GEORGIA

(based on JC national report)

a) National framework for management of spent fuel and radioactive waste

The country does not have any nuclear enterprise. Only one nuclear research reactor was operated during 1959-1989 years. The reactor belongs to the Applied Research Center of E,Andronikashvili Institute of Physics (IP). After the shut down the reactor all spent and fresh fuel was removed from the Georgia. The reactor decommissioning was started within IAEA TC projects. As a first step entombing of the reactor core was conducted. The decommission activity is still going aiming dismantling of the reactor auxiliary systems. (IP was joined to Tbilisi State University at 2011).

IP also operated subcritical assembly, which was dismantled at 2015 and 36% enriched 1280g Uranium contained in the assembly was repatriated to the country of origin. The operation was conducted within RRRFR programme and supported by IAEA and US.

At the site of Applied Research Center Centralized Storage Facility was constructed and put into operation. As results there are only appr. 4 kg nuclear material kept at CSF, which was detained during illegal activities. CSF was operated by IP until the beginning of 2016.

Georgia had one historical closed disposal site- s.c. Saakadze disposal. The disposal is typical Radon type disposal containing mainly VLLW and LLW.

The country strategy for radioactive waste management is under process of elaboration based on Swedish support and should be adopted at the end of 2016.

To increase the effectiveness of using of limited resources for ensuring safety of radioactive waste management Government of Georgia implemented new reform – Both facilities was transferred for operation to Department of Radioactive Waste, which was established at Agency of Nuclear and Radiation Safety

The radioactive waste management actions should follow the openness and stakeholder involvement principles. Final disposal is regarded as the ultimate step in the radioactive waste management process although a step-wise waste management approach is acceptable. Long-term storage of certain types of wastes (e.g. VLLW, LLW and spent sources) may be regarded as one of the steps in the management process. The aim shall be to achieve a maximum degree of passive safety in storage facility and disposal. The design, construction, commissioning, operation, decommissioning and closure of waste generating and disposal facilities shall be in accordance with all applicable regulatory requirements. The following hierarchy of waste management options shall be followed where practicable:

- Avoidance and minimization of waste trough:

- Re-use, reprocessing and recycling;
- Storage;
- Conditioning and disposal.

To minimize the burden on future generations, decommissioning and closure of facilities should be implemented as soon as practicable. The deliberate dilution of radioactive waste is not acceptable, however in the case of NORM waste the dilution of higher concentration material with lower concentration material will be considered provided all relevant regulatory concerns are addressed. All safety requirements are implemented through radiation protection programmes of licensee handling with radioactive waste. Especial attention is paid to minimizing of waste generation, its segregation, avoidance of hazards and limitation for discharge to environment.

b) National legal and regulatory framework

All radiation safety system was based on Frame Law "On Nuclear and Radiation Safety" was adopted at January 1, 1999. The Law also defines authorization system for nuclear and radiation activity including handling with radioactive waste. The law was amended several times. The last amendment was put in force at the end of 2015. New Law "On Radioactive Waste" also was adopted at the same time. The law establishes main principles and general approach to conduct management of radioactive waste. According to the law requirement new rules for handling with radioactive waste is under developing.

Georgia officially adopted classification of radioactive waste as described at Agency document GSG-1

Based on legal requirements Department for Nuclear and Radiation Safety of Georgian Ministry of Environmental and Natural Resources Protection was transferred to Legal Entity of Public Law – Agency of Nuclear and Radiation Safety within the same Ministry. This transformation increases effectiveness of regulation of nuclear and radiation activity. Considering real situation (allocation of limited human and technical resources) it was issued the decision to establish Department of Radioactive Waste Management at Agency of Nuclear and Radiation Safety (ANRS). Effective splitting of regulatory functions from waste management functions are ensured by legal requirements – the Head of Department of Radioactive Waste Management is accountable to minister of Environmental and natural resources and should be assigned by him (not by Head of ANRS). Besides the Department ANRS contains three services:

- Administrative service;
- Authorization service;
- Service for Inspection and Response;

Total staff of ANRS is 25 specialists. Additionally 2 persons are hired to work at regional office at Poti focused on the control of illicit trafficking of nuclear and radioactive materials.

Among a number of responsibilities ANRS is also responsible for state control of radioactive waste management at every step, by issuing the regulatory requirements and controlling of all practices handling with radioactive waste.

c) Radioactive waste management, decommissioning and spent fuel strategy

Georgia has closed near surface "Radon" disposal. It was designed for storing both solid and liquid waste. The disposal facility had been designed in the Soviet times as one of a "Radon" type facility. There are no details or an inventory of waste (or disused sources) buried in the facility. The facility contains one underground disposal (Dimensions 20x10x5 m) for solid waste and three underground tanks for liquid waste. The last burring of radioactivity on the disposal site was conducted at 1995.

Georgia has Centralized Storage Facility, which was put in operation at 2007. CSF was constructed on the site of Applied Research Center (former nuclear center) of Georgian Institute of Physics.

No SA for both facilities were conducted until 2015. Strategic investigation of the facilities with followed up SA were conducted within EU projects.

Radioactive waste treatment activity is conducted to use abrasive cleaning device, which was provided by IAEA within TC project at 2013

Some radioactive objects (Volume 15 m^3, activity 224 GBq) are kept at External Spent Fuel Storage (ESFS) located at the Applied Research Center territory. At the same territory slightly contaminated water (268 m^3) are kept into special canalization 5 tanks.

Operation of the reactor was terminated by the decision of the USSR State Regulatory Body (Gosatomenergonadzor) in January 1988, which requested to increase the level of the reactor safety in response to the tragic accident at the Chernobyl Nuclear Power Plant. A large scale programme of the modifications aimed at enhancing nuclear and radiation safety at the reactor was fully completed in March 1990, however in April 1990 the Presidium of the Georgian Academy of Sciences passed a Resolution (No 83, of March 30, 1990) to shut down the reactor permanently and ultimately decommission it. The Institute of Physics has developed a strategy for the reactor decommissioning with the objective of bringing it to a radiological safe state that does not require extensive maintenance and surveillance measures.

In August, 1995, 17 pieces of IRT-3M type heat-segregation assemblies have been transferred to Institute of Nuclear Physics of the Uzbek Academy of Sciences for operational needs of the research nuclear reactor VVR-SM. The remained part of heat-segregation elements has been transferred to USA in April, 1998. Thus, at the real moment in the IP no nuclear fuel is available.

Table 1 Radioactive Waste In Storage (including spent fuel that is considered waste)

Route Waste Class	Processed (type)/Unprocessed	Total Current Volume (m3)	Estimated Disposal Volume (m3)	Distribution (%)							Planned Disposal Route (if known)
				RO	FFE	RP	NA	DF	DC/ RE	ND	
All Classes	Unprocessed	640	640								
ILW	Unprocessed	372	372								
LLW	Unprocessed	268	268								

NEWMDB waste origin type codes:
RO – reactor operations
FFE – fuel fabrication & enrichment
RP – fuel reprocessing
NA – nuclear applications
DF - defence
DC/RE - decommissioning & remediation
ND - Not Determined

Table 2 Radioactive Waste Disposed (as disposed volume)

Waste Class	Processed (not)	Total Volume (m3)	Distribution (%)							Disposal Route Used
			RO	FFE	RP	NA	DF	DC/RE	ND	
All Classes	Unprocessed	1000	0	0	0	100	0	0	0	

Table 3 Spent fuel in Storage (MTHM)

Type	Current Amount (NPP)	Current Amount (Research Reactors)
Total Spent Fuel Storage	0	0
Wet storage (AR)	0	0
Wet storage (AFR)	0	0
Dry storage (AR)	0	0
Dry storage (AFR)	0	0
Total spent fuel held in storage for other countries (amounts also included above)	0	0

Table 4 Spent fuel sent for reprocessing (in the country or sent to another country) (MTHM)

Type	Current Amount (NPP)	Current Amount (Research Reactors)

Total amount Spent Fuel sent to Reprocessing (in your country)	0	0
Total amount Spent Fuel sent to Reprocessing (in another country)	0	0
Total amount of Spent Fuel received from another country for reprocessing and recycling	0	0
Total amount of Spent Fuel (MTHM) or radioactive waste (cubic metres) returned to country of origin for storage/disposal	0	0

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

National Waste Classification Name	**VLLW**	**LLW**	**ILW**	**HLW**
VLLW	100	0	0	0
LLW	0	100	0	0
ILW	0	0	100	0
HLW	0	0	0	100

Table 6 Waste management facilities

Type	**Planned**	**Construct.**	**Commiss.**	**In Operation**	**Shutdown**	**Decomm.**	**Other**	**Total**
Spent Fuel Storage	0	0	0	0	0	0	0	
Spent Fuel Reprocessing and Recycling	0	0	0	0	0	0	0	
Spent Fuel Conditioning	0	0	0	0	0	0	0	
Spent Fuel disposal	0	0	0	0	0	0	0	
Waste processing	0	0	0	1	0	0	0	
Waste storage	0	0	0	1	0	0	0	
Waste disposal	0	0	0	0	1	0	0	

Table 7 Summary of major sources of waste

Type	Planned	Construct	Commiss.	In Operation	Shutdown	Decomm.	Other	Total
Research reactors	0	0	0	0	0	1	0	0
Nuclear Power reactors	0	0	0	0	0	0	0	0
Spent Fuel Reprocessing and Recycling	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0

Table 8 Future prospects

Type	Current amount	Estimated Current amount when prepared for disposal	Current Disposal Capacity	Total forecast at 2030	Disposal Capacity 2030	Total forecast at 2050	Disposal Capacity 2050
Spent Fuel Storage							
Wet storage (AR)							
Wet storage (AFR)							
Dry storage (AR)							
Dry storage (AFR)							
Total amount Spent fuel sent to Reprocessing and Recycling							
Total amount Spent fuel disposed							
Waste in storage							
Waste disposal							