ANNEX A: Template for National Profiles

Text for parts a, b, and c should be kept to a few paragraphs only and be concise, e.g. 1 to 2 pages, total for each country**.**

Data should be included to the extent they are available. Where some countries might have difficulties in providing the information, best forecasts and estimated volumes for waste storage/disposal should be given.

Latvian National Profile

a. **National Framework for management of radioactive waste and spent fuel** (policies, strategies, roles and responsibilities of different stakeholders (e.g. institutions overview, implementing organizations))

Text from country profiles in NEWMDB (+ additional text that summarizes significant points, e.g. from Joint Convention report, EC, OECD/NEA, if required) If possible, include an organizational diagram for the framework.

The basis of National radioactive waste management (RWM) **strategy – the Radioactive Waste Storage Concept** accepted by the Cabinet of Ministers. The aim of the Concept - to stimulate the development of advanced, environmentally sound and population friendly RWM system.

Latvia has no nuclear fuel, spent nuclear fuel and therefore has no intention to use reprocessing services, the spent nuclear fuel defined as the radioactive waste. This issue is incorporated also in the framework law that spent nuclear fuel may be processed as an eligible resource or intended for complete disposal without the further use thereof and treated as radioactive waste. The use of spent nuclear fuel shall not be permissible in the Republic of Latvia. Importation of spent nuclear fuel into the Republic of Latvia from other countries shall not be permissible.

There is no any large scale facility or processes in which natural occurring radioactive materials are processed and are treated as radioactive waste, but there were several incidents with enhanced radioactivity of metal scrap imported from other countries for the metal smelting plant, thus minor amounts of such materials had been treated as radioactive waste.

Latvia has no any military facility which generates spent nuclear fuel, currently minor amounts of radioactive waste from defence related activities.

Latvia has a sole RW near-surface repository "*Radons"* (*RADON-type,* 27 km of capital Riga*)* foreseen for low and intermediate level short-lived waste (LILW-SL).

Currently the **Radioactive Waste Storage Concept** actualizes following tasks:

1) **To Improve long-term safety** of the RW repository "*Radons"* and **provide** the **new** disposal (2 vaults) and storage (long-term for disused sealed sources) **capacities**
2) **Cooperation with local municipality and people** in order to reduce negative attitude to the repository
3) To provide **accomplishment** of **long-term SA of the repository *"Radons"***

Ministry of Environmental Protection and Regional Development – policy maker for RW management.

The **Radiation Safety Centre** of the State Environmental Service (**RDC**) – the **Regulatory Body** under the supervision of MEPRD – is responsible for:

- supervision and control of practices with the sources of ionizing radiation that forms RW
- preparation of draft policies for the state policy of supervision and control of RW management
- issuance of the licenses for the practices involving ionizing radiation sources

The current version of **national RWM policy** is a part of the "**Guidelines of Environment Policy 2014-2020**".

The **sole RWM operator** in Latvia is the state Ltd. "Latvian Environment, Geology and Meteorology Centre" (LEGMC). LEGMC consists of two facilities:

1. Radioactive waste repository "*Radons"* - as RW disposal/storage site;

2. pre-treatment and conditioning facility in the SRR, which has also store for conditioned cemented radioactive waste to be collected and ensure proper before transportation to the disposal site "*Radons"*.

LEGMC is subordinated to the Ministry (MEPRD) LEGMC, containing as a sub-structure also Salaspils research reactor (SRR), ensures **unified administration and maintenance** of the shutdown **SRR** as well as the **whole cycle of RW management**.

b. **National legal and regulatory framework** (primary legislation, regulations, regulatory organization, specific activities and facilities under regulation, and guidance on implementation)

Text from country profiles in NEWMDB (+ additional text that summarizes significant points, e.g. from Joint Convention report, if required). Possibly include organizational diagram for framework.

The basic documents related to RWM:

1) The Law on Radiation and Nuclear Safety (2000). The law governs all activities involving radioactive or nuclear materials and all sources of ionizing radiation. It establishes the basic principles of radiation and nuclear safety (justification, optimisation and limitation) and also contains provisions on nuclear third party liability.

2) Cabinet Regulations "On Practices involving Radioactive Waste and related Materials" (2002)

3) Cabinet Regulations "Regulations for Protection against Ionizing Radiation" (2002),

4) Cabinet Regulations "Criteria and Principles for Determining Equivalence of Different Radioactive Waste" (2002).

5) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

Operators must provide all necessary information to the RSC showing that safety measures are being applied. The RSC may at any time withdraw or revoke licenses if radiation protection and nuclear safety requirements are not met.

c. **Radioactive waste management, decommissioning and spent fuel strategy and current practices and technologies** (waste and spent fuel management activities/facilities, overview of main waste and spent fuel issues, overview of research and development programmes, overview of financing of waste and spent fuel management)

Text from country profiles in NEWMDB (+ additional text that summarizes significant points, e.g. from Joint Convention report, if required)

Currently there has been stopped final disposal of RW, there is provided **only storage** of conditioned RW in the sole operating vault (Nr.7).

Vaults 1- 6 – closed (with reinforced concrete slabs, covered by a hydro-isolating layer completed by a sand/ soil layer) - as a permanent disposal site, vault 7 (consisting of ten 130 m³ underground concrete walled storage cells, protected from the weather impact by a building) – operating - as a long-term retrievable storage site.

The RW stream is produced mainly by the started process of the shut-down Salaspils Research Reactor (SRR) dismantling and decommissioning.

There have been started preliminary works for enlargement of existing RW repository "Radons" – construction of 2 additional vaults with the aim:

1) to ensure the deposition of all RW from the decommissioning of the Salaspils RR as well as

2) to create sufficient space for the normal functionality of the RW repository in the nearest 100 years or until the eventual accident producing large amounts of RW.

The Radioactive Waste Storage Concept and the repository enlargement plan also foresees to construct a long-term storage facility for the disused sealed sources (DSS) that must not be disposed off in a near-surface repositories.

Financing of RW Management

The RW disposal off (including the RW storage in the repository "Radons" is financed from the State budget.

RW predisposal management (mainly being accomplished in the territory of the shutdown Salaspils Research Reactor) – by operators.

Importer of radioactive substances pays the natural resources tax, being directed to the repository "Radons" local - Baldone – municipality.

Ministry of Environment Protection and Regional Development:

- explains and gives proof to the Government on adequate funding for each fiscal year and long-term programmes
- provides also extra funds from its resources (including extra-budgetary resources from Latvian Environment Protection Fund) and assists in finding donors by maintaining cooperation with international organisations.

For Salaspils RR decommissioning the Government shall allocate additional financial resources.

d. **Radioactive waste classification, waste and spent fuel quantities** (inventory, including disused sources that are declared radioactive waste)

Tabular information of total quantities radioactive waste, spent fuel, by the national classification system (roll-up/summary information, for State or national level, not necessarily by individual facility). The use of the IAEA classification (see GSG-1 and Section 3 above) is recommended.

(data as per country waste classification and IAEA classification (if possible), distribution by NEWMDB origin types, sample table format from NEWMDB)

Table 1: Radioactive waste in storage

Route Waste Class	Processed (type)/ Unprocessed)	Total Current Volume (m^3)	Estimated Disposal Volume (m^3)	Distribution(%)							Planned Disposal Route (if known)
				RO	FFE	RP	NA	DF	DC/RE	ND	
Total of all Classes	Processed	73		-	-	-	5	-	90	5	
LILW-LL(as per IAEA classification)		Not specified						-			

NEWMDB waste origin type codes: RO — reactor operations
FFE — fuel fabrication and enrichment
RP — fuel reprocessing
NA — nuclear applications
DF — defence
DC/RE — decommissioning and remediation
ND — not determined

Table 2: Radioactive waste disposed (as disposed volume)

Waste Class	Processed (not)	Total Volume (m^3)	Distribution(%)							
			RO	FFE	RP	NA	DF	DC/RE	ND	Disposal Route Used
Total of all classes	Processed	818	10			45	2	30	13	
LILW-SL (as per IAEA classification)		Not specified	-	-	-	-	-	-	-	
LILW-LL (as per IAEA classification)		Not specified	-	-	-	-	-	-	-	

(Note: Abbreviations as in Table 1)

Table 3: Spent fuel in storage (MTHM)

Type	Current Amount (NPP)	Current Amount (Research Reactors)
Total Spent Fuel Storage	-	-
Wet storage(AR)	-	-
Wet storage(AFR)	-	-

Dry storage(AR)	-	-
Dry storage(AFR)	-	-
Total spent fuel held in storage for other countries (amounts also included above)	-	-

Table 4: Spentfuel sent for reprocessing (in home country or sent to another country)[12] (MTHM)

Type	Current Amount(NPP)	Current Amount (Research Reactors)
Total amount of spent fuel sent for reprocessing (in your country)	-	-
Total amount of spent fuel sent for reprocessing (in another country)	-	-
Total amount of spent fuel received from another country for reprocessing and recycling	-	-
Total amount of spent fuel (MTHM) or radioactive waste (cubicmetres) returned to country of origin for storage/disposal	-	-

[12] All years

AR = "at reactor site", including fuel pools at NPP

AFR = "away from reactor site" In the case of disused sources not included in volumes according to the relevant national waste classes, please include a similar table for disused sources declared as numbers of items stored and disposed.

Clarification.

In 2008 from the shutdown (in1998) Salaspils Research Reactor was sent to Russian Federation 14376,62 g spent fuel.

Table 5 below shows a translation matrix from a national classification system to IAEA classes. Table showing conversion factors from stored waste volumes to disposed waste volume for forecasts, if required.

Table 5: Example translation matrix (from NEWMDB) that can be used for transition from a national classification system to IAEA classification (see Section 3)

NationalWasteClassificationName	VLLW	LLW	ILW	HLW
ClassA	100%			
ClassB		90%	10%	
ClassC			80%	20%
ClassD				100%

e. Tabulation of processing, storage and disposal facilities for waste and spent fuel

Tabular information on facilities for management of spent fuel and radioactive waste Total number of fuel cycle facilities (by type and status) from INFCIS types "Spent Fuel Storage"; "Spent Fuel Reprocessing and Recycling" and "Spent Fuel Conditioning" Total number of waste management facilities (by type and status) from NEWMDB

Table 6: Facilities for management of spent fuel and radioactivewaste

Type	Planned	Construction	Commissioning	In Operation	Shutdown	Decomm.	Other	Total
Spent fuel storage	-	-	-	-	-	-	-	-
Spent fuel reprocessing and recycling	-	-	-	-	-	-	-	-
Spent fuel conditioning	-	-	-	-	-	-	-	-
Spent fuel disposal	-	-	-	-	-	-	-	-
Waste processing				1				1
Waste storage:				1				1
Waste disposal:				1				1

Table 7: Major sources of radioactive waste (numbers of facilities)

Type	Planned	Construction	Commissioning	In Operation	Shutdown	Decomm.	Other	Total
Research reactors*	-	-	-			1		1
Nuclear power reactors	-	-	-	-	-	-	-	-
Spent fuel reprocessing and recycling	-	-	-	-	-	-	-	-
Other : institutional (industry, research , medicine,...)	-	-	-	40	2			42

* Note: research reactors with medium or high power from RRDB
Note: "Planned" means it has been identified in a national report, strategy, or formal plan. It includes: Planned, Under Study–Assessment, Siting–Design phases
** if applicable, where included in national inventory, e.g. decommissioning of contaminated facilities, clean-up of accident related sites

f. Trends and future prospects (volumes of waste and spent fuel arising, waste and spent fuel management facilities)

Tabular data of amounts, where available Text field that summarizes significant points, e.g. from Joint Convention report

Table 8: Expected future quantities of spent fuel and radioactivewaste

Type	Current amount	Estimated Current amount when prepared for disposal*	Current Disposal capacity	Total forecast at 2020	Total forecast at 2040
Spent fuel storage	n/a	n/a	n/a	n/a	n/a
Wet storage (AR)	n/a	n/a	n/a	n/a	n/a

Wet storage (AFR)	n/a	n/a	n/a	n/a	n/a
Dry storage (AR)	n/a	n/a	n/a	n/a	n/a
Dry storage (AFR)	n/a	n/a	n/a	n/a	n/a
Total amount of spent fuel sent for reprocessing and recycling	n/a	n/a	n/a	n/a	n/a
Total amount of spent fuel disposed	n/a	n/a	n/a	n/a	n/a
Waste in storage:	**73**	**73**		**650**	**60**
LILW-LL (as per IAEA classification)					
Waste disposal:	**818**	**818**	**1880**	**818**	**1800**

AR = "at reactor site"
AFR = "away from reactor site"
*calculated equivalent amount when waste has been conditioned and packaged for disposal as per table of conversion factors given.

g. Sources of data, assumptions (especially for future waste forecasts) and references.

text field that summarizes significant sources of data, assumptions (e.g. number and expected life of NPPs, number being decommissioned, etc), etc list of references date of profile preparation

Comments.
The necessary additional capacity for disposal (see Table 8) will be provided by construction of additional vaults in the territory of existing RW repository „Radons".
There have been accomplished preliminary Environmental Impact Assessment for construction of additional vaults as well as the long-term storage facility for long-lived disused sealed sources) in the territory of existing RW repository „Radons". There is prepared the tender for the designing of the planned new vaults and have been provided financial provision for the vaults' construction.

Appendix 1.

Radioactivity for all radionuclides (data re-calculated on 1 January 2014).

Radioactive waste inventory at radioactive waste repository "Baldone" (as submitted in the 5-th_Latvia's National Report on Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management)

Nuclide	Interim storage	Vault 1	Vault 2	Vault 3	Vault 4	Vault 5	Vault 6	Vault 7	**Total**
Ag-110m								2380	2,38E+03
Al-26				1,05E+12				7,22E+05	1,05E+12
Am-241	3,12E+05			1,05E+11	2,90E+10		5,34E+11	3,39E+12	4,06E+12
Ba-133	7,88E+05	4,49E+08	1,99E+06	1,84E+11	1,98E+07		4,81E+08	6,44E+07	1,85E+11

Bi-207				5,85E+07			1,46E+08	7,87E+04	2,05E+08
Bi-210m				2,64E+08					2,64E+08
C-14		4,43E+11	1,87E+09	1,00E+12	2,80E+11	1,23E+08	1,02E+11	2,72E+10	1,85E+12
Cd-109	8700	2,14	1,25E+02	1,07E+05	3230		4,97E+05	4,18E+07	4,24E+07
Cd-113m				5,34E+07					5,34E+07
Ce-144									0,00E+00
Cl-36		1,01E+12		4,29E+12	1,22E+08	4,11E+07	2,45E+10		5,32E+12
Cm-244							4,43E+05	7,48E+08	7,48E+08
Co-57	654						34,4	7,52E+04	7,59E+04
Co-60	3660	8,12E+10	3,99E+05	4,13E+11	4,08E+10	2,64E+07	3,30E+11	1,71E+14	1,72E+14
Cs-134		4,72E+04		4,38E+07	9,37E+04	2,72E+04	1,42E+06	25	4,54E+07
Cs-137	9,00E+09	2,25E+12	1,71E+08	4,72E+13	1,74E+12	2,40E+07	1,53E+13	2,93E+13	9,58E+13
Cu-63		4,93E+09							4,93E+09
Eu-152		1,65E+08		3,74E+09			1,41E+10	1,48E+11	1,66E+11
Eu-154		2,70E+07		1,83E+09				2,68E+09	4,54E+09
Eu-155		3,26E+03							3,26E+03
Fe-55	2,90E+04	3,59E+06		2,77E+09	6,27E+07	1,36E+05	3,37E+08	4,31E+10	4,63E+10
H-3	580	2,54E+10	1,76E+08	1,03E+13	7,35E+09	1,27E+07	2,93E+12	3,31E+13	4,64E+13
K-40		3,70E+10		8,81E+10					1,25E+11
Kr-85		1,26E+09		3,31E+10	8,50E+09		2,14E+10	2,61E+12	2,67E+12
Mn-54				56,9			29,1	83,8	1,70E+02
Mo-93				1,84E+07			1,84E+07		3,68E+07
Na-22		3,87E+05		1,08E+09	1,12E+05	3,47	1,84E+06	1,12E+04	1,08E+09
Nd-144		9,96E+07					1,00E+08		2,00E+08
Ni-59				1,80E+09		4,11E+07			1,84E+09
Ni-63	4,95E+08	1,62E+11		8,69E+12			3,50E+10	6,66E+09	8,89E+12
Pb-210		4,06E+10		6,21E+11	1,46E+07	3,41E+07	6,48E+08	1,07E+07	6,62E+11
Pd-107				5,55E+09			1,82E+09		7,37E+09
Pm-147		6,43E+06		8,67E+09	2,52E+08		2,99E+09	4,31E+10	5,50E+10
Pu-238	4,73E+05			5,70E+09	3,02E+10		2,24E+11	5,75E+12	6,01E+12
Pu-239	1,17E+11	1,85E+11		1,59E+12	8,87E+10	1,85E+09	1,02E+12	2,65E+12	5,65E+12
Ra-226	5,12E+06	8,55E+11	6,06E+09	7,71E+10	3,45E+04	3,66E+07	2,69E+11	3,83E+09	1,21E+12
Ru-106				1870			90,8	2,04E+07	2,04E+07
Sb-125		3,67E+06		1,90E+08			7,73E+05		1,94E+08
Sm-151				1,91E+08					1,91E+08
Sn-119m								5820	5,82E+03
Sn-121m				2,62E+07					2,62E+07
Sr-90	1,69E+05	1,22E+12		2,16E+12	4,38E+11		1,15E+12	2,35E+13	2,85E+13
Tc-99				1,10E+09	8,98E+07		3,20E+08	1,60E+08	1,67E+09

Th-228							1360	1,50E+04	1,64E+04
Th-230				1,67E+04					1,67E+04
Th-232	1,50E+05	4,24E+06	1,18E+08	9,39E+05			1,72E+08	7,60E+08	1,06E+09
Ti-44				2,09E+09			1,10E+08	1,72E+05	2,20E+09
Tl-204		1,97E+08		8,03E+08	3,91E+08		1,22E+10	6,76E+10	8,12E+10
U-232		5,04E+10							5,04E+10
U-233	2,35E+04			3,50E+04	3,84E+04		8,72E+05	1,48E+05	1,12E+06
U-234				2,21E+03			2,15E+04	73	2,38E+04
U-235	0,463	6,07E+05		3,57E+04			4,27E+03	1,13E+05	7,60E+05
U-238	100	8,22E+07	1,29E+08	2,17E+07	8,00E+06		2,70E+07	6,11E+10	6,14E+10
Zn-65								1,29E+07	1,29E+07
Zr-93		1,78E+07		1,41E+09			2,22E+07		1,45E+09
Total	**1,26502E+11**	**6,37E+12**	**8,53E+09**	**7,78E+13**	**2,66E+12**	**2,19E+09**	**2,20E+13**	**2,72E+14**	**3,81E+14**

Appendix 2.

References to official national and international reports

1. First report submitted by Latvia under the Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 2003.
2. Second report submitted by Latvia under the Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 2005.
3. Third report submitted by Latvia under the Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 2009.
4. Fourth report submitted by Latvia under the Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 2011.
5. Fifth report submitted by Latvia under the Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 2015.
6. Radioactive waste disposal and the environment in Latvia, Proceedings of Conference Radiation and Society: Comprehending Radiation Risk, Paris (France) 24-28 October 1994.
7. Multi-step Optimization for Salaspils Research Reactor Dismantling and Decommissioning, Proceedings of International Conference on Lessons Learned from Decommissioning of Nuclear Facilities and the Safe Termination of Nuclear Activities, Athens (Greece) 11-15 December 2006.

References to reports on international review missions:

1. IAEA End-of-Mission Report on “Waste Management Advisory Mission” by B. Martens, M. Ulbok, C. Bergman, 24-28 April, 1993;
2. Infrastructure Appraisal for Latvia on Radiation Safety, 04-08 December 2008 (RaSIA 18/2006/LAT).