facility; • at the level of the public at large: the National Plan for Radioactive Materials and Waste Management (PNGMDR), based on ANDRA's National Inventory of Radioactive Materials and Waste, is a key element to ensure transparency. This plan is transmitted to Parliament, which refers it to the Parliamentary Office for the Evaluation of Scientific and Technical Choices (OPECST) for assessment, and is made public. In addition, France may also rely on public national debates. Such a debate, on the radioactive waste management, was organized over a four-month period before the adoption of the Waste Act. Another debate concerning the project for the reversible disposal of radioactive waste in a deep geological formation (Cigéo) was held for 6 months in 2013, in accordance with the Environment Code, before submission of the creation authorization application for a deep geological formation disposal centre, • at the level of the Parliament: in the framework of the licensing of a deep geological repository, the Waste Act prescribes two parliamentary deadlines, the first in order to set forth its reversibility conditions, before the authorization of the disposal facility and the second over a longer term, in order to authorize its future closure. The final decision to issue the creation license will belong to the government, but no licensing decree will be issued for the disposal facility without holding a parliamentary review beforehand.

According to the Environment Code, any officer responsible for nuclear activities and any company referred to in Article L. 1333-10 of the Public Health Code must establish, update and make available to the administrative authority all required information necessary for the effectiveness of that control. The Waste Act includes penalties in case of non-compliance on the part of operators. The decree No.2008-875 of 29 August 2008 specifies the scope and nature of the information required to prepare the National Inventory of Radioactive Materials and Waste.

Furthemore, the Environment Code requires that local public inquiries are performed during the licensing process for activities concerned by the management of spent fuel and radioactive waste.

In addition, concerning the access to necessary information relating to the management of spent fuel and radioactive waste :
- The national inventory and the national plan are made public (L. 542-1-2 and L. 542-12 of the environment code). Furthermore, they are elaborated in pluralistic working groups;
- A national assessment board (CNE2) publishes every year a report on research and studies carried out with regard to radioactive waste and spent fuel management (L. 542-3-VI of the environment code),
- The high committee on transparency (HCTISN – article L. 125-35 of the environment code) organises periodically debates and issues reports regarding radioactive waste and spent fuel management,
- There is a local commission for information (L. 125-17) for each nuclear installation and for the underground laboratory of Bure (L.542-13).

Concerning the involvement on the decision making process :
- A public inquiry is part of the authorization process for creation or decommissioning of a BNI (L. 593-8, 593-26 and 593-31 of the environment code) or for authorisation of a CIPE (L. 512-2 of the environment code).
- Furthermore article L. 120-1-1 of the environment code creates a principle of public involvement in the decision from authorities that can have an impact on the environment (then every decision from ASN is submitted to a participation of public during at least 2 weeks).

A public debate (L. 121-1 of the environment code) is organized for every major project, and especially for a deep geological repository (L. 542-10-1 of the environment code).

	Country	Article	Ref. in National Report
	Czech Republic	General	2.2,20
Question/ Comment	Where do you feel major challenges in the final phase of sitting deep geological repository?		

Answer	Significant progress has been performed in the siting process of Cigéo project: in 2009 the area for the implementation of the underground facility was defined within the 250 km2 zone where results from the URL can be transposed. The selection of this area was carried out on the basis of both technical and societal criteria. Societal criteria were outcomes of an intensive dialogue between Andra and local stakeholders. The process for the definition of the precise location of surface facilities also involves local stakeholders. In particular one of the outcomes of the public debate held in 2013-2105 on Cigéo project is the direct connection of Cigéo nuclear surface facility to the railway network.

Country	Article	Ref. in National Report
Finland	General	p. 12-13

Question/ Comment	Executive summary presents that the time schedule for the Cigeo project was revised by Andra. When the construction licence application is going to be submitted? What does pilot industrial phase mean and when the repository planned to be operational? And what are the main safety issues that cause this delay in planned schedule?
Answer	The construction license application will be submitted in 2017. A preliminary set of documents are planned to be provided in 2015 for review to prepare the application. They include safety options (before and after closure), retrievability options, environmental impact assessment and a general plan for the operation of Cigéo including the pilot industrial phase. The pilot industrial phase includes three periods: (i) a first period starting around 2025 for so called "inactive" tests, that is to say without radioactivity with dummy waste packages; (ii) a second period during which will tests be carried out with a small number of real waste packages; (iii) a third period with a progressive increase in the emplacing flow of ILW and HLW packages that are representative of the disposal inventory. The updating of the application time schedule and the creation of the pilot industrial phase are outcomes of the public debate held in 2013-2014 and of the current French nuclear regulation which states that the license application of any new facility should be based on its detailed design.

Country	Article	Ref. in National Report
Italy	General	A, 22

Question/ Comment	Could France provide more details about the design basis that are used for evaluating External Event Safety Margins at Nuclear installations (such as earthquake, floods, total loss of power supply).
Answer	The design basis that are used for Nuclear Installations (NI) are required in the regulatory framework. For instance, at the level of the NI order articles 3.1 to 3.10 gives some legally binding requirements. For some of the events, such as fire, an ASN resolution from January 2014 adds some legally binding requirement. More generally, ASN is currently working on a resolution about the safety demonstration that should be published in 2015. These resolutions decline some of the WENRA levels.

	For other events, ASN guidance that are legally non-binding describe more into details what are the good practices regarding design basis. For instance the way to take into account earthquake is described in the ASN guide RFS 2001/01, the requirement for building with respects to earthquake in a guide 2/01 from May 2006, and the guide No 13 regarding flooding as been published in April 2013.		
	Country	Article	Ref. in National Report
	Japan	General	p43
Question/	Zoning means dividing a given area into a possibly contaminated zone and the rest. Is there no difficulty dividing the entire site area that way? (Would it not impose an excessive burden on the agency?)		
Comment	Would the zoning not increase LLW?		
Answer	Waste zoning doctrine has been established in France in order to add another barrier in the system put in place to identify radioactive waste and ensure that there won't be any contaminated or activated waste cleared from regulatory control. It has been successfully put in place since 1999 and this 15-year feedback shows that it can be carried out. Waste zoning and absence of clearance level can increase the quantity of waste to be produced. It is the reason why France has put in place a dedicated waste route for VLLW for which regulatory requirements are in line with the level of radioactivity of this waste. It is also why the national Plan requires stakeholders to define arrangement that would enable to combine waste zoning and recycling and reuse of VLL waste in the nuclear sector.		
	Country	Article	Ref. in National Report
	Japan	General	-
Question/	Why has ANDRA's safety assessment document Dossier 2009 not been published, except for its overview edition (General Synthetic Report, Selection of zones ZIIS/ZIRA) and some parts? Do you regard your currently published Dossier 2005 as your official opinion statement? If possible, we would like to know why you do not publish your 2009 edition.		
Comment			
Answer	The documents supporting the Dossier 2009 have been published and can be downloaded from the following website (in French): http://www.cigéo.com/documents		
	Country	Article	Ref. in National Report
	Japan	General	5.3.2 p.10
Question/ Comment	National Report states on page 10 that "a position statement will in particular need to be issued on the GCR decommissioning time frame." Please provide why it is an issue and what challenges are involved here.		

Answer	ASN today recommends that the licensees of nuclear installations adopt immediate dismantling strategy. One of the main reasons for recommending such a strategy is to prevent loss of information about the construction and operating conditions as well as loss of skills, aggravated by the retirement of staff familiar with the facility. Deferred dismantling also raises the question of monitoring and maintaining the safety of the facilities. Technical problems can arise: management of the ageing of the civil engineering structures, obsolescence of equipment, in particular monitoring system, etc. There are 6 GCR in France, the first was shut down in 1973 and the latest in 1994. Many dismantling operations have been conducted on these reactors except on the reactor vessels. The operator does not envisage such operations until a management route for the disposal of LLW-LL is available for graphite-containing waste. ASN considers this approach non-compliant with the strategy of immediate dismantling. The position statement that is foreseen may imply the request that the operator creates a temporary storage facility in order not to delay more the decommissioning.

Country	Article	Ref. in National Report
Japan	General	5.4.4 Legacy waste p14

Question/ Comment	National Report states that the plants at la Hague, Cadarache and Saint-Laurent-des-Eaux store legacy waste on an interim basis. It goes on to say that the waste is an inadequate state in terms of safety. What issues have occurred?
Answer	In these facilities, waste are stored pending commissioning of a deep geological repository or a subsurface repository. This storage was carried out few decades ago when the regulatory requirements were not as stringent as they are today in terms of packaging or design. In consequence, the way this waste is stored don't meet today's requirement, then ASN requires its full retrieval and packaging The main issues raised by these storages consist in insufficient number of containment barriers and insufficient monitoring devices to meet today standards. In many cases, legacy waste are stored in bulk and are to be retrieved, properly packed and stored at today safety standards.

Country	Article	Ref. in National Report
Japan	General	p12

Question/ Comment	To select a method for final disposal and a repository site, and to engage in public communication about both are issues common to all the countries involved. In France, plans were made to hold 14 public debates on the Cigêo Project. However, certain opponents hampered those debates, resulting in several being aborted. Please let us know what made it difficult to hold and manage the debates smoothly, and what issues you face for the future. We believe that your inputs will be useful to the other countries.
Answer	The reasons for the difficulties encountered during the public debate organized on Cigéo from May to December 2013:

A disagreement on the calendar: November 16, 2012, forty-four associations, including Greenpeace and Mirabel, Lorraine associations federation of France Nature Environnement, asked the President of the Republic that the public debate on the Cigéo project be postponed after the law of the energy transition vote originally scheduled in 2014 by the French Parliament.
Joined by the Greens Europe-Ecologie party, they considered indeed that there's no rush on this folder and that this debate should take place after the debate on the future of the nuclear power sector.

Furthermore, the associations have expressed their disappointment, sometimes their anger at what they consider to be the failure to take into account in the law of 2006 (programme on the sustainable management of radioactive waste and materials) of the conclusions of the debate in 2005-2006 on the high and intermediate level radioactive waste management options, to study, alongside the deep geological disposal, the perennial surface storage solution.
It should be recalled that prior to the Waste Act in 2006, the French regulatory body (ASN) had given February 1, 2006 an opinion in three points:
- technological feasibility of separation and transmutation is not acquired to date and even in the event of implementation of this solution, HLW-LL radioactive waste removal will be not complete;
- the long-term storage cannot be a definitive solution for the management of HLW-LL;
- disposal in deep geological formation is a final management solution that appears unavoidable.

Finally, many experts and community activists felt that the Waste Act of 2006 having hold the principle of deep disposal, this public debate was a "phony debate", since the question of the appropriateness of the Cigéo project did not appear to be able to be questioned. In light of these elements, many associations have expressed their intention to boycott the debate. A number of opponents have also prevented the holding of public meetings by covering with their voices different scheduled interventions.

The solutions implemented by the National Commission for the public debate:
- Organisation of local meetings in city halls, high schools... These meetings could take place normally when reserved for elected officials. Meetings in schools have also been cancelled at the last moment, probably as a result of local pressure;
- Scheduling of nine interactive debates on the Internet on the following topics: radioactive waste management solutions (disposal, storage, separation-transmutation), comparison of international experiences (Sweden, Finland, USA, Canada, Belgium), the precautionary principle and the reversibility, risk and security for site employees, citizens and the environment, waste transportation, local transformations and spatial planning, costs and funding, governance, dialogue and follow-up to the public debate.

The public answered the call: 400 questions were asked, 9,337 live or offline connections were recorded, i.e. much more than the number of potential participants in public meetings.
- Implementation of a partnership between the French National Public Debates Commission (CNDP) and the regional daily press, in order to feed the debate and further expand the possibilities of information and expression of the public.
- Implementation of a conference of citizens. Adopted at the end of the 1970s in the Nordic countries, and in particular in Denmark, in the form of consensus conference, the conference of citizens remains an experimental procedure in France. CNDP has resorted such a citizens conference for the second time since its inception. Seventeen people were chosen on a list compiled by an opinion survey institute, for querying experts and write their opinions on issues related to the project. The sample was composed of men and women of slices of age and various socio-professional categories, with a representation of the inhabitants of the Meuse and the Haute-Marne, directly affected by the disposal site. The citizens conference was held on three weekends between December 2013 and February 2014, the first two being dedicated to training reflecting the diversity of positions. During the 3rd weekend, the citizens panel conducted a hearing and drafted its opinion.

In order to ensure a total independence regarding the contracting authority and to ensure a total neutrality, a steering committee and an assessment committee were set up by the CNDP.

	Country	Article	Ref. in National Report
	Japan	General	p.22, p.42
Question/	Table 4 on page 42 states that the disposal of low-level long-lived radioactive waste (LL/LL) containing graphite waste and radium is under research. With regard to LL/LL, your last JC National Report (the fourth French National Report) states on page 9 that, "The processes, both for siting and for developing disposal concepts for low-level long-lived waste, are still under way. By the end of 2012, ANDRA will submit a report describing a study on management scenarios for those residues and integrating the possibility to manage graphite and radium bearing waste." Moreover, the present (fifth) National Report states on page 22 that research on the disposal of LL/LL will continue until 2015. Please elaborate on the progress in your research project and your future prospects for selecting your repository		
Comment			
Answer	A report describing management scenarios for LL/LLW was issued as foreseen in 2012. It can be downloaded from Andra's web site (in French): http://www.andra.fr/download/site-principal/document/l_andra/etude_des_scenarios_de_gestion_a_long_terme_des_dechets_favl.pdf		

	This reports concluded to continue the study of various waste management scenarios as well as to launch geological survey of an area located near existing Andra's disposal facilities in Aube. From 2013 a number of progress can be noted including outcomes of the achieved geological survey and of the characterization of the nuclear content of waste (graphite and bituminous). These results will be reported and consolidated in the new progress report planned in 2015, which will propose a continuation route for the		
	Country	Article	Ref. in National Report
	Korea, Republic of	General	B.6.1.1, 50
Question/ Comment	Section B.6.1.1 describes the facility incinerating the NPP wastes. - Then, what is the regulatory requirements on the waste acceptance criteria of these radioactive waste incineration facilities? - Especially, if there is a nuclide specific limit, please explain it.		
Answer	The incineration unit of CENTRACO is used for the treatment of combustible liquid and solid waste, with a capacity of 650 kg/hour. The design has been adapted (radioactivity confinement…) so as to comply with safety requirements for Basic Nuclear Installation in France. The authorization enables to treat annually up to 3000 t of solid waste and 200 t of liquid waste. The resulting smokes are treated (cooling, filtration, chemical cleaning…). The ashes and clinkers resulting from incineration are blocked in hydraulic binder within metallic shield drums (400 liter) which are sent as ultimate waste to ANDRA surface disposal centers. The volume of waste after having undergone this incineration and treatment process is reduced by a factor of 10 to 20. The solid and liquid waste accepted in the incinerating facility of CENTRACO are of low activity. The acceptance criteria are the following: - total mass specific activity in beta/gamma emission (except tritium) below or equal to 20000 Bq/g; - total mass specific activity in tritium below or equal to 20000 Bq/g; - total mass specific activity in alpha emission below or equal to 370 Bq/g; - contact radiological dose below 2 mSv/h.		
	Country	Article	Ref. in National Report
	Russian Federation	General	Section K, 1.1.1, page 210
Question/	As stated in the previous National Report: "The 2006 Planning Act provides for the development of disposal solutions for LL/LL waste, and particularly for radium-bearing and graphite waste". Initially the 2006 Planning Act called for commissioning of a disposal facility for graphite (and radium-bearing) waste by 2013, and yet, according to the fifth National Report, efforts are still underway to find a suitable site.		
Comment	What are the main reasons for delaying the project?		

Answer	A siting process based on voluntarism was launched on the basis of the 2006 Act. Unfortunately this process failed after the withdrawal of preselected candidate communities under the pressure of opponents. Feedback from this failure was taken into account in the continuation of the program. The French Government charged Andra to re-open various management routes for the considered waste and a new siting process has been engaged. Andra will issue a new progress report in 2015.		
	Country	Article	Ref. in National Report
	United Kingdom	General	General
Question/ Comment	Can France describe any measures it has taken to integrate safety and security in spent fuel management, as per the President's report from the previous review?		
Answer	Safety and security are only partially integrated: Since 2007, the scenarios of accident initiated maliciously have to be taken into account in the safety reports of French installations and licenses have to prove themselves able to cope consequences due to these scenarios. Nevertheless, the instruction of such issues relies on two different authorities (safety/security) and public order being a prerogative belonging to the State, measures involving acts of force are to be performed by dedicated units of Gendarmerie.		
	Country	Article	Ref. in National Report
	Italy	Article 4	G, 159
Question/ Comment	With regard to the adopted decommissioning strategy of immediate dismantling could France elaborate on how compliance with the radiation protection principle of dose optimization is assessed?		
Answer	The French regulatory body (ASN) considers the dosimetric gains due to the radioactive decay of certain radionuclides (especially 60Co) which is the plea most often heard in support of deferred dismantling strategies, does not apply to all situations and depends on the type of residual contamination or activation. In the end, this factor would not appear particularly decisive in the choice of a decommissioning strategy. Moreover in case of deferred dismantling, the ageing of the civilian engineering structures, loss of information about the construction and operating conditions as well as loss of skills, aggravated by the retirement of staff familiar with the facility, would be in favour of optimizing the dose for dismantling operators, the general public and the environment.		
	Country	Article	Ref. in National Report
	Italy	Article 4	G, 163
Question/ Comment	Could France further elaborate on existing margins in terms of underwater spent fuel storage capacity of BNI by 2020 and beyond?		

Answer	Installation of La Hague has four swimming pools of spent fuel storage, with a total capacity of 17,600 tons of heavy metals. In November 2014, the filling rate of these pools was an average of 56%. Towards 2020 and beyond, the margins in terms of underwater storage in the basic nuclear installations are followed by the French regulatory body (ASN) regarding the work carried out by EDF on the consistency of the fuel cycle, in which ASN asked the operator to assess the resilience of the fuel cycle based on different scenarios of evolution of the nuclear fleet and on the basis of hazards on the industrial equipment of the cycle.

Country	Article	Ref. in National Report
Hungary	Article 4.1	G.2.2.3.2 p. 167

Question/	"...the design and the strength of spent fuel pits in the NPPs were examined during the stress tests performed following the accident to the Fukushima Daiichi NPP ... EDF presented the changes to be made to its facilities"
Comment	Question: What are the deadlines set by EDF for "provisions designed to reinforce prevention of the risk of accidental emptying of the fuel building pool"?
Answer	The industrial post-Fukushima programme is part of a set of measures aimed at modernizing and extending operating lifetime of the French NPPs. It is mainly incorporated in the schedule of decennial outages and is made up of organizational, equipment and human measures implemented in three phases: - Phase 1 - 2015 to 2017: installation of new mobile and temporary emergency equipment and reinforcement of the organizational measures of emergency response management. - Phase 2 - 2015 to 2025: deployment of new water makeup and power supply systems in order to strengthen the existing safety systems (first part of the "hard core": third diesel generator DUS for every reactor, additional back up water supply, emergency response centre…). - Phase 3 from 2019 onward: the last part of the "hard core" measures designed to manage extreme situations, in the framework of the future decennial safety reassessments and with a goal to operate the plants beyond 40 years: from the first VD4 900 (2019) to the last VD4 1300 (2033). The "hard core" is designed against more severe hypothesis regarding flooding and earthquake (SND level = earthquake level used for the design of the "hard core", with a peak acceleration greater than or equal to SSE*1.5). In this framework, the main changes and deadlines concerning the provisions designed to reinforce prevention of the risk of accidental draining of the spent fuel pool are recalled hereafter: - additional emergency mobile thermal pump to replenish the reactor cooling systems and the spent fuel pool through water branch connection point (1 pump/reactor); done - re-sizing of the siphon-breaker on the cooling system discharge line in order to prevent complete and rapid emptying of the pool by siphoning in the event of a connected line rupture; done

- automation of isolation of the cooling system intake line, to avoid gravity emptying of the pool by the suction line;

This modification is included in the last safety reassessment on each series: to be done by 2016 on the 900 and 1300 MW series and by 2017 for the N4 series (1500 MW).

- feasibility studies to deal with the case of a break on the transfer tube;

Two studies have been launched. The first study is about the robustness of the transfer tube against extreme design earthquake (SND) and need for reinforcement. The second study is about the possibility to install a double envelope around the transfer tube or to ensure the leak-tightness of adjacent rooms. The resulting modifications are planned to begin in phase 2 (implementation of the "hard core").

- prevention of the risk of rapid loss of water inventory in the storage compartment in the event of hypothetical transfer tube or drain line leak situations in the transfer compartment or the BR pool compartments;

Organizational provisions are or will be implemented in the framework of VD1-N4, VD4-900 and VD3-1300. Besides, organizational provisions are implemented in phase 1 to improve the reliability of the closing of the heavy door between the transfer compartment and the storage compartment of the fuel pool in order to reinforce the prevention of loss of water inventory in the spent fuel pool, more particularly in case of loss of electrical power: done

- robustness of the spent fuel pool instrumentation to ensure management of the situation and in particular management of water make-up;

The water level instrumentation TOR of the spent fuel pool will be reinforced (robustness against SND extreme earthquake, extreme temperature and steam environment, irradiation) in phase 2.

- ultimate emergency make-up system which should be installed as of 2015, jointly with installation of an ultimate back-up diesel generator set on the units (see above);

The ultimate diesel generator (DUS) will be implemented on each unit before end of 2018 (specific ASN prescription). The ultimate back up water supply (drill in water-table or water reservoir…) enabling to feed water in the spent fuel pool will be implemented in phase 2.

In phase 3, an ultimate water supply will be ensured, in order to prevent the uncovering of the fuel assemblies in the spent fuel pool (and the fuel assembly being handled if any), through a dedicated line, designed as part of the "hard core", connected to the ultimate water supply through a set of distribution valves. The water supply will be controlled using two water level measurement devices (TOR) and a steam outlet venting device will be implemented in the fuel pool building (dedicated door or sky-dome…).

Country	Article	Ref. in National Report
Italy	Article 5	G, 169

Question/ Comment	In para. 2.3 The ASN analysis concluded: " The spent fuels management strategy adopted by CEA was considered to be on the whole satisfactory. A few points will however need to be improved. " Could France specify which are the few points will need to be improved?
Answer	After the review performed by ASN of the overall spent fuels management strategy adopted by CEA, ASN required on the one hand further information on the management strategy of spent fuel from research reactor that cannot be treated in La Hague plant as it is authorized for reason of size, geometry, … On the other hand, ASN required further information on operations of retrieval of spent fuel stored in PEGASE and INB 72 that must be retrieve because of the shutdown of these installations. The operations requires special arrangement for transportation, handling, … CEA has already provided ASN with relevant data but some information and safety files will be submitted in the next few years.

Country	Article	Ref. in National Report
Italy	Article 5	G, 167

Question/ Comment	With regard to measure to improve safety of spent fuel pools of EDF plants as listed under point 2.2.3.2 of the report, could France provide an updating on the status of their actual implementation?
Answer	The industrial post-Fukushima programme is part of a set of measures aimed at modernizing and extending operating lifetime of the French NPPs. It is mainly incorporated in the schedule of decennial outages and is made up of organizational, equipment and human measures implemented in three phases: - Phase 1 - 2015 to 2017: installation of new mobile and temporary emergency equipment and reinforcement of the organizational measures of emergency response management. - Phase 2 - 2015 to 2025: deployment of new water makeup and power supply systems in order to strengthen the existing safety systems (first part of the "hard core": third diesel generator DUS for every reactor, additional back up water supply, emergency response centre…). - Phase 3 from 2019 onward: the last part of the "hard core" measures designed to manage extreme situations, in the framework of the future decennial safety reassessments and with a goal to operate the plants beyond 40 years: from the first VD4 900 (2019) to the last VD4 1300 (2033). The "hard core" is designed against more severe hypothesis regarding flooding and earthquake (SND level = earthquake level used for the design of the "hard core", with a peak acceleration greater than or equal to SSE*1.5). In this framework, the main changes and deadlines concerning the provisions designed to reinforce prevention of the risk of accidental draining of the spent fuel pool are recalled hereafter:

- additional emergency mobile thermal pump to replenish the reactor cooling systems and the spent fuel pool through water branch connection point (1 pump/reactor); done

- re-sizing of the siphon-breaker on the cooling system discharge line in order to prevent complete and rapid emptying of the pool by siphoning in the event of a connected line rupture; done

- automation of isolation of the cooling system intake line, to avoid gravity emptying of the pool by the suction line;

This modification is included in the last safety reassessment on each series: to be done by 2016 on the 900 and 1300 MW series and by 2017 for the N4 series (1500 MW).

- feasibility studies to deal with the case of a break on the transfer tube;

Two studies have been launched. The first study is about the robustness of the transfer tube against extreme design earthquake (SND) and need for reinforcement. The second study is about the possibility to install a double envelope around the transfer tube or to ensure the leak-tightness of adjacent rooms. The resulting modifications are planned to begin in phase 2 (implementation of the "hard core").

- prevention of the risk of rapid loss of water inventory in the storage compartment in the event of hypothetical transfer tube or drain line leak situations in the transfer compartment or the BR pool compartments;

Organizational provisions are or will be implemented in the framework of VD1-N4, VD4-900 and VD3-1300. Besides, organizational provisions are implemented in phase 1 to improve the reliability of the closing of the heavy door between the transfer compartment and the storage compartment of the fuel pool in order to reinforce the prevention of loss of water inventory in the spent fuel pool, more particularly in case of loss of electrical power: done

- robustness of the spent fuel pool instrumentation to ensure management of the situation and in particular management of water make-up;

The water level instrumentation TOR of the spent fuel pool will be reinforced (robustness against SND extreme earthquake, extreme temperature and steam environment, irradiation) in phase 2.

- ultimate emergency make-up system which should be installed as of 2015, jointly with installation of an ultimate back-up diesel generator set on the units (see above);

The ultimate diesel generator (DUS) will be implemented on each unit before end of 2018 (specific ASN prescription). The ultimate back up water supply (drill in water-table or water reservoir…) enabling to feed water in the spent fuel pool will be implemented in phase 2.

	In phase 3, an ultimate water supply will be ensured, in order to prevent the uncovering of the fuel assemblies in the spent fuel pool (and the fuel assembly being handled if any), through a dedicated line, designed as part of the "hard core", connected to the ultimate water supply through a set of distribution valves. The water supply will be controlled using two water level measurement devices (TOR) and a steam outlet venting device will be implemented in the fuel pool building (dedicated door or sky-dome…).		
	Country	Article	Ref. in National Report
	United States of America	Article 5	G, pg. 169
Question/ Comment	With regard to CEA, the review of its spent fuel management strategy was carried out and the Advisory Committee of Experts issued its opinion in February 2012. This review also addressed the strategy for the management of radioactive waste and disused sealed sources. The spent fuel management strategy adopted by CEA was considered to be satisfactory by experts. However, a few points for improvement were noted. Please elaborate on the improvements that were recommended and the status of their implementation.		
Answer	After the review performed by the French regulatory body (ASN) of the overall spent fuels management strategy adopted by CEA, ASN required on the one hand further information on the management strategy of spent fuel from research reactor that cannot be treated in La Hague plant as it is authorized for reason of size, geometry, … On the other hand, ASN required further information on operations of retrieval of spent fuel stored in PEGASE and INB 72 that must be retrieve because of the shutdown of these installations. The operations requires special arrangement for transportation, handling, … CEA has already provided ASN with relevant data but some information and safety files will be submitted in the next few years.		
	Country	Article	Ref. in National Report
	Austria	Article 6	G, page169
Question/ Comment	The report states that there is currently no siting project for any spent-fuel management facility in France. What does France plan for the future regarding siting of a spent-fuel management facility, if reprocessing is not the only practice?		
Answer	Today spent-fuel storage facilities are currently being extended while: - prospection of new waste disposal installation sites are being prospected - researches on fast-neutrons reactors are being carried out. Prospective studies on fuel cycle are regularly carried out so as to anticipate any lack of storage capacity at any step. In these studies, detailed prospective is performed for the next decade while key milestones are identified for a longer period.		
	Country	Article	Ref. in National Report
	Italy	Article 8	G, 170
Question/	Could France elaborate on spent fuel management facilities safety assessment standard content with particular reference to		

Comment	reference accident scenarios and radiation protection objectives assumed for their verification?
Answer	Each fuel management facilities being unique in France, the ASN has not set general regulation for each. Consequently the regulatory framework for fuel management facilities is similar with the framework for reactor : identification of safety functions, identification of SSCs, elaboration of safety report, periodic review. Radiation protection objectives in case of accident on fuel management facilities are the same as for reactors.

Country	Article	Ref. in National Report
Germany	Article 9	p. 15 (Executive summary, 5.6)

Question/ Comment	Hardened safety core As a reaction to the Fukushima accident, France has developed the concept of "a "hardened safety core" of material and organisational measures to control the fundamental safety functions in extreme situations. Reinforced provisions were requested to reduce the risk of uncovering of the spent fuels in the pools". Could you please provide some additional examples of other safety relevant components beside the spent fuel pools, especially in radioactive waste management facilities, and their response to the "hardened safety core" concept?
Answer	In France, the main waste management facility is the La Hague site operated by AREVA. Following the stress tests or the complementary safety assessments (CSA), AREVA has identified the principal feared situations in the case of an extreme natural event, loss of electrical or/and cooling systems. These situations are: - radiolysis hydrogen explosion after the loss of the venting system ; - loss of containment for silos; - loss of cooling for fission products tanks; - loss of cooling for the centrifuge pendulous decanters; - fire in the Pu dry-line process; - fire in the solvent line process. These situations are related to silos and reprocessing facilities (solvent extraction process, vitrification process…). Analyzes of these situations conclude that large delays exist before reaching phenomena which lead to radioactive releases.

	However, ASN has prescribed to the Licensee to define and to put in place additional arrangements in order to manage these feared situations following an extreme natural events. These arrangements are material and organizational. They cover the levels 3 to 5 of the defense in depth concept : - level 3 “Prevention of severe accidents”, safeguard means - level 4, “Mitigation of severe accidents”, severe accidents means - level 5, “Crisis management”, emergency preparedness arrangements The first arrangements, as an example, are: - the implementation of piezometers under the silos to pump any leakages following the loss of containment for the silos, - additional plugs in the product fission tanks in order to connect them to an independent cooling system by the emergency preparedness team, - additional plugs in the venting system to remove the H2 with inert gas bottle by the emergency preparedness team.		
	Country	Article	Ref. in National Report
	Germany	Article 9	p. 16 (Executive summary, Section 5.6)
Question/ Comment	Consultation on the hardened safety core in 2014 For the nuclear fuel cycle facilities, it is reported that the Nuclear Safety Authority (ASN) has prepared draft resolutions indicating the requirements concerning the hardened safety core, and that a consultation will take place in 2014. Could you please give an update on this process?		
Answer	The consultation on the hardened safety core has been carried out in the last trimester of 2014, and took into account in the resolution made by the ASN on 8th January 2015.		
	Country	Article	Ref. in National Report
	Czech Republic	Article 11	H, 174
Question/ Comment	What are your opinions with minimization of production of solid radioactive waste? What technologies you prefer for such minimization in France?		
Answer	Comment: In order to provide an exhaustive view, various French generators of solid radioactive waste have been asked.		

An important diminution in the production of waste has been reached in the years 90 mainly through reduction at the source of the work (avoiding to introduce material or equipment in controlled zone when not strictly necessary, work organization…). In this way, the volume of short lived low and intermediate level waste from NPP operation, to be disposed of in the CSA (Low and intermediate level, short lived surface disposal center), has been reduced from 360 m3/unit in 1985 to an average of 100 m3/unit since 1995. Further actions to optimize the production of solid radioactive waste are now focused on waste conditioning and treatment rather than on the production level. In order to get the best use of the capacity of the existing radioactive waste disposal centers, the focus is to reduce the volume of waste, especially for technological waste of low activity. These waste, produced mainly during NPPs outages, represent about 80% in volume of the radioactive waste produced during operation before treatment (super-compaction or incineration…). Given that 75% of these waste can be incinerated, EDF promotes the treatment of these waste by incineration (with an objective of 75% in volume). Another way to optimize is to pursue actions in order to declassify some zones labeled as "radioactive waste production zone" to "conventional waste production zone", but this endeavor can only succeed if the operating history and the whole set of radiological controls can warrant the absence of risk of radiological contamination or activation in this zone.

Therefore, in France the main way to reduce production of waste is to treat and recycle all the spent fuels issued from electricity generating plants and from research reactors. Treat and recycle is the national strategy defined by Law n° 2006-739 on the sustainable management of radioactive materials and waste. This is why spent fuel is, after a few years, stored in La Hague facility, dedicated to the treatment. In accordance with the provisions of the relevant law (Law n° 2006-739), a national management program of radioactive materials and waste management has been enacted by a decree. This Decree n° 2013-1304 stipulates that the owners of radioactive materials have to conduct studies on the ways to manage their materials if they happen to turn into wastes. The studies have to be conducted before the end of 2014.

However, the major phases to minimize the solid waste are to sort, to characterize and to treat the waste.
An efficient way to reduce the volume is to incinerate burnable wastes and to melt the metallic waste. These operations, respectively of incineration and fusion, are the main activities in the CENTRACO facility.

In the field of fuel cycle facilities, waste minimization happens at different stages of the global management and starts sorting out proceeds that avoid the production of wastes, and with some preventive actions as cleaned installations, optimized zoning and management of materials. Technologies offer different choices, their performance regarding global impact (environmental, safety and industrial) are evaluated for a qualification as "Best Available Technology" (BAT).

Some technologies are usually good for volume reduction and impact minimization, as melting and compaction, which must be completed with a performing process of packaging by cementation or vitrification.

Recycling used nuclear fuel highly limits its global impact as well as the consumption of waste storage.

Country	Article	Ref. in National Report
Czech Republic	Article 11	H, 174

Question/ Comment: What technology is prefered in France for conditioning (solidification) sludges and ion exchangers to be meet acceptance criteria for disposal?

Answer: Comment: In order to provide an exhaustive view, various French generators of these types of waste have been asked.

i) For sludges generated by NPP operator:

• The low activity sludges, which result mainly from the cleaning of sumps and bottom of storage tanks (process and floor drains, chemical and service effluents…) are conditioned on the NPPs site:

- on 900MW sites: using fixed facilities (mixers…) and conditioning in cylindrical concrete drums;
- on 1300MW and N4 sites: using a mobile machine and conditioning within cylindrical concrete drum or metallic drum according to the activity of waste. A new mobile machine is being developed to replace the previous one (stopped in 2009).

• The very low activity sludges are conditioned in "big-bags" and sent to CIRES (very low level waste disposal center).

ii) For ion-exchange resins generated by NPP operator:

• The ion-exchange spent resins of intermediate activity are conditioned within cylindrical concrete drums using two similar mobile machines (called MERCURE: see below). The process consists of a polymerization reaction between the waste and an epoxy resins. It enables to obtain a waste package (400 liter) which complies with the acceptance criteria of the CSA, particularly in terms of mechanical resistance and confinement.

• The used ion-exchange resins of very low activity (resins from the SG blowdown system APG) are conditioned in "big-bags" to be disposed of at the CIRES disposal center.

The MERCURE process (encapsulation in an epoxy matrix) is used by EDF for final packaging of ion exchanger resins. Packages produced are intended for surface disposal facilities. The biological protection of the packages is provided by a concrete container reinforced with a leaktight steel liner. The final product, in which the resins are poured and fixed in an epoxy matrix and inserted in a concrete package and cover, is intended to comply with Andra standards, for safe disposal at both low and intermediate level repository at CSA.

In a similar concrete package, the cement solidification used in La Hague facility gives the same level of safety in accordance with Andra standards. The MERCURE process was tested 20 years ago at La Hague facility. Today fixed facility of cementation is privileged because mobile process devices are difficult to use on site. The cementation process is also considered as more durable towards resins epoxy in conformance with the REACH approach. However the MERCURE method will probably be also useful for special dismantling operations

In the field of fuel cycle facilities, various conditioning methods are used:
- Concerning resins, the conditioning by cementation is operated. It requires adapted concrete formulations;
- Concerning sludges, various conditioning processes are available and they are displayed according to the characteristics of the waste:
(i) the cementation requires a suitable formulations in function of the nature of the salts introduced into the sludge
(ii) Bitumen
and now (iii) the development of an alternative process based on sludges drying, compacting them in pellets and put these pellets into the primary package and filling it with a matrix. Generally speaking, whatever the mode of conditioning, the behavior assessment of the primary package is a very key point as regards to the acceptance criteria of the deep geological disposal. For this purpose, AREVA deployed effort on characterization and addressed thanks to R&D programs for each kind of waste packages (i) the study of the release of gaseous compounds, (ii) the release of chemical species, (iii) the interaction between the content of the wastes and the conditioning matrices and (iv) naturally the intrinsic performances of the waste package (integrity, fall and fire resistance).

	Country	Article	Ref. in National Report
	Russian Federation	Article 11	Section 1|GENERAL POLICY
Question/ Comment	What is the role of ASN and IRSN in reviewing and approval of National plan on radioactive materials and RAW management? (PNGMDR 2013)?		
Answer	ASN is co-directing the elaboration of the national Plan because it considers that development of radioactive waste management route for every waste is a nuclear safety stake. In fact, ASN provides the Government with stances on the reports submitted by operators on the framework of the national Plan. These stances are an important input data for elaboration of the Plan.		
	Country	Article	Ref. in National Report
	Switzerland	Article 11.6	H 5.1, p. 193

Question/	"With altered situations, assessments may lead to exposures in excess of 0.25 mSv/a, in which case the criteria to judge whether the impact is acceptable or not refer to the exposure mode and time, as well as to the conservative aspect of the selected assessment hypotheses (as specified in § D.3.2.2.2)."
Comment	The Joint Convention states that individuals, society and the environment shall be protected from harmful effects of ionizing radiation, now and in the future, and that reasonably predictable impacts on future generations greater than those permitted for the current generation shall be avoided. What is the reason for the judgment, whether or not a higher exposure than 0.25 mSv/a might be acceptable, dependent on exposure mode and time?
Answer	For long lived waste, Basic Safety rule III.2.f - Safety guide on the permanent disposal of radioactive waste in deep geological repositories and General Safety guidelines for site selection for the disposal of long lived, low specific activity waste both set that (see chapter “radioprotection criteria”): - for the reference situation following the disposal’s closure, the individual effective doses calculated must not exceed 0.25 mSv/year for prolonged exposure associated with certain or very probable events. As the geological environment's stability (which includes a limited and foreseeable change) must be proven, for a period of at least 10,000 years, it must be possible to authenticate the forecast results for this period objectively on the basis of explicit uncertainty studies, in particular. The maximum dose value of 0.25 mSv/year will be retained to check that the facility's design respects the essential safety goal. Exceeding this value must lead either to a reduction in the uncertainties through an adapted research programme or the revision of the facility's design. Beyond this period, the uncertainties on the evolution of the disposal system's environment rise progressively. Upper-bound quantified estimates of the individual exposure doses must nevertheless be made, and possibly complemented with qualitative assessments of the results of these estimates in light of the geological environment's evolution factors, to make sure that the release of radioactive substances does not lead to unacceptable dose levels. The aforementioned value of 0.25 mSv/year will be retained as a reference while this check is made. - for the so-called “modified” or “changed” situations : After the repository's closure, the occurrence of uncertain but plausible events, either natural or linked to human activities, may upset the evolution of the disposal system and, consequently, modify the migration of radioactive substances. Certain situations produced by these events could lead to higher individual exposure levels than those associated with the reference situation. To maintain coherency between the limitation of individual exposure levels in the reference situation and the processing of possible individual exposure levels linked to modified situations, the notion of risk (defined as the probability of the situation combined with the resulting exposure level) may be used to take the probability of each situation which results in exposure into consideration.

However, defining a criterion based on the limitation of individual risk must be done with care insofar as it would imply a debatable equivalence between the reduction of the probability and the reduction of individual exposure levels.

Furthermore, one must expect barriers which are difficult if not impossible to hurdle when estimating the probability of events which can result in exposure.

Under these circumstances, the acceptable nature of individual exposure levels associated with the occurrence of uncertain but plausible events will be appreciated while taking into consideration the resulting situation's characteristics, its probability when it can be determined, the level, duration, scope and nature of the transfer of radioactive substances into the biosphere, the characteristics of mankind's infection pathways and the groups exposed.

Furthermore, the possibility of interventions to limit the consequences, if the situations of the type considered were to occur, must not of course be retained at the design stage to guarantee the safety of the repository after its closure.

That is why the individual exposure levels associated with the modified situations, from which it appears that the exposure levels must be retained for the facility's design, must be kept sufficiently low in relation to the levels which are likely to lead to deterministic effects.

Aside from the comparison of individual effective doses calculated with the values indicated, whether for the reference situation or modified situations, the appreciation of the acceptable nature of the facility's radiological impact depends, above all, on the analysis of the efforts made by the facility's designer so that individual exposure levels are as low as reasonably possible in consideration of economic and social factors.

	Country	Article	Ref. in National Report
	Austria	Article 12	H, page 179
Question/ Comment	The report states that CEA’s objective is to retrieve and package historic waste with appropriate treatment so that it can be sent to existing routes or routes currently being created. Could France give more details on the treatment techniques for the historical waste?		
Answer	The major phases to manage the retrieved historical waste are to sort and to characterize the waste to be able to identify the good route for each waste. Then the treatments could be to stabilize, to encapsulate, to fixe and/or to solidify waste before packaging. The decisions between processing steps are taken to verify that waste accepted in Andra’s disposal facilities is compliant with waste acceptance criteria.		

	Country	Article	Ref. in National Report
	China	Article 12	H.2.2.4.2, p181
Question/ Comment	What are the classification methods of the waste produced from the modification or decommissioning of nuclear power plant? What are the specific monitoring measures to the large quantity waste produced from the modification of nuclear power plant?		

Answer	The radiological inventory of a decommissioning installation lists all of the radiological activity due to activation of the structures (internal structures, concrete, etc.) or due to contamination deposited in the equipment (primary circuit, heat exchangers, etc.). It can be determined: - for activated waste, through a theoretical approach based on calculations combined with the results of analysis of samples (chippings, cores, scrapings, ...). - for contaminated waste, through an experimental approach based on direct measurements (gamma spectrometry, dose rate...) and laboratory analysis (smears, sampling (chippings, cores, scrapings...). This inventory can define the spectrum of Easy To Measure nuclides (ETM). For Difficult To Measure nuclides (DTM), they are defined using the scaling factor (SF) method. This scaling factor method is based on developing a correlation between DTM and ETM nuclides using one or two easy measured key nuclides (e.g. gamma emitting nuclides such as 60Co and 137Cs). The result of this radiological inventory allows provisional classification of waste based on two parameters: the activity level and the half-life of the nuclides in the waste (VLL, LIL-SL, LL-LL, IL-LL, ...). (see § B .4.2.1). Once the waste is packaged, dose rate measurements or gamma spectrometry are carried out to determine the final classification of the waste.

Country	Article	Ref. in National Report
Korea, Republic of	Article 12	H, 185

Question/	ASN reminded EDF of the importance of ensuring that decommissioning of the GCR reactor compartments and graphite sleeves storage silos is not dependent on the commissioning of a low level, long-lived waste disposal facility, but that alternative solutions should be sought.
Comment	- Regards this sentence, do the alternative solutions mean the interim(temporary) storage facility for those wastes?
Answer	Yes, on the basis of a feasibility study of the operator and of the perspective regarding the commissioning of LLW-LL disposal facility (date of commissioning and capacity as regards graphite).

Country	Article	Ref. in National Report
Korea, Republic of	Article 13	H3.2, 212

Question/ Comment	Does French have the limit of total amount of the liquid or gaseous effluents discharge from the nuclear facilities (BNI)?
Answer	All the results concerning the limits applicable to BNIs and the total amounts of liquid and gaseous effluent discharges are given in section L of the report, § L.7.2.

Country	Article	Ref. in National Report
Russian Federation	Article 13	Section B – Policies and Practices

Question/	Whether siting of underground laboratories in deep geological formations to perform research on RW disposal and to carry out the corresponding R&D is subject to licensing?		
Comment	If so, then, what authority and for what time period issues such licence?		
Answer	The operating license of an underground laboratory is given by Decree, signed by the Prime Minister, the Minister of economy, finance and industry, the Minister of ecology, sustainable development and energy and the Minister of higher education and research. The Decree now in force for the underground laboratory of Bure gives permission to operations over a period of 19 years, until December 31, 2030.		
	Country	Article	Ref. in National Report
	Switzerland	Article 13	D3.2.2.3, p. 73
Question/	"Andra is also tasked, under the PNGMDR, with proposing an overall industrial scheme by June 2015, meeting the need for new very low level radioactive waste disposal capacity."		
Comment	Will the siting process follow the principles of Article 13 1iv of the Joint Convention, especially with respect to public involvement (1iv)?		
Answer	As for the creation of the presently operated VLL disposal facility and for any modification of this facility, the creation process will follow the European Regulation, in particular article 37 of the Euratom treaty. In this framework an assessment of the potential impact on neighboring countries is provided as information on the facility. Practically as the potential impact is very low in the close vicinity of the facility, it is not significant in neighboring countries.		
	Country	Article	Ref. in National Report
	Belgium	Article 13.1.1	Section H §3.1 p188
Question/	It is mentioned that “the Environment Code prescribes a certain number of specific requirements concerning the creation application for a deep geological formation repository which requires that such application refers a given deep geological formation, which has been investigated through an URL”.		
Comment	Does it mean that, prior to submitting an application for a deep geological repository, the host-formation must be investigated with an URL? If yes, - In the case that it can be demonstrated that the considered host-formation has similar properties as another formation that has already been investigated with an URL, is the investigation of the considered host-formation through an URL still a prerequisite condition? - The concept of borehole disposal consists in disposing the waste in a borehole at possibly several km depth. The construction of an URL at this depth would be technically challenging. Is the prerequisite condition of host-formation through an URL also applicable to the concept of borehole disposal?		

Answer	The first part of the question is answered in article L542.10.1 of the Environment Code: "the creation authorization request must involve a geological layer having been the subject of studies by means of an underground laboratory". In France, the question of the creation of several deep geological repository does not arise so far, but it can be assumed that an application for the licensing of a geological layer that is not exactly that studied in the framework of the activities of the first underground laboratory should be preceded by studies in another underground laboratory. The area of transposition in which the results of the laboratory of Bure are applicable is indeed limited and covers only 250 km2. Technology of drilling several kilometers deep for the storage of radioactive waste is not considered in France and the existing regulatory framework can therefore be Practically there is only one project of deep geological repository in France for radioactive wastes. According to the waste act of 1991 the purpose of the URL was indeed the assessment of the feasibility of the implementation in a host rock, using the results provided by an URL. This was done in the framework of the "dossier 2005". A "transposition zone" of 250 km2 for which the properties of the rock can be extrapolated from those of the URL was identified, in which the disposal facility could be emplaced. The concept of deep borehole disposal is not developed in France. So this question is presently not relevant in the French case.

Country	Article	Ref. in National Report
United Kingdom	Article 14	G.7

Question/ Comment	What is the design basis for the Cigeo facility? Will it have the capacity to take all the high level and long-lived intermediate level waste from all existing civil nuclear facilities? Will this include spent fuel in accordance with Andra's studies into the feasibility of direct disposal of spent fuel (section G.7)? What is the intention for waste from facilities planned or under construction?
Answer	Cigéo is designed to accommodate all the waste that is intended to be produced by existing nuclear facilities and those under construction. To assess the volume to be considered, the average duration of the operation of nuclear power plants is assumed to be 50 years. According to the French law, all spent fuel are considered to be reprocessed for recycling and only final waste are taken into account in Cigéo reference waste inventory as defined for its application. Feasibility studies of direct disposal of spent fuel make it possible to assess the adaptability of Cigéo in the event of a change in the French policy.

Country	Article	Ref. in National Report
United Kingdom	Article 14	B.1.5.1

Question/ Comment	What is the basis for the 100-year reversibility criterion for the geological disposal facility (section B.1.5.1), noting that IAEA and WENRA guidance is 300 years?
Answer	The duration of the reversibility has not been set in the French regulation and will be decided by the Parliament. The 100-year reversibility is a minimum and was decided by the Parliament on political and technical grounds.

Furthermore, given the fact that the end of reversibility is a progressive process (see for instance NEA works on the degrees of retrievibility), it is difficult to compare duration of reversibility without dealing with associated requirements.

Country	Article	Ref. in National Report
Austria	Article 15	H, page 193

Question/ Comment: The report states that the memory preservation of the repository should be done for an initial period of 500 years. How will that been done in practice?

Answer: This question has been raised in the 1980s at the closure of Centre de la Manche. The answer was an option of preservation of the archives on a “permanent paper” (according to standards as ISO 9706-1994 (paper for documents -- requirements for permanence) and ISO 11108-1996 (archival paper — requirements for permanence and durability). The reference option for the preservation of a long term memory of the facility includes presently:

• 3 arrangements for a so-called “passive memory”:

o The detailed memory with the whole technical documentation required to monitor, to understand, to modify a disposal facility. Its content is derived from the selection with a hierarchy of information related to potential evolution in accordance with long term safety assessment. A set of Investigation tools (inventories, glossary, index, abstracts) ensures accessibility and understanding. The lasting quality of documents is based on a suitable selection of the couple "ink / permanent paper" and conservation of duplicated documents on two separate sites: the storage site and the National Archives. Finally the validity and update of the detailed memory are handled by complementary remittances every 5 years until the end of the monitoring phase,

o A synthetic memory which is a unique document with a synthetic approach of technical and historical data. It is dedicated to decision makers and to the public. Updates are planned at each revision of the safety report of the facility. Its efficiency relies on a wide dissemination: mayors, notaries, associations, departmental councils, prefectures, ministries, national and international organizations…

o Administrative land use restrictions that are intended to prevent hazards resulting from works on site.

• 2 arrangements for a so-called “active memory”:

o Communication activities with the publics through “open gates days”, conferences, exhibitions or interviews. It also includes dissemination of dedicated communication tools: leaflets or internet site;

o An enhanced contribution of local information commissions, keeping memory being a topic they have to deal with in order to maintain it at a local level.

• Assessments every ten years by experts not belonging to Andra to check if the system meets the needs of future generations.

This reference solution also complies with regulatory requirements for the deep geological repository. The safety of this repository should indeed be “passive”; therefore there is no stringent requirement related to memory keeping. The safety guide issued by ASN takes into consideration a potential loss of memory 500 years after closure, for the assessment of intrusion scenarios. Such a timescale is consistent with the expected performance of the selected reference solution.

	Country	Article	Ref. in National Report
	Germany	Article 15	p. 210 (Section K)
Question/ Comment	Waste characterisation Regarding the disposal facility for low-level, long-lived waste (LLW-LL), the reports states that studies must focus on the characterisation of graphite waste and bituminized waste, and on the management scenarios for these two types of waste. What are the reasons for this? Could you please provide some more specific information on the studies envisaged.		
Answer	The content of these waste in radionuclides, especially long lived mobile fission and activation products such as 129I and 36Cl is crucial to assess the performance of disposal options, in particular near surface disposal. The waste owners are developing the characterization of these wastes to reduce current uncertainties. The results of this characterization are being used by Andra along with the results of geological survey of a potential host clay layer in Aube district in order to assess the compliance of near surface disposal of these wastes with safety requirements. In parallel to waste characterization, research is being performed to investigate treatment options to reduce as necessary the content of waste in long lived mobile radionuclides.		

	Country	Article	Ref. in National Report
	Belgium	Article 17	Section H §7.1.2 p197
Question/	It is mentioned that “during the procedure which authorised the CMS to enter the monitoring phase, a certain number of recommendations were issued, notably by the Manche repository situation review board, known as the “Turpin Commission””. One of these recommendations is “to inform and to involve the public throughout the monitoring phase”.		
Comment	Could France give examples showing how the public is involved in the monitoring phase? About public involvement, what are the key lessons learned interesting for other countries?		
Answer	One key result of the Turpin Commission was indeed the implementation of a dedicated information commission for Centre de la Manche. This commission includes ASN, IRSN, local representatives (mayors) and NGO organizations. This is a place where the situation of the facility can be discussed, in particular the results of the environmental monitoring. Results of inspections and audits are provided by ASN. The commission includes a group of experts who can perform independently some measurements in the facility and its environment. This commission is an actual link with the public. Furthermore if any significant change has to be done on the facility, it has to be submitted to public inquiry according to the French regulation.		

	As previously stated, the main lesson learned that can be interesting for other countries is the need of a structure to enable exchanges between the operator and representatives of the public. In addition it is important that the facility may be visited.		
	Country	Article	Ref. in National Report
	Switzerland	Article 17.3	H 7.1.1, p. 197
Question/	"the BNI [Basic Nuclear Installations] Order more specifically requires that protection of the interests mentioned in Article L. 593.1 of the Environment Code (i.e. security, public health and safety, protection of nature and the environment) must be ensured in a passive manner and must not require any intervention after a limited monitoring period, it being understood that the licensee must justify the design adopted and the technical feasibility such as to be able to meet these requirements."		
Comment	The Joint Convention states that intervention measures shall be implemented in the case of unplanned release of radioactive materials. How do you rule out by the means of requirements that unplanned releases will happen and you do not need any intervention measures?		
Answer	The requirement of the BNI order is that the repository shall be sited, designed, built, operated and closed in order that no more intervention is required after monitoring, taking into account a reference scenario and altered scenarios. This is the basis for authorization of the repository. However, if any unplanned release of radioactive material occurs after the monitoring phase and if intervention measures is then required, it will be carried out either by the licensee if it still exists, or the State.		
	Country	Article	Ref. in National Report
	Switzerland	Article 19	2.2.3.2, p. 86
Question/ Comment	Did you define the 5km radius of the installation zone for the public consultation based on the 1st evacuation zone or the cities members of the CLI?		
Answer	The 5 km radius zone for the public consultation is based on the 1st evacuation zone for the NPP. This zone is usually less than 5 km for other BNIs. Public authorities decided to take into account a unique 5 km zone for all BNIs.		
	Country	Article	Ref. in National Report
	Switzerland	Article 19	2.2.4.5, p. 88-89
Question/ Comment	You mention the situation of final shutdown and decommissioning in case of a decision made by the operator. Could you provide some information concerning the possible procedure in case of a political decision?		
Answer	In case of a political decision of final shutdown for an installation, the procedure would be exactly the same than in the case of a decision made by the operator. The regulatory framework doesn’t depend on the origin of the decision.		
	Country	Article	Ref. in National Report
	Switzerland	Article 19	2.2.5.2, p. 91

Question/ Comment	Will the new "ASN Guides" be statutory?		
Answer	ASN guides have a non-binding status.		
	Country	Article	Ref. in National Report
	Belgium	Article 19.2.6	Section E.3.4. pg 104-107
Question/ Comment	This chapter describes the various actors involved in safety and risk protection. Is there a system of information exchange or knowledge sharing between all these actors or some of them?		
Answer	Many exchanges between the different actors occur at various levels but they are not formalized. Sharing knowledge can be organized at the initiative of one of the actors. For example, the President of the Parliamentary Office for the Assessment of Scientific and Technological Options (OPECST) may refer on the High Committee for Transparency and Information on Nuclear Security (HCTISN) on different topics. Nevertheless, each actor publish its work (reports,...). Consequently, the knowledge is easily available for every one.		
	Country	Article	Ref. in National Report
	Luxembourg	Article 20	E3.1.3.1, 99
Question/ Comment	Please provide information on the financial resources of ASN in 2014? Are the resources adequate for the fulfilment of ASN's mandate?		
Answer	Since 2000, all the personnel and operating resources involved in the performance of the responsibilities entrusted to ASN have been covered by the State's general budget. In 2014, the ASN budget amounted to 79.95 M€ payment credits. It comprises 40.68 M€ in ASN payroll credits and 39.27 M€ in operating credits for the ASN central services and the eleven regional divisions. The total ASN technical support IRSN budget for 2014 amounts for its part to 212 M€, of which 84 M€ are devoted to the provision of technical support for ASN. IRSN credits for ASN technical support are covered in part (45 M€) by a subsidy from the State's general budget allocated to IRSN. The rest (39 M€) is covered by a contribution from the nuclear licensees. In total, the State's 2014 budget for transparency and the regulation of nuclear safety and radiation protection in France, amounted to 174.7 M€: 79.95 M€ for the ASN budget, 84 M€ for IRSN technical support to ASN, 10.6 M€ for other IRSN missions and 0.15 M€ for the working of the HCTISN (French High Committee for Transparency and Information on Nuclear Security).		

ASN's workload is forecast to increase significantly in the next few years. The government has provided ASN with a budget increase for 2015 that is more generous than the norm across the French civil service. However, this only partially reflects the anticipated increase in future workload, so ASN will have to make compromises in its plans for future regulatory oversight. If not carefully managed, this shortfall could have a negative impact on the effectiveness of ASN's future regulation.

ASN considers that new ways should be explored to ensure that the human and financial resources needed for effective regulation of nuclear and radiation safety are sustained into the future as ASN's workload increases.

	Country	Article	Ref. in National Report
	Poland	Article 20	p. 100
Question/ Comment	It is mentioned that inspector must follow a series of predefined training sessions before being certified to carry out inspections. It would be interesting to know more in detail on how those trainings are organized – e.g. are the courses organized at operating facilities or there are another ways to provide them?		
Answer	ASN human resources management aims to give the required competencies and necessary skills to each ASN department according to their needs and tasks to conduct. ASN has implemented a well-structured, systematic and effective system of inspectors' training. The ASN's training program is based both on general and technical courses, some of which are mandatory depending on the area to be qualified. According to their position and the facilities under their supervision, staff will follow specific courses, firstly to be qualified as inspectors. Qualification may be given in the following generic competence areas: - nuclear safety, - radiation protection, - transport, - pressure equipment. The competence of inspectors is achieved through a well-developed systematic formal training program. The training programme is comprised of several modules, some general and obligatory for all inspectors, and other tailored to the needs of specific inspectors' specialization. One person can be qualified for several inspector specializations. Newcomers must successfully complete a core business basic training module, a common nuclear safety technical training module, and other specific technical training modules. They must also obtain work experience through observation and participation in ASN inspections. Inspector training is completed with an accreditation. Qualified inspectors must also complete mandatory in-service training modules and work experience modules. These modules comprise areas such as training on new regulatory requirements, handling of events, organizational and human factors, or safety of PWR refueling.		

	Country	Article	Ref. in National Report
	Switzerland	Article 20.2	E2.2.2, p. 84

Question/ Comment	ASN is in charge for socio-economic aspects of the siting procedures of BNIs. Socio-economic aspects are closely related to political questions. How will be assured, that safety is not influenced by political and/or societal pressure? How will be assured that the safety authority will act as independently as possible from political or societal influence?
Answer	By the law, ASN is independent of the French government. ASN is in charge of the evaluation of the safety assessment made by the operators during license procedures of BNIs. The creation authorization decree for a BNI is implemented by the minister in charge of nuclear safety. The minister sends to the licensee a preliminary draft decree granting creation authorization (DAC). The licensee has a period of two months in which to present its comments. The minister then obtains the opinion of ASN. The opinion of the ASN is available for the public. If all safety conditions are not fulfilled, ASN will write it and publish it. ASN is also the only responsible for the commissioning license. Commissioning corresponds to the first loading of radioactive substances in the facility or the initial operation of a particle beam. Prior to commissioning, the operator must submit an application containing an update of the preliminary safety report, the general operating rules, a waste-management study, the on-site emergency plan and, except for disposal facilities, an update of the decommissioning plan, if need be. Once checked that the facility complies with the objectives and rules defined in the Environment Code and its accruing instruments, ASN may license the facility to be commissioned.

Country	Article	Ref. in National Report
Germany	Article 21	p. 109 (Section F, 1.2.2)

Question/ Comment	ANDRA's possibility to turn back to waste producers in financial aspects It is reported that the responsibility of the waste producer lies mainly with financial aspects, and that in that respect the practice "is based on the unlimited possibility in time to turn back to producers, if need be (notably in the case of potential consolidation work or additional provisions resulting from new legal obligations)." As this is not a legal obligation but a contractual agreement: Who is the competent entity for the decision about what is a need in this context?
Answer	It is a legal requirement according to the principle “producer = payer”. If there was a contractual dispute, as in any contract, some provisions are included in the contract and a judge will decide.

Country	Article	Ref. in National Report
United Kingdom	Article 22	F

Question/	France has given a good description of the steps taken to ensure that human resources working across the industry are suitably qualified and experienced (section F), but what steps are being taken to ensure that an adequate supply of such resource remains

Comment	available for the future?		
Answer	The strategic Committee of the nuclear sector (CSFN), which brings together all the stakeholders in the industrial nuclear sector so that representatives of the State, has set up a working group which is studying the adequacy between training in schools and French universities and skills including needs of the nuclear industry in the years to come. This mapping work is currently available in a locally fine way. The working group is also undertaking actions to enhance students in the dedicated nuclear trades and training through the organization of forums and the establishment of dedicated platforms.		
	Country	Article	Ref. in National Report
	Germany	Article 22.2	p. 114 (Section F, 2.2.4.2)
Question/ Comment	Financial provisions of EDF It is reported that the financial provisions created by EDF (…) at the end of 2013 amounted to about 17 321 G€ (million Euro is meant?) for the back-end of the nuclear fuel cycle (…) and to about 15 337 million Euros for the deconstruction of NPPs and the last What is meant by the term "last cores" in this context? If it is the last core of a NPP, why is it assigned to the deconstruction budget and not to the fuel cycle budget?		
Answer	The financial provisions at the end of 2013 were indeed 17 321 million Euros for the back-end of the nuclear fuel cycle. The amount of 15 337 million Euros were at the end of 2013 the total of the provisions for the two different items named ''deconstruction of NPPs'' and ''last cores''. Last core of each shut down unit has indeed to be managed in the area of the decommissioning activities. At the end of 2013, the separate provisions were 13 024 million Euros for deconstruction and 2 313 million Euros for last cores.		
	Country	Article	Ref. in National Report
	Hungary	Article 22.2	F.2.2.1.1 p. 110
Question/	"The tax is collected from the waste producers by ASN in accordance with the "polluter pays" principle, on the basis of flat-rate sums set by the Environment Code and multiplying factors set by decree. The flat-rate sums vary according to the facilities (nuclear power plant, fuel processing plant, etc.). "		
Comment	Question: What is a typical flat-rate for an average size NPP?		
Answer	Since 2000, all the personnel and operating resources involved in the performance of the responsibilities entrusted to ASN have been covered by the State's general budget. In 2014, the ASN budget amounted to 79.95 M€ payment credits. It comprises 40.68 M€ in ASN payroll credits and 39.27 M€ in operating credits for the ASN central services and the eleven regional divisions.		

The total ASN technical support IRSN budget for 2014 amounts for its part to 212 M€, of which 84 M€ are devoted to the provision of technical support for ASN. IRSN credits for ASN technical support are covered in part (45 M€) by a subsidy from the State's general budget allocated to IRSN. The rest (39 M€) is covered by a contribution from the nuclear licensees.

In total, the State's 2014 budget for transparency and the regulation of nuclear safety and radiation protection in France, amounted to 174.7 M€ : 79.95 M€ for the ASN budget, 84 M€ for IRSN technical support to ASN, 10.6 M€ for other IRSN missions and 0.15 M€ for the working of the HCTISN (French High Committee for Transparency and Information on Nuclear Security).

ASN's workload is forecast to increase significantly in the next few years. The government has provided ASN with a budget increase for 2015 that is more generous than the norm across the French civil service. However, this only partially reflects the anticipated increase in future workload, so ASN will have to make compromises in its plans for future regulatory oversight. If not carefully managed, this shortfall could have a negative impact on the effectiveness of ASN's future regulation.

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	Country	Article	Ref. in National Report
	Russian Federation	Article 22.2	Section F, page 110

Question/

The Report says that created in 1979 within the CEA structure, ANDRA was transformed into a public industrial and commercial establishment (établissement public à caractère industriel et commercial – EPIC) by the 1991 Law and the Waste Act.

Comment

…

Since 1 January 2007, ANDRA is financed by the following sources:

commercial contracts for ANDRA's industrial activities16 (operation and monitoring of radioactive-waste disposal facilities, specific studies, take-over of waste or rehabilitation of sites). EDF, AREVA and the CEA constitute the major waste producers with whom the Agency has signed contracts, and

• a subsidy for the preparation of the National Inventory, the collect and take-over of "small-scale" radioactive waste owned by individuals or local communities and the rehabilitation of sites contaminated with radioactive substances in cases of default of the liable entity. Indeed, in accordance with the Environment Code, "the Agency must receive a State subsidy in order to contribute to the financing of the public-interest missions entrusted upon the Agency pursuant to conditions described in Subsections 1 to 6 of Article L. 542-12".

	• an assigned tax. Pursuant to Article L.542-12-1 of the Environment Code, Andra manages an internal "Research fund" intended for financing research and studies on the storage and deep geological disposal of high-level and intermediate-level long-lived radioactive waste. The Research fund is financed by a tax that is additional to the "Research" tax that already exists for BNIs. This additional tax has been instituted in place of the commercial contract that bound Andra to the main producers in order to "guarantee the funding of research and the management of radioactive waste over the long term". The tax is collected from the waste producers by ASN in accordance with the "polluter pays" principle, on the basis of flat-rate sums set by the Environment Code and multiplying factors set by decree. The flat-rate sums vary according to the facilities (nuclear power plant, fuel processing plant, etc.).		
	What are the specific features of ANDRA's legal status as a public industrial and commercial establishment, in particular, with respect to taxation? Is it subjected to some tax reliefs or if any preferential economic advantages are provided to ANDRA? Could you please elaborate whether income tax is imposed on RW disposal activities the way it is imposed on any other commercial nuclear activities?		
Answer	According to the "Code de l'Environnement", Andra's taxation system is the same as any other private or public company. Of course Andra cannot make any profit from activities that are funded by public subsidies.		
	Country	Article	Ref. in National Report
	Belgium	Article 23	Section F.3.2. § 3.2.1 pg. 118
Question/ Comment	ANDRA's Quality, Security and Environment Policy Does ANDRA work according to the principles (guidelines) of GS-R-3 for implementing an IMS and if so how does this correspond with the other standards?		
Answer	In the French regulatory framework, new ministerial decrees were published in February 2012 for nuclear facilities that expresses requirements related to the integrated management system, to safety management and to safety demonstration aspects. Andra didn't really check that its policy fully complies with the GS-R-3. However, Andra considers that national policies are in line with the principles. As an illustration, Andra has an established safety policy that includes safety culture. There are also two independent levels for the management: the Risk Management division that establishes the safety framework, and conducts a second control level on industrial activities impacting safety. This control level is completely independent of the first control level performed by the industrial division in charge of industrial activities.		
	Country	Article	Ref. in National Report
	Czech Republic	Article 24	4.1.2.2, 126
Question/ Comment	If neither "clearance threshold" nor "trivial dose" is included into French regulation, what are the technical specifications for discharges based on?		

Answer	In France, discharge limits for BNIs and ICPEs are not based on dose reference values. In application of the optimisation principle, the licensee must reduce the radiological impact of its facility to values that are as low as possible under economically acceptable conditions. The licensee is also required to assess the dosimetric impact of its activity. The result must be compared with the annual dose limit for the public (1 mSv per year) defined in Article R.1333-8 of the Public Health Code. Consequently, the licensee has to apply for discharge limits proving that he meets the optimisation principle, that he uses the best available techniques for the treatment of the liquid and gaseous discharges, and that the resulting environmental impact is far below the annual dose limit of 1 mSv/yr. Based on this demonstration, ASN determines the discharge limits applicable to the particular installation. For installations other than BNIs and ICPEs, such as hospitals for instance, the technical specifications applicable to the discharges are defined in a resolution issued by ASN in 2008 (resolution n° 2008-DC-0095, dated 29th January 2008). This resolution imposes limit values for the activity of the liquid discharges containing short-lived radionuclides (less than 100 days period), so as to ensure that these discharges will not induce any impact for the public and the environment. For discharges containing radionuclides with more than 100 days period, the licensee has to apply for a particular authorization, providing an environmental impact assessment.

Country	Article	Ref. in National Report
Czech Republic	Article 24	4.2.1.1, 124

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Answer	In France, discharge limits for BNIs and ICPEs are not based on dose reference values. In application of the optimisation principle, the licensee must reduce the radiological impact of its facility to values that are as low as possible under economically acceptable conditions. The licensee is also required to assess the dosimetric impact of its activity. The result must be compared with the annual dose limit for the public (1 mSv per year) defined in Article R.1333-8 of the Public Health Code. Consequently, the licensee has to apply for discharge limits proving that he meets the optimisation principle, that he uses the best available techniques for the treatment of the liquid and gaseous discharges, and that the resulting environmental impact is far below the annual dose limit of 1 mSv/yr. Based on this demonstration, ASN determines the discharge limits applicable to the particular installation.

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	Country	Article	Ref. in National Report
	Czech Republic	Article 24	4.2.4.,138
Question/ Comment	As to the effluent discharges, there are concentration limits and annual-activity limits. Is there any “authorized limit” in term of dose impact for a reference group?		
Answer	The nuclear operator complies with the general regulatory requirements concerning the annual dose limit for the public that is 1mSv/year (whole body). This justification is established in the impact assessment study which is performed for each nuclear facility in the application file for the annual limits for liquid and gaseous releases authorization. In this framework, the dose to the reference group (i.e. the most exposed to radioactive liquid and gaseous releases and to irradiation from the facilities) is calculated for the limits applied for. Besides, each year the dose to the reference group is calculated for the real releases during the year.		
	Country	Article	Ref. in National Report
	Italy	Article 24	F, 126
Question/ Comment	It is stated that French regulation does not include the notion of clearance and that, in practice waste and effluents elimination is monitored on a case by case basis when activities are subject to licensing (as for BNIs) while, otherwise discharges are subject to technical specifications. Could France clarify on which dose reference values discharge limits for BNIs are established?		
Answer	In France, discharge limits for BNIs are not based on dose reference values. In application of the optimisation principle, the licensee must reduce the radiological impact of its facility to values that are as low as possible under economically acceptable conditions. The licensee is also required to assess the dosimetric impact of its activity. The result must be compared with the annual dose limit for the public (1 mSv per year) defined in Article R.1333-8 of the Public Health Code. Consequently, the licensee has to apply for discharge limits proving that he meets the optimisation principle, that he uses the best available techniques for the treatment of the liquid and gaseous discharges, and that the resulting environmental impact is far below the annual dose limit of 1 mSv/yr. Based on this demonstration, ASN determines the discharge limits applicable to the particular installation.		
	Country	Article	Ref. in National Report

	Korea, Republic of	Article 24	F.4, 131
Question/ Comment	- What is the process to derive the transfer coefficients and bioaccumulation factors used in the radiological environmental impact assessment? - What are the transfer coefficient and the bioaccumulation factor applied to each radionuclide?		
Answer	The impacts of planned discharges of radionuclides to the environment are assessed by means of mathematical models that approximate the transfer of radionuclides through the compartments of the environment. The reliability of the predictions of the models depends, inter alia, on the quality of data used to represent radionuclide transfer through the environment such as the concentration factors and distribution coefficient for soil and sediment (Kd). These data relate mainly to equilibrium conditions, that is, they relate to the conditions where equilibrium has been established between the movements of radionuclides into and out of the compartments of the environment. That is the situation during the controlled and continuous release of radionuclides to the environment from a nuclear facility. For these assessments, when there is no site specific data, two IAEA publications are used: Sediment Kds and Concentration Factors for Radionuclides in the Marine Environment (Technical Reports Series No. 247), and the Handbook of Parameter Values for the Prediction of Radionuclide Transfer in Temperate Environments (Technical Reports Series No. 364). They provided a full set of transfer parameter values for the marine, freshwater and terrestrial environments needed for environmental impact assessments. The accompanying IAEA TECDOC-1616 entitled Quantification of Radionuclide Transfers in Terrestrial and Freshwater Environments for Radiological Assessments describes the methods used to obtain the estimate of a representative value for a given parameter and an indication of the extent of uncertainty about this estimate.		
	Country	Article	Ref. in National Report
	Czech Republic	Article 25	5.1.1, 141
Question/ Comment	Which device is provided for warning and informing the population?		
Answer	In case of a nuclear or radiological emergency situation, the operator of the BNI in which the accident occurred is responsible for alerting the population located within 2 km around the installation through its own network of sirens and also alert systems which can send first information to the population through personal mobile phones. Prior, the operator must alert the local authority (departmental prefect) who is able to activate his civil protection teams to alert and inform the possibly affected population through a set of devices encompassing sirens, phone calls, sms, and television and radio channels. In any case, the population is advised to stay at home or a sheltered place attentive to the television or radio messages and any other instructions given by the civil protection units.		
	Country	Article	Ref. in National Report
	Czech Republic	Article 25	5.2.4.4,144

Question/ Comment	How often are verified on-site and off-site emergency plans?
Answer	The on-site (PUI) and off-site (PPI) plans are verified on a regular base first through local or national exercises. The operator is responsible for training its own technicians and managers. For each nuclear power plant, a PUI, testing exercise is organized once a year. At the departmental level and national level, a cross ministerial instruction defines a planning of exercises, each of them aiming at testing the implementation of the PPI but also aiming at testing dedicated topics such as other plans, coordination, alert, evacuation, taking of iodine, international relations and so on. PUI and PPI are also tested and verified during topical inspections made by the ASN in nuclear plants and facilities in order to estimate if the nuclear operators' staffs in charge of nuclear emergency management are properly trained.

Country	Article	Ref. in National Report
Japan	Article 25	p141

Question/ Comment	With regard to your off-site emergency plan, please elaborate on the relationship between the ORSEC Plan and PPI, the differences in roles, and who will mobilize the personnel.
Answer	Off-site emergency plans have been conceived to ensure the protection of the population situated up to a certain distance from the BNI, generally 10 km (corresponding to the radiological emergency situation covered by the safety reports) and whose surface accounts for the emergency planning zone or "PPI zone". But we cannot certify that no nuclear accident will impact the zone beyond the "PPI zone", general measures to protect the population have to be prepared and planned. That is why the ORSEC plan exists. This civil protection lays on ensuring the protection of the population in case of any accidental situations or natural catastrophe. Actually, the PPI is based on the ORSEC plan for the PPI zone but with additional specific measures tallying with the need to protect the population from the radiological releases. The personnel will be mobilized by the General Directorate for Civil Protection and Crisis Management following the decisions made by the National Crisis Centre.

Country	Article	Ref. in National Report
United States of America	Article 25	A, pg. 22

Question/ Comment	The report indicates that ASN decided to conduct stress tests of events of the same nature as at Fukushima Daiichi on non-nuclear power reactors. For waste and spent fuel storage facilities away from power plants, what lessons learned have been implemented?
Answer	In France, the main waste and spent fuel storage facilities are in the La Hague site operated by AREVA. Following the stress tests or the complementary safety assessments (CSA), AREVA has identified the principal feared situations in the case of an extreme natural event, loss of electrical or/and cooling systems.

The assessment of these situations related to the waste and spent fuel storage facilities concludes that large delays exist before reaching phenomena which lead to radioactive releases.

However, ASN has prescribed to the Licensee to define and to put in place additional arrangements in order to manage these feared situations following extreme natural events. These arrangements are material and organizational. They cover the levels 3 to 5 of the defense in depth concept:
- level 3 “Prevention of severe accidents”, safeguard means
- level 4, “Mitigation of severe accidents”, severe accidents means
- level 5, “Crisis management”, emergency preparedness arrangements

As examples, these arrangements include:
- the implementation of piezometers under the silos to pump any leakages following the loss of containment for the silos,
- additional plugs in the ponds in order to connect them to an independent cooling system by the emergency preparedness team,
- the construction of a new emergency control room taking in account a higher seismic hazard level.

	Country	Article	Ref. in National Report
	Italy	Article 25.2	F, 140

Question/ Comment: Similar to what is described for events occurring at French nuclear installation, could France describe the national preparedness for responding to a transboundary emergency following an event to an abroad plant and how it is put under test?

Answer: Regarding the national preparedness to a transboundary radiological or nuclear emergency, France has undertaken bilateral cooperations with cross border countries like United Kingdom, Belgium, Luxembourg, Germany, Switzerland or Spain. These cooperations aim at:
- enhancing our mutual understanding of our respective emergency preparedness and response organizations,
- a more efficient exchange of information during the first phase of a radiological emergency situation for a better harmonized implementation of the protection measures.

The respective plans and bilateral protocols are tested through specific exercises (for example: the “Grande Region exercise” in 2013, which involved France, Luxembourg and Germany) to test the off-site plans, the protocols of exchange of information and the different implementations of protection measures within the countries.

	Country	Article	Ref. in National Report
	Canada	Article 26	152

Question/	As noted by ASN, the strategy for immediate decommissioning, opted for by each of the operators, is experiencing some operational delays. The ASN reports the need for a periodic review - at least once every 10 years - of each operators overall strategy to ensure they are in conformance with the French policy of immediate dismantling for nuclear installations.
Comment	1) How is ASN justifying the frequency of the periodic review to be sufficient? 2) Could France please expand on the concept of the immediate decommissioning strategy (i.e. does ASN define clearly the concept in terms of a procedure/steps, product deliverables or timeframe to respect)?
Answer	1) French operators are responsible for the operation as well as for the decommissioning of their nuclear installations. Each of the main French operators are responsible for tens of installations. The purpose of the overall strategy file requested by ASN is to give an overview of the main principles applied for planning the decommissioning of all the installations belonging to an operator: organisational aspects to define, supervise and implement each decommissioning project, priorities taking into account the safety aspects, schedule taking into account the priorities, safety and radiation protection objectives, waste management objectives, basis for choice of methods and process implemented for dismantling operations, conservation of knowledge and technical capacities, etc. Taking into account the number of installation per operator and the purpose of the overall strategy file, ASN considers a periodic review at least once every 10 years is appropriate. It can request a more frequent review if necessary. In any case, each installation under a decommissioning process is subject to a continuous specific supervision. 2) Immediate decommissioning means that dismantling of the entire facility is started as of the end of operations, with no transitional period, even if the dismantling operations themselves, owing to their complexity, can last for a very long time. The schedule of the operation shall then be consistent with their complexity. The strategy is reviewed on a case by case basis during the review of the decommissioning application file submitted by the operator.

Country	Article	Ref. in National Report
Czech Republic	Article 26	F, 137

Question/ Comment	What organization is responsible for control of production of financial reserves for decommissioning of nuclear instalations?
Answer	The funds are under the supervision of the State (through the Administrative Authority - services of the Ministry for Economy and Energy on the advice of the nuclear safety authority), who can impose corrective measures to the operators.

Country	Article	Ref. in National Report
Korea, Republic of	Article 26	F.6.1.3.5, 148

Question/	Section F.6.1.3.5 states that "ASN maintains the right to carry out an inspection with intakes and measurements before granting its approval."
Comment	- What are the radiological standards applied to free release (delicensing) of the site?

	- What are the contents in the status report submitted by the operator?
Answer	For ASN, the reference approach is, whenever technically possible, complete clean-up of the radioactively contaminated sites, even if the potential exposure to humans from the radioactive pollution appears to be limited. Even if, depending on the characteristics of the site, this approach were to pose implementation difficulties, one should nonetheless take the clean-up process as far as reasonably achievable and provide all technical or economic evidence to demonstrate that the remediation operations cannot be taken any further and are compatible with the established or envisaged usage of the site. Assuming that complete clean-up is not achieved, appropriate measures must be taken (for example: mitigate the exposure pathways, etc.). Complete clean-up must be understood as back to the reference state that is to say the state of the environment before the nuclear activity starts. A baseline characterisation can be done in a similar surrounding environment not influenced by radioactivity. If complete cleanout is not possible, ASN can authorize the release of the site with restrictions. Those restrictions are submitted to public enquiry.

Country	Article	Ref. in National Report
Korea, Republic of	Article 26	F.6.1.3.5, 148

Question/	Section F.6.1.3.5 states that "The operator must declare to ASN any zone he wishes to delicense and must submit in support of his application a justifying case including a status report on the clean-out of the zone involved. Draft Guide No. 14 provides a standard summary of such status report."
Comment	- What are the contents in the status report submitted by the operator?
Answer	The content of the reports submitted by the operators is generally in line with the content requested by the Draft Guide No. 14: reminder of the clean-out methodology concerning the treatment and remediation objectives, the history of activities which took place in the concerned area, the analysis of the events which may have led to chemical or radiological pollution of the area, the civil engineering characteristics, description of the treatments that have been implemented, justification of individual or particular treatments, potential deviations, final chemical and radiological characterisation to justify the objectives have been reached.

Country	Article	Ref. in National Report
Korea, Republic of	Article 26	F.6.1.3.1, 147

Question/	Section F.6.1.3.1 states that "Decommissioning plan must describe notably the following, with the necessary justifications: ..... It is similar to the plan described by the IAEA in Document WS-R-5. A typical summary is proposed in the above-mentioned Guide No. 6."
Comment	- What are the contents of the decommissioning plan? - What are the contents of the safety assessment for decommissioning in the decommissioning plan? - What is the review guideline for reviewing the contents of the safety assessment in the decommissioning plan?
Answer	- Contents of the decommissioning plan: As requested in the Guide No. 6, the decommissioning plan shall contain:

o presentation and justification of the chosen decommissioning strategy;
o general information on the decommissioning: methodological principles relative to decommissioning, site rehabilitation and its subsequent monitoring, measures taken at the installation design stage to facilitate its decommissioning, measures taken by the licensee to guarantee the conservation of the history of the installation and access to the associated data, measures taken by the licensee to guarantee the maintaining of competences and knowledge of the installation (knowledge management), conditions of management of the waste resulting from decommissioning;

o breakdown of the decommissioning process: defining of the decommissioning steps, planned schedule, duration of operations, description of the planned work and the equipment that will be necessary for the decommissioning operations, identification of the safety and radiation protection objectives, taking account of waste, discharges and conventional risks, description of the chosen clean-out methodologies (ground, civil engineering structures), justification of the technical choices from the aspects of nuclear safety, radiation protection, waste management, effluent discharges and conventional risks;

o final state envisaged: presentation and justification of the chosen final state, projections for the future use of the site, uncertainties concerning the description of the final state, evaluation of the impact of the installation and the site after achieving the targeted final state, envisaged monitoring methods.

Depending on the stage of the installation in its life-cycle, some items may not be addressed (for example: at the design stage, planned schedule and duration of operations is not relevant).

- Contents of the safety assessment for decommissioning in the decommissioning plan:

The decommissioning plan does not contain any safety assessment as such. The decommissioning plan as well as the safety assessment are different documents both part of the decommissioning application file that the operator must submit to get the authorisation to dismantle the facility. The content of the safety assessment report is described in the ministerial order of 7 Feb. 2012 (articles 3.1 to 3.10) and will be further detailed in a future regulatory decision on safety assessment.

- Review guideline for reviewing the contents of the safety assessment in the decommissioning plan:

The review of the safety assessment for decommissioning is made on a case-by-case basis depending on the safety issues of the facility, applying the graded approach and taking into account the regulatory provisions mentioned above.

	Country	Article	Ref. in National Report
	Belgium	Article 28	Section J, p.205
Question/ Comment	Good practices are observed about the safe management of the sealed sources. Section J, §1, p. 205 : « Any user to whom a sealed source has been delivered must have them collected by the supplier as soon as it is out of use and no later than 10 years after the initial approval appearing on the corresponding supply form.”		

Section J, §2, p. 205 :
« Given its past role as one of the main French suppliers of sealed sources, the CEA now has to manage all disused sources that are being returned by the industry, hospitals, research organisations or found in its own facilities. Furthermore, the CEA created in 2009, together with its former subsidiary, CIS bio international, a public interest group on cobalt-60 and caesium-137 HL sources in order to collect no only all HL sources of cobalt-60 and caesium-137 distributed in France by the CEA or CIS bio, but also all orphan sources of the same type. In addition, the CEA stores a large number of sources in its facilities, including radium sources, without any practical use that public authorities have entrusted upon ANDRA. »

Answer: France warmly thanks Belgium for these encouraging comments regarding good practices for sealed sources safe management.

Country	Article	Ref. in National Report
United States of America	Article 28	J, pg. 15

Question/ Comment: A working group was set up in 2013 with the purpose of more clearly defining the methods for management of disused sealed sources, and whether they are intended for recycling or considered to be waste. The working group was expected to submit a proposed plan for management of disused sealed sources, by the end of 2014. Please explain the status of this plan at your National Country Presentation at the Fifth Review Meeting.

Answer: Management of disused sealed sources constitutes an integral part of the National Plan for Radioactive Materials and Waste Management for the period 2013 – 2015 (PNGMDR). At the end of 2014, the working group have submitted a proposed plan for management of disused sealed sources. This report is currently under assessment by national authority.

More precisely, in December 2014, as secretary of the working group, CEA answered to the PNGMDR decree requirement and submitted a report containing the recommendations for optimizing the management of retrieval and collection of disused sealed sources. Main recommendations concern disused sources considered as waste, and management of disposal routes. The report provides some information necessary to set up management routes for main categories of sealed sources. During 2015, this report is under review by the national safety authorities and regulators. After this assessment the operational validated conclusions will be included in the next National Plan for the period 2016-2018. This Plan will be presented in 2018 during the following Review Meeting of the Joint Convention.

Country	Article	Ref. in National Report
United States of America	Article 28	J.2, pg. 206

Question/ Comment: The report states: "The CEA has set forth as its strategic objective to ensure, within a ten year timeframe, the recovery and elimination of all sealed sources it supplied or manufactured in the past." Does this only apply to disused sealed sources? Please clarify.

Answer	Because retrieval and collection of disused sealed sources are manufacturer's responsibilities, CEA manage these sources, trying to establish recycling solutions or disposal routes. Specific management rules for disused sealed CEA's sources are defined by CEA in a ten year timeframe. This timeframe is based on a French regulation rule concerning the expiratory date of used sealed sources after ten years, excepted in case of safety authority agreement and supplier agreement to postpone this deadline. CEA's program fixes a ten years deadline for management of disused sealed sources. This timeframe is different for CEA's programs on the one hand, the radioactive waste management, and on the other for spent fuel management. CEA's program for the completion of intermediate level, long-lived waste packaging operations is constructed in order to meet with the deadlines required for achieving the 2030 goal set by the Waste Act. The CEA's program for spent fuels management is constructed to meet the requirements of the French national processing and recycling strategy for spent fuel that was confirmed by the Waste Act, and derivate in the PNGMDR's guidelines ("Reducing the quantity and toxicity of radioactive waste must be sought, notably by processing spent fuel and by processing and conditioning radioactive waste"). CEA's research reactors spent fuels are stored on-site in certain CEA facilities and then on the La Hague site pending processing.

Country	Article	Ref. in National Report
Hungary	Article 28.1	K.1.1.1 p. 210

Question/	"... the level of safety of certain legacy waste storage facilities is unsatisfactory ... the Decree of 27 December 2013 requires of AREVA, CEA and EDF concerning the retrieval and packaging of waste produced before 2015 to be packaged before 2030."
Comment	Question: Is this long period of time acceptable to the public?
Answer	Implementation of retrieval and packaging operations for large quantities of waste that can be chemically reactive in condition of high dose rate requires time for designing adequate retrieval means and waste packages. It also requires the availability of storage or disposal route to manage retrieved waste and compatibility of waste packages and management routes. ASN considers that the time for operation must be as short as possible in consistency with the quality and the safety of the operations to be done. It is the reason why these operations requires time and that ASN sets milestones to frame their implementation. The process of retrieval of legacy waste is discussed in an open workgroup in the framework of the National plan and is discussed with local communities. The transparency of the process and the fact that it is framed by ASN is necessary to make it acceptable to the public.

Country	Article	Ref. in National Report
Australia	Article 32	Pages 12, 30

Question/ Comment	What is the process for establishing a second VLL facility? How was this (or how will this be) addressed in the PNGMDR?
Answer	The PNGMDR addresses the strategy to be implemented. It takes into account waste generation forecasts and available disposal capacities. The question of an anticipated saturation of the CIRES VLL radioactive waste disposal facility has resulted from the analysis of data provided within the National Inventory of Radioactive Materials and Wastes. The opportunity of developing alternative routes to disposal has been discussed and is still under discussion within the PNGMDR. At the end of June 2015, Andra, in coordination with waste generators, will issue proposals for an industrial roadmap for the management of VLL radioactive wastes. It will include different options to process and dispose the wastes, in connection with an agenda related to the decisions to be taken. It takes into consideration the creation by Andra of a second disposal facility. This roadmap will be discussed within the PNGMDR.

Country	Article	Ref. in National Report
Australia	Article 32	Page 30

Question/ Comment	What disposal options are being considered in the feasibility study?
Answer	France's comment addressed to Australia: the question is believed to concern the Comurex Malvési site which the answer is given for. Three concepts are considered for long-term management options of the wastes currently existing in the natural uranium conversion site of Malvési. One of the concepts is surface storage, with a low permeability clayey capping, as the two others are sub-surface storages in geological host rocks from Oligocene: one in the disused open cast mining pit at the industrial site, capping it with a similar engineered cover, and the other underground storage in a facility purpose-engineered in the Upper Oligocene clay formation near the site.

Country	Article	Ref. in National Report
Belarus	Article 32	D, P. 73

Question/ Comment	The National Report indicates that very low-level radioactive waste is located at CIRES disposal facility. Please, provide information about the geological and hydrogeological conditions of this disposal facility siting.
Answer	Information can be found in different publications, for instance: http://www.iaea.org/OurWork/ST/NE/NEFW/CEG/documents/ws062006_18E.pdf http://www.wmsym.org/archives/2011/papers/11554.pdf

	The main principle for the site selection was to comply with European Regulation for the disposal of hazardous waste (European Directive 1999/31). Andra searched a site large enough to accommodate a total volume of waste of 650,000 m3 in order to meet expected disposal needs for 30 years. Andra selected in 1999 a suitable site in the village or Morvilliers, Aube Department, close to the Centre de l'Aube disposal facility, thus allowing for synergies between both operations. Andra's approach took benefit of the confidence built with local communities during more than ten years for the construction and the operation of Centre de l'Aube. An area of 45 ha was surveyed and a clay layer with a thickness between 15 and 25 m was characterized during reconnaissance campaigns. The thickness was 3 times higher than required and permeability was 10 to 100 times less than required.		
	Country	Article	Ref. in National Report
	Belarus	Article 32	B, P.38
Question/ Comment	The National Report mainly specifies the criteria and approaches to classifying solid waste as RW. We would like to know what criteria for classifying liquid and gaseous wastes as RW which are used in France.		
Answer	Liquid and gaseous effluents that are produced in areas identified by the waste zoning are treated (evaporation to reduce volume, decontamination by ion exchangers resins …) or filtrated and can be released. Liquid waste can also been solidified, for instance in a cement matrix and treated as a solid waste. As part of the authorization process and of the periodic safety assessment, nuclear facilities shall demonstrate that their releases are as low as practicable. A decision by ASN sets limits to the authorized releases and is updated frequently.		
	Country	Article	Ref. in National Report
	Belgium	Article 32	Section B § 1.3.2.2 p.30
Question/ Comment	The conclusions of the 2013-2015 PNGMDR, "Improving existing management modes" notice the need to develop reutilization solutions for very low level (VLL) waste because of the saturation of waste disposal capacity in about 2025-2030. The VLL waste recycling must occur in the nuclear industry (section B § 4.1.1.3 "Clearance"). However, clearance would be a useful mean to delay the disposal facility saturation, for all that conservative clearance levels are decided and that waste characterization is correctly		
Answer	ASN doesn't favor the establishment of generic clearance levels in France.		
	Country	Article	Ref. in National Report
	Belgium	Article 32	Section B 2. Page 35
Question/ Comment	Processing spent fuel proves interesting with regard to the long-term disposal of radioactive waste. Waste is processed in a sustainable fashion. Could France explain what is meant by sustainable? What criteria or basic principles, if any, are considered in this matter?		

Answer	Here reference is made to sustainability over time of the glass matrix used for conditioning the IL- and HL-LL waste from reprocessing. Glass matrix allows a safe containment of radionuclides through its properties of thermal stability, chemical durability, and resistance to the self-irradiation.		
	Country	Article	Ref. in National Report
	Belgium	Article 32	Sect. D § 3.2.2.1/3.2.2.2, 3.2.2.3 p71
Question/ Comment	We understand that there are periodic safety reassessments. Is there, in this context, also identification and managing of the risks? If so, is there a 'dynamic list' that is being assessed (and changed if necessary) periodically?		
Answer	The periodic safety assessment will encompass a reassessment of all the risks that have been identified in the safety case. However, there will be a graded approach according to the evolution of knowledge, changes in the installation, importance of these risks, … If new risks appear, for instance due to change of the installation, it will be encompass by the reassessment.		
	Country	Article	Ref. in National Report
	China	Article 32	B.4.1.1.3, p38
Question/ Comment	Please introduce examples and the related procedures of recycling or clearance of very low level (VLL) waste in France.		
Answer	There are no authorization for clearance of very low level waste in France. However, recycling of VLL waste is possible if waste are reused in the nuclear field. For instance, a route for recycling contaminated Lead was in operation in France. After decontamination by melting of the lead, it was sent in a conventional facility that produced equipment for nuclear facilities such as shielding.		
	Country	Article	Ref. in National Report
	China	Article 32	B.4.2.1, p41
Question/ Comment	Please introduce the good practice of waste sorting in France. How to sort very low level (VLL) waste and LILW in practice? Are the wastes measured one by one or by whole bag? Or are the wastes sorted and confirmed when they are produced?		
Answer	In France, a specific public agency, ANDRA (radioactive waste management agency), has the responsibility for the long-term management of radioactive waste. This agency operates waste repositories, defines the acceptance criteria for waste (VLL and LILW) packages in these repositories and controls the quality of their production. The waste producer must comply with these criteria during the entire waste packaging procedure. The radioactive waste management process results in the following simplified steps :		

- Radiological inventory: determining the level and type of radioactivity in different circuits, structures and components of the installation. The result of this radiological inventory allows provisional classification of waste based on two parameters: the activity level and the half-life of the nuclides in the waste (VLL, LILW, short lived or long lived...);
- Categorization of waste: sorting by physical and chemical (admissible or prohibited waste), determination of the radiological activity (with respect to the authorized activity limits), the disposal method and the type of packaging;
- Conditioning and characterization container: Once the waste is packaged, dose rate measurements or gamma spectrometry are carried out to determine the final classification of the waste packages.

The waste producer must guarantee that all delivered waste packages comply with the disposal criteria (activity level, sorting of waste…).

According to the French regulation for nuclear facilities, these wastes are generated inside the « nuclear wastes zone » of the nuclear facility. Generally the waste generators can know in advance which area should have very low level waste and which area should have low level wastes. However confirmation on the relevant waste disposal route has to be made by a measurement and the sorting and confirmation process is assessed through the acceptance process performed by Andra. In some cases waste generators can implement a “switch” after the measurement between both disposal routes.

The radioactive content assessment is performed on a package with requirements to prevent dilution. The acceptance criterion is expressed in term of an acceptance index which is a linear combination of each nuclide activity. This index has to be less than 1 for a batch and less than 10 for a batch of packages. Andra also checks the availability of a remaining radiological capacity (in the license of the facility).

	Country	Article	Ref. in National Report
	China	Article 32	p10£»B.3, p36£»p41
Question/	In the back end of the fuel cycle, the current practice is the separation of uranium and plutonium through spent fuel reprocessing in French. The high toxicity Minor Actinides (MAs) (Am, Np, Cm) would take hundreds of thousands of years to decay to reach the level of natural radiation. The vitrified high-level waste in France includes MAs.		
Comment	What is the position of French government or the French nuclear safety agency on such wastes practice? And what is the public point of view on this in France?		
Answer	France has made the choice of the closed nuclear fuel cycle. This policy allows during spent fuel processing to separate Uranium and Plutonium fission products and minor actinides contained in spent fuel. Plutonium is the main contributor to the radiotoxicity of spent fuel. Its recycling in the form of MOX can divide by 10 the radiotoxicity of waste packages that will be disposed of in Cigéo.		

Separate and transmute the minor actinides would be the next step towards lowering the radiotoxicity of vitrified packages. The Act of June 28, 2006 entrusted CEA to compare the performance of the different possible strategies of transmutation. CEA has delivered its conclusions to the State by the end of 2012.

It was particularly shown that the transmutation of minor actinides does not exclude the need for disposal of in deep geological sites, but could be a way of progress in the long term (beyond a few centuries) by reducing up to a factor of 100 the radiotoxicity inventory contained in nuclear waste. However, the industrial implementation of transmutation in fast reactor options would also carry disadvantages, particularly at the level of operations of the materials cycle. Finally, if the feasibility of minor actinides separation has been demonstrated at the laboratory scale, it is not yet acquired on an industrial scale and an important R&D effort remains necessary.

	Country	Article	Ref. in National Report
	China	Article 32	B.5.2.1, p43
Question/	Before the end of 2014, ASN will publish a resolution clarifying its requirements with regard to the content of the ¡°waste study¡± and the study update procedures, the procedures for the production and management of the waste zone plan and with regard to the content and drafting procedures for the ¡°waste summary¡±.		
Comment	Please give more information about the resolution especially the detailed content about ¡°waste zone plan¡± and it's implementing measures.		
Answer	The decision will define: About the waste study: - Its objectives, - Its detailed content, - The way it is elaborated (including arrangement for nuclear sites) and keep up-to-date - Its link with the operational rules. About the waste zoning : - The way it is elaborated and justified by the licensee (taking account of design of the facility, the way it is and was operated, operational feedback, and radiological state and zoning), - Labeling of the waste zoning, - Dispositions to prevent transfers of contamination and activation,		

- Requirements with regards to verification of the adequacy of the waste zoning
- Changes (pending or temporary) of the waste zoning and authorization process.

	Country	Article	Ref. in National Report
	China	Article 32	B.6.1.1, p49
Question/ Comment	It is mentioned that most of the waste resulting from NPP operation consists of VLL, IL or LL-SL waste. It may be divided into process waste and technological waste. The two categories comprise different types of waste. And 2000 t VLL waste, arising from the operation of EDF nuclear reactors in 2013, intended to be disposed of at the Cires.		
	What are the specific types of VLL waste produced from NPP operation?		
Answer	The main specific types of very low level waste produced from NPP operation are the following, in percentage of mass (ton) produced: - metallic waste (conditioned within racks): 50%; - rubble (conditioned in "big-bags"): 25%; - spent ion-exchange resins from the SG blowdown system (APG), conditioned in big-bags: 22%; - iodine filters and activated charcoal resulting from their dismantling, with various modes of conditioning: 2%.		
	Country	Article	Ref. in National Report
	China	Article 32	B.6.1.1, p50
Question/ Comment	How to control the source of ion-exchange resins, water filters and technological waste to reduce the wastes production in EDF?		
Answer	The management of the production of process waste (ion-exchange resins, water filters, concentrates…) requires a good coordination between many operational professional skills (operators, chemists, waste managers…). It is necessary to take into account the positive or negative effects of the operating strategies in terms of efficiency of the treatment of the primary water, radiological impact and environmental performance (production of radioactive releases and waste…). According to the experience feedback gained annually, multidisciplinary working groups are established as needed in order to identify and implement optimization actions (evolution in procurements, criteria to change the demineralizers and filters…).		

Regarding the specific issue concerning the technological waste, an important diminution in the production of waste has been reached in the years 90 mainly through reduction at the source of the work (avoiding to introduce material or equipment in controlled zone when not strictly necessary, work organization…). In this way, the volume of short lived low and intermediate level waste, to be disposed of in the CSA (Low and intermediate level, short lived surface disposal center), has been reduced from 360 m3/unit in 1985 to an average of 100 m3/unit since 1995. Further actions to optimize the production of solid radioactive waste are now focused on waste conditioning and treatment rather than on the production level. In order to get the best use of the capacity of the existing radioactive waste disposal centers, the focus is to reduce the volume of waste, especially for technological waste of low activity. These waste, produced mainly during NPPs outages, represent about 80% in volume of the radioactive waste produced during operation before treatment (super-compaction or incineration…). Given that 75% of these waste can be incinerated, EDF promotes the treatment of these waste by incineration (with an objective of 75% in volume). Another way to optimize is to pursue actions in order to declassify some zones labeled as "radioactive waste production zone" to "conventional waste production zone", but this endeavor can only succeed if the operating history and the whole set of radiological controls can warrant the absence of risk of radiological contamination or activation in this zone.

	Country	Article	Ref. in National Report
	Ireland	Article 32	B, para 4.1.2.5
Question/	The decree of 23 April 2013 required that owners of radioactive materials carry out studies on the long-term management routes of these materials in the event of them in the future being classified as radioactive waste. ASN was of the opinion that the envisaged depth of the disposal facilities would make them vulnerable to human intrusion and to long term natural phenomena with the possible release of radionuclides in the long-term. With this in mind ASN recommend that together with ANDRA, owners of radioactive materials conduct further environmental studies into the disposal of these materials to provide assessments of radiological and chemical impacts of their transfer through water, air and soil. Ireland is interested to know if these studies commenced and when will they be completed. Is it possible to provide any additional information on the likely outcomes of these studies?		
Comment			
Answer	The decree of 23 April 2012 requires studies on the long-term management for radioactive materials (reprocessing uranium, depleted uranium and thorium) which valorization routes are actually used or envisaged. On one hand, owners for these materials regularly describe, update or re-assess the effectiveness of valorization routes, while, on the other hand, they provided disposal feasibility studies in the event of these materials being classified as radioactive waste. The fact is that valorization routes are fully detailed, while disposal studies can only be elaborated in a conservative approach, based on generic principles, without peculiar geological or geographic sitting. Therefore assessment of radiological or chemical impacts or of transfers through water, air or soil, related to disposal can not be quantitatively addressed from such studies.		

Furthermore, the French Government decided in November 2014 that the owners of thorium bearing materials ask Andra to perform a study on the disposal of these substances in the event they are reclassified as waste. This study takes into account existing waste management solutions as well as future disposal projects. The final report is expected in June 2016. This decision can be downloaded on the web (in French):
http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029783821.

The PNGMDR also provides for studies on depleted and recycled uranium if regarded as waste:
http://www.developpement-durable.gouv.fr/IMG/pdf/PNGMDR_2013-2015_anglais.pdf

	Country	Article	Ref. in National Report
	Ireland	Article 32	B, para 5.2.1
Question/ Comment	All BNI facilities must at commissioning send ASN a “waste study” concerning their facility. It is stated that this waste study is periodically assessed. Ireland would appreciate if France could provide further details as to how frequently this reassessment would have to be undertaken and detail the circumstances that would trigger such a reassessment? Does the revised plan have to be sent to ASN for its approval?		
Answer	The waste study shall be updated at least every 10 years during periodic safety assessment. Moreover, if any change in the installation occurs that has an impact on the waste to be produced or the waste zoning (for instance a new activity in the installation, use of a different type of equipment …), the waste zoning shall also be updated. Every significant update of the waste study is submitted to ASN for approval.		

	Country	Article	Ref. in National Report
	Ireland	Article 32	B, para 5.2.2.4
Question/ Comment	With regard to “depots of TENORM waste on production sites (legacy waste)”, it is noted that such waste mainly came from fertiliser production, alumina production and non-nuclear power plants (ash deposits). It is also stated that these sites which hold 40,000 tonnes of such waste are under appropriate surveillance. Ireland would appreciate if France could indicate the number and location of such sites in France and the nature of the surveillance carried out at these sites.		
Answer	Actually, 4 facilities are authorized to receive TENORM waste : - Villeparisis in Ile-de-France region, license until 31st December 2020, for an annual capacity of 250,000 t/year, - Bellegarde in the Languedoc-Roussillon region, licensed until 4th February 2029, for an annual capacity of 250,000 t/year until 2018 and 105,000 t/year thereafter, - Champteussé-sur-Baconne in the Pays de la Loire region, licensed until 2049, for an annual capacity of 55,000 t/year,		

- Argences in Basse-Normandie region, licensed until 2023, for an annual capacity of 30,000 t/year.

The operational experience feedback from facilities shows there is no contamination of the groundwater linked to the presence of TENORM waste in the sludges. These facilities have the following requirements imposed by prefect orders :
- implementation of an extended prior acceptance procedure (identification of the naturally occurring radionuclide, evaluation of the cumulative doses over one year),
- radiological monitoring (measurement of naturally occuring and artificial radionuclides in the groundwater, leachates, sludge from leachate ponds),
- monitoring of air quality (activity concentration of dust in the air),
- monitoring of workers exposure.

About 10 legacy sites for TENORM waste exist. These sites no longer take any new waste and are under appropriate surveillance. The surveillance consists in :
- ground water radiological monitoring ;
- monitoring of air quality.

The locations of these sites are: Anneville-Ambourville, Saint-Etienne-de-Rouvray, Rogerville, Douvrin, Gardanne, Vitrolles, Marseille (Aygalades, La Barasse-Saint-Cyr, La Barasse-Montgrand), La Grand-Combre, Fuveau and Arjuzanx.

	Country	Article	Ref. in National Report
	Ireland	Article 32	B, para 6.2
Question/ Comment	It is stated in the National Report that there is no national overview on the status of radioactive waste management in the field of Academic Research. Ireland is interested to know the reasons for this and if such an overview is likely to happen in the future?		
Answer	In France, academic research is mainly performed by numerous university laboratories. The lack of a national overview related to the status of radioactive waste management is explained by strong specificities of such a sector: labour turnover, different spread-out practices within establishments, limited means, etc. It should be noticed that the residues generated by universities are quite similar to those produced by biological and medical research. Therefore, no overview is planned for the years to come.		
	Country	Article	Ref. in National Report
	Italy	Article 32	B, 39
Question/	With reference to the clearance, France approach is to recycle in the nuclear industry the materials from a nuclear activity.		

Comment	Are there in France any specific foundry or cement factory that accept radioactive materials?		
Answer	There is one dedicated foundry (CENTRACO) and there used to be a dedicated furnace for lead. Two conventional installations were also authorized to work with recycled lead to produce equipments for BNI.		
	Country	Article	Ref. in National Report
	Italy	Article 32	D, 73
Question/	VLL WASTE DISPOSAL FACILITY (CIRES)		
Comment	Could France specify the waste acceptance criteria for the facility (Bq/g for the different radionuclides, Bq/g of alpha, etc..)?		
Answer	See slide n°9 of http://www.iaea.org/OurWork/ST/NE/NEFW/CEG/documents/ws062006_18E.pdf The acceptance criterion is expressed in term of an acceptance index which is a linear combination of each nuclide activity. This index has to be less than 1 for a batch and less than 10 for a batch of packages. Andra also checks the availability of a remaining radiological capacity (in the license of the facility).		
	Country	Article	Ref. in National Report
	Japan	Article 32	p48
Question/	Regarding your statement that "ASN's policy is to provide the public with impartial information," your National Report states that your information is published through your Annual Reports and various other publications and websites. Can your information be called sufficiently "impartial information"? If so, what are the grounds for judging that? Or, what ingenious measures are taken to ensure such impartiality?		
Comment			
Answer	By impartial information we mean statements that are not subject to any influence exerted by the Government, the licensees or any other interested parties. This principle is guaranteed by the independence of the French Nuclear Safety Authority (ASN). Concretely, ASN's commissioners perform their duties in complete impartiality and receive no instructions either from the Government or from any other person or institution. Their mandate is for a six-year term. It is not renewable. The duties of a Commissioner can only be terminated in the case of impediment or resignation duly confirmed by a majority of the Commissioners. Transparency also fosters impartiality: The law of 13th June 2006 on transparency and security in the nuclear field ("TSN"), constituted a significant innovation in that it defined transparency and the right to information in the nuclear field: "Transparency in the nuclear field consists in the set of provisions adopted to ensure the public's right to reliable and accessible information on nuclear security" (Article L. 125-12 of the Environment Code, previously Article 1 of the TSN Act). ASN is responsible for the correct implementation of the requirements of the TSN Act. Thus, everybody can access to the most important ASN's statements: regulatory decision; inspection follow-up letters; opinions and recommendations from Advisory Committees of experts; press releases; incident notifications; etc. Everybody can gauge the impartiality of those statements. Moreover, according to the law, ASN has a duty to inform the public in case of incident or accident (TSN Act, Art. 4 and 18		

Eventually, each year, ASN reports to the Parliament on its actions and the state of facilities and activities it regulates.

	Country	Article	Ref. in National Report
	Japan	Article 32	1.5.2 Low-level long-lived waste p32
Question/ Comment	The decommissioning of gas-cooled reactors will result in graphite waste, including long-lived radionuclides. Please elaborate on specific research and development issues concerning the disposal of graphite waste. Are there any differences between the decommissioning of gas-cooled reactors and that of light water reactors regarding their issues?		
Answer	In the frame of the law passed on the 28th June 2006 on sustainable management of radioactive materials and waste (PNGMDR), ANDRA is studying ways to receive low-level long-lived waste. A progress report will be delivered mid-2015 which will present a review of site research processes, the results of scientific and technical feasibility studies of sub surface storage on site and investigation of the perimeter of the associated waste. The presentation of this report will define the orientations for the subsequent phases of the project and clarify management scenarios for different types of LL-LL waste. The prospect of a better estimate of the radiological inventory confirms the possibility of their subsurface disposal on site currently being investigated by Andra. As a precautionary measure, EDF carries out R & D activities on decontamination treatment solutions of graphite waste. From a regulatory and technical point of view, the decommissioning process is identical for PWR and NUGG (Natural Uranium Graphite-moderated Gas-cooled) reactor technologies. The main difference in the case of the NUGG is the lack of availability of storage for the graphite waste (low level, long-lived waste LLW-LL). EDF has gained a strong experience through its first generation decommissioning program for the four technologies: PWR, NUGG, fast breeder reactor and heavy water reactor (HWR). With respect to disposal issues the main difference between decommissioning wastes from UNGG and PWR reactors is provided by the radioactive content of the wastes. For UNGG the particular radionuclides to be assessed in the graphite pilings or sleeves are Cl-36 and C-14, there can also be activation of concrete structures (Ca-41). For PWR activation products are related to metallic compounds in the alloys (Ni-63, Ag-108m, Nb-94….).		

	Country	Article	Ref. in National Report
	Japan	Article 32	p39
Question/ Comment	With regard to waste containing uranium and plutonium, how do you assess and consider the generation and effects of radon and other descendant nuclides?		
Answer	Andra considers effects of radon generated by the decrease of radium, uranium and thorium waste with time and particularly in case of inadvertent human intrusion. The constraint taken into account is not a dose constraint but a volume concentration with respect to the ICRP guidelines.		

	Country	Article	Ref. in National Report
	Japan	Article 32	p40
Question/ Comment	For near surface disposal facilities, mid-depth disposal facilities, and geological disposal facilities, have you established principles for regulation limits and regulation requirements regarding human intrusion scenarios, and the robustness of such facilities against long years of natural disasters?		
Answer	For these facilities regulation limits have been set by ASN as reference levels (e.g. 0.25 mSv/y for deep geological repository). In safety guides, ASN provides the operator with requirements with regards to the human intrusion scenarios but it is the responsibility of Andra (French Radioactive Waste management Agency) to define the scenario it will study for the safety assessment, including altered scenarios.		
	Country	Article	Ref. in National Report
	Korea, Republic of	Article 32	B4.2, 41
Question/ Comment	In the French National Report, there are six main waste categories. - Is this six category classification legally prescribed in the law or code? It seems that there is no single classification criterion and it is stated that it is possible to give the specific activity range in Table 4 at page 42. - How does the regulatory body supervise the pre-disposal management of the RW generator with regard to the classification of		
Answer	These 6 categories (VSL, VLL, L&IL-LL, LL-LL, IL-LL and HL) are defined in an appendix of the Ministerial decree setting the requirements of the PNGMDR. These categories are linked with the different types of disposal facilities that are to be designed and sited in France according to the waste act of 28 June 2006. The categorization of the waste is driven in the end by the Waste Acceptance Criteria (WAC) of the associated disposal facility. For instance, a waste will be defined as L&IL-SL waste if it meets the waste acceptance criteria of the Aube disposal facility (CSA). For the regulator body, the categorization of the waste has no direct impact on the control that is performed. However, there is an incentive for waste producer to defined a pre-disposal management stream in order to enable its waste to be treated and packaged in order to change the initial classification by meeting the criteria for another category (for instance with decontamination of LL radionuclides to turn a IL-LLW into a IL-SLW for instance).		
	Country	Article	Ref. in National Report
	Luxembourg	Article 32	/, 8
Question/ Comment	Please give the current status of the project on radium bearing waste and a related dedicated disposal facility?		

Answer	Radium bearing waste is considered for near surface disposal in a clay layer, along with other long lived-low level waste such as graphite waste. Siting is under progress. In particular a geological survey of a potentially suitable clay layer has been performed in Aube district in the vicinity of existing Andra's near surface disposal facilities. Andra will provide the French government with a progress report in 2015.		
	Country	Article	Ref. in National Report
	Poland	Article 32	p. 69
Question/ Comment	Regarding new Conditioning and Storage Facility for Activated Waste being currently under construction could be given an information when it is planned to commission that facility?		
Answer	The major milestones before commissioning of the ICEDA plant (Conditioning and Storage Facility for Activated Waste) are: - Mid 2016: start of passive tests; - Mid 2017: start of active testing; - Early 2018: industrial commissioning.		
	Country	Article	Ref. in National Report
	Slovenia	Article 32	p. 36 and 37
Question/ Comment	What are the expected radiological impacts from operation of dry spent fuel storage facilities? What is the dose constraint for the public during operation of the dry storage facilities?		
Answer	Pending their processing at the La Hague Plant, the CEA stores most of its spent fuel from the CEA's activities in the civilian nuclear sector at a facility on the Cadarache Site, in a dry-storage bunker for spent-fuel elements cooled in pits by natural convection (CASCAD). In the same facility, a water pool storage is also operated. In 2013, the same operators for both storages have received a collective radiation dose of 0,18 mSv/year with a maximum individual dose of 0,12 mSv/year. The measured dose was zero for 25 of the 27 employees subject to dosimetric monitoring. With regard to radiological protection, for a member of the public, the annual effective dose limit from any nuclear activity must not exceed 1 mSv in accordance with Article R. 1333-8 of the Public Health Code (Book III, Title III, Chapter III). This maximum cumulative effective dose from nuclear activities received by any member of the public at 1 mSv per year could be better understood in comparison with the average natural exposure in France which stands at 2.4 mSv/year, and natural exposure levels across the world which vary from 1 to 10 mSv/year. The CASCAD facility is one of the facilities on the Cadarache Site. The exposure level is monitored at the fences of the site. Recordings show values that are equivalent to natural-background radioactivity.		
	Country	Article	Ref. in National Report
	United Kingdom	Article 32	B.4.1.1.3
Question/	Does France see the lack of a clearance route for wastes produced on BNI (section B.4.1.1.3), coupled with France's policy on		

Comment	immediate dismantling (section F.6.1.2), presenting waste management issues in the future?		
Answer	The national inventory of radioactive materials and waste that contains forecasts for production of waste till 2020 and 2030 shows that the current capacities for disposal of VLLW will not be sufficient. It is why the National plan 2013-2015 requires Andra to submit in June 2015 a report to anticipate needs for new repositories and an overall scheme for management of VLLW.		
	Country	Article	Ref. in National Report
	Germany	Article 32.1.1	p. 36 (Section B)
Question/ Comment	MOX fuel management The actual recycling strategy is to use MOX fuel once and store it for future Generation-IV reactors. Can you specify the amount of spent MOX fuel that is currently stored in France? How and where is it stored? The development of a commercial Generation-IV reactor will take decades. Do you intend to store all spent MOX fuel as well as re-enriched reprocessed UO2 fuel until then?		
Answer	Part of the fuel assemblies used in French NPPs are made with fissile materials coming from recycling UOx spent fuels. This process reduces significantly the total inventory that would have to be stored otherwise, while saving natural resources and conditioning of ultimate high level waste. Fuels made from recycled materials are named MOX (mixed oxide) and ERU (Enriched Reprocessed Uranium) fuels. After having produced electricity once more in reactors, these materials are currently stored in wet pools as spent MOX and ERU fuels, first in the relevant plant and then in La Hague facilities, as the other spent fuels from French operating NPPs. The total inventory of spent fuel assemblies to be stored is much reduced through reprocessing and recycling and its growth remains weak. The amount of stored spent MOX fuel is about 10% of all spent fuel stored in the facilities. The storage of spent MOX fuel and ERU fuel is pursued until any decision regarding treatment for use in reactors, Generation-IV model (fast reactors) being appropriate for such product, where a lot more electric energy could be produced from the fissile material still present in those used fuels.		
	Country	Article	Ref. in National Report
	Russian Federation	Article 32.1.1	Section B, 6.1.3.1, page 53
Question/	Referring to the management of liquid HLW, the Report states that HL solutions are “vitrified via a process developed by the CEA. The resulting molten glass into which the fission products are incorporated is then poured into stainless-steel containers. Once the glass has solidified, the containers are transferred to an interim-storage facility where they are air-cooled”.		

Comment	Could you please elaborate whether the findings of laboratory tests involving borosilicate glass matrix are adequately referential to the stability of actual vitrified HLW in relevant geological timeframes taking into account possible geoclimatic changes in the disposal region?
Answer	The laboratory tests involving borosilicate glass matrix led by the CEA and AREVA enabled the characterization of the behavior of the glass in the deep geological disposal (geological disposal water contact - “eau de Bure”). Taking into account a thermal decay of the waste, the rate corrosion can be described and the glass package can last until 1 Ma. (Modèle CEA/AREVA2005) As the conception of the deep geological disposal is not achieved, some studies are still on. The aim of these studies is to evaluate the impact of the characteristics of the disposal materials (e.g. corrosion products of the containers) on the glass behavior and the corrosion rate of the glass. Concerning the subject of the geoclimatic variation: The reference deep geological disposal still under study in France is 500m deep, this depth is under the permafrost, so the geoclimatic variation can be neglected.

Country	Article	Ref. in National Report
Russian Federation	Article 32.1.1	Section B, 6.1.3.3, page 54

Question/ Comment	The Report indicates that there are two radioactive effluent-treatment plants (STE2 and STE3) at La Hague site. Are these facilities designed for treatment of tritium-bearing and long-lived iodine-bearing low level liquid waste or these effluents are still discharged into La Manche? If so, what steps are planned to be taken in order to enhance effluent management at the site?
Answer	Iodine 129 needs consideration because of its long half-life, more than 15 millions years – that conversely is associated to a low activity of low beta energy (6.54x10-6 TBq/g and 0.154 MeV). Iodine is an extremely soluble and mobile element. It is almost practically impossible to contain on the long-term, so that it can be considered that whatever the process used (direct disposal of the fuel elements, reprocessing and conditioning as solid waste or discharge) iodine would be uniformly dispersed on the whole surface of the earth far before its half-life of 15.6 millions years. The lowest impact is obtained by minimizing the instantaneous concentration of 129I. This is reached in reprocessing plants by diverting as most as possible 129I to the liquid effluents discharged to the sea. The large concentration of stable iodine in the sea brings an isotopic dilution that lowers the already small radiotoxicity by several orders of magnitude (around 1/100,000), which added to the physical dilution in the volume of sea leads to quite minute added impacts on reference groups, much less than the one of natural 210Po. Any other process (including the keeping of 129I in the fuel elements) would raise the risk of high concentration atmospheric leaks whose local impact could be very high, because they would not benefit from the isotopic dilution in the stable iodine in the sea. This is the reason why the stacks of the La Hague plants are equipped with active filters that trap the remaining traces of 129I having escaped the pathway to the sea, which could induce significant local impact if released to the atmosphere with no isotopic dilution.

	The 2014 survey prepared by the French Ministry for “Ecology, Sustainable development and Energy” for the OSPAR (Convention for the Protection of the Marine Environment of the North-East Atlantic) explained in his conclusion and summary, that this survey shows that the physical dispersion and isotopic dilution to the sea of the tritiated effluents of the AREVA NC La Hague site is still today the Best Available Technique.		
	Country	Article	Ref. in National Report
	Russian Federation	Article 32.1.1	Section B, 1.5.1, page 31
Question/	Andra seems to place so much emphasis on the reversibility principle. The Report states that “A specific law prescribing the applicable reversibility conditions will also specify a minimum period of at least 100 years during which the reversibility of the repository will be maintained as a precaution.”		
Comment	How (based on what information) did you determine on the duration of the reversibility period? What maximum reversibility period do you consider technically and reasonably achievable for the CIGEO repository?		
Answer	The initial vocation of the geological disposal of radioactive waste is the definitive closure of the centre after operation. However, Parliament has made the choice to ensure the reversibility of disposal for a period of 100 years in the Waste Act of 28 June 2006 on materials and radioactive waste management. It is the period considered reasonable for this reversibility and its feasibility is a technical objective set at Andra.		
	Country	Article	Ref. in National Report
	Hungary	Article 32.1.4	B.1.5.3 p. 33
Question/	"With regard to the other waste for which there is no solution... A progress report for the various developments will be provided in late 2014."		
Comment	Question: Has the progress report been provided and is it available on the web?		
Answer	The progress report has been provided in December 2014. It will soon be posted on the ASN website.		
	Country	Article	Ref. in National Report
	Hungary	Article 32.1.5	B.4.1.13 p. 39
Question/	France's position on clearance is more restrictive than the recommendations made by international organisations.		
Comment	Question: Do you plan to apply this more restrictive approach even at the implementation of the new EU BSS?		
Answer	New directive 2013/59 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation (EU BSS) introduces clearance values for solid materials.		

	As this Directive provides for minimum rules, Member States should be free to adopt or maintain more stringent measures in the subject-matter covered by this Directive, without prejudice to the free movement of goods and services in the internal market. Nevertheless, EU BSS states that protection against natural radiation sources, rather than being addressed separately in a specific title, should be fully integrated within the overall requirements. In particular, industries processing materials containing naturally-occurring radionuclides should be managed within the same regulatory framework as other practices. Consequently, France plans to introduce clearance levels for natural occurring radionuclides. The implementation of new EU BSS is required for 6th February 2018. France has started the work on the subject. Currently, our more restrictive approach will be maintained in this matter for artificial radionuclides. However, the implementation process involves all the stakeholders. Clearance level for every kind of wastes could be discussed if some stakeholders want to. As regulator body, ASN is not in favor of the establishment of generic clearance levels in France even in the context of implementation of the new EU BSS.		
	Country	Article	Ref. in National Report
	Belgium	Article 32.2.1	Section D §3.2.2.1 The centre de la Manc
Question/	As a result of the periodic safety reassessments of the Centre de la Manche that was carried out in 2009, the report mentions that "In accordance with the strategy it proposed, concerning the evolution of the cover, Andra performed work to consolidate the embankments around the edge of the cover on three sectors. The aim is to assess the effectiveness over a period of about ten years, before moving onto the subsequent redevelopment stages"		
Comment	Which subsequent redevelopment stages for the CSM are envisioned by ANDRA?		
Answer	The consolidation of the embankments was performed by implementing walls and softening the slopes, supported by the wall. After a period of observation of the effects of these remediation works, it is planned to suppress the walls and to soften the slopes on the entire circumference of the repository. This will need an expansion of the area of the repository and will be gradually made as the land surrounding the facility will be available.		
	Country	Article	Ref. in National Report
	Belgium	Article 32.2.1	Section D §3.2.2.3 pg 73

Question/	It is stated that “Hence, some studies were launched in order to improve the density of the waste intended for disposal, to optimise the use of disposal space and to assess the feasibility of a recycling system for VLL metal waste. Those activities are monitored in the framework of the PNGMDR. In particular, thanks to optimisation of the use of disposal space, the technical capacity of Cires would now appear to be about 40% higher than its regulation capacity, which, provided regulatory modifications are made, would postpone its saturation.”
Comment	- What type of “optimisation of the use of disposal space” is envisioned? - What technologies are currently studied in order to improve the density of the waste intended for disposal?
Answer	The optimization of the use of disposal space has been already performed and changes of the geometry of the cells have already been licensed: • length of cells was doubled and the volume of one access ramp could be used for disposal, • the depth of cells was increased, • the slopes were made steeper. As a complement to improve the use of the disposal space, it is also planned to crush some concrete scraps and to use them to backfill the vaults. The most current technologies used to increase the density of wastes is compaction. Incineration is not presently practiced as there is no available facility for VLL wastes which could provide a service that could compete with direct disposal. Another option under investigation in the particular French regulatory framework (no clearance level) is waste avoidance through recycling, in particular for some metallic wastes.

Country	Article	Ref. in National Report
Hungary	Article 32.2.3	D.3.2.2.3 p. 73

Question/	Cires' capacity: "some studies were launched in order to... optimise the use of disposal space and to assess the feasibility of a recycling system for VLL metal waste. ... the technical capacity of Cires would now appear to be about 40% higher than its regulation capacity, which, provided regulatory modifications are made, would postpone its saturation."
Comment	Question: What kind of regulatory modifications are needed?
Answer	The present capacity (650,000 m3) with a radiological capacity is a part of the licence. A change of the capacity requires modifying the license, including a public inquiry.