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INTEGRATED REVIEW SERVICE FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT, DECOMMISSIONING AND REMEDIATION (ARTEMIS)

FOLLOW-UP MISSION

TO

SPAIN

Madrid, Spain

28 September – 3 October 2025

DEPARTMENT OF NUCLEAR SAFETY AND SECURITY
DEPARTMENT OF NUCLEAR ENERGY

IAEA

Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation

ARTEMIS

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IAEA ARTEMIS

REPORT OF THE

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TO

SPAIN

Mission dates: *28 September – 3 October 2025*
Location: *Madrid, Spain*
Organized by: *IAEA*

ARTEMIS REVIEW TEAM	
Mr François Besnus	ARTEMIS Team Leader (France)
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IAEA-2025

The number of recommendations, suggestions and good practices is in no way a measure of the status of the national infrastructure for nuclear and radiation safety. Comparisons of such numbers between ARTEMIS reports from different countries should not be attempted.

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EXECUTIVE SUMMARY

On 21 March 2024, the Permanent Representation of Spain to the International Organizations in Vienna requested the International Atomic Energy Agency (IAEA) to organize and carry out, in 2025, an Integrated Review Service for Radioactive Waste and Spent Fuel, Decommissioning and Remediation (ARTEMIS) follow-up mission.

The purpose of this ARTEMIS follow-up mission is to review the implementation of the findings resulting from the initial ARTEMIS mission organised from 14 to 24 October 2018. The initial 2018 ARTEMIS mission was requested by Spain to satisfy its obligations under Article 14(3) of the Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community Framework for the Responsible and Safe Management of Spent Fuel and Radioactive Waste (hereinafter the EU Waste Directive).

The follow-up review mission took place at the headquarter of the National Company for Radioactive Waste (ENRESA) in Madrid from 29 September to 3 October 2025. It was performed by a team of five senior international experts in the field of decommissioning and radioactive waste and spent fuel management, from multiple IAEA Member States, with four IAEA staff providing coordination and administrative support.

Representatives of Spanish organizations during the mission itself were from ENRESA, the Ministry for the Ecological Transition and the Demographic Challenge (MITECO) and the Nuclear Safety Council (CSN).

The ARTEMIS follow-up mission provided an independent international evaluation of Spain's implementation of the findings identified during the initial 2018 ARTEMIS mission.

The scope of ARTEMIS follow-up mission included the aspects and topics covered in the initial 2018 ARTEMIS mission, where some findings were raised, i.e. National policy, National strategy, Concepts, plans and technical solutions for Spent Fuel and Radioactive Waste management, Cost estimates and financing of Radioactive Waste and Spent Fuel management, Capacity building for Radioactive Waste and Spent Fuel management – Expertise, training and skills. The outcomes from the IAEA Integrated Regulatory Review Service (IRRS) follow-up mission in Spain conducted from 26 January to 3 February 2025, were taken into account in the follow-up ARTEMIS mission, as appropriate, to avoid unnecessary duplication.

To assess progress made since the initial mission to address the recommendations and suggestions, the ARTEMIS team received presentations from the Spanish counterparts and conducted a series of discussions to evaluate to which extent the findings of the initial mission could be considered closed or needed to remain opened.

The ARTEMIS team found that Spain has successfully implemented the recommended actions from the 2018 mission. 6 recommendations and 2 suggestions identified in the initial mission in 2018 were closed. In addition, 1 recommendation regarding the process of updating the General Radioactive Waste Plan (GRWP) was closed, trusting further improvement in the transparency of the process.

The good practice identified in the initial mission in 2018 was withdrawn, since the reference case plan to store spent fuel (SF), high level waste (HLW) and special waste (SW) in a centralized storage facility (CSF), based on vault storage technology, will no longer be progressed.

Findings and related considerations supporting above outcomes of the follow-up peer review are summarized in this report.

A press release was issued by the IAEA at the end of the peer review mission.

I. INTRODUCTION

On 21 March 2024, the Permanent Representation of Spain to the International Organizations in Vienna requested the International Atomic Energy Agency (IAEA) to organize and carry out, in 2025, an Integrated Review Service for Radioactive Waste and Spent Fuel, Decommissioning and Remediation (ARTEMIS) follow-up mission.

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The review was performed by a team of five senior international experts in the field of decommissioning and radioactive waste and spent fuel management, from multiple IAEA Member States, with IAEA staff providing coordination and administrative support.

II. OBJECTIVE AND SCOPE

The ARTEMIS follow-up mission provided an independent international evaluation of Spain's implementation of the findings identified during the initial 2018 ARTEMIS mission.

The scope of ARTEMIS follow-up mission included the aspects and topics covered in the initial 2018 ARTEMIS mission, where some findings were raised, i.e. National policy, National strategy, Concepts, plans and technical solutions for Spent Fuel and Radioactive Waste management, Cost estimates and financing of Radioactive Waste and Spent Fuel management, Capacity building for Radioactive Waste and Spent Fuel management – Expertise, training and skills.

The outcomes from the IAEA Integrated Regulatory Review Service (IRRS) follow-up mission in Spain conducted from 26 January to 3 February 2025, were taken into account in the follow-up ARTEMIS mission, as appropriate, to avoid unnecessary duplication.

III. BASIS FOR THE REVIEW

A) PREPARATORY WORK AND IAEA REVIEW TEAM

A preparatory meeting for the ARTEMIS follow-up mission was conducted on 23 October 2024. The preparatory meeting was carried out by the appointed Team Leader, Mr François Besnus, the IAEA coordinator and deputy coordinator, Mr Gerard Bruno and Ms Karina Lange respectively, and the team of National Counterparts, which at that time was led by Mr Jaime de Ponga from the General Sub-Directorate for Nuclear Energy, General Directorate for Energy Planning and Coordination, Ministry for the Ecological Transition and the Demographic Challenge.

The ARTEMIS follow-up mission team had discussions regarding:

- the Terms of Reference for the ARTEMIS follow-up; and
- the specific characteristics and organisation of ARTEMIS follow-up mission in Spain.

IAEA staff presented the ARTEMIS principles, process and methodology. This was followed by a discussion on the work plan for the implementation of the ARTEMIS follow-up mission in Spain in 2025.

Mr Jaime de Ponga, initially appointed as the National Counterpart for the ARTEMIS follow-up mission and designated IAEA point of contact, was replaced in July 2024 by Mr Rafael Felpeto Rebón from the General Sub-Directorate for Nuclear Energy, General Directorate for Energy Planning and Coordination, Ministry for the Ecological Transition and the Demographic Challenge.

The Spanish National Counterpart provided the IAEA with the Advance Reference Material (ARM) for the review in April 2025.

B) REFERENCES FOR THE REVIEW

The ARTEMIS follow-up mission covered all documentation submitted by Spain for the agreed scope of the review.

Spain provided a Self-Assessment Report with a description of the way each one of the findings raised during the initial 2018 ARTEMIS mission has been addressed, with supporting documentation as reference material for the mission.

Additionally, Spain provided adequate (updated) Advanced Reference Material (ARM) to demonstrate the progress and implementation of measures that have been made since the initial ARTEMIS mission in 2018, in particular to address the findings raised during the initial mission.

The complete list of IAEA publications used as the basis for this review is provided in Appendix E.

C) CONDUCT OF THE REVIEW

A Review Team meeting took place on Sunday, 28 September 2025 in Madrid, Spain led by the ARTEMIS Team Leader, Mr François Besnus, supported by the ARTEMIS Team Coordinator, Mr Gerard Bruno, and the Deputy Team Coordinator, Ms Karina Lange.

The ARTEMIS entrance meeting was held on Monday, 29 September, with the participation of the ENRESA, CSN, MITECO senior management and staff. Opening remarks were delivered

by Ms Olga García, President of ENRESA, Mr Juan Carlos Lentijo, President of CSN, Mr Joan Groizard, Secretary of State for Energy of the Ministry for Ecological Transition and the Demographic Challenge, the ARTEMIS Team Leader, Mr François Besnus, and the ARTEMIS Team Coordinator, Mr Gerard Bruno.

During the ARTEMIS follow-up mission, a review was conducted for all review topics within the agreed scope with the objective of reviewing the Government's response to the recommendations and suggestions identified during the initial mission.

The ARTEMIS Review Team performed its review according to the mission programme included in Appendix B.

The ARTEMIS Exit Meeting was held on Friday, 3 October 2025. Opening remarks were made by Mr Victor Marcos, General Director of Energy Planning and Coordination, MITECO, and Ms Olga García, President of ENRESA and Ms Teresa Vázquez, CSN's Technical Director of Nuclear Safety. A presentation of the results of the Review Mission was given by the ARTEMIS Team Leader, Mr François Besnus. Closing remarks were delivered by the ARTEMIS Team Coordinator, Mr Gerard Bruno, Division of Radiation, Transport and Waste Safety, Department of Nuclear Safety and Security.

An IAEA press release was issued.

1. NATIONAL POLICY AND FRAMEWORK FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT

1.1. NATIONAL POLICY

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *The General Radioactive Waste Plan (GRWP) has not been revised since 2006. ENRESA has provided updates in 2010, 2014 and 2015 however these updated versions have not undergone formal approval by the government. Consequently, there is no formal basis for the current decision making in terms of the long-term management of radioactive waste, raising concerns regarding the sustainability of the current strategy for radioactive waste management.*	
(1)	**BASIS: GSR Part 5 Requirement 2 National policy and strategy on radioactive waste management states that** *"To ensure the effective management and control of radioactive waste, the government shall ensure that a national policy and a strategy for radioactive waste management are established. The policy and strategy shall be appropriate for the nature and the amount of the radioactive waste in the State, shall indicate the regulatory control required, and shall consider relevant societal factors. The policy and strategy shall be compatible with the fundamental safety principles and with international instruments, conventions and codes that have been ratified by the State. The national policy and strategy shall form the basis for decision making with respect to the management of radioactive waste."*
RA1	**Recommendation: The Government should take immediate steps toward making decisions regarding updates to the GRWP such that the plan can inform decision making to ensure the continued safe and sustainable management, including interim storage and disposal, of radioactive waste in Spain.**

This recommendation has been duplicated in both the IRRS and ARTEMIS components of the joint report on the combined missions in 2018 (recommendations R2 in IRRS and RA1 in ARTEMIS, respectively).

Changes since the initial ARTEMIS mission

Recommendation RA1:

The Government is responsible for establishing the policy for the management of radioactive waste, including spent nuclear fuel, and the decommissioning of nuclear facilities, through the approval of the GRWP. This function of the Government is established by law, in Article 38 bis of the Law on Nuclear Energy (Law 25/1964, of 29 April 1964).

In accordance with Article 5 (3) of the Royal Decree 102/2014, the GRWP is required to be periodically reviewed based on the scientific and technical developments, the know-how acquired as well as the recommendations, lessons and good practices resulting from peer review processes. However, the ARTEMIS Review Team observed in 2018 that whilst ENRESA made

updates of the GRWP in 2010, 2013, 2014 and again in 2015, the Government had not undertaken any formal update of the GRWP since 2006.

On 27 December 2023, the Council of Ministers, at the proposal of MITECO, approved the 7th GRWP. This is the first GRWP to be subject to a strategic environmental assessment, which includes a consultation and public information phase; as well as a report by the Nuclear Safety Council and the Regional Governments to ensure broad participation, consensus and social support. The ARTEMIS Review Team commends the consultation and public information carried out during this process.

The 7th GRWP revises and modifies the strategy for the temporary storage of spent fuel, moving from a centralised to a decentralised approach, while at the same time promoting the deep geological repository (DGR) programme for the disposal of spent fuel (SF), high level waste (HLW), special waste (SW) and long-lived low and intermediate level waste (LILW) through the adoption of an indicative programme of activities.

ENRESA has a legal obligation to submit, every four years or when required to do so by MITECO, a revision of the GRWP [Royal Decree 102/214, Art. 9.4]. The CSN and ENRESA discuss in the Liaison Committee, which takes place at least twice a year, the licensing milestones required for implementation of the GRWP. The ARTEMIS Review Team was informed that the Ministry would start the approval procedure of the revised GRWP upon significant changes.

The ARTEMIS Review Team acknowledges the efforts made to issue efficiently the new plan which it considers being a major step achieved in line with the recommendation. However, the Government has an opportunity to strengthen its decision-making framework when determining if changes in respect of the current GRWP are significant enough to initiate an approval procedure for a new revision. This would enhance transparency and visibility regarding how and when updates are considered or implemented.

During the review of the findings, the representatives of MITECO have agreed in principle the advice to enhance transparency by publishing a formal statement on their evaluation of the revision of the plan submitted by ENRESA every 4 years.

Status of Recommendation RA1

Recommendation RA1 is closed on the basis of progress made and confidence in effective completion.

1.2. LEGAL, REGULATORY AND ORGANIZATIONAL FRAMEWORK (PARTLY REFERRING TO IRRS)

There were no findings in this area in the original ARTEMIS mission.

2. NATIONAL STRATEGY FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *Current available disposal capacity for LILW of the El Cabril facility is limited. The facility is currently 76% full. Consequently, an extension of the current disposal capacity will be required in the near term.*	
(1)	**BASIS: GSR Part 1 Requirement 24: Demonstration of safety for the authorization of facilities and activities states that** *"The applicant shall be required to submit an adequate demonstration of safety in support of an application for the authorization of a facility or an activity."*
(2)	**GSR Part 1 paragraph 4.37 states that "***Any subsequent amendment, renewal, suspension or revocation of the authorization for a facility or an activity shall be undertaken in accordance with a clearly specified and established procedure, and shall make provision for the timely submission of applications for the renewal or amendment of the authorization."*
SA1	**Suggestion: ENRESA should consider completing the licence extension application in a timely manner to ensure the continued availability of required disposal capacity. This objective should be included in the update to the GRWP.**

Changes since the initial ARTEMIS missions

Suggestion SA1:

Spain manages LILW, as well as very low-level waste (VLLW) at El Cabril Disposal Facility (in operation since 2008). This facility has the authorised capacity to manage VLLW, allowing it to manage the waste expected to be generated in the 7th GRWP, mainly waste from the decommissioning of the power plants. For LILW, an expansion of the capacity is needed to cover the estimates as mentioned in the 7th GRWP. This licence extension application has been approved.

It is expected that the tender for the construction of the Southeast Platform at which the vaults for disposal of LILW will be constructed, will take place in 2026. Permits for the construction of the vaults have been delivered in 2025. During the construction period, estimated at 42 months, the conditions established in the construction and assembly permit will be fulfilled and the licence documentation will be updated to request the start-up of the Southeast Platform, which is expected to take place in the second half of 2030.

The ARTEMIS Review Team took note that the date foreseen for saturation of the present capacity (2031) is the earliest date given by estimates. In addition, it appears that buffer capacity in case of delay at storage sites is largely available. Some flexibility therefore exists in meeting deadlines without risk to impact waste management streams.

Status of Suggestion SA1

Suggestion SA1 is closed.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *There is no evidence that the decision to delay the review of the CSF licence application included a consideration of appropriate technical and safety factors. The current national plan indicates that the CSF would provide a significant contribution to safety by facilitating the safe management of spent fuel, special waste, other high-level waste at an away from reactor site and permits the completion of all dismantling operations at the reactor site.*	
(1)	**BASIS: GSR Part 5 Requirement 6: Interdependences states that** *"Interdependences among all steps in the predisposal management of radioactive waste, as well as the impact of the anticipated disposal option, shall be appropriately taken into account."*
(2)	**GSR Part 5 paragraph 3.21. states that** *"Owing to the interdependences among the various steps in the predisposal management of radioactive waste, all activities from the generation of radioactive waste up to its disposal, including its processing, are to be seen as parts of a larger entity, and the management elements of each step have to be selected so as to be compatible with those of the other steps. This has to be achieved principally through governmental and regulatory requirements and approaches. It is particularly important to consider the established acceptance criteria for disposal of the waste or the criteria that are anticipated for the most probable disposal option."*
RA2	**Recommendation: The Government should ensure, through advice from the competent authority, that any delay in the implementation of the CSF does not negatively impact the safe management of spent fuel and higher-level waste.**

Changes since the initial ARTEMIS mission

Recommendation RA 2:

During the ARTEMIS mission in 2018, a delay was observed in the plans to establish a centralized storage facility (CSF) for all spent fuel, SW and HLW including the waste returned after reprocessing. The original plan was to have a CSF established in 2011. In July 2018, MITECO requested the CSN to suspend the current review of the licence application for construction of the proposed CSF for high level radioactive waste and spent nuclear fuel.

The 7th GRWP mentions a change of strategy for the storage of spent fuel which now opts for storage at the Nuclear Power Plants (NPPs), by means of Individualised Temporary Storage (ITS) facilities. The DTSs (decentralised temporary storage facilities composed of ITS and auxiliary installations – see chapter 4-GPA1 for details) will have to store the spent fuel in safe conditions until the DGR comes into operation, scheduled for 2073.

The ARTEMIS Review Team noted the definitive withdrawal of the CSF project in favour of the implementation of a decentralized spent fuel management strategy, based on proven technology of dry storage by means of storage casks. The ARTEMIS Review Team did not identify any obstacle for this new strategy to comply with international safety standards and took note of CSN priority to examine the necessary authorisation applications in due time, hence consolidating confidence in the availability of the management solutions when needed.

Status of Recommendation RA 2

Recommendation RA 2 is closed.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *There is currently a lack of progress in establishing the Deep Geological Disposal facility. This is further hampered by the fact that the existing generic authorization framework and regulations needs to be complemented by regulations and an implementation plan to specifically address the establishment of the Deep Geological Repository (DGR) programme. This creates uncertainty and decreases the likelihood that the project will be able to meet the key milestones and deadlines.*	
(1)	**BASIS: SF-1 Principle 7 Para 3.29 states that "***Radioactive waste must be managed in such a way as to avoid imposing an undue burden on future generations; that is, the generations that produce the waste have to seek and apply safe, practicable and environmentally acceptable solutions for its long term management. The generation of radioactive waste must be kept to the minimum practicable level by means of appropriate design measures and procedures, such as the recycling and reuse of material."*
(2)	**BASIS: SSR-5 Requirement 1 states that** *"The government is required to establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities shall be clearly allocated for disposal facilities for radioactive waste to be sited, designed, constructed, operated and closed. This shall include: confirmation at a national level of the need for disposal facilities of different types; specification of the steps in development and licensing of facilities of different types; and clear allocation of responsibilities, securing of financial and other resources, and provision of independent regulatory functions relating to a planned disposal facility."*
(3)	**BASIS: GSR Part 1 Requirement 21 states that** *"The regulatory body shall establish formal and informal mechanisms of communication with authorised parties on all safety related issues, conducting a professional and constructive liaison."*
(4)	**BASIS: SSR-5 Requirement 2 states that** *"The regulatory body shall establish regulatory requirements for the development of different types of disposal facility for radioactive waste and shall set out the procedures for meeting the requirements for the various stages of the licensing process. It shall also set conditions for the development, operation and closure of each individual disposal facility and shall carry out such activities as are necessary to ensure that the conditions are met."*
RA3a	**Recommendation: The Government should complement the existing legal regulatory framework by developing regulation and an implementation plan for establishing the Deep Geological Disposal facility. This plan should clarify the roles and responsibilities and engagement of the appropriate**

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	stakeholders, at each stage of implementation.
RA3b	**Recommendation: Further, CSN and other competent authorities should develop a plan for regulatory engagement, licensing submissions and regulatory hold points in consultation with ENRESA and other appropriate stakeholders.**
RA3c	**Recommendation: In addition, ENRESA should proactively complete establishment of the technical basis of the geological disposal programme, particularly the site selection process, and define the major milestones with proposed deadlines.**

Changes since the initial ARTEMIS mission

Recommendations RA3a, RA3b and RA3c:

The ARTEMIS Review Team identified in 2018 that the current generic authorization framework and regulations did not adequately address the specific legal and regulatory process for establishment of the DGR. Whilst the respective roles of regulator and operator were defined, the impact of the long-time frameworks and step by step iterative process, requiring multiple stakeholder engagement and regular reaffirmation of political support, was not explicitly covered.

In the process towards disposal, three main activities have been accomplished after the 2018 ARTEMIS mission: (1) a Tripartite Working Group (TWG) has been formed, (2) the 7th GRWP has been approved (see RA1 for more information) including a roadmap to disposal and (3) a new Regulation on Nuclear and Radioactive Facilities and other activities related with exposure to ionising radiation (RINR) has been approved.

(1) TWG

A Tripartite Working Group (MITECO, CSN, ENRESA) was established in 2020, with the aim of studying and developing a proposal for a legislative, regulatory and procedural framework to support the DGR programme in Spain. The Terms of Reference of the TWG ensures the independence of the regulator.

In 2022, the TWG prepared a first proposal for regulatory implementation on deep geological disposal comprising the following actions: (a) proposal for minimum content for a legal instrument, (b) proposal for technical safety guides and (c) and Action Protocol for regulating the operator-regulator dialogue. See below for more information on these actions.

(2) GRWP and roadmap

A roadmap for the development of a DGR has been established in 2021 and has been included in the 7th GRWP (a revision of the planning of the roadmap was prepared in April 2024 and approved by the TWG in December 2024). The roadmap, based on preparatory work by ENRESA, comprises the major steps foreseen until the commissioning of the DGR with activities, related key decisions hold points, regulatory instructions, regulatory framework development and implementation goals.

(3) RINR

The regulatory framework was supplemented in 2024 with the adoption of a new version of the RINR. The new RINR incorporates the DGR in more detail and these changes clarify the requirements for the DGR authorisations.

Future developments in the regulatory framework

In stage 2 of the roadmap to disposal (2026-2028), the legislative and procedural framework will be adopted to establish the necessary regulations to govern site selection, initiate operator-regulator dialogue to define the basis for the DGR design as well as continue R&D and international cooperation programmes.

The ARTEMIS Review Team commends the forthcoming issuing of a law for the site selection process, planned for 2026-2028. This is a critical step forward in the further implementation of the DGR roadmap for Spain. This law will form the basis for the site selection procedure.

The ARTEMIS Review Team advises the Government to incorporate in the site selection law public participation processes and assignment of responsibilities between the different stakeholders.

The ARTEMIS Review Team also notes that during the discussion of the findings, all parties agreed that the site selection law is critical step to move forward with the DGR programme.

Technical safety guides for the DGR by CSN

The CSN has started working on a CSN Instruction on site characterization and assessment for nuclear facilities (currently in internal revision). The CSN will establish exclusion criteria for DGR sites and geological formation requirements to isolate waste for long periods. After the ongoing revision of the ITS regulation (currently foreseen in 2027), CSN will start working on a document on general safety criteria and a document on site selection criteria for the DGR.

Action Protocol for the operator-regulator dialogue

CSN and ENRESA developed an action protocol to formalize and enhance dialogue between the regulator and implementer during the pre-licensing phases of the DGR and ensure a safe, transparent, and efficient licensing process with public acceptance. The protocol, discussed within the TWG, establishes an allocation of responsibilities, regulatory independence and a commitment to transparency and public communication. It also provides for an organizational structure including joint planning, regular meetings, research and development activities, as well as systematic documentation of these actions. The ARTEMIS Review Team has been informed that the action protocol is planned to be signed in 2028 at the latest.

Knowledge update on disposal by ENRESA

The first phase of the roadmap, called the "knowledge update" (which will run until the end of 2025) is the production of a document compiling and organising all available information on relevant technologies and developments on disposal. The ARTEMIS Review Team commends this knowledge update by ENRESA. The knowledge update will form the basis for site selection of the DGR incorporating the feedback from the European programmes (EURAD and EURAD-2) as well as the international experience from the workshop organised by CSN and ENRESA in November 2022. This workshop reviewed Spain's situation and European DGR development, serving as a forum for technical debate and social participation.

The ARTEMIS Review Team was informed that the knowledge update will be taken into account in future ENRESA's Research & Development (R&D) plans. The 9th R&D plan is a responsibility of ENRESA and publicly available.

Status of Recommendation RA 3a

Recommendation RA 3a is closed.

Status of Recommendation RA 3b

Recommendation RA 3b is closed.

Status of Recommendation RA 3c

Recommendation RA 3c is closed.

3. INVENTORY OF SPENT FUEL AND RADIOACTIVE WASTE

There were no findings in this area in the original ARTEMIS mission.

4. CONCEPTS, PLANS AND TECHNICAL SOLUTIONS FOR SPENT FUEL AND RADIOACTIVE WASTE MANAGEMENT

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *The overall design of the CSF has been formulated with multiple safety features and capabilities to provide lifetime flexibility; for example, the receipt and processing of casks and waste packages are decoupled. The design has been informed through engaging with the designers and operators of existing facilities and adopting best in class for each element of the design.*	
(1)	**BASIS: GSR Part 5 Requirement 17, para. 5.14 states that** *"The need for operational maintenance, testing, examination and inspection has to be addressed for the conceptual design stage onwards."*
GPA1	**Good practice: The process of incorporating the best in class in the design of the CSF together with multiple capabilities for the management for spent fuel is considered as good practice.**

Changes since the initial ARTEMIS mission

Good practice GPA1:

The reference case plan to store SF, HLW and SW in a CSF, based on vault storage technology, will no longer be progressed. The justification for this is given in the 7th GRWP and in reference[1]. The current plan is DTS at the sites of the generating NPPs. Each DTS facility will comprise of one or more ITS facility along with an auxiliary facility to repair/maintain the stored casks/welded canisters. In addition, a hot cell facility with complementary services will be built at one of the NPP sites for spent fuel assemblies recovery to enable remedial activities/examination etc. The latter is a regulatory requirement to address a beyond design base assumption.

The 7th GRWP foresees the use of existing ITSs facilities, originally deployed as contingencies until the CSF was built[2], adding additional capacity at sites where the existing ITS are either full or will not be sufficient to accommodate the lifetime arisings from the generating NPP. The latter will lead to three new ITSs being built alongside existing ITSs and a new one at Vandellos II NPP.

To support the use of the interim storage facilities until a geological disposal facility becomes available in 2073, ageing management plans have been or will be put in-place. Either storage concept meets the safety objectives as outlined in IAEA SSG-15 Rev. 1 and the addition of an auxiliary facility should ensure retrieval of the stored casks.

[1] MINISTRY FOR ECOLOGICAL TRANSITION AND DEMOGRAPHIC CHALLENGE, Evidence On The Report "Analysis Of The Evolution Of Needs For The Storage Of Spent Fuel And High-Level Waste In Spain", MITECO, Madrid (2025).

[2] MINISTRY FOR ECOLOGICAL TRANSITION AND DEMOGRAPHIC CHALLENGE, Topic 2: National Strategy for radioactive waste and spent fuel management, presentation, MITECO, Madrid (2018).

GPA1 was given in recognition of the concept design for a CSF, which incorporated best in class through building on international learning from the deployment of other dry storage systems and the added flexibility to respond to unknowns; for example, the ability to collect data to support disposal.

The current plan of decentralized temporary storage builds on existing deployed storage concepts with the provision to recover/rework stored casks, fulfilling specific safety guidance (sections 6.4 (g) and 6.15 of IAEA SSG-15 Rev 1). While casks are widely used dry storage concepts, there are other dry storage concepts available from the marketplace that find equal use. Given that all the available dry storage concepts meet fundamental safety requirements, the concepts being deployed do not necessarily warrant being singled out as an exemplar for other countries to follow as choice is very much a function of the selection criteria employed and specific country circumstances.

Status of Good practice GPA1

Good practice GPA1 is withdrawn.

5. SAFETY CASE AND SAFETY ASSESSMENT OF RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT ACTIVITIES AND FACILITIES

There were no findings in this area in the original ARTEMIS mission.

6. COST ESTIMATES AND FINANCING OF RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *According to the regulation, ENRESA performs an annual cost assessment of GRWP which is submitted to MITECO each year. In the past years the tax rates prescribed in the regulation have been below the appropriate values that would cover the costs for the realization of the National Waste Management Programme, according to ENRESA estimations. In addition, the regulation has not been amended since 2010. Consequently, the annual revenues to the Fund are less than ENRESA's detailed cost calculations. Further, robustness of the funding mechanism could be questioned by possible evolutions of the nuclear energy policy.*	
(1)	**BASIS: GSR Part 1 Requirement 10: Provision for the decommissioning of facilities and the management of radioactive waste and of spent fuel states that** *"The government shall make provision for the safe decommissioning of facilities, the safe management and disposal of radioactive waste arising from facilities and activities, and the safe management of spent fuel.* *2.33. Appropriate financial provision shall be made for:* *(a) Decommissioning of facilities;* *(b) Management of radioactive waste, including its storage and disposal;* *(c) Management of disused radioactive sources and radiation generators;* *(d) Management of spent fuel."*
(2)	**GSR Part 5 Requirement 1: Legal and regulatory framework states that** *"The government shall provide for an appropriate national legal and regulatory framework within which radioactive waste management activities can be planned and safely carried out. This shall include the clear and unequivocal allocation of responsibilities, the securing of financial and other resources, and the provision of independent regulatory functions. Protection shall also be provided beyond national borders as appropriate and necessary for neighbouring States that may be affected."*
(3)	**SSR-5 Requirement 1: Government responsibilities states that** *"The government is required to establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities shall be clearly allocated for disposal facilities for radioactive waste to be sited, designed, constructed, operated and closed. This shall include: confirmation at a national level of the need for disposal facilities of different types; specification of the steps in development and licensing of facilities of different types; and clear allocation of responsibilities, securing of financial and other resources, and provision of independent regulatory functions relating to a planned disposal facility."*
RA4	**Recommendation: The Government should routinely review the funding mechanism, including the need to update tax rates, to ensure adequate and timely financing of NPP decommissioning, Centralized Storage Facility development, Deep Geological Disposal facility programme development and implementation and other radioactive waste and spent fuel management**

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	activities.

Changes since the initial ARTEMIS missions

Recommendation RA4:

During the ARTEMIS follow-up mission it was presented that the current reference scenario is in accordance with the Integrated National Energy and Climate Plan (PNIEC 2021–2030) and foresees the gradual phase-out of Spanish nuclear power plants between 2027 and 2035. All plants will undergo immediate dismantling, with a 10-year dismantling period, followed by surveillance. El Cabril disposal facility will continue managing VLLW and LILW, while temporary on-site storages will be used for spent fuel and HLW until the planned DGR becomes operational by 2073.

Financing is structured around the principles of polluter pays and no undue burden on future generations. Costs are prepaid through contributions to a dedicated Fund, collected during the operation of nuclear power plants (per kWh produced), at the Juzbado fuel assembly plant (per ton of fuel), and via tariffs for waste from other producers. These non-tax public economic contributions are defined in law and can be revised by the Government as required.

The Fund is legally restricted to finance only GRWP related activities. Any temporary surpluses are invested in a diversified financial portfolio, managed under principles of security, profitability, and liquidity. Its management is overseen by the MITECO and other authorities through a Monitoring and Control Committee. The system includes weekly, monthly, and quarterly reviews, regular audits by independent external firms, and semi-annual internal audits, ensuring transparency and accountability.

Cost estimates are continuously updated using comprehensive analytical accounting, covering current, mid-term (four-year), and long-term projections (to 2100). In accordance with the regulatory framework, ENRESA is required to submit to MITECO an updated Economic and Financial Study on an annual basis. This study provides revised cost estimates for activities envisaged in the GRWP and ensures that financial mechanisms remain consistent with projected requirements. Through this process, the Government receives continuous and reliable information on inventories, costs, and financing needs, thereby enabling timely decisions on tariff updates and funding arrangements. This approach guarantees the adequacy and sustainability of financial resources allocated to ENRESA's decommissioning, waste management and related programmes.

ENRESA in 2018 predicted that a gap between actual cost projections and revenues collected would appear if tax and fee levels were not adjusted. This raised questions about the long-term sufficiency and resilience of the funding mechanism, particularly under possible changes in Spain's nuclear energy policy.

Since the 2018 ARTEMIS mission, the tariff applicable to operating NPPs in Spain has been revised on two occasions:

- Royal Decree 750/2019 introduced the first modification, aligning the tariff structure with the planned, orderly phase-out of nuclear power plants as set forth in the National Energy and Climate Plan (PNIEC 2021–2030);
- Subsequently, Royal Decree 589/2024 further adjusted the tariff to incorporate updated projections of future costs, primarily arising from the approval of the 7th GRWP.

During the presentation and discussion, it was explained that funding mechanism works well, that MITECO regularly (on yearly basis) reviews the cost estimates prepared by ENRESA and the adequacy of the underlying funding mechanism. The ARTEMIS Review Team notes that the taxes have been updated to adequately fund activities mentioned in the 7th GRWP.

Status of Recommendation RA4

Recommendation RA4 is closed.

7. CAPACITY BUILDING FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT – EXPERTISE, TRAINING AND SKILLS

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *ENRESA is bounded by public sector employment requirements which restrict its flexibility in recruiting. Further, ENRESA faces the challenge to ensure knowledge continuity due to retirements. The strategy and processes for knowledge transfer should be further developed to address comprehensively this challenge.*	
(1)	**BASIS: GSR Part 2 Requirement 9, para. 4.27 states that** *"The knowledge and the information of the organization shall be managed as a resource."*
SA2	**Suggestion: ENRESA should consider ensuring that the strategy and mechanisms are in place to avoid the loss of knowledge and know-how on radioactive waste and spent fuel management.**

Changes since the initial ARTEMIS missions

Suggestion SA2:

ENRESA developed and implemented a comprehensive knowledge management framework, which includes structured documentation systems such as the Waste Management System (WMS) and Document Management System (DMS). These systems are designed to capture and preserve procedural and technical knowledge, as well as experience in formats that ensure long-term accessibility. This framework is further supported by a suite of strategic documents and processes, including Knowledge Management Strategy within ENRESA's Technical Directorate, 2024–2027 Company Succession Plan, the Training Policy, the Second General Training Plan, the Onboarding Plan (in place since 2020), and formal procedures for training planning and monitoring. All these documents aim at collectively ensuring a systematic and sustainable approach to institutional knowledge transfer and workforce capability development.

In 2024, ENRESA reported that nearly all its workforce participated in 444 training actions, totalling over 32,000 hours. This included onboarding programmes for new hires, mandatory regulatory training, and professional development initiatives. The Welcome Plan, for instance, introduced 45 new employees to ENRESA's strategic priorities and operational sites, reinforcing the organization's commitment to knowledge transfer. Notably, ENRESA, like other public organizations, has received authorisation for 120% staff replacement, addressing workforce renewal and mitigating risks associated with retirements.

The organization also integrates knowledge management into its corporate risk framework, identifying the absence of a shared strategy as a key risk. This has led to proactive measures to harness lessons learned from past projects and embed them into future planning. ENRESA's participation in international initiatives, such as the OECD/NEA's 2019 Records, Knowledge and Memory (RK&M) programme, further shows its dedication to preserving knowledge across generations. ENRESA also benefits from the transfer of experienced personnel from NPPs to support decommissioning activities, enhancing operational continuity and expertise.

Collaboration remains central to ENRESA's strategy. The organization actively engages with the Research Center for Energy, Environment and Technology (CIEMAT) and the European Union on R&D initiatives and participates in international experience-sharing platforms with

other waste management organizations (WMOs). ENRESA provides lectures to university students.

The recent establishment of a new training centre in Garoña NPP further demonstrates ENRESA's commitment to capacity building and long-term workforce development. While staff retention is not currently a concern, ENRESA has implemented forward-looking plans to address the challenges posed by an ageing workforce.

The ARTEMIS Review Team considers that ENRESA has demonstrated a clear and structured approach to preserving institutional knowledge and technical capabilities in radioactive waste and spent fuel management.

Status of Suggestion SA2

Suggestion SA2 is closed.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *ENRESA prepares five-year R&D programmes. The funding of R&D programmes has decreased significantly in recent years and the emphasis has changed from DGR projects to other areas of radioactive waste and spent fuel management. The current investment in deep geological disposal projects allows ENRESA to follow international developments, but does not provide sufficient funding for maintaining and improving the competences needed to support the implementation of the Deep Geological Disposal facility programme.*	
(1)	**BASIS: SSR-5 Requirement 3, para. 3.13 states that** *"The operator has to conduct or commission the research and development work necessary to ensure that the planned technical operations can be practically and safely accomplished, and to demonstrate this. The operator likewise has to conduct or commission the research work necessary to investigate, to understand and to support the understanding of the processes on which the safety of the disposal facility depends. The operator also has to carry out all the necessary investigations of sites and of materials and has to assess their suitability and obtain all the data necessary for the purposes of safety assessment."*
RA5	**Recommendation: ENRESA should re-evaluate the adequacy of R&D funding needed to support the step-by-step development of the Deep Geological Disposal programme.**

Changes since the initial ARTEMIS missions

Recommendation RA5:

ENRESA has actively re-evaluated its R&D funding and strategic direction to support the step-by-step development of the DGR programme. This re-evaluation is embedded in the 7th GRWP, which outlines a phased roadmap for DGR implementation. The first stage of this roadmap, titled Knowledge Update, spans to 2025 and focuses on consolidating existing knowledge, reviewing international developments, and assessing national capabilities.

During this stage, ENRESA has undertaken a comprehensive review of historical data from the 1980s and 1990s, including insights from the Site Selection Plan, as well as more recent R&D

outcomes. The organization is currently preparing a detailed Knowledge Update Report, expected to be finalised by the end of 2025. This report will cover design and engineering evaluations for clay and granite formations, methodologies for rock characterisation, and comparative analyses of DGR programmes in other countries.

The key R&D activities to support the DGR for the years 2024 to 2028 are provided in ENRESA's 9th R&D Plan.

In addition to bilateral cooperation such as with Posiva Solutions, ENRESA maintains active participation in international forums and working groups. These engagements facilitate the exchange of technical knowledge and support the continuous refinement of ENRESA's R&D strategy. The ARTEMIS Review Team underlines the efforts made by ENRESA to contribute to many of the European research programmes dedicated to the DGR.

Between 2024 and 2100, ENRESA has forecasted a total investment of approximately 20.22 B€ (2023 value) to support Spain's national radioactive waste and spent fuel management programme. Research and development represents a portion of the overall budget of about 337 M€ (2023 value). Nearly 78% of this funding is directed toward the DGR, in alignment with its phased implementation roadmap.

The ARTEMIS Review Team notes that the 2024-2028 budget has been increased to 31 M€ which is consistent with a new momentum for DGR development as detailed in the 7th GRWP.

Status of Recommendation RA5

Recommendation RA5 is closed.

APPENDIX A: TERMS OF REFERENCE

ARTEMIS FOLLOW-UP REVIEW
of the National Radioactive Waste Management Programme
# of Spain

Terms of Reference

1. Introduction

On 21 March 2024, the Permanent Representation of Spain to the International Organizations in Vienna requested the International Atomic Energy Agency (IAEA) to organize and carry out, in 2025, an Integrated Review Service for Radioactive Waste and Spent Fuel, Decommissioning and Remediation (ARTEMIS) follow-up mission.

The purpose of this ARTEMIS follow-up mission is to review the implementation of the findings resulting from the initial ARTEMIS mission organised from 14 to 24 October 2018. The initial 2018 ARTEMIS mission was requested by Spain to satisfy its obligations under Article 14(3) of the Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community Framework for the Responsible and Safe Management of Spent Fuel and Radioactive Waste (hereinafter the EU Waste Directive).

The ARTEMIS follow-up mission will be led by the IAEA Department of Nuclear Safety and Security with the support from the Department of Nuclear Energy. The review will be conducted by an international team of experts selected by the IAEA.

Main counterparts from Spain are the Ministry for the Ecological Transition and the Demographic Challenge, the Nuclear Safety Council and Enresa.

2. Objective

The ARTEMIS follow-up mission will provide an independent international evaluation of Spain's implementation of the findings identified during the initial 2018 ARTEMIS mission.

3. Scope

The scope of ARTEMIS follow-up mission will include the aspects and topics covered in the initial 2018 ARTEMIS mission, where some findings were raised, i.e. National policy, National strategy, Concepts, plans and technical solutions for Spent Fuel and Radioactive Waste management, Cost estimates and financing of Radioactive Waste and Spent Fuel management, Capacity building for Radioactive Waste and Spent Fuel management – Expertise, training and skills -.

The outcomes from the IAEA Integrated Regulatory Review Service (IRRS) follow-up mission in Spain scheduled from January 26 to February 3, 2025, will be taken into account in the follow-up ARTEMIS mission, as appropriate, to avoid unnecessary duplication.

4. Basis for the review

The ARTEMIS follow-up mission will be based on the relevant IAEA Safety Standards and proven international practice and experiences, following, as agreed in these Terms of Reference, the ARTEMIS Guidelines available at the GNSSN platform.

5. Reference material

The ARTEMIS follow-up mission will cover all documentation submitted by Spain for the considered scope of the review.

Spain will provide a Self-Assessment Report with a description of the way each one of the findings raised during the initial 2018 ARTEMIS mission has been addressed, with supporting documentation as reference material for the mission.

Additionally, Spain will provide adequate (updated) Advanced Reference Material (ARM) to demonstrate the progress and implementation of measures that have been made since the initial ARTEMIS mission in 2018, in particular to address the findings raised during the initial mission.

The provisional list of Reference Material is provided in **Annex 1** (this list is subject to updates and should be finalized by submission of the Reference Material).

All documents for the purpose of the ARTEMIS review shall be submitted in English.

Reference Material for the purpose of the ARTEMIS review shall be submitted to the ARTEMIS mission webpage on the Global Nuclear Safety and Security Network (GNSSN) of the IAEA.

6. Modus operandi

The working language of the review, including the review mission, will be English.

The National Counterpart is the General Sub-Directorate for Nuclear Energy, General Directorate for Energy Planning and Coordination, Ministry for the Ecological Transition and the Demographic Challenge. The National Counterpart Liaison Officer for the review is Mr. Rafael Felpeto Rebón.

The ARTEMIS review mission will be conducted from **28 September to 3 October 2025** in Madrid, Spain. The provisional schedule for the review mission is provided in **Annex 2**.

The timeline for the key steps of the review process is provided below:

- Preparatory Meeting: **23 October 2024** (Madrid).
- Notification by IAEA to the Counterparts on the review team composition: by **March 2025.**

- Submission of Self-Assessment Report and Advance Reference Material: not later than **30 April 2025**.

- Submission of questions from the review team to the Counterpart based on preliminary review of the reference material: by **20 June 2025.**

7. International peer review team

The IAEA will convene a team of international experts to perform the ARTEMIS review according to the ARTEMIS Guidelines available at the GNSSN platform and these Terms of Reference. The team will consist of:

- Five qualified and recognized international experts from government authorities, regulatory bodies, waste management organizations, or technical support organizations with experience in the safe management of radioactive waste.

- Two IAEA staff to coordinate the mission. The Coordinator of the ARTEMIS review is Mr Gerard Bruno from the Waste and Environmental Safety Section of the Department of Nuclear Safety and Security of IAEA. The Deputy Coordinator is Ms Karina Lange from the Waste Technology Section of the Department of Nuclear Energy of IAEA;

- One IAEA staff for administrative support.

If possible, a senior staff member from the Department of Nuclear Safety and Security of IAEA will oversee the closure of the review.

The peer review team will be led by a Team Leader from the review team, Mr François Besnus (former Director at IRSN, France). The IAEA will inform the National Counterpart regarding the composition of the proposed review team.

The follow-up mission may include the presence of up to two observers. The National Counterparts will be notified of any proposed observers; the presence of any observers will be agreed between the IAEA and the National Counterpart in advance of the mission.

8. Reporting

The outcomes of the follow-up review will be documented in a final ARTEMIS follow-up Review Report. This report will summarize the work of the review and contains conclusions on how the findings (recommendations, suggestions) have been addressed, following agreement with Spain. The report will reflect the collective views of the review team members and not necessarily those of their respective organization or Member State or the IAEA.

Prior to its finalization, the ARTEMIS Review Report will be delivered to the National Counterpart for fact-checking.

9. Funding of the ARTEMIS review

The ARTEMIS follow-up mission will be funded by ENRESA, Spain. The costs for the services will be limited to the travel costs and per diem of the peer review team (external experts and IAEA staff) in line with IAEA Financial Regulations and Rules.

The cost of the ARTEMIS follow-up mission is estimated to the amount of xxx EUR, to be paid to the IAEA as voluntary contribution before the start of the mission. Funds left from the initial ARTEMIS mission that took place in 2018 will be deducted from such contribution. Spain is aware that the review cost includes 7% programme support costs.

If the actual cost of the ARTEMIS follow-up mission exceeds the estimated amount, Spain agrees to cover such additional cost to the IAEA. Similarly, if the actual cost is less than the estimated voluntary contribution, any excess will be refunded to Spain through the Counterpart.

These Terms of Reference were agreed on 23 October 2024 between the IAEA and the General Sub-Directorate for Nuclear Energy, General Directorate for Energy Planning and Coordination, Ministry for the Ecological Transition and the Demographic Challenge, on behalf of the Government of Spain, during the preparatory meeting held in Madrid.

Annex 1: List of Reference Material

The Reference Material will consist of:

- A Self-Assessment Report, consisting on a description of the way each one of the findings raised during the initial 2018 ARTEMIS mission has been addressed, including context with regard to the regulatory framework of Spanish spent fuel and radioactive waste management and its implementation.
- Advance Reference Material to be delivered with the Self-Assessment Report. The ARM will consist of documents belonging to the following sections:
  a) National reporting
     - in the context of the 8th Review Meeting of the Joint Convention on the Safety of Spent Fuel management and on the Safety of Radioactive Waste Management,
     - in the context of Directive 2011/70/Euratom (National Programme, Implementation Report),
     - results and accompanying documentation of the ARTEMIS peer review mission 2018 to Spain,
     - results of the IRRS follow -up mission 2025 to Spain.

  b) National regulations and regulatory guidance

     - laws and regulations,

  c) International treaties and obligations

Any additional informational material as considered relevant by Spain

APPENDIX B: MISSION PROGRAMME

<table>
<tr><th></th><th>Mon, 29 Sept</th><th>Tues, 30</th><th>Wed, 1 oct</th><th>Thur, 2 Oct</th><th>Fri, 3 Oct</th></tr>
<tr><td>09:00 – 9:30</td><td rowspan="3">Welcoming - 26
Introductions

Opening:
Short speeches from Spanish representatives (3)
Secretary of State for Energy (MITECO)
President (CSN) and
President (ENRESA)
and mission's representatives (2)
coordinator and leader
(5' each)

Group photo</td><td rowspan="3">2. National Programme
RA3a: DGR
MITECO
23</td><td rowspan="3">7. Capacity building- expertise, training and skills
SA2: knowledge management
ENRESA
18</td><td rowspan="3">Presentation of Recommendations and Suggestions to the Counterparts and discussions
23</td><td rowspan="3">Discussions with the Counterparts on the draft report
24</td></tr>
<tr><td>09:30 - 10:00</td></tr>
<tr><td>10:00 – 10:30</td></tr>
<tr><td>10:30 – 11:00</td><td>Coffee break - 26</td><td>Coffee break -23</td><td>Coffee break - 18</td><td>Coffee break - 23</td><td>Coffee break - 24</td></tr>
<tr><td>11:00 – 11:15</td><td>General remarks
MITECO - ENRESA</td><td rowspan="3">2. National Programme
RA3b: DGR
CSN
23</td><td rowspan="3">7. Capacity building- expertise, training and skills
RA5: R&D funding
ENRESA
22</td><td rowspan="3">Drafting of the report</td><td rowspan="2">Finalizing the draft report</td></tr>
<tr><td>11:15- 11:30</td><td rowspan="2">1. National Policy and Framework
RA1: GRWP
MITECO
24</td></tr>
<tr><td>11:30 – 12:00</td></tr>
<tr><td>12:00 - 12:30</td><td rowspan="3">Lunch sede - 25</td><td rowspan="2"></td><td rowspan="3"></td><td rowspan="3"></td><td rowspan="3">Delivery of final draft report – Closure
Secretary of State for Energy (MITECO)
and
President (ENRESA)

24</td></tr>
<tr><td>12:30 – 13:00</td><td rowspan="2">Coffee break - 23
Equipo revisor: 9
MITECO: 4
CSN: 3
ENRESA: 7</td></tr>
<tr><td>13:00 – 13:30</td><td rowspan="2">2. National Programme
SA1: LILW /El Cabril
ENRESA</td><td rowspan="2">Lunch sede - 21</td><td rowspan="2">Lunch hotel - 23</td><td rowspan="8">Adjourn

Lunch (optional)
Equipo revisor: 9
MITECO 1
ENRESA: 1</td></tr>
<tr><td>13:30 – 14:00</td><td rowspan="2">2. National Programme
RA3c: DGR
ENRESA
23</td><td>ARTEMIS team meeting -
Finalization of Recommendations and Suggestions and
Drafting of the report</td><td>ARTEMIS team meeting
Drafting of the report</td></tr>
<tr><td>14:00 – 14:30</td><td>Coffee break - 24</td><td rowspan="2">Lunch at hotel - 23</td><td>Coffee break</td><td>Coffee break</td></tr>
<tr><td>14:30 – 15:00</td><td rowspan="2">2. National Programme
RA2: SF storage
ENRESA</td><td rowspan="4">ARTEMIS team meeting -
Finalization of Recommendations and Suggestions and
Drafting of the report</td><td rowspan="2">ARTEMIS team meeting –

Drafting of the report</td></tr>
<tr><td>15:00 – 15:30</td><td rowspan="3">6. Cost Estimates and Financing
RA4: RD fees
ENRESA</td></tr>
<tr><td>15:30 – 16:00</td><td rowspan="2">4. Concepts, plans and technical solutions for spent fuel and radioactive waste management
GPA1: SF storage – CTS
ENRESA</td><td>16:00 Draft report to be sent to the Counterparts</td></tr>
<tr><td>16:00 – 16:30</td><td>Counterparts review the draft report
MITECO
ENRESA
CSN</td></tr>
<tr><td>16:30 – 17:00</td><td>Discussion (if needed)</td><td>Discussion</td><td></td><td></td><td></td></tr>
</table>

APPENDIX C: CONCLUSIONS ON THE RECOMMENDATIONS (R), SUGGESTIONS (S) AND GOOD PRACTICES (GP) FROM THE 2018 ARTEMIS MISSION

Area		R:Recommendations S: Suggestions GP: Good Practice	Recommendations/Suggestions
4.	**CONCEPTS, PLANS AND TECHNICAL SOLUTIONS FOR SPENT FUEL AND RADIOACTIVE WASTE MANAGEMENT**	GPA1	Good practice GPA1 is withdrawn.

APPENDIX D: LIST OF ACRONYMS USED IN THE TEXT

ARM – Advance Reference Material

ARTEMIS – the Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation

CIEMAT – Research Center for Energy, Environment and Technology

CSF – Centralized Storage Facility

CSN – Consejo de Seguridad Nuclear/Nuclear Safety Council

DGR - Deep Geological Repository

DMS - Document Management System

DPCs – Dual Purpose Casks

DTS - Decentralized Temporary Storage

El Cabril Disposal Facility – near surface facility for the disposal of low and intermediate level and very low level radioactive waste

ENRESA – Empresa Nacional de Residuos Radiactivos S. A./Spanish radioactive waste management agency

GRWP – the General Radioactive Waste Plan

HLW – High level waste

IRRS – the Integrated Regulatory Review Service

ITS - Individualised Temporary Storage

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

LILW – Low and intermediate level waste

MITECO – Ministerio para la Transición Ecológica y el Reto Demográfico/Ministry for the Ecological Transition and the Demographic Challenge

NPP – Nuclear Power Plant

PNIEC - Integrated National Energy and Climate Plan

R&D – Research and Development

RINR – Regulation on Nuclear and Radioactive Facilities

RK&M - Records, Knowledge and Memory

SF – Spent Fuel

SW – Special waste

TWG - Tripartite Working Group

VLLW – Very low level waste

WMO - Waste Management Organizations

WMS - Waste Management System

APPENDIX E: IAEA REFERENCE MATERIAL USED FOR THE REVIEW

[1] INTERNATIONAL ATOMIC ENERGY AGENCY, Fundamental Safety Principles, Safety Fundamentals No. SF-1, Vienna (2006).

[2] INTERNATIONAL ATOMIC ENERGY AGENCY, Governmental, Legal and Regulatory Framework for Safety, General Safety Requirements No. GSR Part 1 (Rev. 1), Vienna (2016).

[3] INTERNATIONAL ATOMIC ENERGY AGENCY, Leadership and Management for Safety, General Safety Requirements No. GSR Part 2, IAEA, Vienna (2016).

[4] INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014).

[5] INTERNATIONAL ATOMIC ENERGY AGENCY, Safety Assessment for Facilities and Activities, IAEA Safety Standards Series No. GSR Part 4, IAEA, Vienna (2009).

[6] INTERNATIONAL ATOMIC ENERGY AGENCY, Predisposal Management of Radioactive Waste, IAEA Safety Standards Series No. GSR Part 5, IAEA, Vienna (2009).

[7] INTERNATIONAL ATOMIC ENERGY AGENCY, Decommissioning of Facilities, IAEA Safety Standards Series No. GSR Part 6, IAEA, Vienna (2014).

[8] INTERNATIONAL ATOMIC ENERGY AGENCY, Disposal of Radioactive Waste, IAEA Safety Standards Series No. SSR 5, IAEA, Vienna (2011).

[9] INTERNATIONAL ATOMIC ENERGY AGENCY, Safety of Nuclear Fuel Cycle Facilities, IAEA Safety Standards Series No. SSR-4, IAEA, Vienna (2017).

[10] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Energy Basic Principles, Nuclear Energy Series, NE-BP, Vienna (2021).

[11] INTERNATIONAL ATOMIC ENERGY AGENCY, Radioactive Waste Management Objectives, Nuclear Energy Series, NW-O, Vienna (2011).

[12] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Fuel Cycle Objectives, Nuclear Energy Series, NF-O, Vienna (2013).

[13] INTERNATIONAL ATOMIC ENERGY AGENCY, Policies and Strategies for Radioactive Waste Management, IAEA Nuclear Energy Series No. NW-G-1.1, IAEA, Vienna (2009).

[14] INTERNATIONAL ATOMIC ENERGY AGENCY, Policies and Strategies for the Decommissioning of Nuclear and Radiological Facilities, IAEA Nuclear Energy Series No. NW-G-2.1, IAEA, Vienna (2012).

[15] INTERNATIONAL ATOMIC ENERGY AGENCY, Policy and Strategies for Environmental Remediation, IAEA Nuclear Energy Series No. NW-G-3.1, IAEA, Vienna (2015).

[16] INTERNATIONAL ATOMIC ENERGY AGENCY, Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, INFCIRC/546, IAEA, Vienna (1997).

[17] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Safety and Security Glossary, IAEA, Vienna (2022 interim edition).

[18] Official Journal of the European Union No. L 199/48 from 2nd Aug 2011, Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, Brussels (2011).