

# **Supplementary Guidelines on the Preparation and Conduct of IRRS-ARTEMIS back-to-back Missions**

June 2024



Integrated  
Regulatory  
Review Service

IRRS



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

ARTEMIS

## 1. Introduction

The IAEA offers its Member States (MSs) a wide array of peer-review services conducted by an IAEA-coordinated team of experts against the IAEA safety standards in different areas. Two of them are the Integrated Regulatory Review Service (IRRS) and the Integrated Review Service for Radioactive Waste and Spent Nuclear Fuel Management, Decommissioning and Remediation (ARTEMIS).

IRRS was developed in 2006 to strengthen and enhance the effectiveness of national regulatory infrastructure for nuclear, radiation, radioactive waste, transport safety and emergency preparedness and response. Whilst recognizing that the ultimate responsibility of each State is to ensure safety, IRRS provides a cross-cutting review of the governmental, legal and regulatory framework for safety and the regulatory oversight of all facilities, activities and exposure situations in host countries against the relevant IAEA safety standards and Code of Conduct on the Safety and Security of Radioactive Sources. The review involves all organizations with relevant regulatory responsibilities and considers technical and policy issues to provide an adequate and objective indication of the effectiveness and efficiency of the national regulatory infrastructure on nuclear and radiation safety and to identify improvement opportunities through recommendations and suggestions in the host country. Due to its international prominence, IRRS has become the instrument of choice for European Union (EU) Member States (MSs) to comply with Article 8e of the amended Nuclear Safety Directive (Council Directive 2014/87/Euratom) which requires a comprehensive self-assessment and an international peer review every 10 years.

As for ARTEMIS, it was developed in 2014 as the IAEA's new integrated expert peer review service for radioactive waste and spent fuel management, decommissioning and remediation programmes. Based on IAEA safety standards and technical guidance, as well as on international good practices, ARTEMIS is available for IAEA MS's organizations, which involves facilities and activities related to radioactive waste or spent fuel management, radiological impact assessments for human health and the environment, the management of residues arising from uranium production as well as the decommissioning and remediation of sites contaminated by radioactive materials. ARTEMIS reviews provide an independent expert opinion and advice to assist MSs in improving performance in the area or activity under review. The reviewed areas/activities vary according to the needs of the requesting organization or facility. For instance, they can focus broadly on the national frameworks and regulatory systems, on specific aspects of national programmes, infrastructure and facilities, on detailed assessments and technical advice or on the implementation of specific programmes and project activities. Since its creation ARTEMIS has played a key role in providing a cross-cutting peer review service for MSs worldwide and more specifically in relation to the peer review obligations of Article 14.3 of the Radioactive waste and spent fuel management directive (Council Directive 2011/70/EURATOM).

For several years, MSs have invited IRRS and ARTEMIS independently as these services have different scopes, audiences and purposes. Given the obligations under the amended Nuclear Safety Directive and the Waste Safety Directive, some EU MS requested the IAEA to further explore how to take advantage of synergies between IRRS and ARTEMIS missions as well as how to optimize

the preparation and implementation of both services when invited in a correlated manner by a host country.

Since the IAEA regularly adapts its peer-review services to enhance their efficiency, effectiveness and complementarity considering the feedback and current needs of all MSs, the IAEA decided to work towards improving the delivery of both services for all MSs by working on the effective, efficient, and coordinated planning and delivery of “back-to-back” missions, as defined in Section 3. IRRS-ARTEMIS back-to-back missions are to be planned in a coordinated manner and implemented sequentially noting that the utilization of flexibility and adaptability in the services should not compromise their respective integrity and effectiveness.

## 2. Objective and Scope

These supplementary guidelines are intended to support MSs, IAEA staff and team members to organize and coordinate IRRS-ARTEMIS back-to-back missions, including during the preparation and conduct of such missions. The detailed comparison and gap analysis conducted for IRRS and ARTEMIS methodologies and related tools demonstrated that an IRRS mission followed by an ARTEMIS mission in a relative short time generates greater synergies than an ARTEMIS mission followed by an IRRS mission. Therefore, these guidelines are applicable for situations when an IRRS is hosted before an ARTEMIS. Moreover, these guidelines do not substitute IRRS and ARTEMIS guidelines, respectively, but supplement them with specific provisions that need to be considered while preparing and conducting back-to-back missions.

The specific provisions covered in these guidelines are:

- **Respective scopes on IRRS and ARTEMIS** - When organised back-to-back and in relation to radioactive waste and spent fuel safety, IRRS focuses on governmental, legal and regulatory framework for safety and ARTEMIS focuses on the implementation of safe radioactive waste management programmes; and
- **Coordination between the two missions** - to avoid overlaps of work making efficient use of resources.

The following phases of back-to-back missions have been considered:

- Preparation, including self-assessment;
- Conduct of the missions; and
- Post-mission activities.

## 3. Definition

To be considered back-to-back, IRRS and ARTEMIS missions should be:

- both requested as such by MSs;
- organized in a coordinated manner by the MS and the IAEA;
- separated by only few months, ideally between 3 to 9 months to minimize the risk of outdated information.

## 4. Preparation

### 4.1. Initial request by MSs

Initial request by the Host Country should state clearly that IRRS - ARTEMIS back-to-back missions are requested. One liaison officer from the Host Country should be appointed for each mission or if preferred, one liaison officer for both missions.

### 4.2. Coordination

To successfully plan and implement IRRS-ARTEMIS back-to-back missions, the level of coordination and communication among the host counterparts in the MS should be greater than for separate missions, especially when the leading host organization is not the same in both missions. Likewise, the IRRS and ARTEMIS coordinators (IAEA staff) should closely coordinate and continuously communicate to guarantee that relevant information from one mission is communicated to the other.

### 4.3. Self-assessment

For IRRS-ARTEMIS back-to-back missions, two separate self-assessments are conducted by the host country. The first one is for IRRS using the SARIS methodology and associated tool (eSARIS) and the second one is for ARTEMIS using the self-assessment questionnaire.

To avoid duplication of when conducting self-assessments, the host country should skip some questions either for IRRS or for ARTEMIS in order to only address once the same issues. Namely, questions dealing with the General Safety Requirements (GSR) Part 1 (Rev. 1) Requirement 10 in Module 1 of SARIS is only covered in the ARTEMIS self-assessment. Likewise, some questions of topics 1, 3, 5 and 7 of ARTEMIS self-assessment questionnaire dealing with legal and regulatory framework are only covered by SARIS. Tables 1 and 2 explain in greater detail, the questions to be skipped from each self-assessment.

*Table 1: List of IRRS Self-Assessment questions to be skipped  
as the issues are addressed in ARTEMIS*

| In SARIS Self-assessment, please answer “ <i>To be addressed in ARTEMIS self-assessment questionnaire</i> ” to the following questions                                                                             |                                                                                                                                                                                                                        |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Module 1 - Responsibilities and Functions of the Government<br><br>Related to GSR Part 1 Requirement 10 Provision for the decommissioning of facilities and the management of radioactive waste and of spent fuel. | <b>Core Primary Question:</b><br><br>What provisions has the government made for the safe decommissioning of facilities, the safe management and disposal of radioactive waste, and the safe management of spent fuel? | Core Primary Question 7 |

*Table 2: List of ARTEMIS Self-Assessment questions to be skipped  
as the issues are addressed in IRRS*

| <b>In ARTEMIS self-assessment questionnaire, please answer “Addressed in SARIS” to the following questions</b>                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Topic 1 - 1.1 National Policy</p> <p><i>(Kindly answer the three primary questions and bypass ONLY the following bullet points)</i></p>                                                                                        | <p><b>What is the national policy for the management of the spent fuel (SF) and different classes and types of radioactive waste (RW) from generation to disposal?</b></p> <p><b>What are the main principles on which the policy is based?</b></p> <p><b>Where is the national policy documented and how has it been approved?</b></p> <ul style="list-style-type: none"> <li>• Safety objectives;</li> <li>• International legal instruments and any relevant Req. relating to the export/import of spent fuel and/or radioactive waste;</li> <li>• Scope of governmental, legal and regulatory framework for safety;</li> <li>• Allocation of responsibilities and implementation of activities.</li> </ul> |
| <p>Topic 1 - 1.2 Legal, regulatory and organisational framework</p> <p><i>(Kindly answer the two primary questions. Concerning the third primary question, answer the question but bypass the bullet points listed below)</i></p> | <p><b>What are the arrangements for safe management of RW &amp; SNF in your legislation?</b></p> <p><b>What are the regulatory provisions and how are they implemented?</b></p> <p><b>How are the responsibilities assigned and where is this documented?</b></p> <ul style="list-style-type: none"> <li>• Regulatory supervision of spent fuel and radioactive waste management;</li> <li>• Transfer &amp; delegation of responsibilities (waste or spent fuel ownership at various steps, provisions in the event of non-availability of the responsible organisation;</li> <li>• Planning and delivery of the required education and training.</li> </ul>                                                   |
| <p>Topic 3 - Inventory of spent fuel and radioactive waste</p> <p><i>(Kindly bypass the primary question)</i></p>                                                                                                                 | <p><b>Which organization/s is responsible for developing, reporting and maintaining the national inventory?</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>Topic 5 - Safety demonstration of radioactive waste and spent fuel management activities and facilities</p> <p><i>(Kindly answer the primary question and bypass ONLY the following bullet point)</i></p>                      | <p><b>What process is in place for developing and maintaining a safety case and / or supporting safety assessments?</b></p> <ul style="list-style-type: none"> <li>• The role of the implementor and regulator at the various stages of the process.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>Topic 7 - Capacity building for radioactive waste and spent fuel management - expertise, training and skills</p> <p><i>(Kindly bypass the primary questions)</i></p>                                                           | <p><b>What are the Requirements on the regulatory authority to ensure that arrangements for education and training are adequate?</b></p> <p><b>What are the Requirements on a holder of radioactive material or radioactive waste or a license holder to ensure that arrangements for education and training are adequate?</b></p>                                                                                                                                                                                                                                                                                                                                                                             |

To facilitate the national coordination between both services and to increase the understanding on the governmental, legal and regulatory framework for safety of radioactive waste and spent fuel, the National Liaison Officer (NLO) of ARTEMIS is encouraged to participate, as a team member or as an observer, in the IRRS self-assessment of Module 5 to 9 on radioactive waste management facilities.

#### **4.4. Composition and recruitment of review teams**

The IAEA assembles two teams of experts, one for the IRRS mission and one for the ARTEMIS mission, in consultation with the host country to avoid any conflict of interests. The provisions related to the selection of team members remain the same as for each peer review service. The only difference is that the IAEA Coordinators identify an expert with enough knowledge and experience in the regulatory field as well as in the radioactive waste and spent nuclear fuel management, decommissioning and remediation fields to participate in both IRRS and ARTEMIS missions. As per IRRS guidelines, it is recommended that this common expert is a regulator.

This common expert serves as:

- the IRRS Expert covering Modules 5 to 9 on aspects for waste and spent fuel management facilities;
- one ARTEMIS Expert (such expert could indifferently be the team leader (ideally), the deputy team leader or a team member).

In addition to the usual assigned role in the IRRS mission and ARTEMIS mission, this common expert shares relevant feedback from the IRRS mission with the ARTEMIS team. To support the common expert, the IAEA coordinators ensure that the ARTEMIS team timely receives all the necessary materials and feedback from the IRRS mission (see Section 4.6), including the IRRS preliminary mission report.

#### **4.5. IRRS and ARTEMIS IAEA coordinators and deputy coordinators**

The process to decide the need for deputy team coordinators follows the rules established for each peer review service (IRRS and ARTEMIS).

The IAEA coordinators for IRRS and ARTEMIS work closely together through all phases of the back-to-back missions. They coordinate their interactions with the Liaison Officer(s).

#### **4.6. Preparatory meetings**

Preparatory meetings are conducted separately for IRRS and ARTEMIS but the coordinators for each mission work closely together all along the process. The main outcomes of the preparatory meetings are the separate Terms of Reference (ToR) for the IRRS and ARTEMIS missions. Each ToR clearly mentions the organisation of IRRS-ARTEMIS back-to-back missions and refers to the other peer review mission, particularly in the scope section. In addition, they highlight the specific provisions to be considered in a context of back-to-back missions, including those described below. The two ToRs are exchanged among coordinators.

Regarding the Advance Reference Material (ARM) for the ARTEMIS mission, the following IRRS documents are shared with the ARTEMIS team on the ARTEMIS GNSSN secured website before the official deadline for the provision of ARTEMIS ARM material:

- the Self-assessment report and ARM Summary report;
- key legislative provisions provided as ARM for IRRS modules 5 to 9 that are necessary for the good understanding of the functioning of the national framework;
- any other parts of IRRS ARM which are relevant for ARTEMIS mission;

- the IRRS preliminary mission report or, if available, the IRRS mission report.

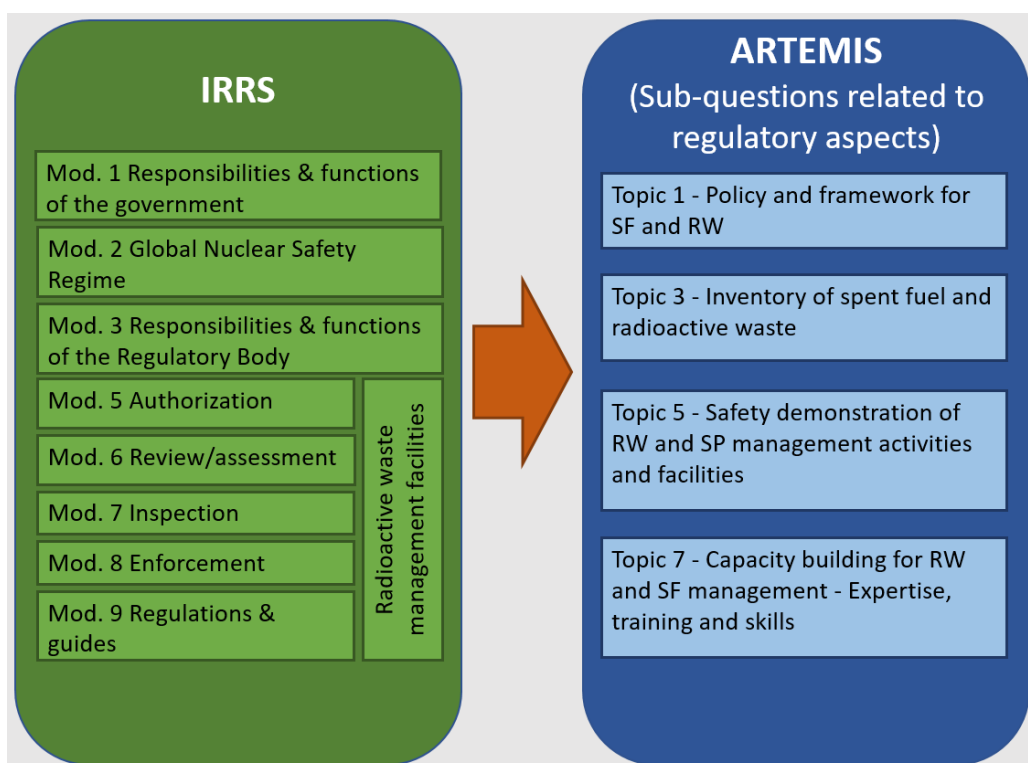
The ARTEMIS ToR indicate that the ARTEMIS team gets access to the above-mentioned IRRS material from the IAEA coordinator for IRRS as soon as it is available.

#### 4.7. Distribution of Review Areas between IRRS and ARTEMIS missions

To enhance the efficiency and avoid overlaps between both services, IRRS covers all the legal and regulatory aspects of activities and facilities, including radioactive waste and spent fuel management, while the ARTEMIS complements the IRRS findings by focusing on all other aspects of radioactive waste and spent fuel management, including decommissioning and remediation, if relevant.

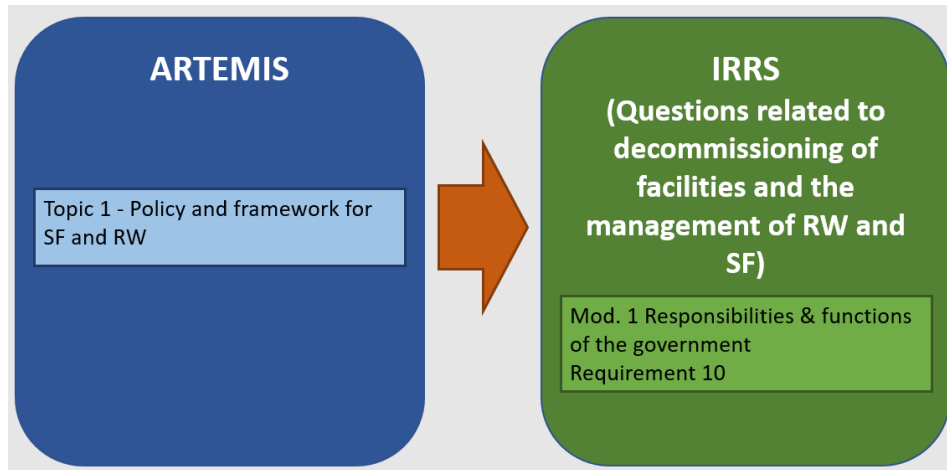
IRRS reviews throughout almost all its core Modules (except Module 4 and 10), the sub-questions of the ARTEMIS Topics related to Legal and Regulatory Framework for Safety, , -namely relevant sub-questions in Topics 1, 3, 5 and 7-, as well as the specific Module related to the regulatory functions for regulating radioactive waste management facilities, as shown in Figure 3.

*Figure 3. ARTEMIS topics covered by IRRS*



Likewise, the ARTEMIS will review through Topic 1, the IRRS questions of Module 1 related to the provisions for decommissioning of facilities and the management of radioactive waste and of spent fuel -namely Module 1 Requirement 10-, as shown in Figure 4.

*Figure 4 IRRS topics covered by ARTEMIS*



In addition to the overlaps acknowledged, there are several complementarities between Module 5 to 9 of IRRS and Topic 5 of ARTEMIS. Yet, these complementarities are reviewed separately by the IRRS and ARTEMIS teams as each service approaches the topics from a different perspective.

In this regard, the IRRS team considers the implementation of the regulatory functions to oversee radioactive waste management facilities during:

- authorization (Module 5);
- review and assessment (Module 6);
- inspection (Module 7);
- enforcement (Module 8); and
- regulations and guides (Module 9).

Like for any other facility, activity or exposure situation, the findings from Module 5 to 9 are addressed either as generic issues or, if relevant, as specifics to radioactive waste management facilities.

In turn, the ARTEMIS team, while reviewing Topic 5, focuses on how the waste management organization(s) apply the regulatory framework in preparation of the safety case and/or safety assessment for their waste management facilities, before submitting to the regulatory body. The repartition of responsibilities during this process is addressed by the ARTEMIS team, as well as the quality of the safety case and/or safety assessment. Moreover, the ARTEMIS team discusses with the waste management organization(s) how safety is addressed and demonstrated and the associated challenges.

## 5. Conduct of the IRRS - ARTEMIS back-to-back missions

### 5.1. Coordination activities

Coordination activities are essential for the efficient and effective management of the back-to-back missions. To ensure essential communication of the IRRS mission findings and to cover comprehensively the full scope of the ARTEMIS component according to the TORs, the common expert provides concise but comprehensive feedback on IRRS findings on the legal and regulatory aspects of radioactive waste and spent fuel management during the first ARTEMIS team meeting and at the opening of ARTEMIS mission as a specific topic.

### 5.2. Report drafting

The mission reports follow the templates established for each peer review with the following adjustments:

- In the IRRS ARM summary report,
  1. The following text is added: *“The topic of Section 1.7 is to be addressed under the upcoming ARTEMIS mission, organized back-to-back to this IRRS mission.”*
- In the IRRS report
  1. To add in the executive summary: *“This IRRS mission is organized back-to-back to an ARTEMIS mission.”*
  2. To add in the Introduction: *“This mission was organized back-to-back to an Integrated Review Service for Radioactive Waste and Spent Fuel, Decommissioning and Remediation (ARTEMIS) mission scheduled on XX-YY Month Year. To avoid unnecessary duplications between the IRRS and the ARTEMIS missions, the preparation and conduct of the IRRS mission were carried out in a coordinated manner with the ARTEMIS mission. Thus, the provisions for the decommissioning of facilities and the management of radioactive waste and of spent fuel, subject of Section 1.7, are to be reviewed by the upcoming ARTEMIS mission.”*
  3. To add in Section 1.7: *“The topic of Section 1.7 is to be addressed under the upcoming ARTEMIS mission, organized back-to-back to this IRRS mission.”*
- In ARTEMIS report
  1. To add in the executive summary and the introduction of the ARTEMIS Report: *“This ARTEMIS mission is organized back-to-back to an IRRS mission conducted from X to X (dates). The conduct of the ARTEMIS mission and the preparation of the associated mission report have been carried out in due consideration of the IRRS mission. The ARTEMIS review was focused on the evaluation of the current XX COUNTRY national programme and national framework for executing the country’s obligations for safe and sustainable radioactive waste and spent fuel management. In developing the ARTEMIS mission report, the outcomes from the YEAR IRRS mission to COUNTRY were taken into account.*
  2. *This ARTEMIS report takes advantage of the IRRS findings the legal and regulatory oversight of activities, facilities and exposure situations in the field of radioactive waste and spent fuel management.”*

The IRRS reports on the legal and regulatory oversight of activities, facilities and exposure situations, including radioactive waste and spent fuel management facilities. The ARTEMIS report complements the IRRS report by focusing on all other aspects of radioactive waste and spent fuel management.

The common expert for the IRRS mission and the ARTEMIS mission is responsible to consider the IRRS report and related material when drafting the ARTEMIS report. The ARTEMIS report should refer to the IRRS report when appropriate.

The final discussions with the host organization(s) on each report are organized in the same manner as in separate missions.

The IRRS preliminary report as well as the relevant sections of the IRRS ARM are sent by the IRRS administrative assistant to the ARTEMIS administrative assistant after the exit meeting for uploading them as part of the ARTEMIS ARM on the ARTEMIS GNSSN platform.

### **5.3. Press release**

The press release of each mission follows the same preparation process of the press release for separate missions. However, they should both clearly mention the back-to-back nature of the missions.

The IAEA press release is initially drafted by the Office of Public Information and Communication (OPIC) based on the draft executive summary of the report and using the OPIC template.

## **6. Post-mission activities**

### **6.1. Mission report**

In addition to sharing the relevant documentation as described in Section 4.6, the IAEA coordinator for IRRS shares the IRRS preliminary mission report and then the final IRRS mission report, with the ARTEMIS coordinator as soon as they are available, so that they are uploaded as part of the ARTEMIS ARM on the ARTEMIS GNSSN platform.