

3rd REVIEW MEETING OF JOINT CONVENTION ON THE SAFETY OF SPENT FUEL MANAGEMENT AND THE SAFETY OF RADIOACTIVE WASTE MANAGEMENT



COUNTRY PRESENTATION THE REPUBLIC OF LITHUANIA

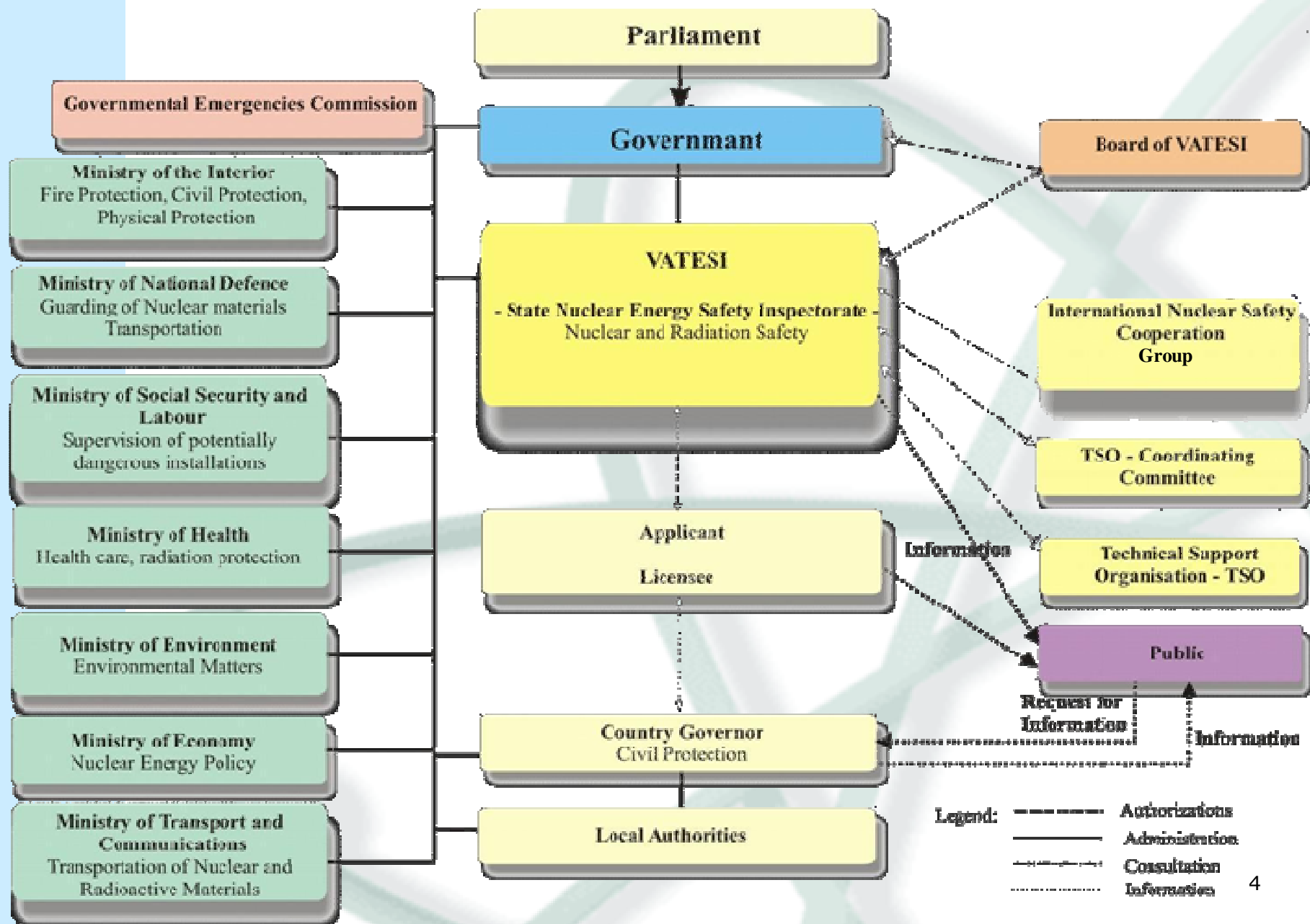
**Country Group 2
Vienna, 15 May, 2009**

Delegation

- **Mr. Gytis Maksimovas, Head of Delegation, Head of VATESI,**
- **H.E. Mr. Renatas Norkus, Deputy Head of the Delegation, Permanent Representative of the Republic of Lithuania at the International Organisations in Vienna**
- **Mr. Vidas Paulikas, Deputy Head of the Delegation, Director of Radiation Protection Department, VATESI**
- **Ms. Violeta Greičiuvienė, Attaché for Nuclear energy Affairs, PM at the International Organisations in Vienna**
- **Mr. Gintautas Balčytis, Head of Division of Supervision and Control of Nuclear Facilities, RPC**
- **Mr. Stasys Motiejūnas, Head of Final disposal Division, RATA**
- **Mr. Valerij Naumov, Engineer of Project Group, Decommissioning Service of Ignalina NPP**

Organizations Contributing to the National Report

- **State Nuclear Power Safety Inspectorate (VATESI)**
- **Ministry of Health (Radiation Protection Centre)**
- **Ministry of Economy**
- **Ministry of Environment**
- **Radioactive Waste Management Agency (RATA)**
- **Ignalina Nuclear Power Plant**



Presentation Outline

- Introduction
- Legal Framework of Radioactive Waste management in Lithuania
- Waste management scheme in Lithuania
- Existing waste installations and inventory
- Planned facilities
- Summary of basic information, matrix
- Changes in the national programme since the last Review Meeting
- Action on challenges from the last Review Meeting, Significant events
- Good practices
- Current challenges
- Responses to questions posted to the Report

Introduction

- **Lithuania has signed this Convention on 30 September 1997 and ratified it on 18 December 2003. This Convention entered in force in Lithuania on 14 June 2004;**
- **This is the second National Report of Lithuania on Joint Convention.**

Sources of radioactive waste

- **Ignalina NPP with two RBMK reactors that produces more than 99 % of radioactive waste in Lithuania**
- **Isotope applications in medicine, industry and research produces less than 1 %**

Legal Framework of Radioactive Waste Management in Lithuania (Main Laws)

- **Law on the Management of Radioactive Waste (1999, last amended in 2009);**
- **Law on Nuclear Energy (1996, last amended in 2009);**
- **Law on Radiation Protection (1999, last amended 2004);**
- **Law on Environmental Protection (1992, last amended 2005);**
- **Law on Ratification of Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (2003).**

Legal Framework of Radioactive Waste Management in Lithuania (Government Resolutions)

- **Government Resolution No. 174 On Approval of the Strategy of Radioactive Waste Management (2002, reviewed and approved by Governmental Resolution No. 860 in 2008);**
- **Government Resolution No. 103 On Approval of Regulations of Licensing of Nuclear Power Related Activities (1998);**
- **Government Resolution No. 205 On Approval of Regulations of Licensing the Practices Involving Sources of Ionizing Radiation (1999, amended 2004);**
- **Government Resolution No. 280 On Approval of Regulations on Management of Illegal (Orphan) Radioactive Sources and Facilities, Contaminated With Radionuclides (2005);**

Legal Framework of Radioactive Waste Management in Lithuania (Regulatory Requirements)

- **Regulation on the Pre-disposal Management of Radioactive Waste at the Nuclear Power Plant, VD-RA-01-2001 (2001, under revision);**
- **The General Requirements for Dry Type Storage for Spent Nuclear Fuel, VD-B-03-99 (1999, under revision);**
- **Regulation on Disposal of Low and Intermediate Level Short Lived Radioactive Waste P-2002-2 (2002);**
- **Regulation on Disposal of Very Low Level Radioactive Waste P-2003-02 (2003);**

Legal Framework of Radioactive Waste management in Lithuania (Other Requirements)

- **Order of the Minister of Health and Head of VATESI No. V-1271/22.3-139 On Regulations on Import, Export, Transit and Transportation of Radioactive Materials, Radioactive Waste and Spent Nuclear Fuel (2008);**
- **Order of the Minister of Health No. V-71 On Regulations of Decommissioning of the Objects in which Practices Involving Sources of Ionizing Radiation Were Executed (2003);**
- **Order of the Minister of Health No. V-10 0 On Approval of the Rules of the Control of Orphan Sources and Sealed Sources of High Activity (2005).**

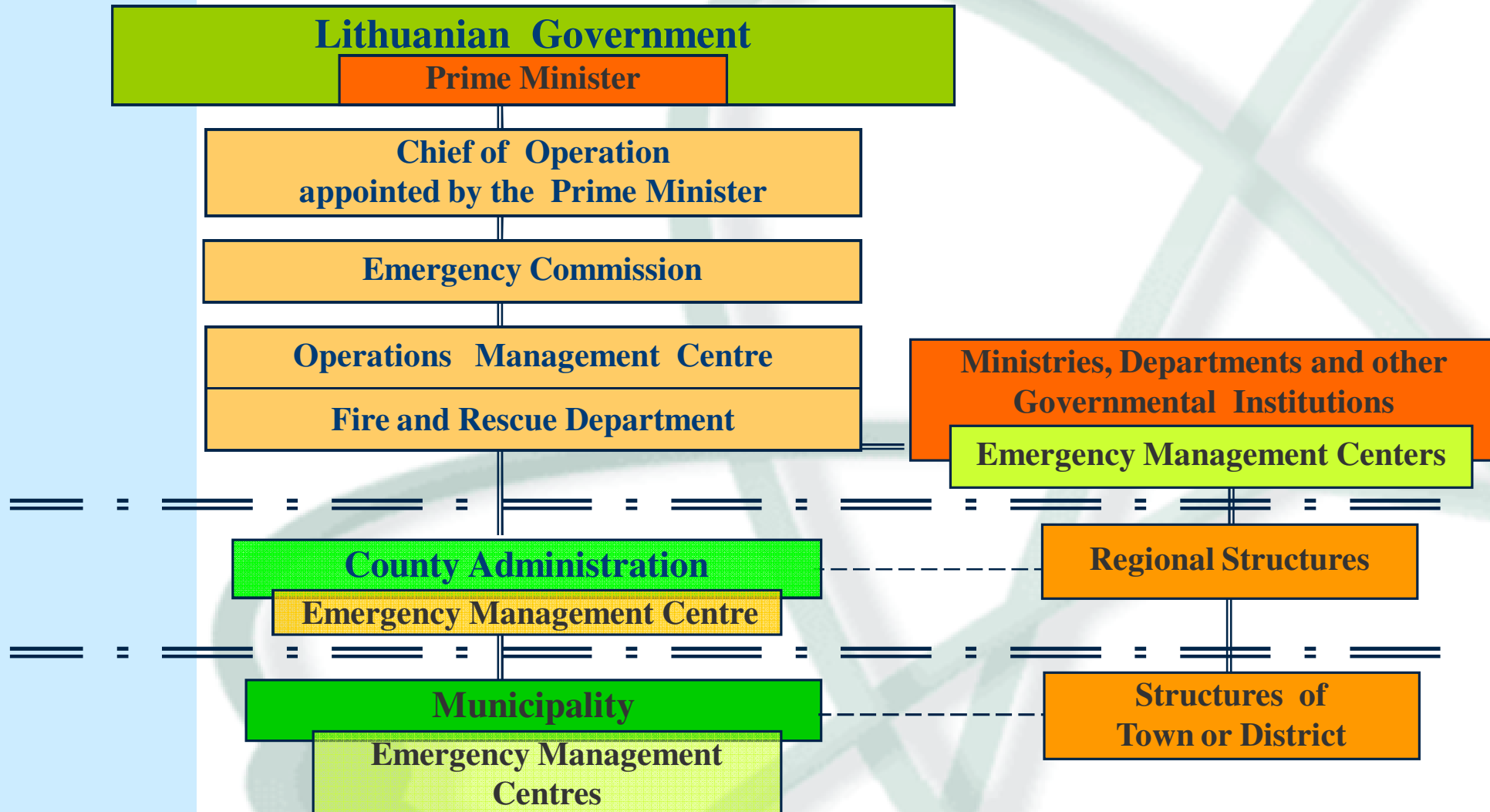
Legal Framework of Radioactive Waste Management in Lithuania (Radiation Protection Requirements)

- **Lithuanian Hygiene Standard HN 73:2001 "Basic Standards of Radiation Protection" (2001);**
- **Lithuanian Hygiene Standard HN 87:2002 "Radiation Protection in Nuclear Facilities" (2002);**
- **Lithuanian Hygiene Standard HN 89:2001 "Management of Radioactive Waste" (2001) (for institutional waste).**
- **Lithuanian Hygiene Standard HN 99:2000 "Protective Actions of Public in Case of Radiological or Nuclear Accident" (2000).**

Legal Framework of Radioactive Waste Management in Lithuania (Environment Protection Requirements)

- **Normative Document LAND 34 – 2000 “Clearance Levels of Radionuclides, Conditions of Reuse of Materials and Disposal of Waste” (2000);**
- **Normative Document LAND 41 – 2001 “Limitation of Radioactive Discharges from Facilities of Medicine, Industry, Agriculture and Research and Permitting of Discharges and Radiological Monitoring” (2001);**
- **Normative Document LAND 42 – 2007 “Limitation of Radioactive Discharges from Nuclear Facilities, Permitting of Discharges and Radiological Monitoring” (2007).**

MANAGEMENT OF CIVIL PROTECTION AND RESCUE SYSTEM IN CASE OF EMERGENCY



Basic information on the national programme

The strategy on radioactive waste management of Lithuania (amend. 2008) has three main objectives:

- Strive to achieve a high level in nuclear and radiation safety in management of spent fuel and radioactive waste;**
- To improve the radioactive waste management infrastructure, which shall be based on modern technologies; strive to minimize activity and volume of radioactive waste;**
- Informing the Lithuanian public to achieve a better understanding of the main radioactive waste management principals and achieve acceptance of waste management projects.**

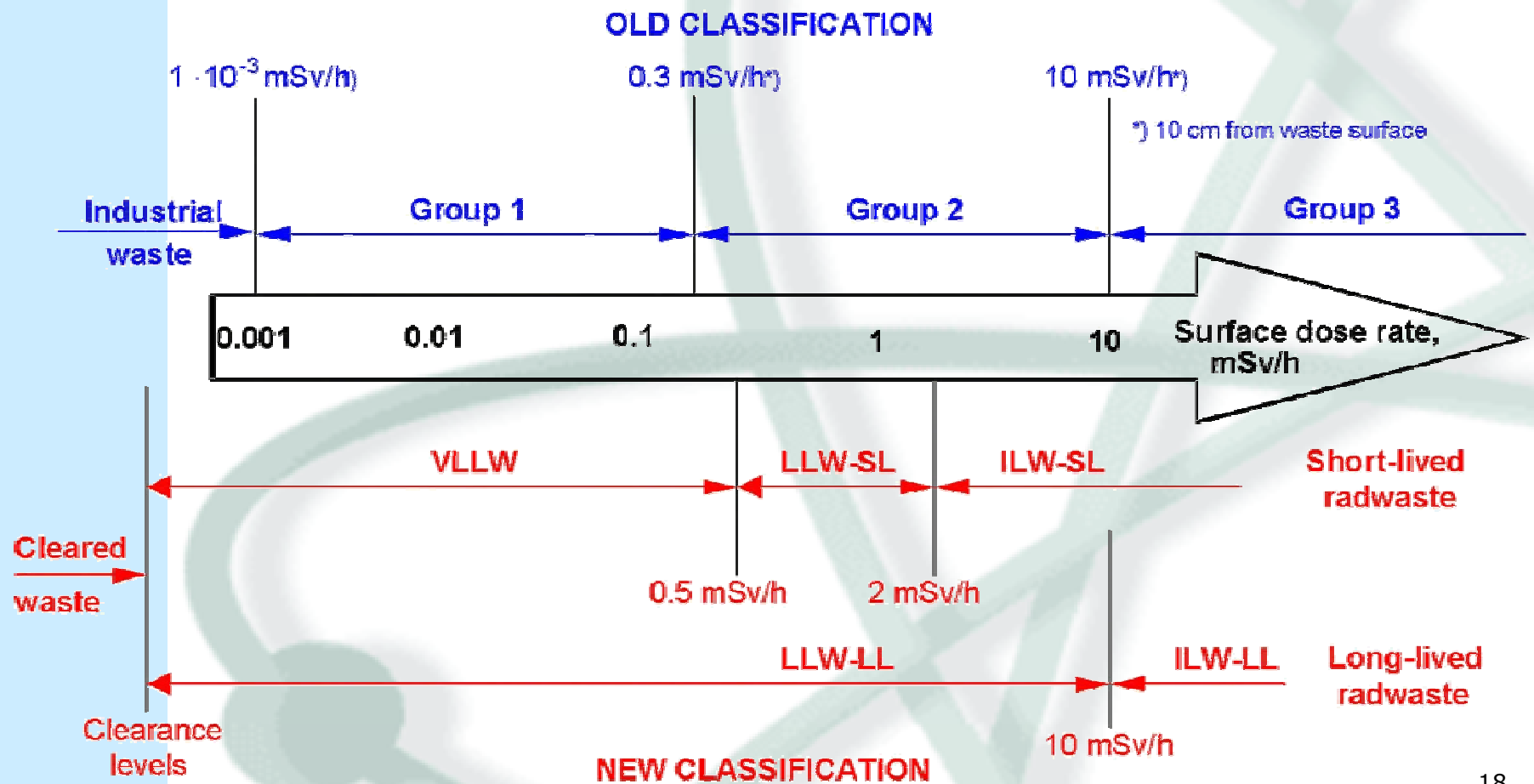
Changes in the national programme since the last Review Meeting

- **In 2008 Strategy on Radioactive Waste Management was revised;**
- **Compared with previous and revised strategies, there are no changes in main strategic. The difference is that the strategy has been restructured and some elements were reworded.**

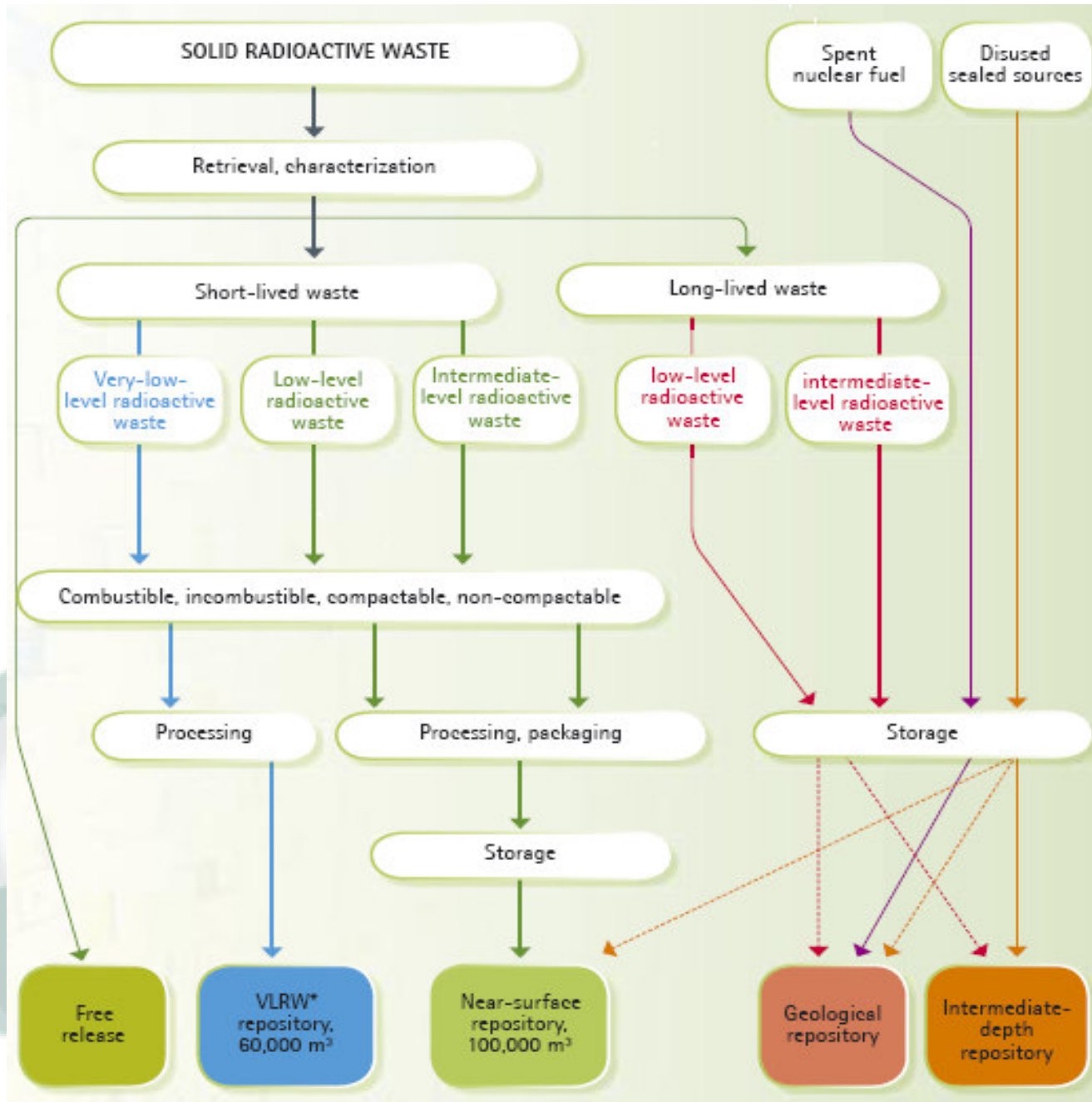
Agreed Matrix

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 facility) and wet (in pools)	Construction of new dry storage facility. Investigation for disposal
Nuclear Fuel Cycle Waste	Storage on site, management and disposal	Funding available except for disposal of HLW	Conditioning storage on site	Retrieval of old waste, storage and 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 planned for nuclear fuel cycle facilities.
Decommissioning Liabilities (1)	Immediate dismantling	Available for the first steps	Shut down of unit 2 and elaboration of decommissioning documentation. Continuation of decommissioning activities of Unit 1.	Facilities for waste management, 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 planned for nuclear _{1,7} fuel cycle facilities.

Radioactive Waste classification in Lithuania (comparison of previous and new classification)



Waste management scheme in Lithuania



Existing waste installations and inventory

Location of Ignalina NPP



Existing waste installations and inventory Location of Ignalina NPP (cont.)



Existing waste installations and inventory

Spent Fuel

No.	Installation	Waste inventory
1.	Ignalina NPP spent fuel in “dry” type storage facility	4794 spent fuel assemblies
2.	Ignalina NPP spent fuel in “wet” type storage facility in pools Unit 1	7071 spent fuel assemblies
3.	Ignalina NPP spent fuel in “wet” type storage facility in pools Unit 2	6219 spent fuel assemblies

Existing waste installations and inventory

Solid Radioactive Waste (Buildings 155, 155/1, 157, 157/1)

Type of waste	1 group comb.	1 group non-comb.	2 group comb.	2 group non-comb.	3 group	Total volume (m ³)
Volume of the waste (m ³)	11 424	8139	2179	2785	815	25 342

Existing waste installations and inventory

Liquid Radioactive Waste

No.	Installation	Waste inventory
1.	Building 151 - Ion-exchange resins, filter aid (perlite), evaporator concentrate and its sediments	3 645 m ³
2.	Building 158 - Bituminized waste storage facility (conditioned evaporator concentrate)	13 130 m ³
3.	Building 158/2 - Cemented waste storage facility (ion-exchange resins, filter aid (perlite), sediments of evaporator concentrate)	3158 (drums of 200 l)

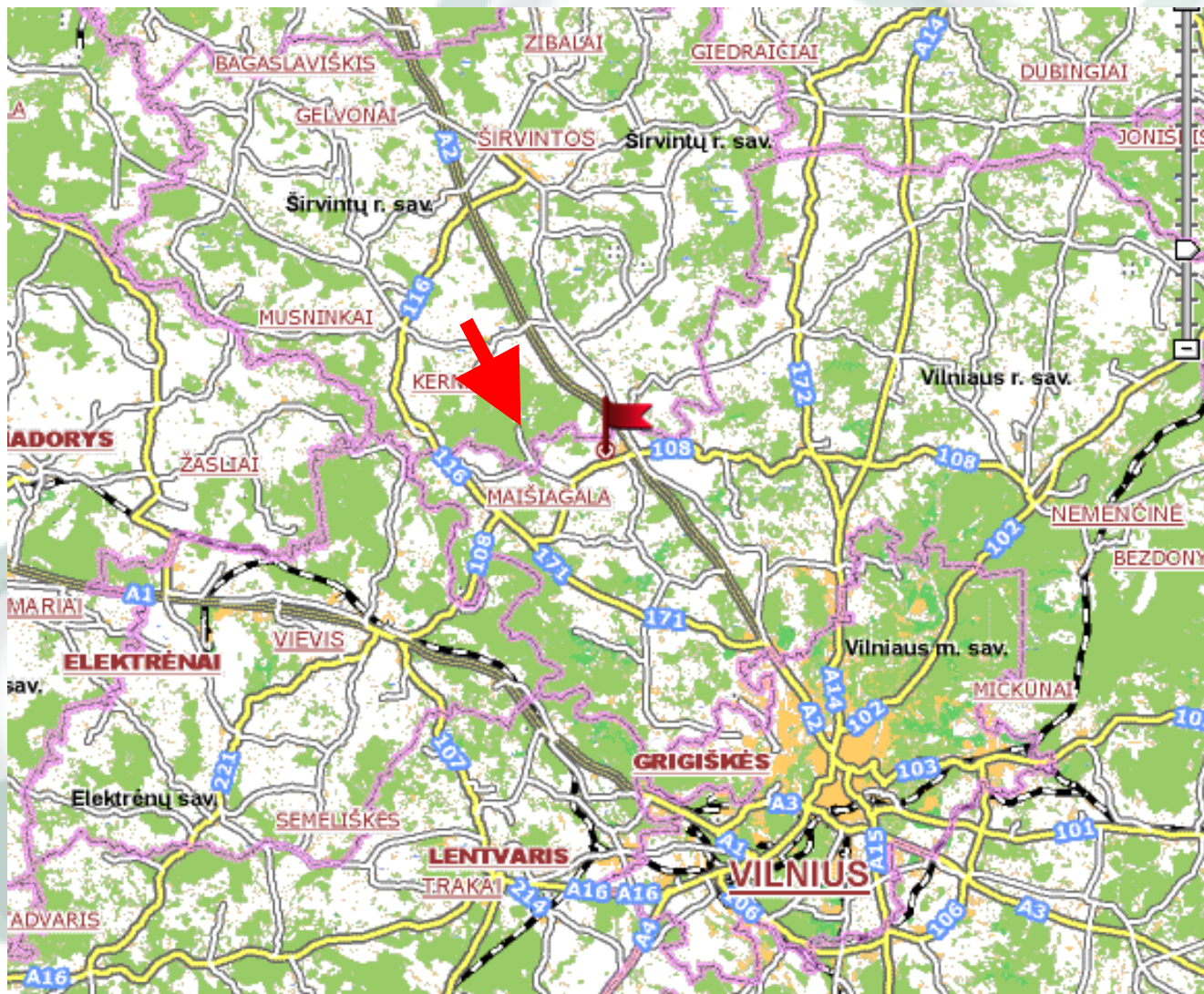
Existing waste installations and inventory

Maišiagala storage facility

- **Typical “Radon” type facility that has been constructed in almost all former USSR Republics**
- **Was constructed in 1963 and closed 1988**
- **The volume is about 200 m³**
- **Total activity in 2008 - $1.25 \cdot 10^{14}$ Bq, mostly tritium**

Existing waste installations and inventory

Location of Maišiagala storage facility



Existing waste installations and inventory Maišiagala upgrading

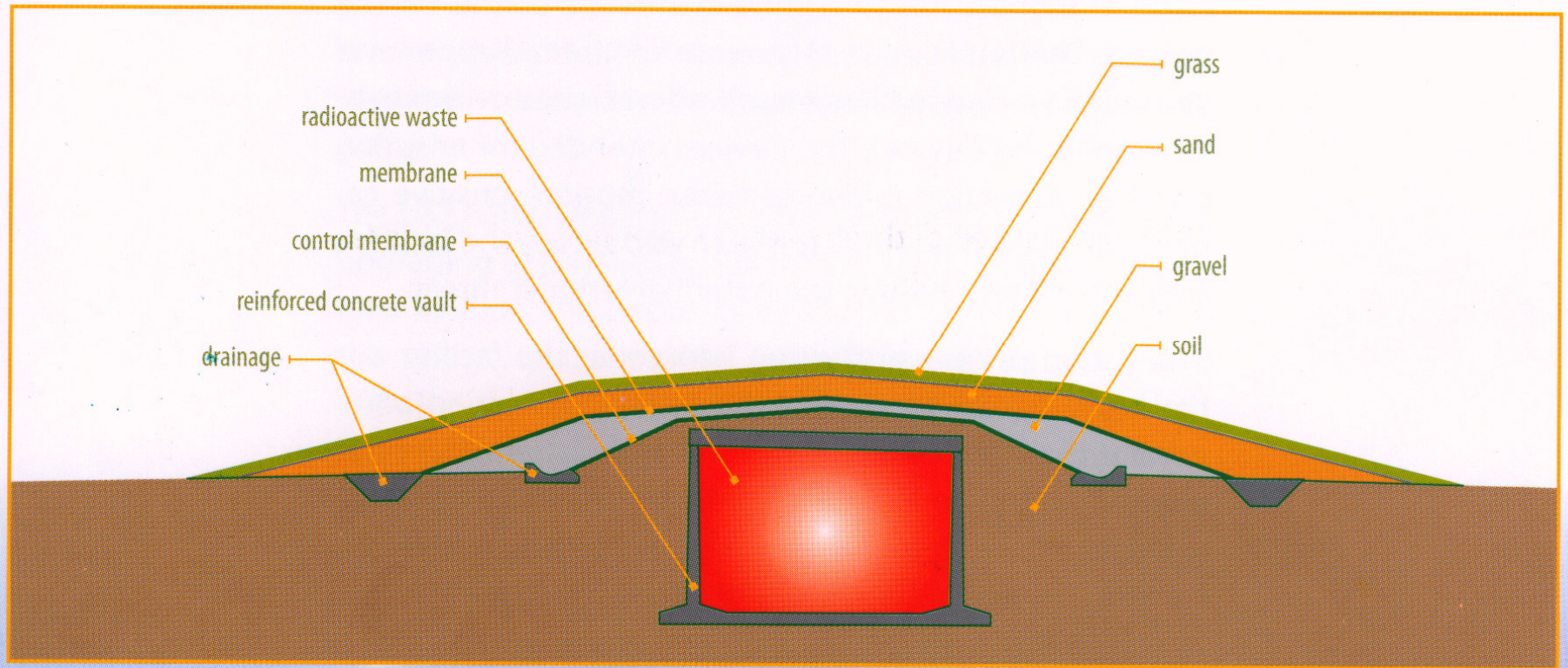
- **The facility was licensed in 2006**
- **Before issuing license the safety assessment was performed and SAR submitted for the RA approval**
- **Maišiagala facility does not fulfill long term safety requirements for disposal, so it was licensed as storage facility**
- **After safety assessment upgrading was performed**
- **In accordance with the license conditions the DP shall be prepared in 2010 for subsequent decommissioning of this facility**

Maišiagala storage facility before upgrading



Upgraded barriers of Maišiagala

A schematic of newly constructed protection barriers



Upgrading activities at Maišiagala



Upgrading activities at Maišiagala



Maišiagala general view after upgrading



Planned facilities: New spent fuel storage facility (B1)

- **Purpose – to store all the remaining spent fuel of Ignalina NPP (part of fuel is already stored in existing spent fuel dry storage facility)**
- **Planned commissioning and operation – 2011**
- **Capacity for up to 18000 spent fuel assemblies**

Planned facilities: new management and storage facility for solid waste (B3/4)

- **Purpose – to treat and store solid operational and decommissioning waste of Ignalina NPP.**
- **Operational waste to be processed - 28 000 m³ and decommissioning waste about 100 000 m³.**
- **Capacity of processing of radioactive waste will be about 15 m³ per day;**
- **Start of operation 2011-2012.**

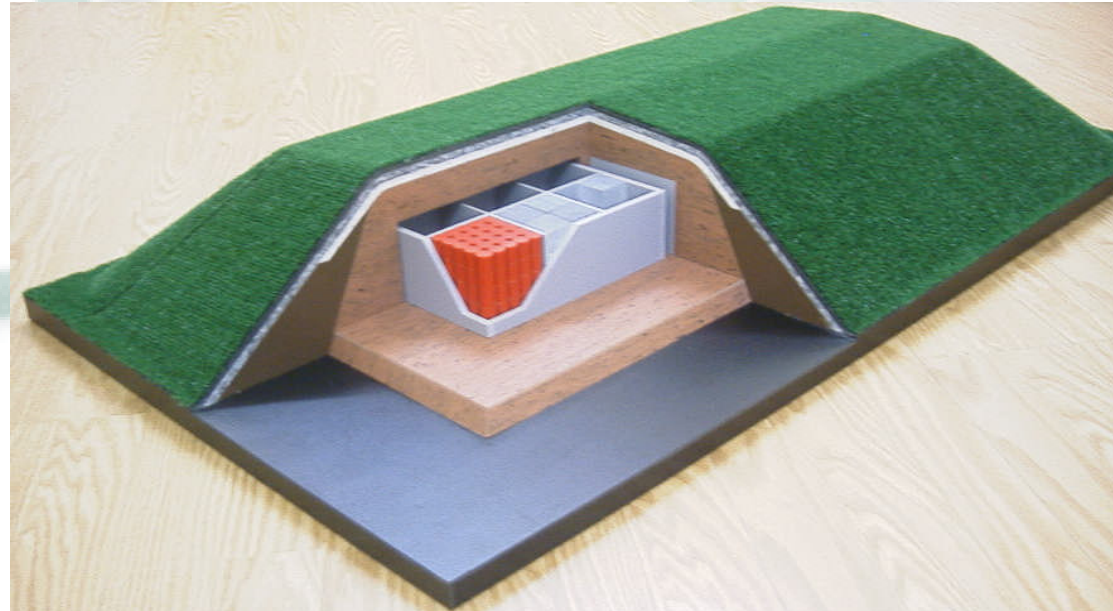
Planned facilities: new management and storage facility for solid waste (B3/4 cont.)

Facility will consist of:

- **Super compactor -15000 kN**
- **Incinerator – 40 kg/h of liquid waste**
- **Incinerator – 100 kg/h of solid waste**
- **Storage facility for short lived waste – 2500 m³ (will be extended if needed)**
- **Storage facility for long lived waste, including graphite – 2000 m³ (will be extended if needed)**

Planned facilities: Low and Intermediate Level Short Lived waste disposal facility (B25)

- **Modular type**
- **Purpose – to dispose Low and Intermediate Level Short Lived waste**
- **EIA report approved in 2007**
- **Site for the repository construction selected**
- **Capacity 100 000 m³**
- **Start of operation in 2015-2016**

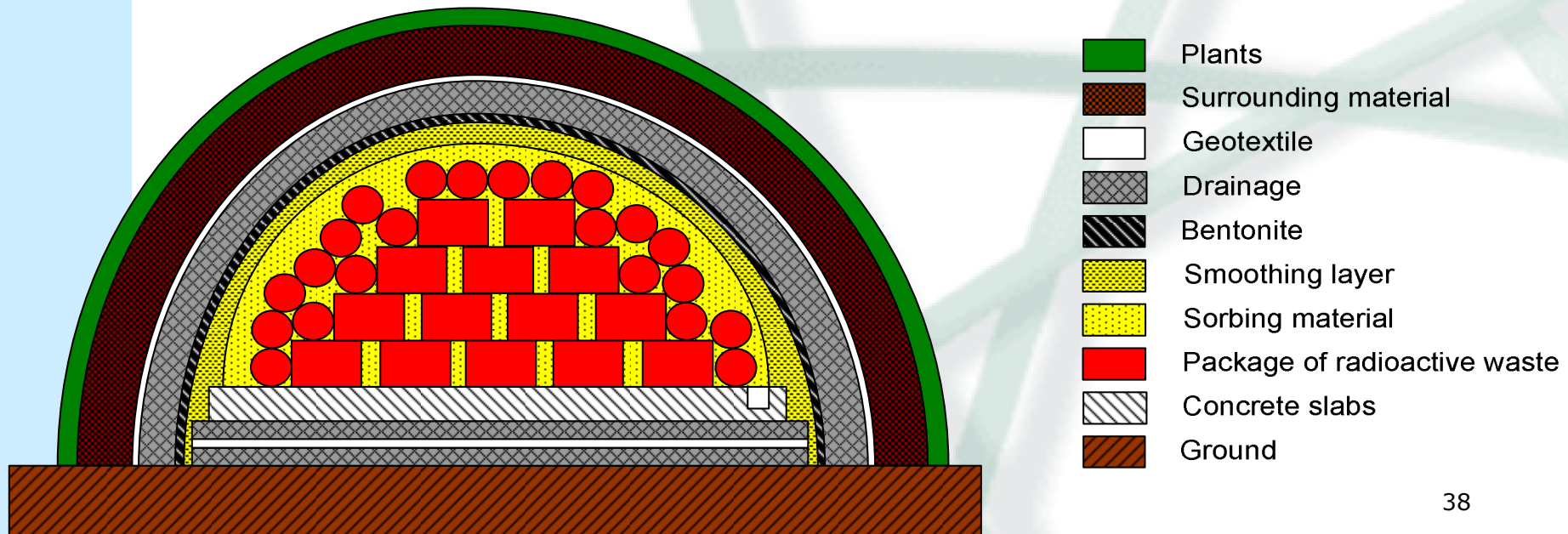


Planned facilities: Buffer Storage Facility for Very Low Waste (B19-1)

- **Purpose – to store waste before disposal in very low level waste disposal facility;**
- **Capacity - 4000 m³;**
- **Start of operation 2010-2011.**

Planned facilities: Disposal Facility for Very Low Waste

- Purpose – to dispose very low waste;
- Capacity 60 000 m³;
- Start of operation – 2012-2013.



Action on challenges from the last Review Meeting

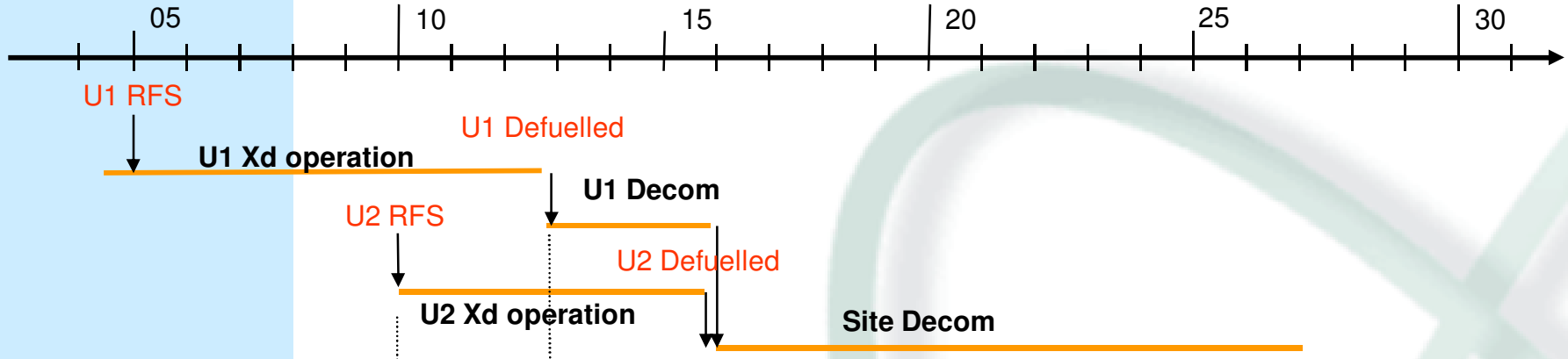
Challenges identified in the last review meeting:

- Implementation of the decommissioning plan for Ignalina NPP Unit 1 and later Unit 2;
- Siting, design, licensing of new disposal and storage facilities for all types of waste;
- Maintaining the funding.

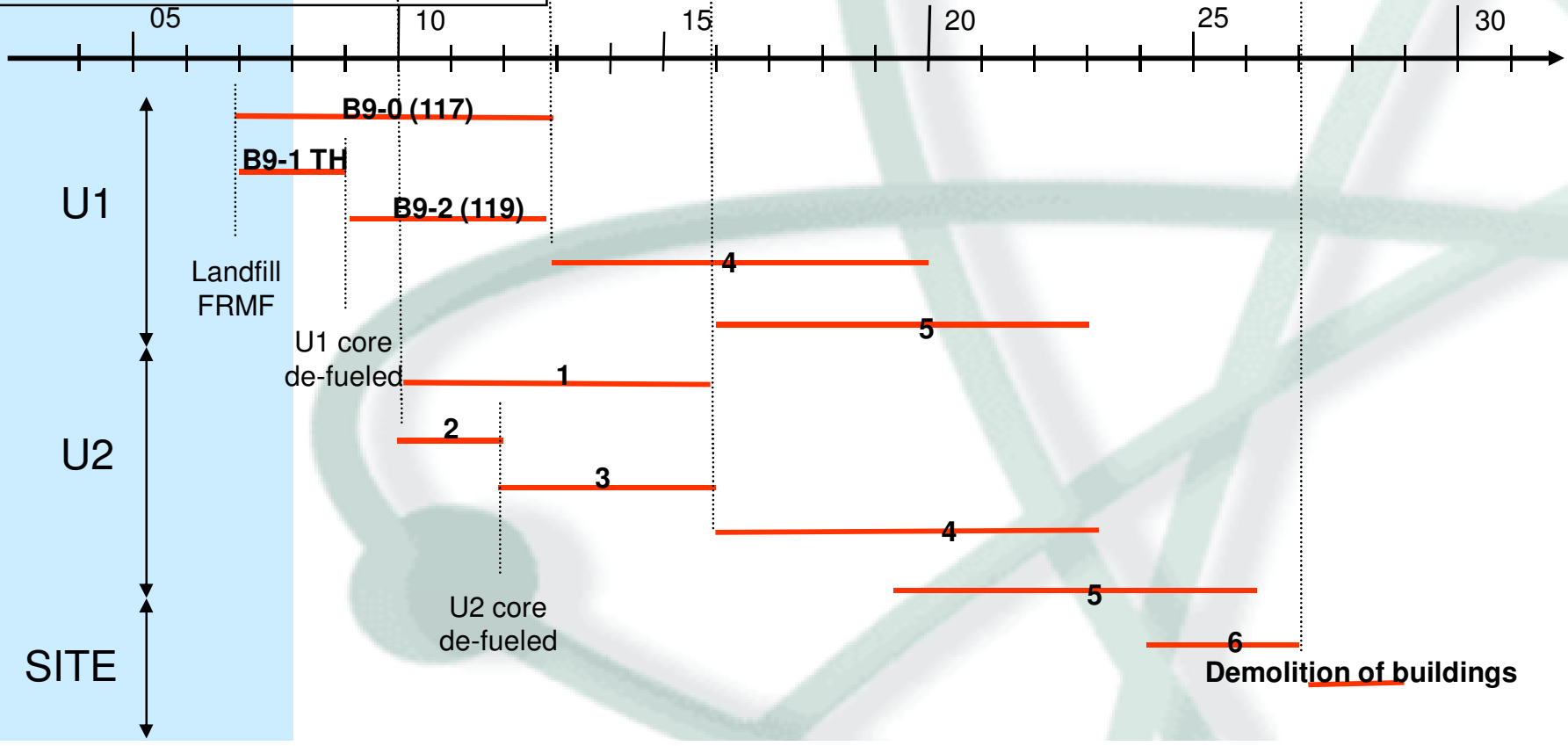
Implementation of the decommissioning plan for Ignalina NPP Unit 1 and later Unit 2

- In 2005 the Final Decommissioning Plan (FDP) was approved by the Ministry of Economy for the both units:
 - Immediate dismantling strategy
 - The whole decommissioning will be implemented in number of projects for unit 1 and later for unit 2
- Decommissioning Project (DP) for INPP unit 1 for Final Shutdown and Defuelling Phase
- Dismantling & Decontamination projects
- Operating organization of INPP will be responsible for implementing decommissioning projects and treatment of RW

Licenses



Dismantling steps/authorizations



Siting, design, licensing of new disposal and storage facilities for all types of waste

- **New spent fuel storage facility (B1);**
- **New management and storage facility for solid waste (B3/4);**
- **Low and intermediate level short lived waste disposal facility (B25);**
- **Storage facility for very low waste (B19-1);**
- **Disposal facility for very low waste (B19-2);**
- **Dismantling and decontamination projects (B9-X).**

Funds are maintained

Significant events since the last Review Meeting

- **The Radioactive Waste Management Strategy was revised and approved in 2008**
- **Site for disposal of low and intermediate level waste was selected**
- **Cement solidification facility at INPP for the spent ion exchange resins, perlite and evaporator concentrate sediments started operation in 2006**
- **Upgrading of Maišiagala by installing new radiological and physical protection barriers was performed in 2006**
- **The free release facility for operational waste commissioned in 2006**
- **Licenses to design new spent fuel storage facility, new management and storage facilities for solid waste, storage and disposal facilities for very low waste were issued**

Good practices

- **National legislation foresees periodic review of National Radioactive Waste Management Strategy**
- **Use of experienced operational staff of Ignalina NPP to implement projects for spent fuel and radioactive waste management as well as carrying out of dismantling activities**
- **Management and Preservation of Knowledge**
 - **implementation of modern data and records management system (electronic archive designed for at least 100 years, internet access for registered users, records kept since the beginning of operation)**
 - **use of retraining program at operator training center**

Planned short term activities to improve RW management and safety

- **Construction and operation of new spent fuel storage**
- **Construction of new management and storage for solid waste, low and intermediate level short lived waste disposal**
- **Construction of storage and disposal facilities for very low waste**
- **Retrieval, characterization and conditioning of operational solid waste at Ignalina NPP old storage facilities**
- **To start operation of free release facility for decommissioning waste**

Current challenges

- **Implementation of all planned projects including decommissioning of Ignalina NPP and waste management facilities**
- **Licensing of decommissioning, spent fuel and radioactive waste management activities**
- **Management and preservation of knowledge critical for the safe decommissioning and RW management**
- **Ensure the adequate funding**

Responses to questions posted to the Report

Questions - 39

Countries - 9 – South Africa, Bulgaria, China , Poland, Germany, France, Slovakia, USA, Ukraine

Main points of interest:

- **Spent fuel management (7)**
- **Disposal of waste (5);**
- **Maišiagala storage facility (3)**
- **Financing system (2);**
- **Public informing (2)**
- **Decommissioning (2);**
- **Waste classification (2);**
- **Radiation protection (1)**
- **Other technical questions (8);**
- **General questions (7);**

Responses to questions posted to the Report

Main questions (1)

Question:

Could the Lithuania provide information on the current viewpoint of the authorities about the long-term management of the Maišiagala facility (the sealed sources and radioactive waste have or not to be retrieved, ...)?

Answer:

According to licence condition issued to RATA, preliminary decommissioning plan of Maišiagala facility shall be prepared until end of 2010. This plan shall include proposals on how and when to retrieve, condition and dispose waste.

Responses to questions posted to the Report

Main questions (2)

Question:

What are measures to ensure the availability of adequate financial resources for decommissioning in the case of premature/unplanned shutdown of nuclear facility?

Answer:

INPP decommissioning is supported by European Commission. Therefore Lithuania negotiates with the EC for financing decommissioning and related projects for every financial EU perspective.

Responses to questions posted to the Report

Main questions (3)

Question:

Informing the public to achieve a better understanding of the main radioactive waste management principles and achieve acceptance of waste management projects is one of the three main Lithuanian implementing strategies. Communication with the public and local municipalities is mentioned throughout the report. Success in this area is evident, particularly in Environmental Impact Assessment area. Please provide an update on public participation activities during your national presentation in May 2009, including lessons learned and recommendations for other Contracting Parties.

Responses to questions posted to the Report

Main questions (3 continued)

Answer:

Public participation in environmental impact assessment (EIA) procedure for solid radioactive waste management and storage facilities:

- Initial information in local and national newspapers;
- EIA report was presented during public hearing meeting (representatives of local media, public and municipality);
- Possibility to acquaint with EIA report in Visaginas municipality and Ignalina NPP visitors center;
- No proposals for the content of EIA report received prior to the public hearing meeting or after it.

Public participation in EIA procedure for repository for short lived low and intermediate level waste disposal:

- During the scoping phase (till the approval of EIA program by the Ministry of Environment) 14 comments from the public were received and evaluated;
- Then procedure was the same as previously described;
- No proposals for the content of EIA report received prior to the public hearing meeting or after it;

Our experience shows that information to the public during EIA should be spread widely and easily accessible in order to avoid public complaints in the future. There is also the requirement in Lithuanian legislation that each public comment should be evaluated and when appropriate taken into account.

Responses to questions posted to the Report

Main questions (4)

Question:

Decommissioning and dismantlement of INPP units 1 and 2 is described in pages 30-33. Reportedly, this is the world's first (page 21) decommissioning of this reactor design. Please describe the uniqueness of this decommissioning plan and other key activities and schedules for this project during your national presentation in May 2009.

Answer:

Uniqueness of the project: Lithuania has chosen to go for Immediate Dismantling (Russia and Ukraine have chosen to go for deferred dismantling); there was no national experience in planning and implementation of RBMK units decommissioning; Lithuanian Decommissioning Fund has been established but not enough -Lithuania has to rely mostly on international funding; The necessary waste management and disposal routes were still incomplete at the start of the decommissioning.

Responses to questions posted to the Report

Main questions (4 continued)

Key Milestone	Schedule
Defuelling of Units reactors	2006 - 2012
New Dry Interim Spent Nuclear Fuel Storage operation	From 2011-2012
Defuelling of the Units spent fuel ponds	Till 2016
Free Release Measurement Facility operation	From 2009
Landfill operation (starting with buffer storage)	From 2010-2011
Solid Waste retrieval, Management and Storage Facility operation	From 2011-2012
Near Surface Repository operation (1st module)	From 2015-2016
Contaminated equipment Dismantling and Decontamination (D&D)	2010 - 2026
Reactors dismantling	2015 - 2025
Site conventional demolition	2027 - 2029

Responses to questions posted to the Report

Main questions (5)

Question:

Since the last report Lithuania has conducted meetings (2007) with Belarus and Latvia on a project to expand spent fuel dry storage at the Ignalina NPP. The public was familiarized with the economic activity, environmental impacts, and other details on the project. Please describe the key issues raised and their resolution during your national presentation in May 2009.

Responses to questions posted to the Report

Main questions (5 continued)

Latvia concerns:

Some of the questions raised by Latvian public and institutions were not related to environmental impact assessment (EIA) for the planned activity. They were interested in sustainable development of neighbouring municipalities of Ignalina NPP, compensation of losses regarding property devaluation.

Other issues were related to assessment of impacts on environment of Latvia by all INPP decommissioning projects, improvement of organization in information (including monitoring data) exchange between the countries, insufficient completeness of risk analysis.

Response of Lithuania:

Taking into account the requirements of Lithuanian legislation and above comments, Ministry of Environment of Lithuania requested the developer (Ignalina NPP) during EIA for new spent fuel storage facility to assess possible radiological impacts on Lithuanian and neighbouring countries taking into account all existing and planned nuclear facilities in the vicinity of Ignalina NPP. During consultation meeting with Latvian authorities it was explained that very thorough risk analysis will be done in later phase (during safety analysis).

Responses to questions posted to the Report

Main questions (5 continued)

Belarus concerns:

During the public hearing in Belarus, the public and the authorities were interested in possibility to dispose spent nuclear fuel in other countries (EU countries or Russian Federation), the need to periodically organise bilateral (Lithuania-Belarus) governmental meetings to discuss radiation protection and safety issues related to Ignalina NPP decommissioning projects. They also asked to provide the Ministry of Natural Resources and environmental protection of the Republic of Belarus with equipment necessary for all kind of environmental monitoring. The authorities of Belarus were also interested in the amount of spent fuel which will be stored in the facility, had question related to radionuclide emissions, risk assessment and etc.

Response of Lithuania:

There are several bilateral permanent working groups on governmental and ministerial level which meets quite often to discuss various issues including questions related to nuclear energy and environment.

In the EIA decision Ministry of Environment stated that during designing of spent fuel storage facility as low as possible public irradiation considering the existing and planned nuclear facilities should be ensured and shall not exceed the annual effective radiation dose to public – 0,2 mSv. It was also stated that during preparation of the basic design for this facility it should be envisaged that environment monitoring would also take into consideration the need for monitoring measures of neighbouring countries.

General overview of questions posted by Lithuania to other Contracting Parties

Questions - 23

Countries - 6 – Estonia, China, South Africa , France, Slovakia, Belarus

Main points of interest:

- **Waste disposal;**
- **Clearance levels;**
- **Environmental impact and monitoring;**
- **Management of spent sealed sources;**
- **Legislation;**
- **Emergency preparedness;**
- **Waste management practices.**

Conclusions

- **Lithuania has well established and functioning legal and institutional infrastructure for the safe management of spent fuel and radioactive waste**
- **Current and future challenges related with the decommissioning of Ignalina NPP and Maisiagala storage facility are well understood and properly addressed, necessary preparatory work is progressing**
- **Lithuania complies with the provisions of Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management**