ANNEX A: Ireland - National Profile

a. National Framework for management of radioactive waste and spent fuel

Ireland has chosen not to develop a nuclear power industry and the Government has no plans for a change of policy in this respect. Ireland has:

- No nuclear power stations;
- No defence reactors for research or other purposes;
- No spent nuclear reactor fuel in storage or awaiting treatment and no associated spent fuel reprocessing facilities of any sort;
- No trans-boundary movement of spent nuclear fuel from other countries across its territory, nor through its territorial waters;
- no civilian research reactors.

However, like all modern societies, Ireland uses radioactive materials in the form of sealed and unsealed sources in support of its high technology industries and its medical and other societal infrastructure. These activities give rise to waste materials such as disused sealed sources. There are also small amounts of naturally occurring radioactive materials that are produced and also discharged as a result of Ireland's exploitation of natural resources.

Ireland, therefore, has a small but well-developed infrastructure to control and monitor these materials and to provide the necessary protection of public and workers health. This is exercised through the Environmental Protection Agency (EPA) which is the national competent authority and regulatory body for regulating, *inter alia*, the custody, use and disposal of radioactive substances and irradiating apparatus, operating independently from parliament or government departments.

In late 2010 the Government adopted a policy outlining principles and key future steps to be taken with regard to Radioactive Waste Management in Ireland and in the intervening years, substantial progress has been made in Ireland on the basis of this policy. Development of the policy was guided by the following principles:

- The need to address the storage and disposal of legacy and orphan sources into the future in a safe, secure and sustainable way that meets Ireland's international commitments and addresses domestic concerns.
- To aim to do this in a way that has the support of stakeholders (including those who hold and use radioactive sources, and relevant Government Departments and Agencies) and of the public.

- The development and implementation of the policy needs a "whole of Government" approach, with a high level of inter-agency co-operation in a context of agreed and clearly defined demarcation of roles and responsibilities.
- There is no "one size fits all" solution to the variety of waste sources , thereby requiring a number of parallel and complementary strands.
- The resource requirements of implementing the policy should be addressed, as far as possible, according to the "polluter pays" principle.
- The policy reflects the specific roles of key stakeholders including the role of the regulatory authority in terms of licensing and compliance monitoring.

The key elements of the policy are:

- A National Radioactive Waste Storage Facility for disused radioactive sources is to be established.
- The Department of Environment, Community and Local Government (DECLG) and the Environmental Protection Agency (EPA) are to draw up a detailed specification for the facility and make recommendations on the siting, management and resourcing of the facility.
- The current inventory of disused radioactive sources is to be reduced through a co-ordinated and phased Inventory Reduction Programme.
- Interim centralisation of sources by sector in a small number of sector-specific existing storage facilities.

Categorisation of radioactive materials and radioactive waste in Ireland is based on a pragmatic approach consistent with the relatively simple needs of the country. The waste categorisation scheme under the current categories applicable in Ireland are disused sealed sources in storage/custody and unsealed radioactive material arising from medical applications.

b. National legal and regulatory framework

Responsibility for nuclear safety policy is vested in the Minister for the Environment, Community and Local Government. Within DECLG, there is a dedicated Environmental Radiation Policy Unit, whose responsibilities include:

- Policy development and advice to Government in relation to nuclear matters;
- Transposition into national legislation of relevant EU and other international instruments;
- Representation at meetings of the EU, IAEA and other international organisations.

The Environmental Radiation Policy Unit is assisted in these activities by the Office of Radiological Protection of the Environmental Protection Agency (ORP) which was formed by the merger of the Environmental Protection Agency (EPA) and the Radiological Protection Institute of Ireland (RPII). The EPA is an independent public body that reports to Government and is partially funded by the exchequer.

Because Ireland is a member of the European Union, its regulatory framework in respect of radioactive waste and the protection of workers and the public from the hazards associated with ionising radiation is based on the relevant EU Directives and Regulations.

The framework legislation governing the nuclear and radiation protection sectors in Ireland is the Radiological Protection Act, 1991 as amended. This Act repealed the Nuclear Energy Act, 1971. Under the 1991 Act, the Minister for the Environment, Community and Local Government has Ministerial responsibility in relation to nuclear and radiological protection matters. The Radiological Protection (Miscellaneous Provisions) Act, 2014 provides for the merger of the Environmental Protection Agency (EPA) and the Radiological Protection Institute of Ireland (RPII) essentially establishing the EPA as an independent national regulatory body with the radiation protection functionality being exercised on a day to day basis by the Office of Radiological Protection (ORP).

The Radiological Protection Act, 1991 (Ionising Radiation) Order, 2000 (S.I. No.125 of 2000), which was made under Section 30 of the Radiological Protection Act of 1991, gives legal effect in Ireland to EU Council Directive 96/29/Euratom of 13 May 1996, which lays down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation, and EU Council Directive 90/641/Euratom of 4 December 1990 on the operational protection of outside workers exposed to the risk of ionising radiation during their activities in controlled areas. Under S.I. No. 125 of 2000, all activities involving radioactive sources, save those which meet the criteria for exemption specified in the S.I., require a licence from the ORP. In addition, the Radiological Protection Act 1991 (Control of High Activity Sealed Radioactive Sources) Order (S.I. No. 875 of 2005) gives effect to Council Directive 2003/122/EURATOM on the control of high activity sealed radioactive sources and orphan sources. The Radiological Protection Act 1991 (Responsible and Safe Management of Radioactive Waste) Order 2013 (S.I. No 320 of 2013) gives effect to Council Directive 2011/70/EURATOM of 19 July 2011 which establishes a Community framework for the responsible and safe management of spent fuel and radioactive waste.

The Radiological Protection Act, 1991 as amended sets out the functions of the EPA as well as the legislative powers of the Minister for the Environment, Community and Local Government in the areas of nuclear safety and radiological protection. The Act also provides for the implementation of future European Union legislation in the area of radiation protection by means of Ministerial Order. It also sets out specific responsibilities of other Government Ministers and

functions of the Food Safety Authority of Ireland, principally in regard to the protection of individuals from radiological hazards in food.

c. Radioactive waste management, decommissioning and spent fuel strategy and current practices & technologies

Ireland follows the principles of minimisation of the generation of radioactive waste in any form and also avoidance of the importation of radioactive waste in any form. Another principle is the management of all sealed sources from "cradle to grave". This includes a licensing system and take-back arrangements with the original overseas supplier of the sources. If available, the practice of replacement of radioactive sources by non-radioactive alternatives is applied. This includes, for example, prohibiting the import and use of lightning conductors that employ radioactive sources or of radium used in luminising materials.

The disused sources, which for whatever reason cannot be returned to the original supplier, are held in secure store on the premises where they were previously used and subject to any licence conditions which the ORP may see fit to impose and to inspection by the ORP.

Radioactive waste in unsealed form arises from the use of radionuclides mainly in hospitals and in a few educational and research establishments. The sources are either imported from the relevant overseas suppliers or short-lived ones generated on the main hospital sites.

Requirements for the licensing of the use and disposal of unsealed sources, or exemption from such requirements, are established by Article 5 of the Radiological Protection Act 1991 (Ionising Radiation) Order 2000 (S.I. No. 125 of 2000)). Quantities or concentrations requiring licensing under S.I. No. 125 of 2000 are based on Annex I of the EU Council Directive 96/29/Euratom. Normal practice in regard to requirements for licensing is to apply the limits or concentrations used on a daily basis.

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	<30 m^3	<30 m^3	0	0	0	100	0	0	0	Unknown
Disused sealed sources	Unprocessed	<30 m^3	<30 m^3	0	0	0	100	0	0	0	Unknown
Unsealed radioactive material	N/A	0	0	0	0	0	0	0	0	0	N/A

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	N/A	0	0	0	0	0	0	0	0	N/A

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
Disused sealed sources	0	100%	0	0
Unsealed radioactive material	N/A	N/A	N/A	N/A

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	0
Spent Fuel Reprocessing and Recycling	0	0	0	0	0	0	0	0
Spent Fuel Conditioning	0	0	0	0	0	0	0	0
Spent Fuel disposal	0	0	0	0	0	0	0	0
Waste processing	0	0	0	0	0	0	0	0
Waste storage	1	0	0	0	0	0	0	1
Waste disposal	0	0	0	0	0	0	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	0	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	0	0	0	0	0	0	0
Wet storage (AR)	0	0	0	0	0	0	0
Wet storage (AFR)	0	0	0	0	0	0	0
Dry storage (AR)	0	0	0	0	0	0	0
Dry storage (AFR)	0	0	0	0	0	0	0
Total amount Spent fuel sent to Reprocessing and Recycling	0	0	0	0	0	0	0
Total amount Spent fuel disposed	0	0	0	0	0	0	0
Waste in storage	0	0	0	0	0	0	0
Waste disposal	0	0	0	0	0	0	0