Joint Convention
Questions Posted To Lithuania in 2018

1	Country Belarus	Article Planned Activities	Ref. in National Report Section K, p. 100
Question/ Comment	It is stated that there are four measurers, formulated in the Radioactive Waste Management Development Programme (2015) with regard to building of the deep geological repository for disposal of spent nuclear fuel and long-lived radioactive waste. Currently, the main implementer of the Programme measures dedicated to the deep geological repository is RATA. Taking into account the complexity of the task, aimed at building of the deep geological repository, does Lithuania plan to involve in its implementation foreign organizations, having an appropriate experience, and if so, indicate, please, what organizations and in what stages?		
Answer	The first input in the development of the activities related to Deep Geological Repository (DGR) has been made by SKB (Sweden). It was defined as *Competence Development in Lithuania in the Area of Spent Nuclear Fuel Disposal*. This was a series of workshops organised by RATA, involving SKB, supported by SIP, SKI and SSI from the Swedish side, Lithuanian Energy Institute and Lithuanian Geology Survey from Lithuania. At the present stage in the DGR project development the involvement of foreign organisations is not planned, however, such possibility can not be excluded in the future. Taking in to consideration the international recommendations, IAEA requirements on application of step-by-step approach for repository implementation and previous studies on possibilities to implement a geological repository in Lithuania, RATA still working on the preparation of The Deep Geological Repository Development Project and currently is focusing on the first step of the Implementation Plan of a Geological Repository and preparing main works packages for this step. When main works packages would be prepared RATA will identify the need on the support from the technical support organisations and needed field investigations. Contractors needed for the technical support and for the field investigation works will be hired according public procurement rules.		
2	Country Slovenia	Article Planned Activities	Ref. in National Report K. p. 98
Question/ Comment	What are the authorized limits of radioactive gaseous and liquid releases during the operational period of disposal facilities?		
Answer	According to the Nuclear Safety Requirements BSR-1.9.1-2011 “Limits of Radioactive Discharges into Environment from Nuclear Facilities and Requirements for a Plan for Radioactive Discharges into Environment” (revised in 2017) total annual limit values of radionuclide releases to the water and releases to the air should not exceed 0.2 mSv to the public. This annual effective dose constraint for the general public is applied for design, operation (during the normal operation and potential operational occurrences) and decommissioning of the nuclear facility (including radioactive waste storage and disposal facilities, spent nuclear fuel storage facilities). All nuclear facilities (except Maisiagala storage facility, see p. 25 of National Report) are situated at Ignalina NPP site. The Plan for Radioactive Discharges into Environment from the Ignalina NPP was renewed and coordinated with VATESI in June 2015. Discharges limits and data on airborne and liquid discharges into environment from Ignalina NPP are provided in table below:		

Discharge Limits, Bq/year	
Airborne	$1{,}47 \cdot 10^{16}$ including: inert radioactive gases – $2{,}22 \cdot 10^{14}$; long-lived radionuclides – $9{,}47 \cdot 10^{11}$; Tritium H-3 – $1{,}44 \cdot 10^{16}$; Carbon C-14 – $4{,}55 \cdot 10^{13}$
Liquid	$1{,}7 \cdot 10^{14}$

3	Country France	Article General	Ref. in National Report Overview Matrix

Question/ Comment: According to the guidelines regarding the Form and Structure of National Reports (INFCIRC/604/Rev.3), the report from Lithuania should include an overview matrix chart of spent fuel and Radioactive Waste Management to be used by the Rapporteur during the Country Group review.

Answer

Type of Liability	Long Term Management Policy	Funding of Liabilities	Current Practice / Facilities	Planned Facilities
Spent Fuel	Storage for 50 years. Disposal in deep geology	Funding available for storage only.	On site storage- dry (storage facilities) and wet (in pools)	Deep Geological Repository
Nuclear Fuel Cycle Waste	Storage on site, management and disposal	Funding available except for disposal of HLW	Retrieval of old waste, conditioning and storage on site	Disposal facilities
Application Wastes	State register, collection, pretreatment and storage, disposal	Waste producers pay	Some waste in Maišiagala (old practice). Other stored at Ignalina NPP.	No additional facilities. Shall be treated in existing or planed for nuclear fuel cycle facilities.
Decommissioning Liabilities (1)	Immediate dismantling	EU support under Accession Treaty and national co-financing	Continuation of decommissioning activities of Unit 1 and Unit 2.	Facilities for storage and disposal
Disused Sealed Sources	Returned to supplier. Recovery of orphan sources	Waste producers pay. State budget for orphan sources	Registration and collection and storage	No additional facilities. Shall be treated in existing or planed for nuclear fuel cycle facilities.

4	Country France	Article General	Ref. in National Report Section D - page 24

Question/ Comment: The following acronyms: SWTF (p. 24), D&D projects (p. 102) and SSSs (p. 103) are not explained in the List Of Abbreviations

Answer: SWTF – Solid Waste Treatment Facility;
D&D – Decommissioning and Dismantling;

SSS – Spent Sealed Sources.

5	Country Morocco	Article General	Ref. in National Report section A , p 5

Question/ Comment	You mention in paragraph (Isotope applications p 5) that RATA is responsible for management and disposal of all radioactive waste transferred and the waste are managed and stored at Ignalina nuclear power plant INPP. Could you clarify the relationship between, their missions and their roles? Could you explain the transfer liability of the waste between these institution?
Answer	Currently INPP responsible for all operations with RAW produced during INPP operation and decommissioning: treatment, final packages formation, storage, construction of disposal facilities, disposal of RAW, operation of disposal facilities including close and post close operation. RATA is responsible for the collection of institutional waste, including Spent Sealed Sources of small producers, orphan sources, etc. The waste is taken to a handling facility (with a hot cell) in Vilnius, which is used for conditioning (re-packing mainly) with the main goal of volume reduction and preparation for transportation to Ignalina NPP for further processing and storage until the repositories are available. After the hand-over documents are signed the waste becomes responsibility of Ignalina NPP with the exception of Spent Sealed Sources, which are only taken for storage, but the ownership remains with RATA. RATA is also responsible for the operation (and later - decommissioning) of the Maišiagala Radioactive Waste Storage Facility which contains institutional legacy waste. During the decommissioning of Maišiagala facility the waste will be removed, undergo preliminary sorting, and will be transported to Ignalina NPP for further processing and storage.

6	Country Morocco	Article General	Ref. in National Report section A , p 6

Question/ Comment	You mention in paragraph “Specific items regarding radioactive waste management in Lithuania p 6” that All radioactive waste management facilities in Lithuania are considered nuclear facilities. What about radioactive waste generated from radiation applications.
Answer	According to the Law on Radiation Protection of the Republic of Lithuania, pretreatment activities with radioactive waste generated from the use of radioactive materials in medicine, industry, agriculture, research and education performed at the site of waste generation (such as a hospital, laboratory or research centre) are considered as part of their activities with radioactive sources.

7	Country Netherlands	Article General	Ref. in National Report Section A, p. 5

Question/ Comment	The report states that the number of radioactive sources in Lithuania is “continually decreasing”, because of new technologies and alternative non-radioactive sources. Could you elaborate about the reason for the continuous decrease?
Answer	Decreasing tendency in the use of sealed radioactive sources in Lithuania (2015 – 2087, 2016 – 1953, 2017 – 1877, excluding 8800 radioactive sources used in smoke detectors in Ignalina NPP) mainly is due to replacing, where applicable, the use of radioactive sources in industrial radiography by X-ray equipment or to reducing extent of activities in radiography, also due to removing out of use the old type dosimeters, which were using small calibration sources.

8	Country Poland	Article General	Ref. in National Report Introduction, Section A

Question/Comment: What would happen with a radioactive waste management facility and radioactive waste if an operating license were revoked?

Answer: Pursuant to Paragraphs 4 and 5 of Article 29 of the Law on Nuclear Safety, after the revocation of a licence, the activities which are subject to the issued licence shall be terminated in the manner prescribed by the legal acts within the reasonable time-limit given by the Head of the State Nuclear Power Safety Inspectorate, subject to means indispensable for implementation of suspension or termination and nuclear safety requirements; the revocation of a licence shall not release licence holder from the responsibility to ensure nuclear safety for as long as the nuclear installation or activities remain hazardous in terms of nuclear safety, i.e. they pose a risk to human beings, their property and environment; or for as long as a relevant licence has been issued to another person.

Pursuant to Paragraph 4 of Article 22 of the Law on Nuclear Safety, the aforementioned activity cannot be carried out without a licence, therefore a new entity would have to apply for a new licence.

Pursuant to Paragraph 3 of Article 11 of the Law on Radioactive Waste Management, Where the authority having issued a licence, a temporary permit or a permit to the radioactive waste generator establishes that the radioactive waste generator does not conform to the requirements of safe management of radioactive waste or if it has otherwise violated the terms and conditions of the activities regulated by the licence, temporary permit or permit, the authority having issued the licence, temporary permit or permit may decide on a compulsory transfer of the radioactive waste to the radioactive waste manager. In such case the radioactive waste manager shall ensure completion of the unfinished tasks in the radioactive waste management. The expenses for the management of the radioactive waste shall be recovered from the radioactive waste generator in the manner prescribed by laws. Radioactive waste manager is established by the Law on Radioactive Waste Management.

9	Country Slovakia	Article General	Ref. in National Report Section K/ p. 98

Question/Comment: When is it planned to change the legal framework (the Law on Radioactive Waste Management) to ensure there are distinct steps for authorization of the closure of repositories? Was it one of IRRS recommendations of 2016?

Answer: One of IRRS recommendations of 2016 was: ”VATESI should initiate amendment of the legal framework to ensure there are distinct steps for authorizing the closure of repositories.”.

The Law on Radioactive Waste Management is under revision. It is expected that the amended law will enter to force until the end of this year (2018).

10	Country Belarus	Article Article 4	Ref. in National Report Section G, p. 65

Question/Comment: The Section G of the National Report states on ensuring safety of spent nuclear fuel storage the following: “All spent nuclear fuel in Lithuania is located in INPP’s storage pools, or in the dry interim storage facility. In both cases the SF is handled according to the design documentation, adopted by the regulatory body and both methods are licensed (with involvement from experts from Western Europe), thereby providing a justification for safety. It is shown, that the safety criteria, particularly criticality and sufficiency of removal of residual heat, are fulfilled during normal operation and during design basis

accidents."
However, there have been a few publications in the mass media on out-of box spent fuel storage in the storage pools with violations of the safety requirements of 57 badly damaged spent fuel assemblies with a bend of almost 400 mm. This excludes their disposal according to the standard technology in a hot cell.
This and other claims of the public in mass media have not yet been officially commented.
Could you, please, clarify the actual situation of the mentioned issue? Is there a precedent of non-project spent nuclear fuel placement in the storage pools of the Ignalina NPP?
If yes, we would ask for the information on licensing procedure of such a method of storage in the operating organization, done by the Lithuanian regulator, as well as the information on availability of the documents on its safety justification with corresponding calculations. How much defective fuel which requires special treatment according to the radiation safety rules was used?
Which installation is used for operations with improper fuel (prematurely discharged fuel assemblies without having reached the designed burn-up, spent fuel assemblies with mechanical damage, spent fuel assemblies with defects or direct contact with water)?
Would you, please, also mention subsequent stages and planned for application methods as well as availability of financial resources for this work?

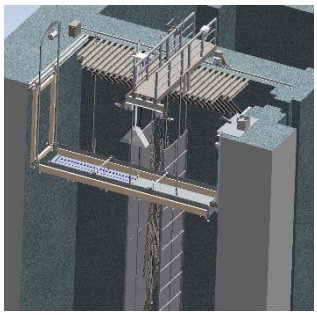
Answer Currently 15 (not 57) bent heavily damaged spent nuclear fuel assemblies (SNFA) are actually stored in the INPP storage pools without cases. The geometry of those SNFAs does not allow transferring them into 'Hot Cell' in order to cut and to put into the 32M baskets. Special equipment is designed for those SNFAs using that the SNFAs will be cut and put into special over-pack cartridges. Currently the mentioned SNFAs are located in the storage pools with the less grid spacing than for SNFAs with designed geometry. General designer - VNIPIET justified the safety of the storage of bent SNFAs. This storage option was agreed by the relevant decision and approved by regulator in 1993. Therefore, there are no precedents of non-project spent nuclear fuel placement in the storage pools. Monitoring of specific activity of Cs-137 in the water of INPP storage pools is performed on a regular basis in order to ensure safety and not to exceed the limits defined in the operation technical regulations of both INPP units.
Total number of uncut SNFAs in INPP storage pools with cladding damages and therefore classified as damaged SNFAs at 01.04.2017 is 267 SFAs (15 heavily damaged SNFA, mentioned above, is included). Special Damage Fuel Handling Operations are necessary.

Summary of the Damage Fuel Handling (DFH) Operations:

- transportation of damaged SNFA with different defects in SPH from the store places to the underwater Working tray;
- cutting damaged SNFA into 2 separate fuel bundles (FB);
- insertion of individual FBs into over-pack cartridges;
- loading of over-pack cartridges into damaged fuel baskets which are installed in the storage casks.

Three types of CANs are foreseen:

- CAN 160 mm: Cylindrical over-pack cartridge with one damage FB located inside;
- CAN 160 mm: Cylindrical over-pack cartridge with one insert positioning tube containing filter elements with fuel debris;
- CAN 500 mm: Rectangular over-pack cartridge with one damage FB located inside;
- CAN 1200 mm: Rectangular over-pack cartridge with one damage FB located inside.



3D view of the DFH equipment - Working Tray in storage pool (SPH).

The SNFA cutting into two FB and FB insertion into the corresponding cartridges is performed on the WT in horizontal position. One set of cutting equipment (wire saw, hydraulic scissor) are foreseen for both INPP Units. The work will be performed sequentially – INPP Unit 1 then Unit 2.

Technical Design and preliminary SAR for Damaged Fuel Handling System (DFHS) in frame of B1 project were approved by VATESI in January 2016. Currently DFHS is under detailed designing and manufacturing. DFHS factory and site acceptance tests training are scheduled on June-October 2018. DFHS aim to start installations in the 2019 at Unit 1.

As mentioned in Article 5.1(h) there are several financing sources for the management of spent fuel in Ignalina Nuclear Power Plant: State Enterprise INPP Decommissioning Fund, State budget, Ignalina International Decommissioning Support Fund, Ignalina Programme

11	Country Belarus	Article Article 4	Ref. in National Report Sections G, H

Question/ Comment

In order to ensure safety during operation of the existing objects and objects under construction of storage and disposal of radioactive waste and spent nuclear fuel of the Ignalina NPP:

1. What measures are being taken and what safety systems are employed for accident-free operation of the complexes?
2. Was the monitoring system created and what is it like?
3. Was the impact on the environment assessed in case of emergency (non-design) situations?
4. Which external factors were considered in the relevant assessments?

Answer

1. During operation the safety of the existing facilities of SRW and SF management is ensured by meeting the requirements of Regulations of Operation and associated instructions by means of the trained qualified personnel, by controls of operability of safety related systems and components in accordance with the approved schedules, by holding internal inspections.

For each nuclear installation lists of safety related systems (SRS) have been defined, instructions have been developed for the operation of the SRS, regulations and schedules for maintenance of the functioning of the SRS have been established.

2. The environmental monitoring system functions from the beginning of the operation of the plant. The scope and frequency of monitoring is consistent with the Monitoring Program, which is coordinated with the Radiation Protection Centre, Ministry of

Environment and VATESI. The monitoring program includes monitoring of air emissions, water and groundwater discharges, precipitation, bottom sediments, food products and other environmental samples.
Annually the scope of environmental monitoring includes about 12600 samplings and measurements of different objects of environment including about 8150 radiological measurements and about 4450 chemical measurements.
Environmental monitoring system includes:

- Radiological Research Laboratory with all necessary staff, tools for radiological monitoring of air and water realises;
- Environmental Laboratory with all necessary staff, transports and tools needed for execution of the monitoring program;
- SkyLink automatic measurement system for dose rates on-line measurement within INPP territory and within 30 km sanitaru zone;
- Gamma and neutrons detectors for monitoring of Interim Spent Fuel Storage facility ad Solid Waste Treatment and Stprage Facilities territory.

The monitoring program is periodically reviewed in order to ensure control over the environmental impact of new nuclear power engineering object, as well as changes in the requirements of monitoring authorities. Monitoring reports are regularly submitted to the supervisory authority.
With the commissioning of new nuclear facility and the accumulation of monitoring data on the state of the environment, reports on post-project analysis will be developed in accordance with the requirements of the United Nations Convention on EIA. Currently, a post-project analysis program has been developed, which will soon be presented to the countries concerned.
3. The consequences of accidents (both design basis accidents and beyond-design basis accident) are estimated in the documents of new nuclear installation designs. In addition, as part of the development of the General Plan for Population Protection of Republic of Lithuania, INPP is currently preparing documents for the purchase of calculations for the analysis of unlikely beyond-design basis accidents and an assessment of their possible radiological impact.

4. Many external factors are considered for the safety analysis, the most significant ones are selected, such as aircraft crash, earthquake, flood.

12	Country Ukraine	Article Article 4	Ref. in National Report G

Question/Comment: Is there a system for drying spent nuclear fuel in the dry spent nuclear fuel storage on purpose to remove water under fuel rod cladding before storing?

Answer: After SNFAs/FBs (fuel bundles) loading, the cask is closed by primary lid. Than water removed from the cask cavity. The cask cavity is dried by vacuum and the degree of dryness is measured according to the pressure rise method (criterion < 3 hPa in 2 hours) prior to filling in the cavity with helium.
Condensation of water in the cask and significant corrosion effects are therefore excluded. If the FBs with cladding leakage (operational limit for one cask is 24 FBs) have been loaded to the cask, a cartridge with a drying agent is inserted into the cask to collect the evaporated water that may be left in leaking fuel rods after vacuum drying.
The drying agent is specifically qualified for spent fuel storage casks and captures residual water possibly released from leaking fuel rods during the storage period.

13	Country Ukraine	Article Article 4	Ref. in National Report G

Question/Comment: Is there a severe damaged spent nuclear fuel stored in Ignalina NPP? Is the procedure for handling such damaged SNF determined? Does the dry spent nuclear fuel storage project include dismantling of damaged SNF on separate fuel rods?

Answer:
1. Yes. See response to the Q10 (Article 4, NR Sec. G, p. 65) from Belarus (please see JCWeb with uploaded file, as answer supporting document, with all answers).
2. The damage SNFA will be cut into separate fuel bundles on underwater table. Than insertion of individual fuel bundles into over-pack cartridges, (CAN 160/500 or 1200 mm).
3. The dismantling of damaged SNF on separate fuel rods is not foreseen.

14	Country Ukraine	Article Article 8	Ref. in National Report G

Question/Comment: Does the dry spent nuclear fuel storage project has management of SNF containers in cases of violations detection of the barriers on the path of radioactive substances?

Answer: Currently, with regard to dry SFSF in case of detecting the defective cask, it is transferred back to INPP storage pools for reloading to another cask.

The procedures to handle with the defective cask at new ISFSF are developed, i.e. the defective cask will be transported to the FIHC (Fuel Inspection Hot Cell) located at ISFSF for further reloading.

15	Country Ukraine	Article Article 8	Ref. in National Report G

Question/Comment: What quantity of SNF is expected for storing in one container in the dry spent nuclear fuel storage? Does the container for SNF have neutron-absorbing elements to ensure nuclear safety during SNF storing?

Answer:
1. Storage configuration of the cask CONSTOR®RBMK1500/M2 loaded with 91 Spent Fuel Assembles or 182 Fuel Bundles (FB) is 102 FB - Basket 32M and 80 FB- Ring Basket.
2. The cask CONSTOR®RBMK1500/M2 is not equipped with the neutron-absorbing elements.

16	Country Belarus	Article Article 9	Ref. in National Report Section G, p. 76

Question/Comment: The report admits that one of the problematic issues in case of deciding to create a geological repository is the lack of trust among the public and politicians. The works are supposed to be conducted with the involvement of the scientific community, the public is expected to be informed about the technologies and nuclear facilities safety issues as well as about the experience of other countries.
Could you, please, clarify the following:
1. When and under what conditions does the Lithuanian Government plan to begin work with the public?
2. Does public information include neighboring countries and at what stage?
3. Do there exist in the world construction of storages in the analogous geological conditions? Please, provide examples.

Answer: 1. When and under what conditions does the Lithuanian Government plan to begin work with the public?
The general public information on radioactive waste management issues and educational

activities are carried out by RATA on permanent basis. The DGR project is on concept selection stage at the moment. According to the Law of Environmental Impact Assessment of the Planned Activities the public including neighbouring countries must be informed and involved into decision making process at the earliest stage of the activity. According to the Radioactive Waste Development Programme of the Republic of Lithuania the choice of drill sites of investigative boreholes is foreseen in 2022. Environmental impact assessment will be launched and public involvement into decision making process will be started for the investigative boreholes siting in 2022.

2. Does public information include neighboring countries and at what stage?

According to the Joint Convention on the Safety of Spent Fuel Management, the ESPOO Convention, the Aarhus Convention and national legislation: Law on the Safety of Radioactive Waste Management, the Law of Environmental Impact Assessment of the Planned Activities the information on the safety of the deep geological repository will be provided to the public of the neighbouring countries during the siting process. The public of neighbouring countries will get opportunity to participate in Environmental Impacts Assessment procedures equivalently to the Lithuanian public. As it was mentioned in the answer above, the site selection process for investigative boreholes is foreseen to start in 2022. Now Lithuania is at the concept selection stage for the DGR (2017-2021).

3. Do there exist in the world construction of storages in the analogous geological conditions? Please, provide examples.

The leading country in this area is Finland, which has selected site for the deep geological repository already and the operator has obtained licence for construction in 2015, and it is planned to start the operation of the repository in 2020. Other most advanced countries on the DGR project development are Sweden, France and Canada. These countries have the sites selected. The mentioned countries and also Switzerland and Belgium have installed deep geological laboratories for research. It can not be said that the countries mentioned above have the geological conditions completely similar to Lithuania, but if it would be decided to construct DGR in the rock formations in Lithuania, then conditions similar to Sweden and Finland would be possible to treat as similar to some extent.

17	Country Belarus	Article Article 10	Ref. in National Report Section G

Question/ Comment	The report states: “The first explorations of the potential of the spent nuclear fuel geological repository were conducted in 2004. Their main goal was to prove that it is possible to organise a safe direct disposal site for spent nuclear fuel in Lithuania. This goal does not imply that spent nuclear waste disposal will be carried out in Lithuania”. Yet, Section B of the report mentions that the Radioactive Waste Management Programme includes the actions on choosing, justification and approving the site for a geological repository and developing its concept, i.e. the Programme states a definite plan on creating a geological repository in Lithuania. Different sections of the report give contradicting information. Could you, please, clarify this issue?
Answer	Development Programme of Radioactive Waste Management was approved in 2015. It establish a task for construction of DGR in Lithuania. The Strategy of Radioactive Waste Management approved in 2002 did not have a goal for construction of deep geological repository (DGR). The goal on the Strategy related to the DGR was to carry out research on possibilities of disposal of long lived and high level waste. Hence, the goal of research activities conducted in 2004 was in line with the approved strategy for radioactive waste management at that time.

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18	Country Netherlands	Article Article 10	Ref. in National Report Art. 10, section Go, p. 76

Question/ Comment	Throughout the report the development of a near-surface repository has been comprehensively set out. The possibilities for deep geological disposal (p. 76) are also explored, whereas on page 82 the following is stated: “Institutional waste, meeting the acceptance criteria for near-surface disposal, will be disposed in a near-surface repository. Other waste has to be disposed in a geological repository or a near surface repository.” Could you please specify in what kind of facilities (near surface depository, disposal) what type of waste (HLW, ILW , LLW, VLLW) Lithuania intends to store, and/or dispose?
Answer	There are two near surface disposal facilities under construction: Short-lived Very Low Level Waste Repository (for VLLW class waste according to IAEA GSG-1)) and Short-lived Low and Intermediate Level Waste Repository (for LLW). There are also two planed disposal facilities: Deep disposal (for ILW and HLW) and Near surface disposal facility of bituminized waste (for LLW). Sealed sources are intended to dispose in a near surface or deep disposal facilities according to waste acceptance criteria. There are storage facilities for all classes of waste (according to IAEA GSG-1): 1 buffer storage (VLLW), 4 solid waste storage facilities (VLLW, LLW, ILW), 1 bituminized waste storage facility (LLW), 1 cemented waste storage facility (LLW), 1 Short-lived Low and Intermediate Level Waste storage facility (LLW), 1 Long-lived Low and Intermediate Level Waste storage facility (ILW), 2 spent nuclear fuel storage facilities (HLW).

19	Country Belarus	Article Article 11	Ref. in National Report p. 78-80

Question/ Comment	The IAEA IRRS mission discovered substantial challenges for Lithuania connected with application of new international standards on nuclear and radiation safety, supply of needed resources and skills for an appropriate control over the INPP decommissioning. The mission also took notice that the validity period of the certificate of spent nuclear waste transportation containers expired and that there is not enough licensing requirements to ensure that transportation meets the IAEA norms of safe transportation of radioactive materials. Which measures have been taken to address the general issues discovered by the IAEA and the issue of safe transportation in particular?
Answer	The Council Directive 2014/87/Euratom of 8 July 2014 provides that the Member States shall, at least once every 10 years, arrange for periodic self-assessments of their national framework and competent regulatory authorities and invite an international peer review of relevant segments of their national framework and competent regulatory authorities with the aim of continuously improving nuclear safety. Respective provisions are included into Law on Nuclear Safety. 17–29 April 2016 Lithuania hosted the first Integrated Regulatory Review Service mission (hereinafter – IRRS mission), during which International Atomic Energy Agency (hereinafter – IAEA) experts evaluated the national framework of nuclear and radiation safety supervision and activities of competent regulatory authorities, compliance with nuclear and radiation safety standards set forth by IAEA and recognized by the international community. The IRRS mission report, publicly available on the website of VATESI, provides results of the mission, including recommendations and suggestions for the further strengthening the effectiveness of the national nuclear regulatory infrastructure. Majority of recommendations and suggestions are already taken into

consideration, appropriate measures are implemented or are under implementation, including improvements of main legal acts, specific regulatory requirements and internal management system procedures.

In particular to the topic of the question, Recommendation R11 of the Report is following: VATESI should set up requirements, as appropriate, for establishment of a process to ensure post–storage transport of spent fuel in compliance with IAEA regulations for the safe transport of radioactive materials.

To address the Recommendation in 2017 VATESI revised the own requirements and provisions for evaluation of transportability of storage cask as well as detail requirements on periodic safety review were included to the General Requirements for Dry Type Storage Facility of Spent Nuclear Fuel BSR 3.1.1-2016. That will require during the next periodic safety review of both storage facilities to evaluate possibilities for storage cask to fulfil requirements of transportation in post-storage period and to be certified in due course.

It shall be noted that:

- a certificate of casks of storage facility 1 was issued by Czech Republic (manufacturer of the cask) for 10 years in 1999. Transportability of cask of storage facility 2 is described in technical design documentation and its safety analysis report. Transportation within site of Ignalina NPP of storage casks of both storages are described and justified in technical design documentation and their safety justification correspondingly. Both cask after fulfilment in units were transported within site of Ignalina NPP and did not use public roads. In accordance with national legal framework and IAEA safety standard SSR-6 in such a case formal certification of design of transportation package is not required. When licence holder of storage facility will decide to ship spent nuclear fuel by public roads the certificates will be issued in due course based on justified submissions in accordance with national legal framework.

-in fact, Lithuania is a member of IMO and ICAO and has ratified ADR, RID and SMGS and Lithuania's regulations for safety of transport of radioactive material comply with SSR-6 provisions. Moreover for regulation of carriage of nuclear, fissile and radioactive material the Law on Carriage of Dangerous Goods by Road, Rail and Inland Waterways is issued in 2001 (amended in 2012), the Rules on import, export, transit and transport of radioactive material, radioactive waste and spent nuclear fuel define the permitting procedure to import, export, transit and transport radioactive material, including sealed sources of ionizing radiation and disused sealed sources of ionizing radiation, radioactive waste and spent nuclear fuel and the requirements and controls, is issued in 2008 and Rules on Issuing Certificates of Shipment for Nuclear Fuel Cycle, Nuclear and Fissile material BSR-4.1.1-2017 is issued in year 2017. Provisions of these documents aim at protecting people and the environment from the harmful effects of ionizing radiation. The last-mentioned rules include provisions related to authorization (certification) of radioactive material shipment, radioactive material design and radioactive material package design approval for applicants seeking export, import, transit and transport of radioactive material within Lithuania.

20	Country Belarus	Article Article 11	Ref. in National Report p. 78-80
Question/ Comment	Does Lithuania plan to conduct the self-assessment of the national INPP decommissioning programme and the international peer review of the self-assessment?		
Answer	Currently, following the regulatory requirements, Ignalina NPP is carrying out periodical		

review and update of the Final Decommissioning Plan which has to be agreed with number of Lithuanian authorities and approved by the Ministry of Energy of Lithuania.
Lithuania is planning to perform self-assessment of its national programme of radioactive waste management on 2020 and to invite International Atomic Energy Agency ARTEMIS mission to perform international peer review of the national programme for radioactive waste management in 2021.

21	Country Belarus	Article Article 11	Ref. in National Report Section G

Question/ Comment

The report (e.g. on page 76) states that one of the options for long-term radioactive waste and spent nuclear fuel storage organization is construction of a geological repository. It is indicated that studies which were carried out in 2004 confirmed the possibility of building a storage facility in Lithuania in a crystalline basement or, alternatively, in clay rocks with very good limiting properties.
Could you, please, clarify:
Who (what organisations) conducted this research? Is it possible to get acquainted with its basic calculations and conclusions? Were international experts or organizations involved in the assessment of data or conclusions?
Did the 2004 study take into account the amount of radioactive waste and SNF that the geological repository is intended to store? If so, what is the amount?
Was there carried out more research between 2004 and the present time?
Was there conducted work on planning the process of selecting sites for the location of the geological repository (page 9, the years 2016-2017 are mentioned as the planned time)? What are the results or outcomes of such work? Is there a list of sites (areas) the parameters of which are being studied or will be studied as far as the security, absence of prohibiting or limiting factors are concerned?

Answer

Geological Survey of Lithuania, in co-operation with RATA, SKB and Lithuanian Energy Institute conducted a study “Investigations of Possibilities to Dispose of Spent Nuclear Fuel in Lithuania: A Model Case”.
The study in question looked into the geological feasibility of the deep geological repository (DGR), and provided **forecast** of the SNF inventory, as the period of Ignalina NPP operation was still uncertain. The estimated amount of SNF at that time was 2436 tons U.
A number of research reports and feasibility investigations have been carried out during the period of 2004-2017. Just to mention a few:
- Concept and Safety Assessment of a Repository for Long Lived Radioactive Waste in Medium Depth, Lithuanian Energy Institute, 2006;
- Feasibility Study for the Disposal of Sealed Sources of Ionising Radiation and Long Lived Radioactive Waste Stored at Ignalina NPP in Drills of Medium Depth (BOSS method), Vilnius University, 2008);
- Geological Investigation Programme for Underground Disposal of Long-lived Radioactive Waste and Concept of Disposal Infrastructure Development (UAB GROTA, 2010);
- Programme of Geological Investigations of Possibilities of Underground Disposal of Long-lived Radioactive Waste (UAB J. Jonyno Ecofirma, 2012);
Preparation of DGR siting programme and Facility Installation Plan, Lithuanian Energy Institute, 2015).
The work in the DGR project during 2016-2017 was concentrated on the following:

- Preparation of the DGR project development plan (including analysis of the local and international legal and administrative situation, assumptions for Safety Assessment for each stage of the project, analysis of relevant experience in other countries);
- Public opinion poll on radioactive waste management and construction of DGR;
- Development and substantiation of priority financial sources for the different stages of the DGR project development;
- Preparation of documents, relevant to the financing of the project and determination of costs for each stage of the project;
- Development of the geological database, based on the information available.

The site selection process is currently still in the planning stage. No specific sites have been identified yet.

22	Country Sweden	Article Article 11.5	Ref. in National Report Page 79
Question/ Comment	It is stated that the WAC for shallow land disposal, among other features, also consider the decomposition of organic wastes. Could you please provide some more details of this criteria and how it correlates to the long-term evolution of the capping of the disposal facility.		
Answer	Decomposition of organic waste was considered in EIA and SAR. The conclusion was made that under conditions of waste in landfill and keeping the composition of the waste, decomposition of organic waste will not put a repository in jeopardy. Annual gaseous releases from the Landfill disposal, governed by decomposition of the organic waste, would be below by three orders of magnitude in comparison with activity limits, authorized to be released into the atmosphere by the INPP Also, during the analysis of long-term safety of the repository, retention of the radionuclide migration by waste packages was not taken into consideration (conservative approach). The waste must be: • Solid and not containing any free liquid; • Compressibility of the waste must be as low as reasonably achievable; • Waste must not be highly inflammable; • Do not contain toxic, aggressive materials.		

23	Country France	Article Article 13	Ref. in National Report Section K - page 100
Question/ Comment	One of the 3 challenges identified in the 5th Review Meeting was "maintaining investigation program on final solution of spent nuclear fuel and other long lived radioactive waste". In the present report, it is indicated that "the main repository site selection stages are: site selection process planning (2016–2017), detailed research to choose several regions of interest (2019–2022), detailed characterization (2022–2030) and site approval phase (2030–2033)". Could Lithuania specify whether public reports relative to first results of the 2016 2017 step of site selection process are (or will be soon) available and if not, summarize these first results? In particular, could Lithuania clarify how is considered the public consultation during this site selection process?		

Answer The deep geological repository (DGR) Development Plan including conclusions, observations and proposals was prepared and approved on 30 December, 2016. The Plan provided analysis of the legal and administrative environment and the assessment of relevant local legislation and international agreements. The analysis of the legal environment came to a conclusion that the legal environment of the project was sufficiently regulated, however, participation of the state institutions in the site selection process was not defined enough - there was only a general statement regarding following the IAEA guidelines. It would therefore be necessary to consider preparation of safety assessment for each stage of the site selection process, which would allow a better involvement of relevant state institutions and would add to the risk mitigation.

The DGR Development Plan also identified the basic stages of the project based on the geological investigation data available, international experience and IAEA guidelines:

Project planning and investigative borehole site selection (2017-2021); Investigation of the borehole site, choice of additional borehole sites (2022-2030); Investigations of the additional boreholes, site selection for the installation of research laboratory (repository) (2031-2035); Installation of underground research laboratory, confirmation of the repository site (2036-2045); Development of the repository design (2046-2055); Construction of the repository (2056-2065); Operation of the repository (2066-2072); Closure of the repository (2072-2077).

The following public consultation activities are planned during the site selection process:

· The general public information and educational activities are carried out. RATA provides public information and communication activities about spent fuel and radioactive waste management facilities: organising meetings and events for students, making educational presentations, demonstrating visual material such as models of the facilities, issuing and distributing newsletters to stakeholders, publishing information on Facebook social network, RATA website and mass media.

· The deep geological repository project is on the concept selection stage at the moment. According to the Law of Environmental Impact Assessment of the Planned Activities it must be ensured that the public, including neighbouring countries, will be informed and involved into decision making process in the earliest stage of the activity. According to the Lithuanian Radioactive Waste Development Programme the choice of drill sites of investigative boreholes is foreseen in 2022. An environmental impact assessment will be launched and public involvement into decision making process will be started for the investigative borehole sitting in 2022.

The first publicity in the project is planned in the stage of the EIA of the first deep geological borehole, 2022-2023. During the period of 2016-2017 only general public information on radioactive waste management issues and educational activities were carried out in the form of lectures, interviews, internet material and booklets.
The site selection process is currently still in the planning stage. No specific sites have been identified yet.

According to the Law on the Environmental Impact Assessment of Proposed Economic Activity (last amended in 2017) (hereinafter – EIA law) the decision whether the proposed economic activity by virtue of its nature and environmental impacts **may be carried out on the chosen site only after having performed environmental impact assessment**

(hereinafter – EIA). The list of nuclear facilities for which EIA should be carried out is in line with those listed in the United Nations Convention on Environmental Impact Assessment in a Transboundary Context (hereinafter – Espoo Convention) and in the Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (as amended by Directive 2014/52/EU), and includes construction and decommissioning of nuclear power plants, management, storage and disposal of radioactive waste, etc.

The public participates in the EIA procedure in accordance with EIA law and acts implementing the law. In accordance with amended EIA law competent authority makes information on screening regarding EIA and/or EIA documentation (scoping document, EIA report) publically available shortly after receiving application from developer of the project. Public has possibility to express and the decision-maker to take account of opinions and concerns which may be relevant to those projects.

EIA in a transboundary context is regulated by EIA law and by the Espoo Convention. The parties to the Convention are entitled to participate in an EIA procedure of the proposed nuclear activity (nuclear power stations and other nuclear reactors, including decommissioning of power stations or reactors; production, processing, enrichment, storage and disposal of nuclear fuel) carried out in Lithuania if the detrimental environmental impacts of the project could potentially affect the country in question. For other projects the transboundary impacts are analysed through screening procedure. If competent authority decides that project might have significant transboundary effects national and transboundary EIA procedure will be applied. During transboundary EIA procedure participation of the public of affected party is ensured in accordance with national and international legislation as well.

Information about nuclear facilities and activities on territory of Lithuania shall be submitted to neighbouring countries according the bilateral agreements.

In 1994 Lithuania signed an Agreement between the Government of the Republic of Lithuania and the Government of the Republic of Poland on the implementation of the Convention on Environment Impact Assessment in a Transboundary Context.

Lithuania has intention to sign bilateral agreements with Latvia and Belarus. The draft Agreement between the Government of the Republic of Lithuania and the Government of the Republic of Belarus on the implementation of the Convention on Environment Impact Assessment in a Transboundary Context was prepared and sent to Belarus.

24	Country France	Article Article 13	Ref. in National Report Section D - p 24-25

Question/Comment: The report indicates that Decommissioning of Maišiagala radioactive waste storage facility started in December 2016 and should be completed until 2023. Besides, regarding the B25 project of LILW disposal facility (Near Surface Repository, NSR), Lithuania indicates that technical design and PSAR were completed in May 2017 and that "Tendering, construction and commissioning of first group of NSR disposal vaults are planned in 2021-2023".

Could Lithuania specify if waste from Maišiagala decommissioning is dedicated to this NSR project facility? If so, could Lithuania clarify how would be managed the delay between the commissioning the NSR and the decommissioning of Maišiagala?

Answer: All radioactive waste from Maišiagala decommissioning will be transported to the Ignalina NPP for further treatment, conditioning, packaging, storage and disposal of waste, which will comply with the waste acceptance criteria for disposal. Besides, it is estimated that during the decommissioning of Maišiagala radioactive waste storage

facility the amount of radioactive waste will be approximately 300 m3 and it will be only 0,23 percent of radioactive waste amount originate from decommissioning of Ignalina NPP.

Some of these radioactive waste from Maišiagala storage facility will be designated for the Near Surface Repository (NSR) and, if there are any delays related to the operation of the NSR facility the waste will be stored at storage facilities until it will be available to dispose.

25	Country Sweden	Article Article 14	Ref. in National Report Page 85

Question/ Comment: Could you please clarify which types of post-operational (institutional) controls that are included in the active (30 y) respective passive control (70 y) for the VVLW disposal?

Answer: During the active control the following activities are performed:

- Monitoring of the site and environment,
- Surveillance of properties of engineering barriers and, if necessary,
- Performance of remedial works.

During the passive control only restriction of land use will take place.

26	Country Sweden	Article Article 14	Ref. in National Report Page 84

Question/ Comment: It is stated that the design of the VLLW-disposal facility has been developed using experience from Swedish shallow land burials. Could you provide with more information of the design principles, as the design of these Swedish facilities differ.

Answer: VLLW disposal facility at Ignalina NPP based on design principles of shallow land disposal at Oskarshamn NPP (see Report INPP Landfill. Studsvik RadWaste AB, Studsvik/RW/04/17, 2004-02-26):

- Reinforced concrete plate as base,
- Waste are disposed off in half-height ISO containers and pressed bales,
- Sealing layer of geosynthetic clay liner and high density polyethylene.

27	Country United States of America	Article Article 14	Ref. in National Report Section B and H pg. 8, 85, 102

Question/ Comment: The report states that a near-surface waste repository is expected to operate from 2021-2038. It further states that the repository's technical design has been approved. Please describe the next steps, and when construction is expected to take place.

Answer: NSR technical design (TDD), Preliminary safety analysis report (PSAR) and other related to TDD studies and documents had being prepared during 2006-2015 period (including site selection procedures etc.).

During 2015 -2017 approval process by state institution were performed. In April 2017 TDD and PSAR were approved by all state institution including Regulatory body. In May 2017 permission for construction of NSR were provided to INPP. In November 2017 license for construction and operation of NSR were provided by Regulatory body to INPP.

Starting from May 2017 preparation for procurement of NSR construction and related services started. It is planed that tenders for construction of NSR will be available in 2018. Contracts (Construction of some infrastructure will be implemented by separate contracts) for construction it are expected in 2019.

According to the updated schedule in 2018, construction of NSR is scheduled from 2019 until 2022-2023.

From 2023 until 2038 NSR will be in operation before NSR closing.
Institution control including monitoring will be conducted during 100 year until 2138.
Then 200 year restriction of territory usage will be applied.
After 2338 territory of NSR can be used without limitation.

28	Country Belarus	Article Article 16	Ref. in National Report Section H

Question/ Comment: The section "Solid Radioactive Waste Management" states that pressing is envisaged for Solid Radioactive Waste with dose rate of gamma radiation no more than 0,3 mSv/h
In what way is solid radioactive waste with gamma-radiation dose intensity higher that 0,3 mSv/h dealt with?

Answer: Solid radioactive wastes with gamma-radiation dose rate higher than 0,3 mSv/h are to be sorted at new waste management facility B3.
Sealed spent sources and graphite pieces are to be separately loaded into 200-litres drums. Four such drums are to be loaded into a steel container for long-lived wastes. Wastes with gamma-radiation dose rate higher than 10 mSv/h are to be loaded into a steel container for long-lived wastes.
Air filters are to be pressed and loaded into 200-litres drums.
Burnable materials are to be transferred through metal detector, shredded, packed and burnt. Ash is to be loaded into a 200-litres drum and compacted.
Non-compactable wastes are to be loaded into a concrete container for short-lived wastes.
All other wastes are to be loaded into 200-litres drums.
All filled drums (except sealed spent sources) are to be measured with gamma-spectrometer and pressed (except sealed spent sources and graphite).

29	Country Czech Republic	Article Article 16	Ref. in National Report H, 90

Question/ Comment: Could you describe in more details the expected final form used for disposal of bituminized concentrate, which is stored at this moment in the special store (build. 158)?

Answer: Bituminized concentrate is stored in building 158 in vaults with useful volume of 2000 m^3. INPP plans to transform storage building 158 into final repository. At present, the tender on performance of additional investigations (geological, hydro geological and expertise of storage structures) and environmental impact assessment of conversion of the existing bituminised waste storage into a disposal repository is ongoing. Decision on conversion possibility will be made based on results of the above mentioned works. In case of positive results, technical design and safety justification documentation of disposal facility will be prepared. In case of negative results, investigations on alternative ways of bituminized waste storage decommissioning (further operation as storage with following retrieval, treatment and disposal of waste) will be initiated.

30	Country Japan	Article Article 16	Ref. in National Report 91

Question/ Comment: Please provide some examples of contaminated hazardous waste generated from INPP decommissioning and how those waste will be treated for final disposal.

Answer: Among solid RAW of INPP, small quantity of contaminated bound asbestos is present. This asbestos waste belong to VLLW, and after packaging in plastic sacks and containers (half-heght ISO or FIBC) will be disposed off in the Landfill facility for VLLW. At present, the updating of Safety Analysis Report of Landfill facility is ongoing in order to

receive the regulator's approval.

31	Country United States of America	Article Article 16	Ref. in National Report Section C and H pg. 16, 78

Question/ Comment: The report states that Lithuanian law prohibits reprocessing of spent fuel in Lithuania. Please provide an estimate of how much spent fuel is exported for reprocessing (subsequently re-entering Lithuania) versus held in interim storage with no reprocessing. How is the decision made to reprocess out of country versus store with no reprocessing?

Answer: According to the Law on Nuclear Energy, Article 5, It shall be prohibited to produce radioactive materials for a nuclear weapon or for fuel of nuclear power plants, also to reprocess already used elements of such fuel in the territory of the Republic of Lithuania. No spent fuel was exported to other country. Currently, there is no plans to do so. All spent fuel is held in interim storage and later on shall be disposed in geological repository.

Additionally please see this part of Agreed Matrix, concerning spent fuel:

Type of Liability	Long Term Management Policy	Funding of Liabilities	Current Practice / Facilities	Planned Facilities
Spent Fuel	Storage for 50 years. Disposal in deep geology	Funding available for storage only.	On site storage- dry (storage facilities) and wet (in pools)	Deep Geological repository

32	Country Bulgaria	Article Article 19	Ref. in National Report p.44

Question/ Comment: Regarding the application of clearance procedure in Lithuania, the operator shall measure waste or materials, intended for free release, ensuring that clearance levels are not exceeded. VATESI review and endorse the applied methodology for clearance levels and is responsible for ensuring that clearance levels in cleared waste or material will not be exceeded. Environmental Protection Agency had signed the contract with VATESI in August 2012. According to this contract responsibilities of Environmental Protection Agency are to support VATESI by performing of necessary measurements of waste, materials and discharges in-situ and in laboratory.

What kind of measurement technique is used for free release measurements and how the measured activity values are compared to the clearance levels? Do you use in some cases estimated nuclide specific activity, based, for example, on nuclide vectors or other type modeling. If so, how they are verified?

Answer: Measurement techniques used to define key nuclide activities:

- measurement using HPGe – spectrometers.
- Measurement using plastic scintillators

Activities of the other nuclides from a list are calculated according to defined nuclide vector.

Every nuclide activity is compared to its clearance level.

Nuclide activity to its clearance level fraction is calculated for each nuclide in the list.

Sum of the fractions shall not exeed 1.

Nuclide vectors are verified comparing nuclide activities of many samples to nuclide vector activities (calculated to a relevant date).

33	Country Ghana	Article Article 19	Ref. in National Report E, 33

Question/ There appears to be a lot of coordinated efforts among state agencies, is there a

Comment	designated regulatory body entrusted with the implementation of the Legislative and regulative framework for the management of Spent Fuel and Radioactive Waste?
Answer	VATESI is state regulatory and supervisory authority in Lithuania for activities involving nuclear materials and other activities in the area of nuclear energy involving sources of ionizing radiation that regulates and supervises nuclear safety, radiation safety in nuclear field, security and control of nuclear material. In other words, spent fuel and radioactive waste management in nuclear field (Ignalina NPP and its facilities) is under VATESI supervision. The rest waste management (waste from small producers) is under supervision of Radiation Protection Centre. Other state agencies supervise activities of nuclear facilities in accordance with theirs competencies, for example, Environment protection agency – monitoring of environment, Inspection of Territory planning and construction – supervises civil construction works.

34	Country	Article	Ref. in National Report
	Morocco	Article 19	section E, p 36

Question/ Comment	You mention in paragraph "(ii) a system of licensing of SF and radioactive waste management activities; Lithuania p 36" that has TWO regulatory bodies which are : • VATESI is a competent authority for the licensing of activities involving nuclear materials or nuclear cycle materials or carried out in nuclear facilities • Radiation Protection Centre (RPC) under Ministry of Health is responsible for issuing licences for transportation of radioactive waste and to manage institutional waste excluding disposal. Could you clarify the way they interact each other? What are means that are taken to avoid any overlap between these institutions? Could you clarify how the principle of independent is observed in the case of violation of the regulatory requirements by for instance an hospital which is under of health ministry as the Radiation Protection Centre (RPC) is , responsible authority ?
Answer	Separation of functions of VATESI and Radiation Protection Centre (RPC) is clearly defined in the Law on Radiation Protection and the Law on Nuclear Safety of the Republic of Lithuania. The overlap of the regulatory control is excluded because the different types of practices are regulated by VATESI and RPC. VATESI regulates activities in nuclear facilities and related activities with sources of ionising radiation in the nuclear energy area and RPC regulates activities with the use of radiation sources in medicine, industry, agriculture, research and education. VATESI and RPC cooperates in such areas of activities as establishing radiation protection requirements (regulations) for activities in nuclear facilities (e.g. common radiation protection requirements, applicable for all regulated activities in general, are drafted by RPC and nuclear energy area specific requirements are established by VATESI), also in some cases of international activities (e. g. IAEA missions, conventions) etc. The functions of the RPC are defined in the Law on Radiation Protection of the Republic of Lithuania. RPC implements its regulatory functions and takes decisions in the field of regulatory control independently from Ministry of Health and this was found during an Integrated Regulatory Review Service (IRRS) mission, which took place in 2016.

35	Country	Article	Ref. in National Report
	Netherlands	Article 19	Art. 19, section E, p. 36

Question/ Comment	This paragraph describes how VATESI is responsible for strategy, lines of policy, drafting of law and acts, licensing, inspection and enforcement in the nuclear field. Are responsibilities, such as policy and strategy, licensing, inspection or enforcement, strictly separated within VATESI? Or is one employee, for example, responsible for enforcement , as well as licensing?

In line with the topic of division of responsibilities: The Ministry of Energy is coordinating the Radioactive Waste Management Development Programme (p. 35). This program contains four objectives, set out on pages 8 and 9, which are not easily to combine with other objectives of the ministry of Energy itself which is responsible for energy production. Could you elaborate on procedures how a conflict of interest might be solved?

Answer VATESI competence is defined in the Article 20 (Regulatory body) of the report. To simplify and shorten these responsibilities – VATESI state regulatory and supervisory authority in Lithuania for activities involving nuclear materials and other activities in the area of nuclear energy involving sources of ionizing radiation. In other words, spent fuel and radioactive waste management in nuclear field (Ignalina NPP and its facilities) is under VATESI supervision.

VATESI is not responsible for strategy or lines of policy of spent fuel and radioactive waste management. It is responsibility of Ministry of Energy. Law on Nuclear Energy Article 9 states: "Competence of the Ministry of Energy of the Republic of Lithuania states The Ministry of Energy of the Republic of Lithuania shall: 1) shape the State policy in the area of nuclear power and organise, coordinate and control implementation thereof;".

Responsibilities inside VATESI, concerning licensing, inspection or enforcement, is not strictly divided. All VATESI inspectors are responsible for drafting legal acts, participating in licensing process, review of safety submittals, performing inspections and using enforcement in the area prescribed for them e.g. radioactive waste management, radiation protection, fire protection and etc.

The Lithuania's electricity demand is satisfied with the electricity generated from renewable sources, fossil fuels and import. Nuclear energy for generation of electricity isn't used anymore.

For the implementation of the Radioactive Waste Management Development Programme is used State Enterprise INPP Decommissioning Fund, state budget, Ignalina International Decommissioning Support Fund, Ignalina Programme and by fees collected from the institutional waste producers. In the electricity tariff no component which would be dedicated to the implementation of the Radioactive Waste Management Development Programme.

Following provisions of the Government resolution No. 86 On Approval of the regulations of the Ministry of Energy of the Republic of Lithuania (2009, amended 2013), Ministry of Energy is responsible for the determining of the policy in the radioactive waste management and generation, transmission, distribution of the energy. These tasks of the Ministry of Energy are appointed to the different vice ministers. The departments responsible for radioactive waste management and energy production are separated in the structure of the Ministry of Energy and are accountable to the different vice minister. So, in the structure of the Ministry of Energy are used measures which reducing the potential for the conflict of interest.

Taking in to account reasons mentioned afterward we think that no reason for rising of the conflict of interest.

36	Country Netherlands	Article Article 19	Ref. in National Report Art,19, section E, p.38

Question/ Comment Each year VATESI develops a plan of inspection in accordance with the established criteria and with regard to available and financial resources. Regarding all the (other) responsibilities, who decides about the number of employees working for VATESI? Will

the government guarantee that there will be enough capacity and money to perform all the tasks VATESI has, especially the inspection?

Answer Governmental resolution (21 December 2015 No. 1329) has established a number of employees working for VATESI among other state institutions based on justification that VATESI provided. It is responsibility of Head of VATESI to establish organizational structure of VATESI and set distribution of positions within the organizational structure. Budget of regulatory authority is set within State Budget Law as separate line annually and VATESI is assignation possessor of the own budget.

According to the Article 21 paragraph 3 of the Law on Nuclear Energy VATESI acts as independent governmental institution subordinated directly to the Cabinet of Government and the President, hence its place in the governmental structure helps to assure an effective separation of the regulatory body from the institutions responsible for promotion of nuclear energy. The same paragraph stipulates, that the structure, competence of the VATESI and its provision with resources shall correspond with the nature and scope of the activities in the field of nuclear energy, activities involving nuclear materials and other activities in the field of nuclear energy involving sources of ionising radiation undertaken and planned to be undertaken in the Republic of Lithuania.

These statements of the Law on Nuclear Energy guarantee that VATESI would be adequately funded by its activities.

37	Country Poland	Article Article 19	Ref. in National Report Section E

Question/ Comment In what cases are administrative fines imposed on legal persons and in what cases are fines imposed on legal entities?

Answer Fines on natural persons are imposed in the following cases set in the Code of Administrative Offences:

1) import of radioactive materials to the territory of the Republic of Lithuania, export from the Republic of Lithuania, transit of such materials or transportation in the territory of the Republic of Lithuania without a duly issued permit (Paragraph 3 of Article 47);

2) engaging in commercial, economic, financial or professional activities without having a licence (permit) for the activity which requires licence (permit), or otherwise illegally engaging in such activities (Paragraph 1 of Article 127);

3) violation of the rules of licensing or control of export, import, transit and brokering of strategic goods (Article 141);

4) emission of pollutants into the atmosphere exceeding the norms indicated in the permit or violating other conditions of the permit for emission of pollutants, or emission of pollutants into the atmosphere exceeding the environmental norms provided in legal acts or other requirements for emission of pollutants into the atmosphere when a permit for the emission of pollutants into the atmosphere is not required by legal acts; emission of pollutants into the atmosphere without a dully issued permit, when permit is required by legal acts (Paragraphs 1, 2 and 4 of Article 242);

5) pollution of environment with radioactive materials, transportation, use, possession or disposal at waste disposal facility of such materials violating environmental requirements (Paragraph 1 of Article 245);

6) noncompliance with or violation of normative of other legal acts regulating nuclear safety, physical protection of nuclear installations, nuclear materials and nuclear fuel cycle materials, radiation protection of activities with sources of ionising radiation in the area of nuclear energy and accounting and control of nuclear materials (except for

administrative offences foreseen in Paragraph 3 of Article 47, Paragraph 1 and 2 of Article 127, Article 141, 242, 245, 322, 359, 360 and 546) (Paragraph 1 of Article 320);
7) use of construction (of its premises) violating the requirements foreseen in the Law on Constructions of the Republic of Lithuania and other laws and (or) use of construction (or its premises) against their purpose, except for cases when construction (or its premises) are used against their purpose on instances and in a manner provided by the Government of the Republic of Lithuania (Paragraph 1 of Article 359);
8) failure to follow technical maintenance regulations, except of violation foreseen in Paragraph 2 of this Article; failure to apply measures foreseen in technical maintenance regulations for constructions in cases of dangerous deformations and a risk of collapse (Paragraph 1 and 2 of Article 360);
9) intentional damage or tearing-off of a stamp (seal) placed by an competent officer, except for cases provided in Article 216 of this code (Article 546);
10) engaging in commercial, economic, financial or professional activities without having a licence (permit) for the activity which requires licence (permit), or otherwise illegally engaging in such activities repeatedly (Paragraph 2 of Article 127);
11) emission of pollutants into the atmosphere exceeding the norms indicated in the permit or violating other conditions of the permit for emission of pollutants, or emission of pollutants into the atmosphere exceeding the environmental norms provided in legal acts or other requirements for emission of pollutants into the atmosphere when a permit for the emission of pollutants into the atmosphere is not required by legal acts and emission of pollutants into the atmosphere without a dully issued permit, when permit is required by legal acts committed repeatedly (Paragraph 3 of Article 242);
12) pollution of environment with radioactive materials, transportation, use, possession or disposal at waste disposal facility of such materials violating environmental requirements committed repeatedly (Paragraphs 2 of Article 245);
13) noncompliance with or violation of normative of other legal acts regulating nuclear safety, physical protection of nuclear installations, nuclear materials and nuclear fuel cycle materials, radiation protection of activities with sources of ionising radiation in the area of nuclear energy and accounting and control of nuclear materials (except for administrative offences foreseen in Paragraph 3 of Article 47, Paragraph 1 and 2 of Article 127, Article 141, 242, 245, 322, 359, 360 and 546) committed repeatedly (Paragraph 2 of Article 320);
14) failure to comply with the State Nuclear Power Safety Inspectorate's officers lawful demands (mandatory requirements) to eliminate detected violations of requirements regulating nuclear safety, physical protection of nuclear installations, nuclear materials and nuclear fuel cycle materials, radiation protection of activities with sources of ionising radiation in the area of nuclear energy and accounting and control of nuclear materials in prescribed manner and conditions; failure to comply in prescribed manner and conditions with the State Nuclear Power Safety Inspectorate's officers lawful demands (mandatory requirements) to suspend works within the time-limits set by the Head of the State Nuclear Power Safety Inspectorate and/or to shut-down the nuclear reactor, to decrease its capacity, to discontinue the operation of other equipment or activities; other that the ones specified in Paragraphs 1 and 2 of this article and in Paragraph 1 of Article 505 obstruction of activities performed by the State Nuclear Power Safety Inspectorate's officers (Article 322);
15) use of construction (of its premises) violating the requirements foreseen in the Law on Constructions of the Republic of Lithuania and other laws and (or) use of construction (or its premises) against their purpose, except for cases when construction (or its premises) are used against their purpose on instances and in a manner provided by the

Government of the Republic of Lithuania committed repeatedly (Paragraph 2 of Article 359);
16) Obstruction for the authorised officials to implement their rights prescribed by laws regulating their activity or perform their duties, noncompliance or improper compliance with lawful instructions and requirements of these officials as well as decisions (resolutions) of collegial bodies (denying access of the officials into the inspected area, premises (except human housing) or other objects, failure to provide information, data of documents to the officials or provision with incorrect or false information or data, refusal to explain or give data, concealment of documents, avoidance to arrive and provide explanations, etc.) except for the cases foreseen in Paragraph 1 of Article 224, Article 317, 318, 322, 506 and this offence committed repeatedly (Article 505);
17) humiliation of honour and dignity of state politician, state official, public servant or person implementing functions of public administration expressed in written, verbal form, by gesture, by offensive, aggressive, provocative or other behaviour (Article 507).
In cases set in paragraphs 1–9 above the fines are imposed by VATESI, in cases set in paragraphs 10–17 above, the fines are imposed by the court.

As established in Paragraphs 1 and 2 of Article 48 of the Law on Nuclear Safety, fines on legal persons are imposed in case legal entity fails to act in line with the requirements established by this Law and other legal acts that regulate nuclear safety and radiation protection in carrying out activities related to nuclear energy and involving sources of ionising radiation, as well as physical protection requirements, and due to which the safety barriers containing radionuclides and (or) shielding ionising radiation are breached, and (or) as a result of which the activity of radionuclides discharged into environment exceeds the allowed limit and (or) exposure of workers exceed the allowed limits, and which fails to comply with the requirements stemming from the international obligations on non-proliferation of nuclear weapons assumed by the Republic of Lithuania, and this is related to significant quantities of nuclear materials defined by the IAEA. Higher fine is imposed if the aforementioned violation is repeated.

38	Country Sweden	Article Article 19	Ref. in National Report Page 33

Question/Comment: Which criteria apply for the post closure radiation safety of the VLLW-disposal facility and near surface disposal facility for LLW and ILW?

Answer: In the post close period for VLLW disposal facility it is foreseen 30 years institutional control and monitoring period and 100 year restriction of territory usage.
For NSR (for LLW and ILW sort lived (or in accordance to IAEA classification LLW)) it is 100 years of institutional control and monitoring period and 200 year restriction of territory usage.
Post closure radiation safety of VLLW disposal facility and near surface disposal facilities for LLW and ILW were assessed in corresponding Preliminary Safety Analysis Reports.
In order to assess the safety of the disposal facilities, maximum values of the exposure dose to a worker are compared to the dose limit of 20 mSv per year.
In case of exposure dose to a member of the critical group of population, the dose is compared to the effective dose constraint, 0.2 mSv/year. If several nuclear facilities are located at the same site, the same dose constraint must envelope radiological impacts from all operating and planned nuclear facilities exposing the same individuals.
For scenarios of inadvertent intrusion into the disposal facility the limiting dose value is

assumed to be 10 mSv per year.
After construction of VLLW disposal facility and NSR the corresponding Preliminary Safety Analysis Reports will be updated and the Final Safety Analysis Reports will be issued. In FSARs, the changes in normative documents since issue of PSAR will be taken into account (e.g. for scenarios of inadvertent intrusion into the VLLW disposal facility the limiting dose value shall assumed to be 1 mSv per year).

39	Country Canada	Article Article 20	Ref. in National Report page 42 and 83

Question/Comment: Please clarify what requirements are in place to ensure the licensee communication with the public on their facilities and/or activities? Further, please provide information on how the public is being engaged in the siting of proposed facilities.

Answer: The interaction of the licensee with the public is carried out in accordance with the requirements of legal documents:

- Law of the Republic of Lithuania on Information No. I-1418
- Law on the Environmental Impact Assessment of Proposed Economic Activity No. I-1495.
- Law of the Republic of Lithuania on Nuclear Safety No. XI-1539.
  Article 39. Mandatory provision of information to the public and other interested parties
- Nuclear Safety Requirements BSR-1.1.5-2017 „Procedure for the Organization of Public Participation in Decision-making in the Field of Nuclear Energy“
- Procedure for communicating and participating in the process of environmental impact assessment of the proposed economic activity.

Pursuant to Article 39 of the Law on Nuclear Safety, licensee is required to provide (upon request of on his initiative) information related to nuclear, radiation safety and physical security and non-proliferation of nuclear weapons, if the aforementioned information is not prohibited to provide by laws. Licensee is required at least once per year to publish information on state of nuclear, radiation safety and nuclear security while providing information on his activities. Additionally, licensee is required to provide persons who are legally at the site of nuclear facility the following information on present conditions of operation:
1) information on radiological conditions at the site or facilities where these persons are going to be and whether these conditions meet legal requirements;
2) information on deviation from normal operation conditions, if it could have impact on health of these persons.
Pursuant to Article 39(1) of the Law on Nuclear Safety, public has the right to participate in decision-making process (siting and issuing licences and permits, set in Paragraph 1 of Article 39 (1). The procedure requires the licensee to disclose documents that are provided for such decision-making process (unless the law specifies that particular information cannot be disclosed), evaluate all proposals and provide feedback on if and how these proposals were taken in consideration.
The public of Lithuania is given the opportunity to participate in the decision-making process regarding spent fuel and radioactive waste management, as well as during strategic environmental assessment and environmental impact assessment process. Each stage of public information and publicity activities related to radioactive waste management is defined in the Lithuanian legislation. The focus of the public involvement in the decision-making process starts on the early stages of radioactive waste management – planning and siting. Effective public participation in the earliest stage of activities can help develop a better quality of plans and programs, to anticipate and

resolve potential conflicts of interest, to improve the planning process, transparency of decision-making, to achieve best solutions meeting the public interests.
According to the Law on the Environmental Impact Assessment of Proposed Economic Activity (last amended in 2017) (hereinafter – EIA law) the decision whether the proposed economic activity by virtue of its nature and environmental impacts **may be carried out on the chosen site only after having performed environmental impact assessment** (hereinafter – EIA). The list of nuclear facilities for which EIA should be carried out is in line with those listed in the United Nations Convention on Environmental Impact Assessment in a Transboundary Context (hereinafter – Espoo Convention) and in the Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (as amended by Directive 2014/52/EU), and includes construction and decommissioning of nuclear power plants, management, storage and disposal of radioactive waste, etc.
The public participates in the EIA procedure in accordance with EIA law and acts implementing the law. In accordance with amended EIA law competent authority makes information on screening regarding EIA and/or EIA documentation (scoping document, EIA report) publically available shortly after receiving application from developer of the project. Public has possibility to express and the decision-maker to take account of opinions and concerns which may be relevant to those projects.
EIA in a transboundary context is regulated by EIA law and by the Espoo Convention. The parties to the Convention are entitled to participate in an EIA procedure of the proposed nuclear activity (nuclear power stations and other nuclear reactors, including decommissioning of power stations or reactors; production, processing, enrichment, storage and disposal of nuclear fuel) carried out in Lithuania if the detrimental environmental impacts of the project could potentially affect the country in question. For other projects the transboundary impacts are analysed through screening procedure. If competent authority decides that project might have significant transboundary effects national and transboundary EIA procedure will be applied. During transboundary EIA procedure participation of the public of affected party is ensured in accordance with national and international legislation as well.
Information about nuclear facilities and activities on territory of Lithuania shall be submitted to neighbouring countries according the bilateral agreements.
In 1994 Lithuania signed an Agreement between the Government of the Republic of Lithuania and the Government of the Republic of Poland on the implementation of the Convention on Environment Impact Assessment in a Transboundary Context.
Lithuania has intention to sign bilateral agreements with Latvia and Belarus. The draft Agreement between the Government of the Republic of Lithuania and the Government of the Republic of Belarus on the implementation of the Convention on Environment Impact Assessment in a Transboundary Context was prepared and sent to Belarus.
An example of public participation in choosing the location of a new nuclear power facility is the selection of a site for the construction of a near surface repository for low and intermediate-level short-lived radioactive waste (B25).
The final choice of the site for the construction of the repository was made taking into account the opinion of the public.

40	Country United States of America	Article Article 20	Ref. in National Report Section E pg. 42

Question/ Commen The report notes "VATESI and the license holders must inform both the state and municipal institutions and the general public, as well as other persons whose business

t activities are directly related to the licensed activities of a relevant license holder about the conditions of nuclear safety." Please describe the results of these activities and provide any examples of how this effort has helped improve relations with the public.

Answer Pursuant to the Law on Nuclear Safety Article 39 and in the manner under the Law on Provision of Information to the Public of the Republic of Lithuania and other legal acts VATESI informs state and municipal institutions and the general public, as well as other persons whose business activities are directly related to the licensed activities of relevant license holder about the conditions of nuclear safety.

Annually VATESI issues a report for general public "Nuclear Power safety in Lithuania" on the activities of regulation in nuclear safety. This report is presented to the Parliament Economic Committee for discussion, to electronic copy to municipalities in which territory the licence holder operates. The Parliament Economic Committee issues a decision of approval of the Report, municipalities could make inquires to the VATESI or express their suggestions during the annual stakeholders survey.

While implementing delegated supervision functions VATESI provides public consultations to the legal entities that submitted written questions or provides public consultations on its own initiative. The procedure of public consultations is outlined in Nuclear Safety Requirements BSR-1.1.2-2011 "Rules on providing confirmed written and publicly announced consultations". Information meetings or consultations in informal manner with licensees are organised quarterly and help to promote dialogue and more favourable working environment with high degree of transparency.

Pursuant to Article 39(1) of the Law on Nuclear Safety, public has the right to participate in decision-making process (siting and issuing licences and permits, set in Paragraph 1 of Article 39 (1). The procedure requires the licensee to disclose documents that are provided for such decision-making process (unless the law specifies that particular information cannot be disclosed), evaluate all proposals and provide feedback on if and how these proposals were taken in consideration.

Accessible website www.vatesi.lt for general public and the licensees is in place. On this website licensees can find comprehensive information on all aspects of regulatory decisions. Website includes information on specific events and unusual incidents, annual VATESI and national reports, press releases, relevant guidelines and legislation, information about main VATESI activities and performance indicators. Up to date information on electronically basis provided in Lithuanian and English languages. General public and media inquiries are handled in a timely manner. Information and documents are being made public according to national legislation regulating restricted information. Public opinion surveys regarding nuclear safety issues were organised by VATESI in 2009, 2011, 2014 and 2016.

Guided by the requirements of the documents listed in the answer to question Q39 (please see JCWeb with uploaded file, as answer supporting document, with all answers), INPP, as the license owner, provides the presentation of information on the external web-site of the enterprise (www.iae.lt), publications in the mass media.

Meetings between the management of the enterprise and representatives of Municipality, as well as the Community Council created under the Municipality, are held on a regular basis. Various issues related to INPP activities, exercising the town authorities and the public, including security issues, are discussed, decisions that meet the requirements of both parties are taken, and earlier decisions are monitored at these meetings.

41	Country	Article	Ref. in National Report
	Belarus	Article 22	Section F

Question/ Open information sources provide information on the shortage of funds for the

Comment decommissioning of the Ignalina NPP, which was also mentioned by the officials of Lithuania and experts of the EU.

The report mentions that the greatest part of the financing the implementation of the Ignalina Programme is provided by the EU and the amount of aid is set until 2020.

“Luthiania hopes that the EU will remain devoted to the Agreement according to Protocol №4 of the Treaty of Accession of Lithuania to the EU and will continue to cooperate and provide financial aid without any hindrance, which is crucial for Lithuania in connection with the decommissioning of the INPP in the period after 2020”.

In this regards, could you, please, give the following information.

1. What are the actual steps and measures taken by the Lithuanian Government in respect of the continuous decommissioning of the plant including construction and exploitation of the sites for nuclear waste storage and disposal?

2. Which measures (mechanisms) does Lithuania plan to turn to in case the EU does not provide the financing?

3. What can guarantee the receipt of funds for ensuring safe operation of the sites?

Answer 1. What are the actual steps and measures taken by the Lithuanian Government in respect of the continuous decommissioning of the plant including construction and exploitation of the sites for nuclear waste storage and disposal?

Since the shutdown of the Ignalina NPP in 2004, ensuring the European level of nuclear safety has always been a top priority for Lithuania and the EU. Ignalina NPP decommissioning project, therefore, is one of the priorities of the Government of Lithuania. Significant Ignalina NPP decommissioning progress has been made as a result of complementary national and EU-level efforts. Currently, Ignalina NPP decommissioning continues firmly on track in accordance with the Final Decommissioning Plan revised in 2014, and the highest level of nuclear safety is maintained.

Radioactive Waste Management Agency (RATA), the implementer of the Radioactive Waste Management Development Programme measures dedicated to the deep geological repository, is dealing with the preparation of The Deep Geological Repository Development Project, developing a draft proposal on the possible financing mechanism for the final disposal (deep geological disposal) of spent nuclear fuel and high level radioactive waste, preparing and implementing public communication measures related to the deep geological repository project.

2. Which measures (mechanisms) does Lithuania plan to turn to in case the EU does not provide the financing?

The closure of the Ignalina NPP being an EU decision, its safe and efficient decommissioning is also the goal and common interest of the entire EU. Lithuania thus expects continuing solidarity of the EU in its effort to successfully complete the decommissioning.

If sufficient EU assistance is not ensured in the forthcoming multiannual financial frameworks, Ignalina NPP decommissioning currently described in Final Decommissioning Plan will be suspended and turned in to the safe state.

3. What can guarantee the receipt of funds for ensuring safe operation of the sites?

The provision of adequate financial EU support for the decommissioning of the Ignalina Nuclear Power Plant (Ignalina NPP) is pledged in in Protocol No 4 to the Lithuania’s Treaty of Accession to the European Union, the provisions of which stipulate seamless continuation of adequate EU assistance in future financial periods. Also, national co-

financing will be continued.

Currently, we have received confirmations from high EU officials that financial assistance will be continued; however, its scope is still the object of negotiations.

42	Country Belarus	Article Article 22	Ref. in National Report Section F, p. 46

Question/ Comment

Section F of the national report on the issue of training of the INPP staff mentions:
"Initial and continuous training of personnel is performed on the basis of a Systematic Approach to Training, providing the highest level of personnel training".
However, during the decommissioning activity at the INPP there occur from time to time emergency situations, some of which concern dealing with radioactive waste and spent nuclear fuel.
One of the latest examples of such incidents is the emergency situation of August 11, 2017 which occurred in one of the fuel storage pools of the second block of the INPP during loading the protection container CONSTOR®RBMK1500/M2 with spent nuclear fuel.
Earlier there occurred an incident of decompression of the equipment with forming large amount of liquid radioactive waste, resulted from the use of the technologies which was not tested at nuclear industry plants and the contractor which does not meet the necessary requirements.
Which measures does Lithuania plan to employ in order to improve the staff training and recruiting system, in order to not repit emergency situations and insure safety during the working process?

Answer

There were no events at INPP during decommissioning, which can be classified as "emergency situations" or "incidents". This could be said also about events referred in the question (all of them were classified on INES scale as "below scale / Level 0"). As regarding "use of the technologies which was not tested at nuclear industry plants" it should be said that the chemical decontamination for Primary Circuit was used at others nuclear industry plants in the past.
Use of own and external operational experience is a key element to avoid the similar events and prevent of serious incidents and accidents at nuclear facilities. Requirements on the Operational Experience Feedback in the field of Nuclear Energy (P-2009-4) requires use of operational experience in the operations and in the training process. The Licensee shall assure that the content of the training programs of the personnel be regularly revised and updated with regard to the obtained operational experience (both internal and external). INPP has a processes to familiarize INPP personnel with event reports, taking into consideration a specificity of personnel work. During the theoretical part of training for a job position a theoretical course "Using own and industrial experience" is lectured. During the course employee receives information about in INPP occurred events within his competence. Moreover, a corresponding topics on actions in emergency situations is included in the practical part of training for a job position. During a study of the topic employee acquires skills of reaction and behaviour in case of emergency situations.

43	Country Bulgaria	Article Article 22	Ref. in National Report p.47

Question/ Comment: Lithuania believes that the EU will remain committed to the agreement under Protocol No 4 of the Accession Treaty and seamlessly continue cooperation and the provision of financial assistance, which is vital for Lithuania in confronting with this decommissioning project. Negotiation actions regarding adequate EU financial support for INPP decommissioning after 2020 have already been started.
What includes the negotiation actions and what type of data/information is provided to the EC during the process?

Answer: Intensive preparations for the negotiations have been started in early 2017. The preparations are based on active communication of INPP decommissioning progress and future financial needs including frequent meetings and written correspondence at high-level officials (governmental and ministerial) and experts levels. An information brochure containing key information on INPP decommissioning and funds necessary was prepared by the Ministry and is distributed to relevant officials. The EC is provided with calculations of the funds required to ensure smooth and stable progress of INPP decommissioning both until the end of decommissioning in 2038 and in the future MFF based on the Final Decommissioning Plan. Also, Lithuania highlights the increased national co-financing for the programme and the fact that the Government of the Republic of Lithuania has committed to maintain the increased national co-financing of direct decommissioning costs at the level of 14 per cent on average till the end of the project in 2038. It is also stressed that, in addition to the direct decommissioning costs, Lithuania allocates substantial resources for the fire and physical protection of INPP and invests heavily in the mitigation of negative social and economic effects of INPP decommissioning in the INPP region.

44	Country Canada	Article Article 22	Ref. in National Report page 46-48

Question/ Comment: Please explain the methodology used to estimate the cost required for decommissioning and for radioactive waste disposal. Also, is there a General Requirement that covers the decommissioning cost estimate requirements?

Answer: The combination of various sources and methodologies has been used for cost estimation of decommissioning of Ignalina NPP:
1. The results of revision of decommissioning project for Ignalina NPP (INPP) Unit2 final shutdown and defueling phase. The revision was carried out in the frame of the contract between INPP and Energiewerke Nord GmbH (Germany). Subsequently the following has been used for cost calculation by the INPP:
• Methodology for the cost estimation of decontamination and dismantling;
• Methodology for the Defueling Phase cost estimation after Unit 2 Reactor Final Shutdown;
• Cost estimation Norm for the Unit 2 Defueling Phase after Reactor Final Shutdown;
• Cost Report for the Unit 2 Defueling Phase after Reactor Final Shutdown.
2. Documents, developed for the task of cost evaluation have been used to estimate costs for the projects, for which costs of works in the scope of item 1.1 have not been calculated:
• “Tasks and resources assessment Report at the stage of INPP decommissioning in the period from 2010 to 2029 years”. This report was developed by INPP personnel in 2009 by the EC request for the formation of an application for funding of INPP in 2010 ;
• Description of Cost estimation method for isolation projects. This method was developed by INPP personnel for cost estimation of works on isolation of equipment

• Description of Cost estimation method for decontamination and dismantling projects. This method was developed by the INPP personnel for estimation of cost of the dismantling works.
3. Based on the aforementioned methods, scopes of planned for each project works and works performance schedule have been estimated for each project for the period from 2014 up to 2038 including the following characteristics:
• Labor costs of own personnel, including a paid by enterprise tax on social insurance, income tax, deductions for health insurance and pension fund, cost of implementation of projects with breakdown by type of personnel activity.
• Goods for the projects implementation with breakdown by cost items (prices of 2013);
• Works and services for the projects implementation (prices of 2013);
• Energy resources to insure activity (prices of 2013);
• Taxes and government fees.
4. Annual inflation size for project costs estimation was accepted for the whole decommissioning period at the rate of 3% per year for the growth of average salary, the cost of goods, the cost of the works/services and the cost of energy resources.
5. During projects costs estimation, risks associated with the performance of work by external contractors for investment projects were taken into account, as well as risks during the decommissioning projects works implementation by INPP personnel. The cost of risk is represented by a seven-year period.
6. The accuracy of cost estimation accepted on the basis of the planning period, increases during projects movement along the life cycle and depends on the project implementation time.
7. The following aspects have been taken into consideration in order to define the utilities consumption:
• Average statistical data for the last three years of the INPP power resources consumption and external air temperature.
• Terms of the buildings and structures decommissioning according to the INPP Decommissioning Megaproject.
• Predicted reduction in power resources consumption due to implementation of modifications under the Programme on INPP power resources management.
• Terms of the new facilities commissioning according to the INPP Decommissioning Megaproject.
8. The results of the execution of the concluded contracts.
9. Costs for disposal of very low, low and intermediate level radioactive waste have been taken from technical designs developed under the relevant contracts. The cost of disposal of spent fuel is not included in decommissioning cost estimate.
As for decommissioning cost estimate requirements there is only requirement in nuclear safety regulation BSR-1.5.1-2015 “Decommissioning in nuclear energy facilities” which states that “description and cost estimation of management of waste arising during decommissioning of nuclear energy facility, specifying planned funding sources” should be included in Final decommissioning plan.

45	Country	Article	Ref. in National Report
	Netherlands	Article 22	Art. 22, section F, p. 48

Question/Comment This paragraph states that the funding of deep geological disposal is coming from two sources: both the NDF and state budget provide financial resources. Later it is said that the government is currently developing a financing mechanism for final disposal. Earlier in the report (p. 45), it is said that the waste generator shall pay for the expenses for management and emplacement in the disposal. Could you explain how this financial mechanism ‘de facto‘ works?

Answer According to the Law on Radioactive waste management, the waste producer shall pay all the expenses incurred during the management of radioactive waste from the moment of its generation to its disposal, including the expenses related to scientific research, the upgrading of the radioactive waste management facility, as well as the post-closure surveillance of the repository.

But no funds were accumulated for the decommissioning and radioactive waste management of Ignalina NPP during its operation in the Soviet era, and only after the regaining of independence since 1995 such funds were started to be accumulated in the National Ignalina NPP Decommissioning Fund (the National Fund). Therefore, the amount accumulated in the National Fund is insufficient. The National Fund is accumulated in the special Treasury Account and contains funds that have been transferred by Ignalina NPP as part of its revenue earned from electricity sales. Since Unit 2 of Ignalina NPP was shut-down on 31 December 2009, payments to the National Fund ceased.

Lithuanian government taking in to account that National Fund is insufficient to cover Ignalina NPP decommissioning and radioactive waste management costs decided to co-finance Ignalina NPP decommissioning and radioactive waste management activities from the Lithuanian State Budget funds. State Budget allocations are planned on an annual basis as per the budgetary planning procedures.

In order to raise funds that are sufficient for future financing of a deep geological disposal project, the government is currently developing a funding mechanism for allocating funds from the State budget. This funding mechanism should allow to finance activities related to the development of the deep geological disposal and to raise funds for the construction of the deep geological disposal.

As regards waste (not related to Ignalina NPP) transferred to the Radioactive waste management agency (RATA), it is the responsibility of RATA to accumulate funds collected from waste producers so that they are available when demanded. The funds are transferred by waste producers to RATA along with the waste. Institutional waste producers pay for their waste collection, transportation, treatment, and storage and disposal services. This fund is not used for the deep geological disposal project.

46	Country Bulgaria	Article Article 23	Ref. in National Report p.50

Question/ Comment The application of the IMS requirements is graded so as to deploy appropriate resources, on the basis of the consideration of the significance and complexity of each product or process, the hazards and the magnitude of the potential impact associated with the safety, health, environmental, security, quality and economic elements of each product or process and the possible consequences if a product fails or a process is carried out incorrectly.

Is there an approved procedure/methodology in the Integrated Management System (IMS), which to give clear guidance how the relative importance of the product and/or activity in a specific process is defined and how the significance and complexity of a specific process are defined, using quantitative indicators? Who is involved in the grading process and what are the responsibilities and communications while applying the principal of graded approach?

Answer Graded approach is applied at the INPP in accordance with the requirements for management systems (BSR-1.4.1-2016 “Management system”) imposed by VATESI. IAEA requirements and recommendations, set forth in documents GSR Part 2 „Leadership and Management for Safety” and IAEA-TECDOC-1740 „Use of a Graded Approach in the Application of the Management System Requirements for Facilities and

Activities” are also considered while applying the principle.

At the INPP purchased products (goods, works, services) are subject to safety class classification (1, 2, 3 and 4 classes of safety) in accordance with the requirements of the BSR-2.1.2-2010 “Basic Safety Requirements for Nuclear Power Plants with RBMK-1500 Reactors” imposed by VATESI.

Managers of divisions, processes and projects apply the graded approach to their activity within the frames of their responsibilities and authorities.

General principles for application of the graded approach are established in the INPP Management system manual, DVSta-0108-4.

As a part of the IMS, INPP also implemented Enterprise Risk Management (ERM) system, which aims to grade decommissioning projects and activities/processes of the INPP based on their level of risk. ERM system design is based on ISO31000 series Standard and covers most of activities and the major projects. The level of risk is estimated taking into consideration the financial, time and quality/safety impact.

47	Country Belarus	Article Article 24	Ref. in National Report Section F, p. 52

Question/Comment: The report states: "Dose constraint for members of the public due to normal operation and decommissioning of nuclear facility (including radioactive waste storage and disposal facilities, spent nuclear fuel storage facilities) of 0.2 mSv/year is set in the Lithuanian Hygiene Standard HN 73:2001 and BSR-1.9.1-2011..."
Could you, please, clarify
1) If the Lithuanian Hygiene Standards establish dose constraint for members of the public, associated with waste disposal facility after its closure;
2) Do the Lithuanian Hygiene Standards include provisions on establishing dose constraints for controlling occupational exposure, as it is required in paragraph 1.22 of the IAEA General Safety Requirements No GSR Part 3?

Answer: 1) Specific dose constraints for disposal facilities are established in nuclear safety requirements BSR-3.2.2-2016 “Radioactive waste Repository”. The disposal facility shall be designed so that during the operation the annual dose to the public of this facility remains below 0,2 mSv in case of design basis accident and remains below 5 mSv in case of beyond design basis accident.
For the period after closure of repositories (very low level repository and low and intermediate level waste repository) 0,2 mSv limit was used.
While developing waste acceptance criteria for disposal facility unintentional intrusion scenario shall be considered and radionuclide activity concentration limits shall be so established that the annual dose to the public remains below 10 mSv, except for disposal facilities for very low level radioactive waste – annual dose to the public shall remain below 1 mSv.
2) Yes, the Lithuanian Hygiene Standards require that for optimization of radiation protection, where appropriate, dose constraints shall be applied. Dose constraints for controlling occupational exposure shall be established by the operator for the purposes of optimization of radiation protection and safety.

48	Country Belarus	Article Article 24	Ref. in National Report Section F, p. 53

Question/Comment: It is mentioned that "BSR-1.9.2-2011 "Derivation and Use of Clearance Levels of Radionuclides for Materials and Waste Generated during Activities in the Area of

t	Nuclear Energy" establishes criteria when materials, equipment, installations, buildings and waste, contaminated with radionuclides or containing radionuclides may be used or disposed of without any application of requirements of radiation protection". Could you, please, clarify: 1) If the clearance levels values, established in BSR-1.9.2-2011 are in compliance with Annex 1 of the IAEA General Safety Requirements No GSR Part 3; 2) Whether it is considered to set specific clearance levels, for example for decommissioning waste. If so, what is the approach for derivation of the specific levels and do you have a procedure for approval of the specific levels established?
Answer	1) From 8 February 2018 BSR-1.9.2-2018 “Derivation and Use of Clearance Levels of Radionuclides for Materials and Waste Generated during Activities with Ionising Sources in the Area of Nuclear Energy” superseded BSR-1.9.2-2011. BSR-1.9.2-2018 establish unconditional clearance levels specified in European Council Directive 2013/59/EURATOM of 5 December 2013, laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom. Clearance values specified in 2013/59/EURATOM directive are based on IAEA Safety Standards Series No. RS-G-1.7, Application of the Concepts of Exclusion, Exemption and Clearance. 2) BSR-1.9.2-2018 establish criteria for derivation of conditional clearance levels for specific use of materials or waste and procedure of their establishment. Licence holder has possibility to derive conditional clearance levels and with their justification to submit them to VATESI for their approval. Currently, there are no approved conditional clearance levels, nor plans for their derivation.

49	Country Belarus	Article Article 24	Ref. in National Report Section F, p. 55

Question/ Comment	The report states that even in case of an accident during the INPP decommissioning subsequent radiation contamination will not pose a threat to health of the population and to environment. What is this statement based upon (confirmed by)?
Answer	The statement is based on the assumptions that the spent nuclear fuel is unloaded from reactor core of Unit 1 and Unit 2 (2018-02-25 data) and the decommissioning activities at INPP are being performed with very-low and low contaminated equipment. Thus, decommissioning activities with very-low and low contaminated equipment are not liable to result in a radioactive contamination, significant from the point of view of health, of the water, soil or air of Lithuania as well as neighbouring countries. All possible incidents at the stage of implementation of the decommissioning activities in terms of impact on the personnel, public and the environment are evaluated in the EIAR and SAR of the specific decommissioning project. The results of the assessment demonstrates that the magnitude of the possible impact on safety during implementation of these projects, even in case of an accident, is well below national and international standards for radiation protection. This is also proven by the Ignalina NPP safety analysis report and potential beyond design basis accident guide which showed that the worse accident may occur in spent nuclear fuel pools of Ignalina NPP and are not postulated by the decommissioning activities. Even in case of this beyond design basis accident conservative calculations

showed that in case of the worst-case scenario accident, maximum annual effective dose for population may reach 1,2 mSv and is significantly lower value than operational criteria (100 mSv) for triggering protective actions set in Lithuanian hygiene norm HN 99:2011 „Protective Actions of General Public in Case of Radiological or Nuclear Accident“ which corresponds to IAEA General Safety Requirements No. GSR Part 7 and implements IAEA General Safety Guide No. GSG-2 “Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency”. Therefore, there will be no radioactive contamination, significant from the point of view of health, of the water, soil or air of Lithuania as well as neighbouring countries and requiring implementation of urgent protective actions or early protection actions in neighbouring countries.

50	Country Japan	Article Article 24.1	Ref. in National Report 53

Question/ Comment	Please provide more information regarding what kind of wastes/materials can be cleared in Lithuania. For example plastics, cables, complex parts (e.g. switchboard), asbestos and soils, are they able to clearance as well as metals and concrete rabbles?
Answer	All kind of wastes/materials can be cleared in Lithuania as long as it passes free release procedures and meets clearance criteria.

51	Country Belarus	Article Article 25	Ref. in National Report Section F, p. 57

Question/ Comment	According to the report: «The Plan identifies at state level the measures of civil protection to be taken, while organizing and implementing protective actions, which seek to protect and (or) minimize the risk of deterministic and stochastic effects of ionizing radiation, to protect the property of residents as well as environment from radioactive contamination due to nuclear accident in nuclear power facility (irrespective of whether it is in the Republic of Lithuania or beyond its boundaries) and (or) radiation accident (in nuclear power facility of threat category I and III), when transboundary release of radioactive materials is likely beyond the boundaries of sanitary protection zone under the threat of State level emergency or in case of State level emergency». According to the given information, the Lithuanian party assumed the obligation to take measures on the protection of residents, including residents beyond the boundary of Lithuania in case of a radiation accident with transboundary release of radioactive material. With the purpose of the efficiency improvement of the cooperation on this issue, the Belarusian party asks for more detailed information (perhaps, a corresponding extract from the Plan with a list of probable transboundary emergency situations with account of anticipated circumstances in the area of the emergency situation, their forecast and liquidation procedure, the forces employed) to be send to Belarusian side.
Answer	While the nuclear spent nuclear fuel is still in spent nuclear fuel pools, Ignalina NPP is considered as facility of emergency preparedness category I referring to IAEA General Safety Requirements No. GSR Part 7. According to Ignalina NPP safety analysis report and potential beyond design basis accident guide, the worst-case scenario accident may occur in spent nuclear fuel pools of Ignalina NPP. Conservative calculations showed that in case of accident in nuclear spent fuel pools, maximum annual effective dose from terrain, transport and contamination of skin, for population may reach 1,2 mSv and is significantly lower value than operational criteria (100 mSv) for triggering protective actions set in Lithuanian hygiene norm HN 99:2011 „Protective Actions of General Public in Case of Radiological or Nuclear Accident“ which corresponds to IAEA General Safety Requirements No. GSR Part 7 and implements IAEA General Safety Guide No.

GSG-2 “Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency”. Maximum dose rate outside sanitary protection zone of Ignalina NPP will not reach more than 0,1 μSv/h.
Therefore there will be no transboundary release requiring implementation of urgent protective actions or early protection actions in Lithuania or neighbouring countries.
Detailed information about the nuclear facilities situated in territory of Lithuania within 100 km radius from border of Republic of Belarus and accidents which may occur these facilities was sent to Ministry for Emergency Situations of the Republic of Belarus with VATESI 2017-09-13 letter No. (8.4-43)22.1-693. Replying to the 2017-12-18 letter of Ministry for Emergency Situations of the Republic of Belarus No. 1/07-10/3961 to present more detailed information about these facilities, reply with detailed information about mentioned facilities was sent in April, 2018.
As it was mentioned in the National Report, the State Plan of Public Protection in Case of Nuclear Accident (hereinafter referred to as – Plan) is now under revision and should be implemented in 2018. This Plan sets out implementation of protective actions and other requirements for the nuclear facility of threat category I and III. The revised Plan sets out implementation of protective actions and other requirements also for the emergency preparedness category V referring to IAEA General Safety Requirements No. GSR Part 7. This emergency preparedness category V assumes the transboundary release from the sources which are not in affected country (Lithuania in this case) and Plan identifies at state level the measures of civil protection to be taken, while organizing and implementing protective actions, which seek to protect and (or) minimize the risk of deterministic and stochastic effects of ionizing radiation, to protect the property of residents as well as environment from radioactive contamination due to nuclear or radiological accident in nuclear facility in other country.

52	Country Morocco	Article Article 28	Ref. in National Report section J, p97
Question/ Comment	The figure Figure J-1: Sealed radioactive sources, which were in use in Lithuania in period of 2014-2016 (p 97) show a big amount of DSRS and smoke detectors. How these sources are management do you dismantle them or you keep them in their shielding?		
Answer	The sources can be dismantled to reduce volume of radioactive material depending on the design and the degree of activity of the sealed source.		
53	Country United States of America	Article Article 28	Ref. in National Report Section J pg. 96
Question/ Comment	The report states that, in the event disused sources cannot be returned to the manufacturer, they are managed as radioactive waste. Please clarify whether the Lithuanian Government allows other management options, such as reuse or recycling of disused sources.		
Answer	In some cases disused sources can be reused, but only after verification of its safety (in accordance with special procedure) and with agreement of regulatory authority. Recycling of disused sources is not applicable in Lithuania, because there are no such facilities and activities executed in Lithuania.		
54	Country Belarus	Article Article 32	Ref. in National Report Section B. Policies and Practices
Question/ Commen	The national report states that a repository of very low-level waste will be built near the Ignalina Nuclear Power Plant.		

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1. Would you, please, provide more detailed data on the construction plans of the repository, the start of operation and the methods of waste disposal?
2. What are the plans on the management of wastes from the industrial waste landfill of the Ignalina NPP which may contain very low-level waste? In what way the safety of the landfill is ensured? Was the safety of the landfill and its impact on the environment assessed? How much waste does the landfill contain?
3. What are the plans on the construction and start of operation of the planned short-lived low- and middle-level waste repository?

Answer

1. Construction of repository of very low level waste (VLLW) was started in October 2017. It is planned to have first disposal campaign in 2-3 quarter of 2019. VLLW repository at Ignalina NPP is an above surface construction where the waste packaged in half-height ISO containers, pressed bales and FIBC are placed in several levels on reinforced concrete plate. This “hill shaped” construction id covered by some protective layers of about 2 m thick against water, animals and roots penetration.
2. The site for interim storage of the INPP industrial very low level waste was arranged on the INPP site in 1985 pursuant to the regulations valid at that time in the field of nuclear energy. The γ-dose rate of the waste to be loaded into the storage site did not exceed 0.6 μSv/h. Starting from 2014 loading of industrial waste into the storage site was stopped. Within the period of operation of the storage site 29326 m3 of operational solid waste were accumulated. In compliance with the Nuclear Safety Requirements BSR 3.1.2-2017 „Requirements for Pre-Disposal Management of Radioactive Waste at Nuclear Installations“ the accumulated waste are classified as very short-lived very low level waste (Class A, with surface dose rate not exceeding 0.2 mSv/h).

   In order to ensure compliance with the regulatory requirements BSR 3.1.2-2017, the INPP is planning to perform safety assessment of the interim storage site enabling to evaluate the possibility of subsequent storage of accumulated waste in a safe manner to the environment and the population until reaching the free release levels. In case if the safety assessment does not prove the possibility of further safe storage, the INPP will take measures to seek for other solutions in relation to disposal of the accumulated waste into other disposal facilities. The performance of safety assessment requires accumulation of sufficient data for statistical processing of monitoring data. Therefore, currently radiological monitoring of the surface run-off water and groundwater of the interim storage site is performed, as well as dose rate at the level of 1 m from the ground surface is monitored and the respective monitoring maps are compiled. The monitoring data are analysed and accumulated. The issue related to further handling of waste accumulated at the interim industrial waste storage site is included into the INPP Safety Improvement Programme (SIP-3) the implementation whereof is controlled by VATESI. It is planned to perform the safety assessment in 2019.
3. NSR technical design (TDD), Preliminary safety analysis report (PSAR) and other related to TDD studies and documents had being prepared during 2006-2015 period (including site selection procedures etc.).

   During 2015 -2017 approval process by state institution were performed. In April 2017 TDD and PSAR were approved by all state institution including Regulatory body. In May 2017 permission for construction of NSR were provided to INPP. In November 2017 license for construction and operation of NSR were provided by Regulatory body to INPP.

Starting from May 2017 preparation for procurement of NSR construction and related services started. It is planed that tenders for construction of NSR will be available in 2018. Contracts (Construction of some infrastructure will be implemented by separate contracts) for construction it are expected in 2019.
Construction of NSR is scheduled from 2019 until 2022-2023.
From 2023 until 2038 NSR will be in operation before NSR closing.
Institution control including monitoring will be conducted during 100 year until 2138.
Then 200 year restriction of territory usage will be applied.
After 2338 territory of NSR can be used without limitation.

55	Country Belarus	Article Article 32	Ref. in National Report Section B, p. 9

Question/ Comment	The report states: The second task is to select the location for the geological repository. It will be a combination of successive stages ("step by step"). Selection of suitable geological formations and investigation of the repository environment will be included in the site selection program. The main repository site selection stage are: site selection process planning (2016-2017), detailed research to choose a few regions of interest (2019-2022), detailed characterization (2022-2030) and site approval phase (2030-2033). What new waste disposal sites (primary and alternative) are currently explored?
Answer	The deep geological repository site selection process is still in the planning stage. There are no waste disposal sites under exploration yet**.**

56	Country Belarus	Article Article 32	Ref. in National Report Section B, p. 10

Question/ Comment	The report states: According to Article 3 of Law on Radioactive Waste Management “radioactive waste generated in the territory of Republic of Lithuania shall be disposed of in disposal facilities in the territory of Republic of Lithuania or transported for disposal to other country, except cases indicated in Article 24 (cases related to management of spent sealed sources)”. Could you please, clarify, in what cases radioactive waste generated in the territory of Republic of Lithuania could be transported for disposal in other countries?
Answer	According to provisions of Law on Radioactive Waste Management: Article 5. Radioactive waste and/or spent nuclear fuel may be exported only to such countries that have the administrative and technical capabilities to receive it, as well as adequate regulatory and supervision institutions, also other structures required for radioactive waste and/or spent nuclear fuel management in accordance with the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Article 6. It shall be prohibited to export radioactive waste from the territory of the Republic of Lithuania with an intent of disposal at disposal sites lying south of 60 degrees latitude South.

57	Country Belarus	Article Article 32	Ref. in National Report Section B. Policies and Practices

Question/ Comment	It is stated in Section B of the report that solidified liquid nuclear wastes are classified as short-lived. Was the content of long-lived beta-emitting radionuclides in solidified liquid nuclear

wastes (corresponding Table L-21) taken into account while the mentioned classification?

Answer

Solidified waste shall go to near surface disposal facility (short-lived waste go these facilities) and each disposal facility shall have waste acceptance criteria. If the waste will not comply with the waste acceptance criteria of near surface facilities (e.g. long-lived beta-emitting radionuclides exceeds the level for such radionuclides determined in waste acceptance criteria) it shall reclassified and will go to another kind of repository e.g. deep geological repository. During final characterisation of the waste, the activities of all radionuclides (also long-lived beta-emitting) in the waste package are determined and comparison if the final waste package complies with waste acceptance criteria of the disposal facility is done.

58	Country Belarus	Article Article 32	Ref. in National Report Section D, p. 17-32

Question/ Comment

The report contains a list of licenses and permissions which are to be acquired according to the national legislature in order to undertake activities on project development, operation and decommissioning of nuclear facilities.
When and under what conditions were the licenses on the use of the temporary dry spent nuclear fuel storage (SNFSF-1) and the new storage of a dry type (SNFSF-2) issued?

Answer

Operation license for SNFSF-1was issued in 2000 and renewed without time limit in 2004 . The latest revision of operation license for SNFSF-1, taking into account the new legislation, issued in 2012. Spent nuclear fuel with enrichment of 2 % and tight is stored in the casks CASTOR RBMK1500 and CONSTOR RBMK1500. Operation license for SNFSF-2 was issued in 2016. All remaining spent nuclear fuel, including untight and damaged, will be stored in new CONSTOR RBMK1500/M2 casks according to approved technical design documentation and SAR.

59	Country Belarus	Article Article 32	Ref. in National Report Section D, p. 17-32

Question/ Comment

In May, 2017, both the storage pools of the energy blocks 1 and 2 were filled with spent nuclear fuel from the reactors. Would you, please, provide the data on the following issues?
1. How much erbium fuel of enhanced enrichment (up to 2.8% of U-235) is kept in the storage pools?
2. Which equipment for water level monitoring in the pools is available at the energy blocks and for controlling nuclear fuel condition to ensure radiation safety of “wet” spent nuclear fuel storages?

Answer

1. 6229 SFAs with erbium and enrichment up to 2,8% of U-235 are stored in the storage pools.
2. Water level monitoring in the storage pools is performed automatically according to four points (foreseen by NPP design):
- Emergency level increase, when the signal is set to the operator on a control panel of water services;
- Maximum level of normal operation when the valve of the makeup pipeline is closed;
- Minimum level of normal operation when the valve of the makeup pipeline is opened;
- Emergency lowering of the level when the signal is set to the operator on a control panel of water services.

Water level monitoring is also performed with microimpulse detectors having measuring range from 0 to 17.00m. The readings of the detectors are shown on the control panel of water services as well as in the unit control room. This equipment was installed as the result of post-Fukushima safety improvement activity at INPP.
The water temperature and level monitoring, water quality and activity concentration of caesium in the water of the storage pools is performed to ensure safe storage of the nuclear fuel. There are fuel leak tightness monitoring systems whilst defueling from the reactor, cutting operations in the Hot Cell. Visual inspection is made on a fuel inspection facility, in the process of cutting in the Hot Cell and using underwater cameras.
Radiation safety monitoring is performed remotely using automatic monitoring system. The data are indicated on the control panel. Gamma rays dose rate, neutron irradiation and presence of active gases and sprays in the air are monitored.

60	Country Belarus	Article Article 32	Ref. in National Report Section D, p. 17-32

Question/ Comment: The report states that in 2014 the Ministry of Energy approved the updated version of the INPP decommissioning plan
Which essential amendments were introduced to the original decommissioning plan of 2005?

Answer: Final Decommissioning Plan (FDP) was issued in 2005 when Unit 2 was still in operation. It was shutdown at the end of 2009. The vision of decommissioning at that time was not as clear as in 2014 when FDP was revised and new version was issued. FDP has been amended in terms of scope, cost and time. Due to clearer understanding of the scope of decommissioning, the cost and duration have been changed. Moreover, risks and inflation omitted in FDP (2005) were accounted in FDP (2014).
There have been numerous substantial changes in the decommissioning process and hence in the FDP including in the following specific areas:

- Decommissioning process duration – has been extended from 2029 to 2038.
- Total anticipated Cost – increased up to 3377 MEuros including inflation and some provision for risk. The Cost increases due to project delay, scope adjustments, overall process extension, increased labour rates.
- Scope Definition - Scope omissions in FDP (2005) were corrected and major change was related to the Reactor dismantling execution.
- Planning System - Megaproject now transferred and configured in Primavera P6, with analytical benefits. ISDC Costing System also applied for analysis.
- Organisation - Still carries a residual power station shape but in the process of transition to a Decommissioning Delivery Organisation.
- Waste Inventory - 2004 Design Basis Inventory Volumes still the only valid total but new activities on Characterisation and the effects of decontamination will change the distribution of the waste types.

The delay of 9 years is mainly caused by new vision of scope:

- Scope of dismantling of Unit 1 and 2 reactors has been changed, which affected the final decommissioning date. Due to the lack of knowledge and complete absence of prior experience in the world, it was unclear how to dismantle RBMK reactors. In 2014 In-depth Realistic Decommissioning Planning was carried out resulting in a more robust and specific plan of action but unfortunately a longer duration was required to deliver it and the actual sequence of the Reactor dismantling works had to be changed.
- In FDP(2005), it was planned to complete Interim Spent Fuel Storage Facility

construction in 2008 but due to various issues this was revised to 2017 in FDP(2014).

- Re-cultivation of site was omitted in FDP(2005) but considered in FDP(2014).

In 2005, pursuant to FDP(2005) it was planned to complete decommissioning in 2029 for €1.24 bn, whereas FDP(2014) suggests the finish date of 2038 and the planned cost of €2.59 bn, which indeed includes the actual cost of €718,3M for the period of 2000-2013. Budget of €90M for risks and anticipated inflation of €695M give € 3.38 bn in total cost of decommissioning.

61	Country Belarus	Article Article 32	Ref. in National Report Section D

Question/Comment: Which technology does the Lithuanian party plan to use for taking out of commission the RBMK-type graphite-uranium reactors at the Ignalina NPP?
Is there a systematic approach and a developed comprehensive programme on the mentioned sphere?
Was the impact of the use or application of this technology on the environment assessed?
Does Lithuania plan to cooperate with the participants of the GRAPA project (Irradiated GRAphite Processing Approaches)?
Which scientific and technical and economic assessments, international experience in irradiated graphite conservation did Lithuania relied upon while developing the construction plan?

Answer:

1. The systematic approach is used for decommissioning of RBMK-type graphite-uranium reactors at Ignalina NPP.
   Optioneering Report and EIAR for both reactors will be developed at the first stage of the Project. Optioneering Report will contain a detailed description of preferred technologies for dismantling of structures and equipment as well as radioactive waste management of both INPP reactor shafts, including reactor waste storage (further - RWS) – the optimal place to store the graphite and other packages with class E (ILRW-LL) waste till the deep geological repository for long lived radioactive waste will be constructed. Environment Impact Assessment Report (EIAR) for both INPP reactors will be prepared and agreed by authorities.
   After completion of the first stage of the Project at the second stage a set of documents will be developed - Reactor D&D Technological Design, SAR for D&D and RWS, GDS (General Data Set), Design for Construction Works Inside of Reactor Building, Basic Design for RWS Facility, Specifications for Reactor D&D tools procurement and Training and Knowledge Transfer.
   The permission for D&D of RBMK-type graphite-uranium reactors will be issued on the basis of the above mentioned approved documents.
2. Lithuania believes that any form of legal cooperation with the participants of the GRAPA project (Irradiated GRAphite Processing Approaches) will increase a confidence regarding future works when any processing required will be obviously safe. INPP representatives are regular participants of the GRAPA project.

Lithuania relies upon international and national experience regarding to temporary storages of radioactive waste. Prior to the construction of deep geological repository the associated waste acceptance criteria shall be developed. Design lifetime of temporary Reactor Waste Storage shall be not less than 50 years taking into account national program of commissioning in 2066 and closure in 2072 of the deep geological repository for long lived radioactive waste.

62	Country	Article	Ref. in National Report

	Belarus	Article 32	Section D, p. 17-32

Question/Comment

The report contains the data on the atmospheric emission and Lake Drūkšiai radionuclides disposal rates in 2014–2016, as well as the assessment of the annual exposure rate of the critical population group due to atmospheric emissions and liquid effluents to the Lake.

Would you, please, provide the following data?

1. Which radioactively hazardous radionuclides were taken into account in the content of emissions and effluents?
2. How great is their partial contribution to the emission and critical population group exposure?

Answer

According to Nuclear Safety Requirements BSR-1.9.1-2011, in order to keep up to the dose constraint, it was accepted that annual effective dose through each pathway (to air or water) shall not exceed 0.1 mSv per year accordingly.

The content of airborne discharges in 2014-2016 are presented in tables below:

- radionuclide composition in airborne discharges;
- activity of each radionuclide released per year;
- exposure doses for the critical group of population due to these discharges;
- partial contribution of each radionuclide released.

2014:

Isotope	**Exhaust activity, Bq/year**	**Dose, Sv**	**Partial contribution, %**
Co-60	7.31E+06	5.45E-09	5.90E+01
Nb-94	6.71E+02	7.17E-13	7.76E-03
Sr-90	5.22E+06	6.36E-10	6.88E+00
Cs-137	1.20E+07	2.12E-09	2.29E+01
Eu-152	1.03E+05	1.41E-12	1.53E-02
H-3	3.94E+09	7.38E-12	7.98E-02
C-14	2.20E+09	1.02E-09	1.12E+01
Total	**6.16E+09**	**9.24E-09**	**1.00E+02**

2015:

Isotope	Exhaust activity, Bq/year	Dose, Sv	Partial contribution, %
Co-60	2.75E+07	1.79E-08	7.67E+01
Sr-90	3.85E+06	4.83E-10	2.07E+00
Cs-134	9.13E+04	7.58E-12	3.25E-02
Cs-137	1.81E+07	2.72E-09	1.17E+01
Eu-152	7.46E+04	1.02E-12	4.38E-03
Eu-154	5.85E+04	9.52E-11	4.08E-01
H-3	3.11E+09	5.82E-12	2.49E-02
C-14	4.07E+09	2.13E-09	9.15E+00
Total	**7.23E+09**	**2.33E-08**	**1.00E+02**

2016:

Isotope	Exhaust activity, Bq/year	Dose, Sv	Partial contribution, %
Co-60	7.11E+06	1.74E-09	2.04E+01

Sr-90	3.91E+06	3.37E-10	3.97E+00
Nb-94	3.43E+03	3.67E-12	4.32E-02
Cs-137	4.62E+07	5.78E-09	6.80E+01
H-3	3.86E+09	7.14E-12	8.40E-02
C-14	1.25E+09	6.34E-10	7.47E+00
Total	**5.16E+09**	**8.50E-09**	**1.00E+02**

The content of liquid discharges from Ignalina NPP to the lake Drūkšiai and it's contribution to the doses to critical group in period 2014–2016 is presented in the tables below:

- radionuclide composition of the water discharges into Drūkšiai lake
- activity of each radionuclide released per year;
- exposure doses for the critical group of population due to these discharges;
- partial contribution of each radionuclide released.

2014:

Isotope	Exhaust activity, Bq/year	Dose, Sv	Partial contribution, %
Co-60	1.35E+05	1.62E-10	3.94E+00
Cs-137	1.56E+06	3.74E-09	9.10E+01
H-3	5.96E+09	2.09E-10	5.07E+00
Total	5.96E+09	4.12E-09	1.00E+02

2015:

Isotope	Exhaust activity, Bq/year	Dose, Sv	Partial contribution, %
Co-60	1.04E+06	1.25E-09	2.42E+00
Cs-134	1.44E+05	1.07E-09	2.07E+00
Cs-137	2.04E+07	4.89E-08	9.49E+01
H-3	8.18E+09	2.87E-10	5.56E-01
Total	8.21E+09	5.16E-08	1.00E+02

2016:

Isotope	Exhaust activity, Bq/year	Dose, Sv	Partial contribution, %
Co-60	5.06E+05	6.06E-10	6.82E-01
Cs-137	3.59E+07	8.62E-08	9.69E+01
H-3	6.14E+10	2.15E-09	2.42E+00
Total	6.14E+10	8.89E-08	1.00E+02

63	Country Belarus	Article Article 32	Ref. in National Report Section D, p. 17-32

Question/ Comment

The report mentions that it is planned to construct (some buildings are already built or being developed or built) on the premises of the Ignalina NPP the following radiation and nuclear hazardous facilities:
Low-level waste storage;
Short-lived radionuclides waste storage
Low- and middle-level nuclear waste storage;

Temporary (dry) spent nuclear fuel storage;
Nuclear waste processing and disposal plant in case of the INPP decommissioning;
Nuclear waste bituminisation and cementation plant in the process of the INPP decommissioning;
Liquid nuclear waste processing and conditioning plant;
Processing and storage of nuclear waste generated in the process of the INPP decommissioning, etc.
The site area of the INPP is situated at the border with the Republic of Belarus, directly on the bank of Lake Drūkšiai water body.
In this regards, we would like to ask the following.
1. How big is the total area of the INPP site where the abovementioned facilities are situated?
2. Which part of the area is allocated for the mentioned radiation and nuclear hazardous facilities?
3. How great is the radiation holding capacity of each of the radiation and nuclear hazardous facilities situated in the mentioned area?
4. What is the anticipated radiation (anthropogenic) load (per unit area) on the elements of the environment (air, soil, ground, underground and surface waters, artesian aquifers) in the near (50 years) and distant (500 years and more) future?
5. What is the anticipated long-term total anthropogenic load on all the elements of the environment from all the radiation and nuclear hazardous facilities assigned to the stated area of the INPP in the transboundary context?
6. Which environmental objects are regularly monitored?

Answer 1. The total area of the INPP site in accordance with General Site Plane is 480.4757 ha.
2. Areas of the INPP's separated nuclear objects are as follows:
• Dry spent fuel storage facility - 2.3317 ha;
• New interim spent fuel storage facility (B1 project) - 2.305 ha;
• New solid waste treatment and storage facility (B3/4 project) - 4.379 ha;
• Very low level waste disposal facility (Landfill, project B19-2) - 2.9703 ha;
• Near surface disposal facility for low level and intermediate level waste (B25 project) - 29.2257 ha.
• Territory inside of INPP security fence is 82.2369 ha. Within this territory the liquid waste processing and conditioning plants, including bituminisation and cementation facilities, processing of waste generated in the process of dismantling and decontamination, operational waste storage facilities are situated.
3. The radiation holding capacity of each of the above mentioned facilities:
• Dry spent fuel storage facility – 120 casks, cask capacity is 51 fuel assemblies, the total activity is about 8,39E+18 Bq (considering 5 years cooling);
• New interim spent fuel storage facility (B1 project) – 190 casks, cask capacity is 91 fuel assemblies, the total activity is about 1,85E+19 Bq (considering 5 years cooling).
• New Solid waste treatment and storage facility (B3/4 project) - the total activity which could be loaded to the Short Lived Waste storage for temporary storage is about 9.9E+13 Bq; the total activity which could be loaded to the Long Lived Waste storage for interim storage is about 3.05E+16 Bq;
• Very Low Level waste disposal facility (Landfill, B19-2 project) - limits of total activities for each of nuclides of interest are determined. The most important of all nuclides is C-14, which has the total value of activity 6,18E+10 Bq;
• Near surface disposal facility for low level and intermediate level waste (B25 project) - limit of total activity for each of nuclides of interest are determined by the design. The most important of all nuclides is C-14, which has the total value of activity – 8.18E+13

Bq.
• Total activity of bituminized waste, accumulated in the storage (building 158) for α-nuclides 3.37E+9 Bq and for β,γ- nuclides is about 2.48E+14 Bq.
4th and 5th questions:
In accordance with the procedure defined by the requirements of Ministry of Environment documents on environmental protection, during preparation of any of the INPP projects, related either to the construction of a new nuclear power engineering facility or to D&D of the equipment, a comprehensive assessment of environmental impact from all existing nuclear facilities is carried out.
A 500-year delayed assessment of the impact on the components of the environment has not been carried out so far, as the site of the deep disposal of waste has not yet been determined. This issue has yet to be solved by the Republic of Lithuania in the short term.
Analysis of ionizing radiation impact to the environment components, including neighbouring countries, was performed. The documents on the assessment of impact to the environment were submitted to neighbouring countries.
The total annual effective radiation dose for the critical group of Republic of Lithuania population, due to all nuclear facilities, will not exceed dose constraint for population of 0.2 mSv (defined cumulatively from direct impact; by water ways and by air ways).
With the commissioning of new nuclear facilities and the accumulation of monitoring data on the state of the environment, reports on post-project analysis will be developed in accordance with the requirements of the United Nations Convention on EIA. Currently, a post-project analysis program has been developed, which will soon be presented to the countries concerned.
Using the example of construction of the near surface disposal facility for low- and intermediate-level short-lived radioactive waste (project B-25) the following can be stated:
• The site for the disposal facility was selected from 3 pre-qualified and evaluated sites, taking into account the position of the neighbouring countries - Latvia and Belarus, which, in accordance with the requirements of the United Nations Convention on EIA, took part in the discussion of the proposed economic activity.
• Conservatively estimated maximum annual effective dose of radiation will not exceed 0.009 mSv,
• The total impact of all nuclear facilites on the local farmer in the period up to about 2320 will not exceed 0.062 mSv/year.
• Anthropogenic impact of NSR was evaluated for the worst case: living by NSR site, usage of water from the vicinity of NSR. Based on this activity limits of waste acceptance criteria were established. Influences to all other groups will be less.
Within 100 years after the repository is closed, the active institutional supervision will be carried out (ensuring physical safety, maintenance and monitoring of the environment), after that the passive supervision of the disposal facility will be performed for 200 years more.
6. All territory of INPP including disposal and storage facilities are monitored regularly in accordance with the approved Monitoring Programme. Also see response to question No. 64.
According to the Regulations of Environmental Monitoring of Economic Entities the Monitoring shall cover the ionising radiation dose rate and the external absorbed dose and radionuclide measurements in different environmental components. The environmental objects shall be selected taking account of the impact of radionuclides accumulated in them on exposures of members of the critical groups.
Samples of the environmental components shall be taken at or near the radionuclide

discharge (release) points and at the places where the largest discharges are expected (according to the radionuclide dispersion estimates and area specifics) in the zone of possible environmental impact of the nuclear facilities, which is specified in the Monitoring Programme.

Samples to be taken in the case of terrestrial ecosystems:

- air (gases and aerosols);
- precipitation;
- soil;
- forest products (berries and mushrooms) and plants;
- grass;
- underground water (including groundwater);
- indicator organisms and substances (with radionuclide accumulation characteristics).

Samples to be taken in the case of water ecosystems:

- filtered water;
- suspended matter;
- bottom sediments;
- water plants;
- benthic organisms (if any in a water body being effected);
- fish;
- indicator organisms and substances.

The sampling periodicity shall correspond to seasonal changes of the environmental components, and the data obtained shall be sufficient for the assessment of exposure of members of the critical group(s). The sampling periodicity of the environmental components the Monitoring of which is also carried out as part of the state environmental monitoring shall not be less frequent than provided for such components under the State Environmental Monitoring Programme.

64	Country Belarus	Article Article 32	Ref. in National Report Section D, p. 25

Question/ Comment

According to the report: «an institutional control of the storage includes physical protection, environmental monitoring and public information activities»

In what way and how frequently radiation monitoring of air and underground waters in the area of nuclear waste storage take place and public is informed?

Answer

The environmental monitoring should be done in accordance with Law on the Environmental Monitoring. According to this law, environmental monitoring of economic entities shall be conducted in accordance with a programme for environmental monitoring of economic entities, which shall be drafted by the economic entities themselves. The content of programmes for environmental monitoring of economic entities and the procedure for drafting, co-ordinating with state institutions, implementing them, ensuring control and providing information shall be established by the Regulations of Environmental Monitoring of Economic Entities.

The Regulations of Environmental Monitoring of Economic Entities regulate the environmental radiological monitoring (hereinafter – the Monitoring), which must be carried out by the operator who designs, constructs or operates a nuclear facility (hereinafter – NF), decommissions the NF and carries out the supervision of closed repositories of radioactive waste. The requirements shall not apply in the cases of nuclear and radiological accidents at the NF.

Pursuant to the above mentioned requirements, The Monitoring of the NF shall be carried out in accordance with the environmental radiological monitoring programme

(hereinafter – the Monitoring Programme) drawn up by the operator and coordinated with the Environmental Protection Agency covering the monitoring of discharges and the monitoring of the environmental impact.

The Monitoring Programme shall cover all radionuclide dispersion and population exposure pathways to facilitate the assessment of annual activity of radionuclide discharges to the atmosphere and water, short-term changes in radionuclide discharges and effective doses for the members of the critical groups of the population.

The Monitoring Programme shall specify:

- the Monitoring goals and organisation principles;
- the name and address of the laboratory which performs the Monitoring, the number and issue date of the accreditation certificate or authorisation to carry out measurements and tests of discharges from sources of pollution and of pollutants in the components of the environment;
- a brief description of activities of a NF and of its potential environmental impact;
- the principles and substantiation of the selection of observation points;
- the NF site scheme with specified sources of pollution and sampling/observation points;
- the plan of meteorological and hydrological observations in the environmental impact zone of the NF;
- environmental components being analysed, the periodicity of sampling and sample analysis;
- the list of measurement methods and procedures, detection limits, calibration and quality assurance procedures;
- data collection, doze assessment models, the Monitoring results' assessment criteria;
- time limits and form of the submission of data and reports, recipients of data and reports.

The first review of the Monitoring Programme shall be carried out after one year of operation, and afterwards – every five years. The review shall take account of experience of the previous period, the most recent Monitoring methods and means, changes in the NF operation and environmental conditions. Irrespective of periodicity specified in this paragraph, the Monitoring Programme shall be revised in the following cases:

- where, in addition to the already operated NF, the operator envisages starting to operate a new NF (to which the same critical population group/groups may be exposed);
- where, upon change of the NF operations by the operator (e.g., expansion of operations, decommissioning of the NF), new discharged radionuclides, their pathways, media or points of discharge emerge and the plan of radionuclide discharges is changed in accordance with the procedure set out by the Republic of Lithuania Law on Nuclear Safety;
- where, during the Monitoring it is established that radionuclides discharged to the environment are not specified in the plan of radionuclide discharges to the environment drawn up and coordinated in accordance with the procedure set out by the Republic of Lithuania Law on Nuclear Safety (in the case of unplanned release);
- where the Monitoring data show that the critical group members' exposure dose exceeds or is likely to exceed the dose constraint in the future.

According to the Regulations of Environmental Monitoring of Economic Entities the composition and activity of radionuclide discharges to the atmosphere (except for 3H, 14C) shall be measured at least once a month, activity of H-3 discharged to the atmosphere in physical and chemical forms shall be measured at least once a quarter.

The radioisotope composition of radionuclide discharges to water and radionuclide

activity (including H-3, but excluding C-14) shall be measured at least once a month. Where water is accumulated for a longer period, before releasing it from the NF to the environment samples shall be taken and the radioisotope composition and radionuclide activity shall be assessed.

On site radiation level monitoring at Maišiagala storage facility is performed 24 hours per day. Monitoring of the level of Radon gas in the soil air above the vault is also performed 24 hours per day.

The ground water samples are collected and checked twice per month. Once per month ground water samples are checked for presence of tritium.

Once per year α and β radiation level in underground water is measured, as well as soil samples are examined for the presence of tritium.

Reports concerning radiological situation on the site are presented to VATESI and to the public at RATA's internet site (http://rata.lt/maisiagalos-radioaktyviuju-atlieku-saugykla/aplinkos-monitoringo-ataskaitos/) every 3 months.

65	Country Belarus	Article Article 32	Ref. in National Report Section D

Question/Comment: The report mentions that the automatic fire-extinguishing systems at facilities 157 and 157/1 were switched to the manual mode.
1. Is such a decision acceptable?
2. Does it meet the established requirements?
3. How is the required safety level maintained?

Answer: A fire in building 157 and 157/1 will be detected by fire detection system, which gives a signal to the central control room and to the Visaginas fire brigade. Waste retrieval operations will be performed remotely, and it will be supervised by video cameras, which will help to notice immediately any emergency situation (e.g. smoke, fire). The fire or smoke must be visually confirmed before extinguishing is aloud. The Visaginas fire brigade performs the fire fighting. In clothed (conserved) compartments the fire, due to lack of oxygen and turbulence will smolder and not burn with open flame, which gives extended time to switch to the manual mode fire-extinguishing systems and extinguish before a large release of radioactive material. If the compartment is open for the retrieval of waste the personal and fire brigade can be alarmed immediately and extinguish fire. The personnel are appropriately trained according to the new arrangement to switch on fire-extinguishing system at facilities 157 and 157/1 in manual mode.
Such a decision acceptable established in Safety Analysis Report for existing INPP buildings and meets the all requirements.

66	Country Belarus	Article Article 32	Ref. in National Report Section D

Question/Comment: The report states that the research on the possibility of conversion of the extinguishing bitumunised waste storage (facility 158) into an ultimate disposal repository must be conducted until 2022.
Taking into account that:
- each cell of the storage may contain 2000 m3 of waste;
- the storage already contains 14,417 m3 (Table L-21);
- the waste poses high fire hazard;
- the contemporary criteria of nuclear waste acceptability for disposal,

the conversion of this facility into a repository is viewed as improbable. Are there steps taken as far as analysis and development of an alternative plan for accumulated bituminised waste management are concerned?

Answer: At present, the tender on performance of additional investigations (geological, hydro

geological and and expertise of storage structures) and environmental impact assessment of conversion of the existing bituminised waste storage into a disposal facility is ongoing. Decision on conversion possibility will be made based on results of the above mentioned works. In case of negative results, investigations on alternative ways of bituminized waste storage decommissioning (further operation as storage with following retrieval, treatment and disposal of waste) will be initiated.

67	Country Belarus	Article Article 32	Ref. in National Report Section D

Question/ Comment: The report mentions that an incineration installation of a solid radioactive waste processing complex (B3) is used for combustible low- and middle-level waste
Does it mean that very low-level waste will not be burnt, but disposed of directly?

Answer: Currently it is foreseen to dispose very low-level waste directly to Landfill facility (B19-2 project, is under construction) using dedicated flexible packages.
The possibility to incinerate very low-level waste is currently under consideration by INPP and could be implemented after start of industrial operation of complex B3 (scheduled for the November 2018). The concept could be implemented after thorough consideration and obtaining the approval from national regulatory body.

68	Country Belarus	Article Article 32	Ref. in National Report Section D

Question/ Comment: The report does not provide information on handling high-level radioactive waste (regulatory authorities of the control and security system, in-core control sensors).
Could you, please, provide clarify this issue?

Answer: This type of radioactive wastes will be transported to B3 facility and loaded to the dedicated Long Lived waste storage container for interim storage in B4 facility before final disposal.

69	Country Belarus	Article Article 32	Ref. in National Report Section B, p. 12-14

Question/ Comment: From this part of the report, it could be realized that there are two waste classification schemes currently used in Lithuania. The categorization, adopted in 2001 and planned to be used for all new facilities is based on surface dose rate (mSv/h) as the main categorization criteria, though concentration of long-lived radionuclides and other characteristics of waste should be also taken into account.
In this regards,
1. Could you explain, please, if the classification, based on the surface dose rate, is applied only to untreated waste for the purpose of its pre-sorting? If so, what is further procedure to test the compliance of the “surface dose rate” criteria with the radionuclide concentration criteria; which is more significant for further waste management decisions?
2. Which classification is use for waste that is received at the B-19 site?
3. The classification scheme has been developed for the purposes of operational waste management and is not completely consistent with the generic classification recommended in the IAEA Safety Guide No GSG-1 for adoption at national level.
The IAEA classification should be used “to facilitate the development in the national waste management policies and strategies and overcome difficulties in communication and information exchange within and among the countries”.
Does Lithuania have an intention to implement the IAEA classification scheme in future as a tool for facilitating communication on radioactive waste safety at the national and international levels?

Answer: 1. In the old classification system the dose rate was used not only for pre-sorting of

untreated waste, it was used for further steps of management of waste excluding disposal - the old system didn't include this final step of waste management.
In new classification system dose rate is used for all steps of waste processing (pre-treatment, treatment, conditioning) before final characterisation of the final waste package. During final characterisation, the activities of all radionuclides in the waste package are determined and comparison if the final waste package complies with waste acceptance criteria of the disposal facility is done.
2. For waste dedicated for B19-1 (storage facility) and B19-2 (disposal facility), the new classification system is used. It is class A waste.
3. For better understanding, please find the table with comparison of Lithuanian waste classification with IAEA GSG-1 classification.
There is no intention to change Lithuanian classification, at the moment.

Waste Class	Definition	IAEA GSG-1 classification	Surface dose rate	Conditioning	Selected main method for disposal according IAEA	Management method according the national requirements
0	Free release			Not required	As non radioactive waste	As non radioactive waste
Short-lived low and intermediate level waste [1]						
A	Very low level waste (VLLW)	**VLLW**	<0,2mSv/h	Not required	Very low level waste repository (Landfill Facility)	Very low level waste repository (Landfill Facility)
B	Low level waste (LLW-SL)	**LLW**	0,2–2 mSv/h	Required	Near surface repository	Near surface repository
C	Intermediate level waste (ILW-SL)	**LLW**	>2 mSv/h	Required	Near surface repository	Near surface repository
Long-lived low and intermediate level waste [2]						
D	Low level waste (LLWLL)	**ILW**	<10 mSv/h	Required	Deep geological repository	Near surface repository (cavities at intermediate depth)
E	Intermediate level waste (ILW-LL)	**ILW**	>10 mSv/h	Required	Deep geological repository	Deep geological repository

Spent sealed sources						
F	SSS		-	Required	Deep geological repository	Near surface or deep geological repository [3]
Spent nuclear fuel	Spent nuclear fuel	**HLW**	-	Required	Deep geological repository	Deep geological repository

[1] Containing long-lived alpha emmiters the specific activity of which, measured and/or calculated by using approved methods, does not exceed 4000 Bq/g in an individual waste package on the condition that the average specific activity of long-lived alpha emmiters estimated for all waste packages does not exceed 400 Bq/g. The activity of long-lived beta and (or) gamma emmiters shall not exceed the waste acceptance criteria values set for the repository.

[2] Containing long-lived alpha emmiters the specific activity of which, measured and (or) calculated by using approved methods, exceeds 4000 Bq/g in an individual waste package, as well if the average specific activity of long-lived alpha emmiters estimated for all waste packages exceeds 400 Bq/g.

[3] Depending on acceptance criteria applied to spent sealed sources.

70	Country Belarus	Article Article 32	Ref. in National Report Section B

Question/Comment

It is stated in the report that the post-operational control period for the planned repository of short-lived low- and middle-level waste will be 300 years.
Could you, please, clarify the following:
1. What are the maximum permissible values of the basic short- and long-lived radionuclides in radioactive waste that will be taken for disposal?
2. On what grounds are they justified?
3. Do they comply with the maximum values of specific activity for long-lived alpha-emitting radionuclides of 4000 Bq/g in individual radioactive waste packages with an average storage capacity of 400 Bq/g which are set in the classification?
4. What are the amount and design features of the short-lived low- and medium-level waste of reinforced concrete containers planned for use at the burial site? How many 200-liter barrels can they contain?

Answer

1. Evaluation of maximum allowable limits of each radionuclide was done based on radioactive waste inventory of INPP. Based on these result waste acceptance criteria (WAC) were established.
2. Justification of limits were done by using three different ways of radiation impact: 1. Direct impact; 2. By water ways; 3. By air ways. By using these evaluation minimum values of each radionuclide was selected as maximum acceptable.
3. Yes, they do. They comply with the maximum values of specific activity for long-lived alpha-emitting radionuclides of 4000 Bq/g in individual radioactive waste packages with an average storage capacity of 400 Bq/g.
4. Design volume of NSR 100.000 m3 of waste packages. It is planned about 43000 barrels in containers (total volume of containers with LRW about 31000m3) with cemented liquid radioactive wastes and about 5000-8000 of KTZ-3.6 containers with solid RAW (6.5 m3 each).

71	Country Belarus	Article Article 32	Ref. in National Report Section B

Question/Comment

Taking into account the intentions of the Lithuanian side to decommission the Maišiagala repository and dispose of the extracted radioactive waste at the Ignalina NPP site, and taking into account that a similar problem related to the safety of waste stored in old storage facilities is being solved in Belarus, could you, please, provide the following information.

1. Was the impact on the environment during the extraction and transfer of hazardous and radioactive waste been assessed?
2. Was there conducted a comprehensive engineering radiological examination of the Maišiagala repository? If so, what are its main results, what is the state of the engineering barriers?
3. Is there full information on the inventory (including amount, radionuclide composition, activity) of the radioactive waste intended for transfer?
4. Which technologies and equipment are planned for waste extraction?
5. What is the cost of extracting and packaging of waste for transport to the INPP?
6. Are all the types of radioactive waste which are presently stored in the Maišiagala repository planned to be buried in the territory of the INPP?
7. What are the plans for further disposal of radioactive waste which do not meet the acceptance criteria for radioactive waste repository at the INPP?
8. Does the radioactive waste repository project at the Ignalina NPP include placing additional amounts of radioactive waste from the Maišiagala repository? Were additional evaluations been carried out to justify its safety, taking into account the plans on the placement of these radioactive wastes?

Answer

1. The impact on the environment during the extraction and transfer of hazardous and radioactive waste was assessed in the Environmental Impact Assessment Report for the Decommissioning of the Maišiagala Radioactive Waste Storage Facility which was issued in October 2017 (http://rata.lt/wp-content/uploads/2017/10/S14-1670.16.18-PAVA01.pdf)
2. The last comprehensive engineering and radiological examination of the Maišiagala repository was conducted 2005 during it‘s reconstruction. The scope and the goal of the reconstruction design was calculated to protect the vault for 25 years or more. The protection consists of the combination of natural and engineered barriers. As the repository is closed and not in use now, there is no possibility to examine the structures without removing protective layers.
3. Information on the inventory at Maišiagala Radioactive Waste Storage Facility is available and is based on the Registry Entries (Registration Logs) for the radioactive waste accepted to the Storage during it’s operation between 1963 and 1989.
4. Technologies and equipment for the Maišiagala Radioactive Waste Storage Facility decommissioning project will be chosen and described in the technical design documentation (in preparation).
5. European Union Structural Fund financing for Maišiagala repository decommissioning project is 4 000 000 eur. This includes the compilation of necessary documents, decommissioning licensing, removal of radioactive waste from the storage facility, transportation to Ignalina NPP and return of the Maišiagala site for public use after decontamination and radiological surveillance.
6. All types of radioactive waste which are now stored in the Maišiagala Radioactive Waste Storage Facility will be processed and stored at INPP storage facilities until final disposal.
7. Please refer to answer 6.

8. During the decommissioning of the Maišiagala Radioactive Waste storage Facility approximately 300 m³ of radioactive waste will be generated which makes up 0.23% of the radioactive waste generated during decommissioning of Ignalina NPP. Ignalina NPP is fully capable of receiving and managing such amounts radioactive waste. All types of radioactive waste from Maišiagala repository will be processed and stored in Ignalina NPP storage facilities until final disposal.

72	Country Bulgaria	Article Article 32	Ref. in National Report Annex 1, p. 102

Question/ Comment: The task of irradiated graphite (i.e., graphite sleeves, rods and stack's bricks to be retrieved from the core during zones R1/R2/R3 dismantling) management before its final disposal was transferred to the scope of the project 2103.
Do you have any experience in irradiated graphite characterization with a view to its final disposal – structure, activity, leaching products speciation, studies in order to determine the mobility of radiocarbon in the repository environment?

Answer: Lithuania has an experience in irradiated graphite characterization from 2011. This radiological characterization includes not only theoretical consideration, but also real samples from reactor core of Unit 1. Radiological surveys of graphite stack was started in 2011 from programme preparation and development of needed tools. In 2012 about 40 specimens of graphite bushings and samples from graphite columns of 4 CPS channels were taken for gamma-emitters measurements. In 2013 the radiological surveys were continued and about 150 specimens - samples from graphite columns of 14 Fuel channels were taken for gamma-emitters measurements. In 2015 the preliminary evaluation of the induced activity for Unit 1 graphite was completed with in-situ verification of 3D model calculation.
In 2018-2019 the INPP will perform comparative sampling and measurements at Unit 2.
In additional, structural analysis (expertise) of upper reactor structure "E" for direct access was completed in October 2016. Mock-up testing of semi-remote tubes, walls and floors cutting equipment (under gamma-exposure up to 800 mSv/h) is ongoing.

73	Country Canada	Article Article 32	Ref. in National Report page 13-14

Question/ Comment: Please clarify if there is a waste class for very low level waste that may have some concentrations of longer lived radionuclides.

Answer: In Lithuanian radioactive waste classification, very low level waste is short lived waste and may have long lived radionuclides. There is no separate class for very low waste containing long lived radionuclides.
Definition of short lived waste: waste containing long-lived alpha emmiters the specific activity of which, measured and/or calculated by using approved methods, does not exceed 4000 Bq/g in an individual waste package on the condition that the average specific activity of long-lived alpha emmiters estimated for all waste packages does not exceed 400 Bq/g. The activity of long-lived beta and (or) gamma emmiters shall not exceed the waste acceptance criteria values set for the repository.

74	Country France	Article Article 32	Ref. in National Report Section D - pages 24-25

Question/ Comment: The IVth report from Lithuania indicated that a new project of NPP was planned in the vicinity of Visaginas (Visaginas NPP project). The present report no longer mentions this project.

	Could Lithuania clarify whether it still has a willingness to continue producing nuclear energy and if not, what consequences could have this change of policy on public funding for radioactive waste management?
Answer	Currently is ongoing procedure of renewal of the National Energy Strategy of Lithuania, however in the Strategy draft the continuation of production of nuclear energy is not foreseen. Ignalina NPP is the main source of the radioactive waste in Lithuania, producing more than 99% of total radioactive waste. Waste from the Ignalina NPP comes from the previous operation and now it comes from the decommissioning activities. Further nuclear energy production wouldn't have a significant effect on the public funds needed to manage the spent nuclear fuel and radioactive waste from the Ignalina NPP. New nuclear power plant would have different owner and different legal status than Ignalina NPP, and funds collected for the management of its spent nuclear fuel and radioactive waste, wouldn't be possible to use for the management of Ignalina NPP spent nuclear fuel and radioactive waste.

75	Country Germany	Article Article 32	Ref. in National Report p. 14

Question/ Comment	In the National Report it is stated that the new classification of radioactive waste shall be fully adopted after the modernisation of the radioactive waste management system at INPP and will be in operation at the new waste management facility. Could Lithuania please provide information on when the modernised radioactive waste management system will be available?
Answer	The modernised radioactive waste management system will be completed after full commissioning and start of industrial operation of new Solid Waste Retrieval Facilities and Solid Waste Treatment and Storage Facilities (project B234) which is scheduled to start by November 2018.

76	Country Ghana	Article Article 32	Ref. in National Report B, 8

Question/ Comment	Kindly provide an update on the progress made on establishing a near-surface repository to be operational from 2021-2038? What informed the choice of a 100 years active institutional control and 200 years passive control? what will be the form of active institutional control which is expected to last for 100 years and that of the passive control afterwards?
Answer	NSR technical design (TDD), Preliminary safety analysis report (PSAR) and other related to TDD studies and documents had being prepared during 2006-2015 period (including site selection procedures etc.). During 2015 -2017 approval process by state institution were performed. In April 2017 TDD and PSAR were approved by all state institution including Regulatory Body. In May 2017 permission for construction of NSR were provided to INPP. In November 2017 license for construction and operation of NSR were provided by Regulatory Body to INPP. Starting from May 2017 preparation for procurement of NSR construction and related services started. It is planed that tenders for construction of NSR will be available in 2018. Contracts (Construction of some infrastructure will be implemented by separate contracts) for construction it are expected in 2019. Construction of NSR is scheduled from 2019 until 2022-2023. From 2023 until 2038 NSR will be in operation before NSR closing. Institution control including monitoring will be conducted during 100 year until 2138.

Then 200 year restriction of territory usage will be applied.
After 2338 territory of NSR can be used without limitation.
During the active institution control NSR engineering barriers will be monitored against possible intrusion using strict safeguard measures. Also ground water will be monitored using boreholes samplings.
After 100 year period it will be restricted to use territory of NSR for 200 years period.
Above time periods are related to the nuclides migration scenarios evaluated in PSAR and it was demonstrated that such time periods ensure that in case of engineering barriers degradation after 100 year and in case of intrusion after 300 year all exposes to population and environment remain below limits set up in regulatory requirements.

77	Country Ghana	Article Article 32	Ref. in National Report B, 9 (geological repository)

Question/ Comment: What schedule is in place to ensure reliability of data storage?
and What is the current status of the site selection process?

Answer: The current Radioactive Waste Management Development Programme (2015) addresses the relevant data storage in the following manner:
"Data on Spent Nuclear Fuel is stored both in a separate database and as a hard copy. The data will be maintained for as long as the SNF is stored in interim storages, and not less than 5 years after the storage period expires and the SNF is transported to the repository or for re-processing. The maintenance and copying of the computer database is subject to relevant data security procedures." Strategy for data storage reliability for DGR will be developed at later stages.
The site selection process is currently still in the planning stage. Currently site selection criteria are being elaborated.

78	Country Korea, Republic of	Article Article 32	Ref. in National Report B

Question/ Comment: Per Section B, the construction of new dry storage for spent from INPP was completed in 2017 and Short-lived low- and intermediate-level radioactive waste repository will be in operation from 2021. What are the activities of RATA or INPP to promote the public acceptance on spent fuel or radioactive waste management facilities?

Answer:
1. INPP organizes excursions to public and official delegations in INPP Information Center and INPP controlled area in order to provide the most accurate information about INPP history, environment protection, process of decommissioning, spent fuel and radioactive waste management and main projects being implemented at the plant;
2. Publishing of the press releases related to the INPP activities;
3. INPP provides answers to the queries of stakeholders and journalists in verbal or written form;
4. Information on website (https://www.iae.lt) about INPP activities, spent fuel and radioactive waste management, financing, decommissioning project implementation, etc. is updated on a regular basis;
5. The brochure "Spent Nuclear Fuel Management and Storage at Ignalina Nuclear Power Plant" (in Lithuanian and English) was prepared and is spread for visitors and guests;
6. The short clip about B1 (Interim Spent Fuel Storage Facility) was prepared;
7. Information on INPP activities and progress published constantly on INPP's Facebook page;

RATA's public information and communication activities about SNF and radioactive waste management facilities include organising meetings and events for students, making educational presentations, demonstrating visual material such as models of the facilities,

issuing and distributing newsletters to stakeholders, publishing information on Facebook, other social media and RATA website.

79	Country Morocco	Article Article 32	Ref. in National Report Section B – Policies and practice, P6

Question/ Comment: As it is mentioned in" section b. policies and practices P 7" Lithuania has approved a comprehensive programme dealing with Radioactive Waste Management. But in order to be implemented, this programme should be emerged from also a comprehensive policy where the government expresses the commitment (policy statement) of the country to achieve its objectives.
Could you comment on that issue

Answer: Following provisions of the Government resolution No. 86 On Approval of the regulations of the Ministry of Energy of the Republic of Lithuania (2009, amended 2013), Ministry of Energy is responsible for the determining of the policy in the radioactive waste management and has the right for the legislative initiative in this area.
According to the Article 4 of the Law on Radioactive Waste Management Government of the Republic of Lithuania adopts the radioactive waste management program for the 7 year period. Regarding Article 5 (1) of this Law draft of the radioactive waste management program should be prepared by radioactive waste management entity and submitted to the Ministry of Energy of the Republic of Lithuania. Ministry of Energy starts consultation on the draft of the radioactive waste management program with the State Nuclear Power Safety Inspectorate and the Lithuanian Ministry of Health and when the draft is agreed among the involved institutions, it is submitted it to the Government for approval.
National radioactive waste management program is the part of the national legal system. Program was approved by Government resolution. Regarding Government resolution No. 827 On Approval of the strategic planning methodology (2002, amended 2013) all national programs should be adopted for the 7 year period. After this period programs should be revised mandatory. According to the article 65 of the above-mentioned Government resolution the programs should be evaluated systematically on the annual bases. Program evaluation is the systematic and objective assessment of the planned, ongoing and completed programs in one or more of the following key aspects of program evaluation: relevance, efficiency, effectiveness, usefulness and continuity.
The implementation of the National radioactive waste management program is coordinated by the Ministry of Energy. The Ministry of Energy informs the Government of the Republic of Lithuania about implementation, evaluation results and progress of the National radioactive waste management program in the previous year in the beginning of the year.

80	Country Morocco	Article Article 32	Ref. in National Report Section B – Policies and practice, P13

Question/ Comment: The adopted classification explained in "(v) criteria used to define and categorize radioactive waste" shows that:
• it does not include the waste generated from radiation applications
• From practical point of view, the dose rate, only the one parameter is not enough to distinguish between different boundaries of different kind of waste. It would be better to add activity of waste and half-life of the existed radionuclide in the waste.
Could you explain how the consistency of you classification is with IAEA classification?.

Answer Only some pretreatment activities with radioactive waste generated from the use of radioactive materials in medicine, industry, agriculture, research and education are performed at the site of waste generation (such as a hospital, laboratory or research centre). Further treatment of waste and its classification is performed at the Ignalina NPP site. So, the classification system includes the waste generated from radiation applications.

In classification system dose rate is used for all steps of waste processing (pre-treatment, treatment, conditioning) before final characterisation of the final waste package. During final characterisation, the activities of all radionuclides in the waste package are determined and comparison if the final waste package complies with waste acceptance criteria of the disposal facility is done.

For better understanding, please find the table with comparison of Lithuanian waste classification with IAEA GSG-1 classification.

Waste Class	Definition	IAEA GSG-1 classification	Surface dose rate	Conditioning	Selected main method for disposal according IAEA	Management method according the national requirements
0	Free release			Not required	As non radioactive waste	As non radioactive waste
Short-lived low and intermediate level waste [1]						
A	Very low level waste (VLLW-SL)	**VLLW**	<0,2mSv/h	Not required	Very low level waste repository (Landfill Facility)	Very low level waste repository (Landfill Facility)
B	Low level waste (LLW-SL)	**LLW**	0,2-2 mSv/h	Required	Near surface repository	Near surface repository
C	Intermediate level waste (ILW-SL)	**LLW**	>2 mSv/h	Required	Near surface repository	Near surface repository
Long-lived low and intermediate level waste [2]						
D	Low level waste (LLW-LL)	**ILW**	<10 mSv/h	Required	Deep geological repository	Near surface repository (cavities at intermediate depth)
E	Intermediate level waste (ILW-LL)	**ILW**	>10 mSv/h	Required	Deep geological repository	Deep geological repository
Spent sealed sources						

F	SSS		-	Required	Deep geological repository	Near surface or deep geological repository [3]
Spent nuclear fuel	Spent nuclear fuel	**HLW**	-	Required	Deep geological repository	Deep geological repository

[1] Containing long-lived alpha emmiters the specific activity of which, measured and/or calculated by using approved methods, does not exceed 4000 Bq/g in an individual waste package on the condition that the average specific activity of long-lived alpha emmiters estimated for all waste packages does not exceed 400 Bq/g. The activity of long-lived beta and (or) gamma emmiters shall not exceed the waste acceptance criteria values set for the repository.

[2] Containing long-lived alpha emmiters the specific activity of which, measured and (or) calculated by using approved methods, exceeds 4000 Bq/g in an individual waste package, as well if the average specific activity of long-lived alpha emmiters estimated for all waste packages exceeds 400 Bq/g.

[3] Depending on acceptance criteria applied to spent sealed sources.

81	Country Netherlands	Article Article 32	Ref. in National Report Art. 32, section B, p. 8-9

Question/ Comment: Page 8 and 9 comprehensively describe the Development Programme of Radioactive Waste Management. This includes the development of an analysis program, the strengthening of the radioactive waste management infrastructure, the increase of the reliability of data storage, the site selection of the geological repository, and efforts to inform the public. Could you please add actors and timetables to these program objectives?

Answer: Development Programme of Radioactive Waste Management sets of spent nuclear fuel and radioactive waste management goals, objectives, and values of evaluation criteria as well as tentative schedule of implementation of objectives and tasks. These institutions are responsible for the implementation of objectives set out in your question:

- Ignalina NPP is responsible for the development of an analysis program to evaluate the possibility to extend the storage period of the spent nuclear fuel in the existing spent nuclear fuel storage. This analysis program will be developed until 2025.
- For the strengthening of the institutional radioactive waste management infrastructure is responsible State Enterprise Radioactive Waste Management Agency (RATA). This must be done before the closure of the Ignalina NPP radioactive waste management infrastructure. RATA responsible for the collection and initial treatment of radioactive waste arising from various activities/sources not related to Ignalina NPP (hospitals, industrial facilities, universities, etc., also legacy waste (i.e. like orphan sources and other radioactive waste)) and for delivery of radioactive waste to Ignalina NPP, which performs final treatment and long term storage/disposal.
- Ignalina NPP is responsible for increasing the reliability of data storage and for the collection and storage of data related to radioactive waste management. In order to increase the reliability of data storage Ignalina NPP regularly upgrade the data storage hardware and software. Data storage will be maintained until the end of passive institutional control period of the repositories.
- For the site selection for the Deep Geological Repository is responsible RATA and Ignalina NPP. The main repository site selection stages are: site selection process planning (2015–2016) (delays), detailed research to choose several regions of interest (2017–2019), detailed characterization (2020–2031) and site approval phase

(2032–2036). Repository site should be selected by 2033.

• The main organizations are responsible for raising public awareness are RATA and Ignalina NPP. For the implementation of this objective, progress assessment criteria, targets are described in the National Program for Radioactive Waste Management. VATESI and RPC is taking part in implementation of this objective – seek to ensure the transparency in management of spent nuclear fuel and radioactive waste and informing public of Lithuania about decisions made by VATESI and RPC on management of these waste.

82	Country Poland	Article Article 32	Ref. in National Report Section B

Question/ Comment	Are fees paid only when radioactive waste is emplacement at a disposal facility or periodically? How are fees determined?
Answer	Institutional waste producers pay for their waste collection, transport, treatment, and storage and disposal services. The fees of the services were approved by the Order of the Minister of Energy No. 1-303 “On the State Enterprise Radioactive Waste Management Agency fees for the management of radioactive waste”. There is a methodology for calculation of cost of radioactive waste management for the institutional waste to be transferred to RATA (prepared by Lithuanian Energy Institute). Fees are mandatory revised once in two years and agreed by RATA and Ignalina NPP. The last revision of the methodology and amount of the fees were made on the December of 2015 by Lithuanian Energy Institute. RATA collect fees from the institutional waste producers in to separate dedicated account. RATA transports radioactive waste to the Ignalina NPP and pays to it for treatment and storage of the radioactive waste. For the final disposal of the radioactive waste RATA will pay before disposal of it.

83	Country Ukraine	Article Article 32	Ref. in National Report B, p.9

Question/ Comment	The report indicates that radioactive waste from the radioactive waste storage facility in Mayshagala will be recovered; the territory will be rehabilitated and transferred for uncontrolled use. And where will the removed waste be placed?
Answer	All types of radioactive waste which are now stored in the Maišiagala Radioactive Waste Storage Facility will be transported to Ignalina NPP for storage and disposal (of waste complying with WAC) .

84	Country Ukraine	Article Article 32	Ref. in National Report K, p.99

Question/ Comment	The report indicates that, with respect to bituminized wastes in the canyons, the issue will be resolved or licensed as a storage facility or sludge will be removed and placed in containers. How are they supposed to be removed?
Answer	INPP has not performed any investigation on retrieval of bituminized waste yet. At present, the tender on performance of additional investigations (geological, hydro geological and expertise of storage structures) and environmental impact assessment of conversion of the existing bituminised waste storage into a disposal facility is ongoing. Decision on conversion possibility will be made based on results of the above mentioned works. In case of negative results, investigations on alternative ways of bituminized waste storage decommissioning (further operation as storage with following retrieval, treatment and disposal of waste) will be initiated.

85	Country	Article	Ref. in National Report

	Ukraine	Article 32	B, p. 9
Question/ Comment	It seems that the time frames for the geological repository program implementation are too prescriptive. Do you also consider the probability that, for example, the site selection process could take longer period that planned?		
Answer	The plan is to have the Deep Geological Repository in operation by 2065 is based on the 50 year licence period of the dry Spent nuclear fuel intermediate storage facility at Ignalina NPP, therefore the planning is done backwards from the date mentioned. All the stages of the project have possible delay margins included in their duration. Detailed stages of the project and main works packages are described in the Implementation Plan of a Geological Repository.		

86	Country Ukraine	Article Article 32	Ref. in National Report B, p.14
Question/ Comment	Have you defined WAC applied to RW in a form of disused sealed radiation sources? If yes do they defined in the specific activity (as for RW) or in the total activity (as for SRS) values?		
Answer	All sources will be loaded to 200 l steel drums and then stored in long lived waste containers (4 drums each) in new build long lived storage facility (B4). There is no specific WAC applied for storage of Sealed radiation sources. The decision is not taken on the final disposal of these waste. Currently the possibility to dispose the limited amount of SRS in near surface repository and Landfill facility is under analysis with development of corresponding criteria.		
87	Country Ukraine	Article Article 32	Ref. in National Report D, p.23
Question/ Comment	How often, in average, the cases when the wastes are returned from free release facility (B10) are happened (for example in % of the monthly volume).		
Answer	1.8% of wastes were returned from free release facility (B10) in 2017.		
88	Country Ukraine	Article Article 32	Ref. in National Report D, p.23
Question/ Comment	What is the purpose of the buffer storage (B19-1) for VLLW?		
Answer	In accordance with design of the VLLW repository, disposal campaign will take place once in two years. In order to collect and store waste packages between disposal campaigns the buffer storage is foreseen. Also, the final characterization (measurement of activity, conclusion on acceptability of packages) is performed in buffer storage at special characterization unit.		
89	Country Sweden	Article Article 32.1.3	Ref. in National Report Page 25
Question/ Comment	What are the future plans for treating and disposal of the waste that are to be recovered from the Maisiagala storage facility? What are the radioactive inventory for the waste disposed of at the Maisiagala facility in table D-1 on page 26 based on?		
Answer	All types of radioactive waste, which are now stored in the Maišiagala Radioactive Waste Storage Facility will be processed and stored at Ignalina NPP storage facilities until final disposal.		

Information on the inventory at Maišiagala Radioactive Waste Storage Facility is based on the Registry Entries (Registration Logs) for the radioactive waste accepted to the Storage during it's operation between 1963 and 1989.

90	Country Sweden	Article Article 32.2.3	Ref. in National Report Page 23

Question/Comment: Could you give some more details of the characteristics of the Short-lived VLLW planned to be disposed of at the Landfill Facility at the INPP-site (Project B19-2).

Answer: Waste to be disposed off in Landfill facility shall be packed in half-heght 20 ft ISO containers (non-compactable), plastic bales (compactable) or FIBC containers (ion exchange resins). Waste shall not have free liquids, toxic, hazardous and easy flammable materials. Activity of radionuclides shall not exceed established waste acceptance criteria. Dose rate shall not exceed 0,2 mSv/h from the waste. In accordance with source term used for safety assessment specific activity of Cs-137 and Co-60 is in order 10E3 Bq/kg.