

Guidelines for Preparing and Conducting an Integrated Nuclear Infrastructure Review (INIR)

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INTERNATIONAL ATOMIC ENERGY AGENCY VIENNA, 2017

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FOREWORD

As of 1 July 2017, there were 447 operational nuclear power reactors in 30 countries and another 60 were under construction in 15 countries. Technically and financially, access to nuclear power is no longer limited to advanced economies. Many developing countries are interested in introducing or expanding nuclear energy programmes because they regard nuclear power as a stable and reliable source of baseload electricity, which, in addition, makes a significant contribution to climate change mitigation. While several operating countries are planning to expand current capacity, about 30 Member States, mostly developing countries, are considering embarking on a nuclear power programme, some are developing the necessary infrastructure, and some others are negotiating or building their first nuclear power plant.

Building a nuclear power programme is a major undertaking with significant international implications and is based upon a commitment to use nuclear power for peaceful purposes, in a safe, secure and sustainable manner. This commitment requires establishing a sustainable national infrastructure that provides governmental, legal, regulatory, managerial, technological, human resource, industrial and stakeholder support for the nuclear power programme throughout its life cycle. The demonstration of compliance with international legal instruments, internationally accepted nuclear safety standards, nuclear security guidelines and safeguards requirements is essential in establishing a responsible nuclear power programme.

In response to growing demand by embarking countries for advice and assistance, the IAEA has developed an approach to assist Member States that are considering or planning their first nuclear power plant to understand the commitments and obligations associated with developing a nuclear power programme. States that already have nuclear power can also assess their preparedness for expansion. This approach is set out in the publication Milestones in the Development of a National Infrastructure for Nuclear Power, which was revised in 2015.

To facilitate the application of the Milestones approach, the IAEA developed the Integrated Nuclear Infrastructure Review (INIR), which is a holistic peer review to assist Member States in assessing the status of their national infrastructure for the introduction or expansion of nuclear power. Since the first INIR mission in 2009, the IAEA has conducted missions in 16 embarking countries upon their request. The service enables representatives of the host Member State to have in-depth discussions with a team of IAEA and international experts on and experiences best practices in nuclear power infrastructure development. Recommendations and suggestions are provided in a report to the Member State, enabling it to update its national action plan accordingly. The service is a valuable tool to ensure that the infrastructure required for the safe, secure and sustainable use of nuclear power is developed and implemented in a responsible and orderly manner.

This publication updates INIR: Integrated Nuclear Infrastructure Review Missions — Guidance on Preparing and Conducting INIR Missions (Rev. 1). It takes into account the feedback from Member States who have hosted INIR missions, as well as contributions from IAEA staff and external experts familiar with the programme and process of the INIR service provided by the IAEA. The IAEA officers responsible for this publication were J. Bastos and M. Samiei of the Division of Nuclear Power.

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1. INTRODUCTION

1.1. BACKGROUND

The International Atomic Energy Agency (IAEA) publication "Milestones in the Development of a National Infrastructure for Nuclear Power, Rev. 1" [1] provides guidance to Member States interested in establishing or expanding a nuclear power programme. The Milestones publication identifies 19 infrastructure issues that need to be addressed in three phases of development. Nuclear power infrastructure includes a number of 'soft' infrastructure issues such as legislation, regulations, institutional development, human resources planning, policies and strategies in relevant areas, as well as some 'hard' infrastructure issues, such as site and supporting facilities and electrical grid. The Milestones publication defines a milestone at the end of each phase for the development of a nuclear power infrastructure and provides guidance on the activities that need to be carried out to achieve each milestone.

The IAEA Integrated Nuclear Infrastructure Review (INIR) service evaluates the status of the infrastructure for the introduction or expansion of a nuclear power programme in a Member State based on the Milestones publication.

These Guidelines incorporate the modifications to the process of preparing and conducting the INIR service resulting from the experience gained since the launching of the INIR service in 2009. This publication supercedes the IAEA booklet on INIR entitled: *Guidance on Preparing and Conducting INIR Misisons (Rev.1)* from 2011.

1.2. OBJECTIVES OF INIR

The INIR service is a holistic IAEA peer review conducted by a team of IAEA staff and international experts who have experience in nuclear power programmes and infrastructure development.

The major objective of the INIR service is to assist Member States in determining the status of their nuclear power infrastructure and identifying areas requiring further development in order to reach the corresponding Milestone.

The key benefits of the INIR service are:

- Providing Member States with an opportunity to evaluate their nuclear power programme on the basis of the Milestones publication [1];
- Drawing attention to areas requiring additional work;
- Providing a forum for peer discussions and exchange of experiences on infrastructure development;
- Making available to senior officials in the host Member State, an independent peer review report on the status of the infrastructure for their nuclear power programme.

It is important to note that the INIR service is not:

- An audit or inspection against established requirements;
- An endorsement of the Member State self-evaluation;
- A detailed assessment or verification of specific activities;
- A confirmation of the effectiveness of the Member State processes/actions.

For example, the INIR mission can evaluate whether some site prospecting was performed and criteria established. However, an assessment of the appropriateness of the prospecting performed and the adequacy of the criteria adopted is a matter for site specialists, and an appropriate IAEA review service is needed to cover these technical aspects in detail. The same logic applies to all the other infrastructure issues.

Therefore, the results of an INIR mission cannot be considered as a 'release stamp' that certifies the quality and completeness of the work done and validates the host Member State's actions and programmes.

The INIR service is equally available to Member States considering introducing nuclear power, and those with existing nuclear power programmes which have not built a new plant for an extended period of time¹.

The results of INIR missions are considered as inputs for future assistance in support of national nuclear infrastructure development through IAEA Technical Cooperation and extrabudgetary programmes. This assistance is planned and implemented through *integrated work plans* which include activities from all concerned IAEA departments.

1.3. SCOPE OF THE GUIDELINES

The objective of these Guidelines is to provide information on the structure and steps involved in the INIR service. It explains the overall process and the interactions between the requesting Member State and the IAEA.

The intended users of these Guidelines include host counterparts in Member States, IAEA staff and external experts assigned to prepare for and conduct activities related to the INIR service for Phases 1 and 2. Guidelines for Phase 3 INIR mission are provided in a separate document.

1.4. STRUCTURE

Following this introduction, Section 2 presents the structure of the INIR service and its process flowchart. Section 3 describes the initiation of the process and the self-evaluation by a Member State. Sections 4 deals with the INIR team members and the pre-INIR mission. Section-5 addresses the preparation, conduct, finalization, and delivery of the mission report. Section 6 refers to the follow-up INIR mission. Appendix I defines the roles and responsibilities of INIR team leader, mission coordinator, team members and the host counterpart. Appendix II provides a template for the INIR mission terms of reference. Appendix III describes the criteria for classification of actions needed and recommendations,

¹ Countries introducing nuclear power for the first time are called 'newcomer' or 'embarking countries'. Countries with existing nuclear power plants which have not built any new nuclear power plant for two to three decades are designated as 'expanding' or 're-embarking countries'.

suggestions and good practices. An example of INIR mission report cover page and its contents are given in Appendix IV. Appendix V provides a template for Member State's action plan progress report to be used as the basis for a follow-up INIR mission.

2. STRUCTURE OF THE INIR SERVICE

The INIR service consists of the following four major steps:

- (a) Step 1 Assessment of the Self-Evaluation Report (SER) prepared by the Member State requesting the service: The IAEA will review the SER prepared by the Member State (based on the IAEA document "Evaluation of the Status of National Infrastructure Development, Rev. 1" [2]) to assess whether the information provided is sufficient to give an understanding of the status of the nuclear infrastructure in the country and that the statements of the SER are supported by appropriate documents. Depending on the level of improvements needed in the SER, the IAEA may organize an SER support mission to discuss with the Member State the sections of the SER requiring improvement.
- (b) Step 2 Conduct of pre-INIR mission: The purpose of the pre-INIR mission is to present and discuss with the counterparts the INIR process and to agree on the terms of reference for the main INIR mission. The logistical arrangements for the main INIR mission are discussed and the facilities proposed for the main INIR mission are visited. If an SER support mission is required, it may be possible to conduct the SER support mission and the pre-INIR mission together.
- (c) Step 3 Conduct of the main INIR mission: The purpose of the main INIR mission is to review the status of the nuclear power infrastructure in the Member State based on the SER, additional supporting documents and interviews with the designated nuclear power programme key counterparts. The output of the main INIR mission is a report identifying recommendations and suggestions in areas requiring additional work to reach the corresponding milestone as well as recognizing good practices to be shared with other countries.
- (d) Step 4 Follow-up INIR mission: The follow-up INIR mission is intended to assess the level of implementation of the recommendations and suggestions provided during the main INIR mission. The timing of the follow-up INIR mission should be agreed with the Member State but it is recommended to be held 18 to 30 months after the main INIR mission.

A request from a Member State for the INIR service signifies a commitment to all four steps described above.

The INIR service, as described in these Guidelines, may be offered as a Phase 1 or Phase 2, depending on the status of the country's nuclear power programme development.

Figure 1 shows the INIR service process flowchart including the main inputs and outputs of each of the four major steps of the process.

3. REQUEST FOR THE INIR SERVICE AND SUPPORT FOR SELF-EVALUATION

3.1. MEMBER STATE REQUEST

Any embarking or expanding Member State may request the INIR service by sending a letter to the IAEA (normally to the Deputy Director General/Head of the Department of Nuclear Energy) indicating whether it is a Phase 1 or 2 review, identifying a host counterpart and proposing a tentative date for the main mission.

The host counterpart is the single contact point with the IAEA for the preparatory arrangements for, and the conduct of, the INIR service. The host counterpart is, inter alia, responsible for ensuring that all stakeholders of the nuclear power programme in the host Member State are involved in the INIR process, and that proper logistical arrangements and other required support as described in these Guidelines are in place.

3.2. IAEA RESPONSE

On receipt of an embarking or expanding Member State's request, the IAEA will send a letter confirming its availability for conducting the requested INIR service, and nominating a liaison person from the Nuclear Infrastructure Development Section (NIDS) for further contacts.

3.3. APPOINTMENT OF TEAM LEADER AND MISSION COORDINATOR

Following the correspondence with the Member State requesting the INIR service, the IAEA will appoint an INIR team leader and a mission coordinator. The team leader is a senior IAEA professional staff member with thorough understanding of the evaluation methodology and experience in INIR missions. The mission coordinator is an IAEA professional in the Nuclear Infrastructure Development Section familiar with the work being undertaken by the Member State who will be responsible for consolidating the INIR report and making the necessary logistical arrangements related to the INIR service (Appendix I).

3.4. DEVELOPMENT OF SELF-EVALUATION REPORT

Eight to twelve months prior to the main INIR mission, the host Member State must prepare its SER covering all the 19 nuclear infrastructure issues. The basis for the preparation of the self-evaluation is the IAEA document "Evaluation of the Status of National Infrastructure Development, Rev. 1" [2], which defines the specific conditions to reach Milestones 1 and 2.

The preparation of the SER is a collective work involving the main stakeholders of the nuclear power programme in the Member State. Such an evaluation is to be carried out by those who are directly involved in the preparation of the pre-feasibility studies and the consolidation of the comprehensive report which will be supporting the decision making process (for Phase 1 countries) [3], or the development of the national nuclear infrastructure (for Phase 2 countries). This may be followed by an independent review by other stakeholders not directly involved in the initial evaluation. The SER should include a short description of how the evaluation was conducted and who was involved in the preparation of the report.



FIG. 1. Flowchart for INIR Service.

3.5. IAEA REVIEW OF THE SELF-EVALUATION REPORT

The IAEA will review the SER to assess whether the information provided includes inputs from relevant stakeholders and is sufficient to provide an understanding of the status of the nuclear infrastructure in the country. The IAEA will also review whether or not the statements in the SER are validated by appropriate supporting documents.

The IAEA may organize an SER support mission to discuss improvements to the report to facilitate a more effective and efficient main INIR mission as well as to agree on the time frame needed by the Member State to prepare a final version. The final SER and supporting documents will constitute the basis for the assessment during the main INIR mission.

Typically the duration of an SER support mission is two to three days and the team consists of two to three experts with a good knowledge of the evaluation methodology [2].

4. INIR TEAM NOMINATION AND PRE-INIR MISSION

4.1. INIR TEAM NOMINATION

The IAEA proposes the team members (IAEA staff as well as external experts) for the INIR mission and allocates infrastructure issues to each one. The final decision on the composition of the INIR team will be made in consultation with the host counterpart during the pre-INIR mission. Team members are expected to have received training on the INIR methodology, have at least 15 years of experience in one or several of the nuclear infrastructure issues and have held senior positions in relevant organizations. The INIR team will not include a member from the host Member State, or experts who may have conflicts of interest.

The majority of the team should have experience in previous INIR missions and together the team should have the experience to review all 19 nuclear infrastructure issues. Typically the size of the team for the main INIR mission varies from eight to eleven experts.

The team may also include one or two observers. Observers participate in the main INIR mission to gain insight into the INIR review process.

The detailed roles and responsibilities of the INIR team members are described in Appendix I.

4.2. PRE-INIR MISSION

Five to eight months before the main INIR mission, a pre-INIR mission will be conducted in the Member State. The purpose of the pre-INIR mission is to present the INIR review process, and to discuss and agree on the Terms of Reference (ToR) for the main INIR mission, including an agenda, the team composition, all logistical arrangements, interpretation requirements and arrangements for interaction with the media (Appendix II).

The team leader and the mission coordinator are responsible for preparing and conducting the pre-INIR mission. This mission has a duration of two days.

5. PREPARATION AND CONDUCT OF THE MAIN INIR MISSION

5.1. MEMBER STATE PREPARATORY ARRANGEMENTS

The Member State, through the host counterpart, will prepare and send the final SER and the supporting documents to the team leader at least six weeks before the main INIR mission.

The supporting documents may include:

- a) English translations of the summary and table of contents of the supporting documents, if they are not in English, as identified in the ToR for the main mission;
- b) Any additional information identified by the team during their preparation.

Moreover, the Member State should designate at least one local expert for each infrastructure issue as the lead interlocutor during the interviews.

5.2. IAEA PREPARATORY WORK

5.2.1. Mission agenda, INIR team composition and travel arrangements

The team leader, together with the mission coordinator, will:

- Finalize the main mission agenda and communicate it to the Member State;
- Finalize the INIR team composition and communicate it to the Member State;
- Make the financial and travel arrangements necessary for the INIR team preparatory meeting and the main mission.

The mission coordinator will also advise team members in sufficient time ahead of the main mission regarding visa, IT matters, travel, and health requirements.

5.2.2. INIR team preparatory meeting

The team leader, together with the mission coordinator, will decide the location (IAEA headquarters or the host Member State), timing and agenda for the preparatory meeting.

During the preparatory meeting, the team leader will brief the team on the mission schedule and expectations. A staff member of the IAEA Technical Cooperation Department, familiar with the host Member State, will provide a country briefing and identify any relevant countryspecific matters. Staffs from other concerned departments, working on assistance projects with the Member State, also participate in the meeting.

The INIR team members are also made aware of the IAEA policy for interactions with the media which, inter alia, assigns the responsibility to the team leader.

The team members will prepare and report on their preliminary evaluations of the status of their assigned infrastructure issues based on a review of the SER and supporting documents. Reviewers are expected to apply their judgment and experience to evaluate the extent to which the work done by the Member State addresses the conditions in the evaluation methodology [2], and to identify areas to be discussed during the mission interviews.

The evaluation will be documented using specific templates for reporting (Microsoft PowerPoint presentation and Standard Evaluation Forms in Microsoft Word [2]). These templates, together with the SER and supporting documents, will be provided to each INIR team member in electronic format.

The preparatory meeting provides an opportunity for the INIR team to develop a common understanding of the status of the infrastructure in the host Member State, and to identify questions that team members will ask during the interviews. Based on the INIR team discussions in the preparatory meeting, the members of the team may need to revise their documents (in Microsoft PowerPoint and Word formats) for their assigned infrastructure issues. To facilitate the interview process, the mission coordinator will send the final PowerPoint presentation for each infrastructure issue to the host counterpart no later than 24 hours before the corresponding interview.

5.3. CONDUCTING THE MAIN INIR MISSION

The key steps for the main INIR mission are:

- Entrance meeting;
- Review process;
- Preparation of the draft report;
- Exit meeting.

A Phase 1 INIR mission (assessment against Milestone 1 conditions [2]) generally lasts seven working days and a Phase 2 mission (assessment against Milestone 2 conditions [2]) lasts 11 working days.

5.3.1. Entrance meeting

At the start of the main INIR mission, an entrance meeting is conducted with a senior representative of the IAEA, key persons from the host Member State organizations and all members of the INIR team.

The team leader will provide an overview of the INIR methodology and present the mission programme and objectives. The Member State will present an overview of their nuclear power programme and plans for the future.

A press conference may take place depending on the arrangement made with the Member State as reflected in the mission ToR (Appendix II).

5.3.2. Review process

5.3.2.1. Interviews

The prime objective of the interviews is to seek clarification on or gather information not covered by the written material. The team members will use the PowerPoint presentations agreed in the INIR team preparatory meeting as the basis for the interviews.

Interviews will be conducted in a plenary session and the assigned INIR team reviewers will lead the discussion on their designated infrastructure issues. Another INIR team member, assigned as secondary reviewer, will take notes during the interview.

Bilateral discussions may take place between the assigned INIR team reviewer and the counterparts to discuss topics that could not be addressed in the plenary session or to review specific supporting documents in more detail.

The team leader should encourage open communications between all participants. This will enhance the quality of the review and the benefits to the host Member State.

During the interviews, the team leader will also moderate the discussions and ensure the timely conduct of the interviews.

5.3.2.2. Daily team meetings

At the end of each day, the INIR team will meet to:

- (a) Discuss the conclusions of the day's interviews including:
 - Identification of gaps that may lead to recommendations or suggestions, and recognition of potential good practices (Appendix III);
 - Identification of any areas where the information gathered is not clear or inconsistent with information provided previously.
- (b) Review draft Standard Evaluation Forms as completed/amended by each INIR team reviewer;
- (c) Review any presentation prepared to support the interviews which were not agreed in the INIR team preparatory meeting, or still requiring discussion.

5.3.2.3. Debriefing with host counterpart

At the begining of each day (except for the first day) a debriefing meeting of about 30 minutes is held with the counterparts to summarise the conclusions of the previous day. The INIR team reviewers, responsible for the interviews, will indicate the gaps identified and the potential areas for recommendations and suggestions.

No reference will be made to good practices at this point. These will be discussed during the team meetings and a final decision will be taken by the team during the preparation of the complete draft INIR report towards the end of the mission.

5.3.3. Preparation of the draft report

5.3.3.1. Standard Evaluation Form for each infrastructure issue

Each INIR team reviewer prepares the first draft of the Standard Evaluation Form for their allocated infrastructure issue before the INIR team preparatory meeting.

Subsequently the first draft is amended based on the interview results. At this stage the reviewer should also identify any infrastructure areas requiring further development and draft proposals for recommendations and suggestions. These should be based on the conditions defined in the publication "Evaluation of the Status of National Infrastructure Development Methodology (Rev. 1)" [2].

This amended draft is then reviewed in several steps by the INIR team and by the local experts as shown in Figure 2. The host counterpart is provided with each completed Standard Evaluation Form for review as soon as feasible.

The local experts are expected to review and comment on the content of the Standard Evaluation Forms during the mission to ensure technical accuracy and common understanding of the reported results.

5.3.3.2. Preliminary draft report

Towards the end of the mission, the team will discuss and formulate their main conclusions, based on an analysis of the recommendations and suggestions for each infrastructure issue.

The mission coordinator will compile the preliminary draft report based on the final version of the Standard Evaluation Forms and the main conclusions developed by the team. Appendix IV provides an example of the standard report format and its attachments.

Once a complete preliminary draft report has been prepared, it is reviewed before the exit meeting with the host counterpart and the local experts. After the preliminary draft report has been agreed in this meeting, any subsequent changes (see Section 5.4) should be limited to editorial and correction of factual errors.

5.3.4. Exit meeting

The main INIR mission concludes with the exit meeting attended by the host counterpart and other senior representatives of the host government, key persons from the Member State stakeholder organisations, and all members of the INIR team.

Prior to the exit meeting, the team leader and the host counterpart should agree on the organization of the meeting including any media attendance.

At the exit meeting, the team leader summarizes the main results and conclusions of the mission, including a presentation of recommendations, suggestions and good practices as reflected in the preliminary draft report of the INIR mission, and provides a copy of the report to the host counterpart.

5.4. FINALIZATION OF MAIN INIR MISSION REPORT

5.4.1. Draft report

Within two weeks after the exit meeting, the team leader ensures that the preliminary draft report is finalized to include any editorial changes and sends as the draft report to the host counterpart for comments.



FIG.2. Flowchart for developing Standard Evaluation Forms.

The host counterpart is expected to collect all comments on the draft report from participating stakeholder organizations in the Member State and send them to the team leader within one month after the receipt of the draft report. The comments are expected to be limited to the factual correctness of the information contained in the report. Changes proposed to the technical content of the report, in particular on the recommendations and suggestions cannot be accepted at this stage.

5.4.2. Final report

The team leader assesses the comments received from the host counterpart, involving other team members as required, and prepares the final main INIR mission report. The final report is then submitted to the IAEA Deputy Director General, Department of Nuclear Energy, for in-house approval and handing over to the Member State.

5.5. HANDOVER OF THE FINAL REPORT TO MEMBER STATE

The IAEA Deputy Director General/Head of the Department of Nuclear Energy, or his designated IAEA senior official, will deliver the main INIR mission report to the designated official in the Member State on the dates agreed with the host counterpart during the main INIR mission (normally three to four months after the exit meeting). The main INIR mission report is then published on the IAEA website unless the host Member State objects in writing within three months after the handover of the report.

The Member State is expected to develop an action plan specifying the activities to be undertaken to address recommendations and suggestions contained in the main INIR mission report [2]. This action plan will also be the basis for determining any future assistance from the IAEA, including follow-up review missions.

6. FOLLOW-UP INIR MISSION

Member States who have received a main INIR mission are encouraged to request the IAEA for a follow-up INIR mission to take place 18–30 months after the main mission in order to review the progress on the implementation of the recommendations and suggestions provided by the main INIR mission.

The follow-up INIR mission is conducted based on the action plan progress report prepared by the Member State and other supporting documents. The exact timing of the follow-up mission will be agreed between the IAEA and the designated Member State host counterpart.

6.1. SCOPE AND TEAM COMPOSITION

The follow-up INIR mission will focus on the response to the main INIR mission's recommendations and suggestions.

The team will include the team leader and the mission coordinator from the main mission together with 1 to 3 experts, depending on the number of recommendations and suggestions identified during the main INIR mission. The appointment of the team follows the same conditions as in the main mission (Section 4.1). In case either of the team leader or the mission coordinator from the main mission is no longer available, a suitable replacement will be designated.

The team leader will prepare the terms of reference for the follow-up INIR mission in consultation with the host counterpart. The terms of reference should include team composition, timing, funding, logistics and supporting documents required.

6.2. PREPARATORY ACTIVITIES

At least one month prior to the conduct of the follow-up INIR mission, the host counterpart should submit the Member State's action plan progress report together with the supporting documents. A template for the action plan progress report is provided in Appendix V.

The team leader will distribute the action plan progress report for review to the follow-up mission team members and concerned IAEA staff and will collate the feedback before the follow-up mission.

6.3. CONDUCTING THE MISSION

The follow-up mission will begin with an entrance meeting where the team leader will explain the follow-up review process and objectives, and present the proposed agenda for the mission. The Member State will provide an update on the nuclear infrastructure development since the main INIR mission.

The team will then review the status of implementation for each recommendation and suggestion and categorise them as:

- *Completed* The actions taken have fully addressed the recommendation/ suggestion;
- *Work in progress* Actions have been taken following the recommendation/ suggestion but further work is still required;
- *No action taken* The recommendation/suggestion has not been taken into account or work on this recommendation/suggestion has not yet started.

The follow-up INIR mission will not provide new recommendations or suggestions but will only review the status of implementation of the recommendations and suggestions from the main INIR mission.

While in the country, the follow-up INIR mission team will prepare the preliminary draft of the mission report and agree on its content with the host counterpart.

6.4. EXIT MEETING

The follow-up INIR mission concludes with the exit meeting attended by senior representatives of the host government, key stakeholder organisations, and all members of the follow-up INIR team. The team leader and the host counterpart should agree on the organization of the exit meeting including any media attendance.

At the exit meeting, the team leader presents the main results and conclusions of the mission. The preliminary draft report of the follow-up INIR mission is provided to the host counterpart at the end of the meeting.

6.5. FINALIZATION OF FOLLOW-UP INIR MISSION REPORT

Within two weeks of the exit meeting, the team leader ensures that the preliminary draft report is finalized to include any editorial changes and is sent as draft report to the host counterpart for comments.

The host counterpart is expected to collect all comments on the draft report from participating stakeholder organizations within the Member State and send them to the team leader within

two weeks after the receipt of the report. The comments are expected to be limited to the factual correctness of the information contained in the report.

The team leader assesses the comments received and prepares the final follow-up INIR mission report. The report is then submitted to the IAEA Deputy Director General, Department of Nuclear Energy, for in-house approval and submission to the Member State through the official channels.

REFERENCES

[1] INTERNATIONAL ATOMIC ENERGY AGENCY, Milestones in the Development of a National Infrastructure for Nuclear Power, IAEA Nuclear Energy Series No. NG-G-3.1 (Rev. 1) IAEA, Vienna (2015).

[2] INTERNATIONAL ATOMIC ENERGY AGENCY, Evaluation of the Status of National Nuclear Infrastructure Development, IAEA Nuclear Energy Series No. NG-T-3.2 (Rev. 1), IAEA, Vienna (2016).

[3] INTERNATIONAL ATOMIC ENERGY AGENCY, Building a National Position for a New Nuclear Power Programme, IAEA Nuclear Energy Series No. NG-T-3.14, IAEA, Vienna (2016).

BIBLIOGRAPHY

INTERNATIONAL ATOMIC ENERGY AGENCY

Integrated Nuclear Infrastructure Review Missions https://www.iaea.org/NuclearPower/Infrastructure/INIR.html

Integrated Nuclear Infrastructure Review (INIR) Missions: The First Six Years, IAEA-TECDOC-1779, 2015

The Milestones Approach https://www.iaea.org/NuclearPower/Infrastructure/milestone/index.html

Nuclear Infrastructure https://www.iaea.org/topics/nuclear-infrastructure

Nuclear Infrastructure Bibliography https://www.iaea.org/NuclearPower/Infrastructure/Bibliography/index.html

Integrated Work Plan Ensures Coordinated IAEA Assistance to Newcomer Countries https://www.iaea.org/NuclearPower/News/2016/2016-03-30-NIDS.html

APPENDIX I

ROLE AND RESPONSIBILITIES OF THE INIR TEAM LEADER, MISSION COORDINATOR, TEAM MEMBERS, HOST COUNTERPART AND OBSERVERS

I.1. TEAM LEADER

The primary responsibilities of the INIR team leader are to:

- a) Serve as the official IAEA liaison with the host counterpart prior to, during and after the review mission;
- b) Analyse the final SER and other supporting information to prepare for the mission;
- c) Prepare the Terms of Reference and a detailed agenda for the main INIR mission (and seek agreement with the host counterpart during the pre-INIR mission;
- d) Identify appropriate team members in consultation with the Head of the IAEA Nuclear Infrastructure Development Section (NIDS) and other IAEA departments involved in the mission;
- e) Assign the 19 infrastructure issues to team members;
- f) Provide team members with appropriate pre-mission information;
- g) Lead the mission, including supervising the review, ensuring schedules are met and providing leadership in the resolution of subjects that may arise;
- h) Lead the team's preparatory meeting, entrance, daily and exit meetings;
- i) Ensure that the team works in a consistent and cohesive manner;
- j) Communicate with team members prior to and during the mission, in order to ensure that team members are adequately prepared and informed;
- k) Ensure that the objectives of the mission are met;
- 1) Provide guidelines for the conduct of the daily meetings;
- m) Submit the draft report to the host counterpart for comments;
- n) Finalize the mission report on the basis of the comments received from the host counterpart;
- o) Submit the final report to the IAEA Deputy Director General/Head of the Department of Nuclear Energy (DDG-NE) for handing over to the Member State.

I.2. MISSION COORDINATOR

The primary responsibilities of the mission coordinator are to:

- a) Collect and make available to all INIR team members the SER, supporting documents and any other relevant material for the mission;
- b) Ensure the logistical arrangements are in place for all stages of the mission, and interact with the host counterpart as necessary;
- c) Facilitate the process for recruiting external experts;
- d) Collect the information for the mission's preliminary draft report based on the contributions from the team members;
- e) Prepare the preliminary draft report based on the inputs received from the team members;
- f) Support the team leader in any other aspect of mission as required;
- g) Organize and support the official INIR report delivery.

I.3. TEAM MEMBERS

The primary responsibilities of the team members are to:

- (a) Make arrangements for visas, immunizations and travel;
- (b) Review Self Evaluation Report and supporting documents;
- (c) Prepare initial Standard Evaluation Form and PowerPoint presentations for the allocated infrastructure issues;
- (d) Participate in the team preparatory, entrance, daily and exit meetings;
- (e) Take the lead during interviews for the assigned infrastructure issues;
- (f) Fulfill the role of second reviewer for the assigned infrastructure issues;
- (g) Evaluate the results of the interview and complete the corresponding draft Standard Evaluation Form;
- (h) Review, jointly with the team, all draft Standard Evaluation Forms;
- (i) Participate in the formulation of the main conclusions, based on the analysis of the recommendations and suggestions for each infrastructure issue;
- (j) Review the completed preliminary draft report;
- (k) Maintain appropriate confidentiality of sensitive information in accordance with the IAEA confidentiality statement signed.

I.4. HOST COUNTERPART

The host counterpart is the focal point responsible for coordinating the activities for the mission within the country. The host counterpart is expected to:

- (a) Act as the official Member State liaison with the IAEA;
- (b) Coordinate overall arrangements for the mission;
- (c) Ensure that supporting documents are sent to the IAEA on time;
- (d) Ensure translation of the table of contents and summary for documents not in English;
- (e) Designate and provide information/instructions to the other local stakeholders involved in the interactions with the mission;
- (f) Ensure availability of relevant local stakeholders to address all 19 infrastructure issues;
- (g) Attend daily briefing sessions;
- (h) Arrange for timely response to the draft Standard Evaluation Forms submitted during the mission;
- (i) Arrange for timely comments to the mission's preliminary draft report and to the draft report.

I.5. OBSERVERS

An observer is a host counterpart of another Member State or a potential team member for a future INIR mission. The observer will participate in all INIR team activities but will not interact directly with the host Member State's local experts during the interview sessions.

The observer will be appointed in agreement with the Member State receiving the INIR mission.

APPENDIX II

TEMPLATE OF THE MAIN INIR MISSION TERMS OF REFERENCE

The material in this Appendix is provided to the INIR team leader as a Word template file to facilitate discussions and reaching an agreement with the host counterpart during the conduct of the pre-INIR mission.

INTEGRATED NUCLEAR INFRASTRUCTURE REVIEW MISSION TO

COUNTRY'S NAME

TERMS OF REFERENCE

Mission Date

Counterpart: Country Organization

A. Introduction

On *date*, *Country's name* requested the International Atomic Energy Agency (IAEA) to carry out a *Phase 1/Phase 2 (select one)* Integrated Nuclear Infrastructure Review Mission (INIR) in *Country's name*, which the IAEA agreed to conduct in *date*. A final Self-Evaluation Report was submitted on *date*. A pre-INIR mission was conducted on *date* and *Country's name* provided the supporting documents to complement the SER.

The main INIR mission will be conducted from *date* to *date*. The team will be led by the IAEA appointed mission team leader, Mr. /Ms. *XXX*. The team will be composed of designated IAEA staff and international experts recruited by the IAEA in consultation with *Country's name*.

These Terms of Reference for the INIR mission were discussed and agreed upon in a pre-INIR mission on *date*.

B. Scope and objectives

The main INIR mission will focus on the conditions required to achieve the corresponding milestone of the 19 infrastructure issues for *Phase 1/Phase 2 (select one)* as defined in the IAEA NE Series guide "Milestones in the Development of a National Infrastructure for Nuclear Power" (NG-G-3.1 Rev. 1).

The primary objective of the main INIR mission is to evaluate the status of the national infrastructure according to the evaluation conditions described in IAEA NE Series technical report "Evaluation of the Status of National Infrastructure Development" (NG-T-3.2 Rev.1) corresponding to the status of *Country's name* nuclear programme.

The main INIR mission will:

- Identify areas needing further actions to reach the respective milestones;
- Provide recommendations and suggestions which can be used by the host government and national stakeholder institutions to prepare an action plan to address the infrastructure gaps identified;
- Logistics and requirements of the IAEA team during the mission.

C. Methodology

The main INIR mission will utilize the following techniques:

Review of documents:

Prior to the main INIR mission, as part of its preparation, the team will review:

- The final Self-Evaluation Report (SER);
- Documents referenced in the SER and provided in advance of the mission;
- Conclusions and recommendations from other relevant IAEA missions.

During the mission the team leader may request additional documentation and supporting materials.

Presentations:

- *Country's name* will provide an overview of its nuclear power programme development at the opening session;
- The INIR team leader will provide briefing on the mission implementation and agenda at the opening session and a briefing on the main results and recommendations during the exit meeting.

Interviews:

- Interviews will be used to gather information through discussions with experts of the relevant organizations identified by the host counterpart.
- Interviews will be conducted for all 19 infrastructure issues, following NG-T-3.2 Rev. 1, as referenced above.

Debriefings:

Based on the information gathered, the INIR team will prepare a preliminary assessment for each infrastructure issue. This assessment will be discussed with the experts of the relevant organizations on the day following the interview.

D. Report

The outcome of the main INIR Mission will be the INIR mission report. The preliminary draft report will be presented to *Country's name* at the exit meeting. Within ... weeks following the

exit meeting, *Country's name* will have the opportunity to provide comments on the preliminary draft report which are limited to the factual correctness of information contained in the report.

The dates for the delivery of the main INIR mission report will be agreed with the *Country's name* host counterpart. The report will be made publically available on the IAEA web site unless *Country's name* objects in writing within three months after the handover of the report.

E. Pre-INIR mission

A pre-INIR mission was held on *date*. The purpose of this mission was to agree with the national counterparts on the arrangements for conducting the main INIR mission and to explain the INIR process. The topics that were covered at the pre-INIR meeting included:

- Discussions on the INIR review process;
- Agreeing on the Terms of Reference, the proposed team composition and the draft agenda for the main INIR mission;
- The supporting documents to be provided prior to the main INIR mission by the Member State in addition to the final SER;
- Logistics and requirements of the IAEA team during the mission.

It was agreed that the host counterpart for the mission will be *Name*, *Job Position*. The counterpart team will include officials from the relevant stakeholder organizations in the country.

F. Language

The INIR mission will be conducted in English. If interpretation or translation is needed, it will be arranged by the host counterpart.

For supporting documents not in English language, the IAEA team leader will agree with the host counterpart on the translation of the table of contents and summary of some of the most relevant documents.

G. Major elements of the schedule

The detailed agenda for the main INIR mission is provided in Attachment 2.

INIR team preparation and travel

In order to prepare the INIR team, the following activities will be performed:

- The INIR mission team will meet in *Vienna or Town Name in host Country* on *date* for a two day meeting prior to the main mission to perform a preliminary assessment of the 19 infrastructure issues based on the final SER;
- Team members will travel in accordance with the detailed agenda;
- On *date*, the INIR team will hold a Preparatory Team Meeting;
- Meetings with *Country's name* counterparts will start on *date*;
- The location of the main mission will be the *name* hotel.

Day 1 — Hotel (date)

- Opening meeting with the local authorities and representatives of the organizations involved in the nuclear power programme and the press (to be decided by the host Member State);
- Background, objectives, scope and process of the INIR mission (IAEA);
- Current status of *Country's name* nuclear programme (Counterpart);
- Beginning of interviews on infrastructure issues (All);
- IAEA INIR team meeting in the evening.

Day 2 — 4 Hotel (from date to date)

- Debrief with INIR team and local experts;
- Discussions on infrastructure issues continued;
- IAEA INIR team meeting in the evening / Meeting of the host counterpart and the representatives of stakeholder organisations on the comments to the write-ups.

Day 5 — Hotel (date)

- Follow-up of any questions or open infrastructure issues from the previous discussions (if necessary);
- Preparation of INIR mission preliminary draft report.

Day 6 — Hotel (date)

• Day off.

Day 7 — Hotel (date)

• Preparation of INIR mission draft report.

Day 8 — Hotel (date)

- Finalization of preliminary draft report with counterparts (All);
- Exit meeting presentation (IAEA);
- End of the INIR Mission.

H. Logistical considerations and mission cost sharing

- The hotel where the INIR team will stay and the mission will be conducted was agreed during the pre-INIR mission.
- A meeting room for 15 people to accommodate INIR team meetings will be arranged. The meeting room should have a projector and be located at the same hotel where the INIR mission will be held. The booking should be for full day on *dates*, and half day on *date*. This is under the Counterpart responsibility.
- A meeting room for at least 50 should be arranged for the plenary sessions. This room is needed for *date* and *date* and should have a projector available. This is under the Counterpart responsibility.
- Transportation to the hotel and back for the INIR team from the airport as required. This is under the Counterpart responsibility.

- Arrangements for lunch at or near the main mission site. This is under the Counterpart responsibility.
- The cost of the mission meeting rooms will be covered by *Country's name* for the meetings conducted in *Town name*; including the expenses for a meeting room in the hotel for team meetings where the IAEA team is staying.
- The cost of the INIR team travel, accommodation and other expenses in *Country's name* will be covered by IAEA Technical Cooperation (TC) *project's number or IAEA extrabudgetary resources, including the Peaceful Uses Initiative (PUI).*
- The cost of external experts' participation in the INIR team preparation meeting in *City's name* in *Month* will be covered by *TC project's number* or *IAEA extrabudgetary resources, including the PUI.*
- The cost of the SER Support/Pre-INIR mission was covered by *TC project number or IAEA regular budget or extrabudgetary resources, including the PUI.*

I. Media

- The opening and closing sessions will be open to the media, subject to *Country's name* decision. *Country's name* will inform the IAEA regarding media attendance.
- Any request for press interview with the IAEA officials will be made at least one week in advance.
- *Local organization name* will take responsibility for photo documentation of the mission.
- A joint web story will be prepared and issued on the IAEA web site.

J. References

- INTERNATIONAL ATOMIC ENERGY AGENCY, Milestones in the Development of a National Infrastructure for Nuclear Power, IAEA Nuclear Energy Series No. NG-G-3.1, (Rev. 1) IAEA, Vienna (2015);
- INTERNATIONAL ATOMIC ENERGY AGENCY, Evaluation of the Status of National Nuclear Infrastructure Development, Rev.1, IAEA Nuclear Energy Series No. NG-T-3.2, (Rev. 1) IAEA, Vienna (2016);
- INTERNATIONAL ATOMIC ENERGY AGENCY, INIR, Integrated Nuclear Infrastructure Review Missions Guidelines on Preparing and Conducting INIR Missions. (Rev. 2), IAEA, Vienna (2017);
- Self-Evaluation Report of *Country's name, date*.

K. Documents requested prior to the INIR Mission

An electronic version of the following documents, if not provided during the pre-INIR Mission, will be sent to the IAEA by *date* through the INIR Mission Coordinator:

- 1. Updated Self-Evaluation Report of Country's name, if any;
- 2. Documents referenced in the SER.

ATTACHMENT 1 — INIR Team and Role Assignments

ATTACHMENT 2 — Detailed Agenda for the Main INIR Mission

ATTACHMENT 1: INIR Team and Role Assignments for Country's name INIR Mission

	Infrastructure Issue	First Reviewer	Second Reviewer
1	National Position		
2	Nuclear Safety		
3	Management		
4	Funding and Financing		
5	Legal Framework		
9	Safeguards		
L	Regulatory Framework		
8	Radiation Protection		
6	Electrical Grid		
10	Human Resource Development		
11	Stakeholder Involvement		
12	Site and Supporting Facilities		
13	Environmental Protection		
14	Emergency Planning		
15	Nuclear Security		
16	Nuclear Fuel Cycle		
17	Radioactive Waste Management		
18	Industrial Involvement		
19	Procurement		

Team Leader: Mission Coordinator:

Observer(s):

	Mon	Preparation of exit meeting		Exit meeting		Team departure					
	Sun	Preparation of INIR mission	preliminary draft report (Team onlv)								
	Sat	Day off	Meeting Counterparts (if INIR mission exit meeting Opening 6.Safeguards 18.Industrial 11.Stakeholder necessary) frediminary Opening 6.Safeguards 18.Industrial 11.Stakeholder necessary) frediminary Plenary Involvement Involvement Involvement Preparation of frequent Position 1.National 1.Snuclear 9.Electrical 4.Funding/ frequent Position 15.Nuclear 9.Electrical 4.Funding/ frequent Return Grid Financing frequent								
	Fri	Follow-up with counterparts (if	TeamRegistrationDebriefing/feedback on write-upsFollow-up withDay offPreparation ofPreparation ofMeetingOpening6.Safeguards18.Industrial11.Stakeholder11.Stakeholdernouterparts (ifnot interpret interpret interpret interpret involvementnot interpret interpret interpret involvementPlenary0.Safeguards18.Industrial11.Stakeholder11.Stakeholderinvolvementnot involvementI.National1.National1.Snuclear9.Electrical4.Funding/framinaryExit meetingPosition15.Nuclear9.Electrical4.Funding/fram reportinterportExit meetingSecurityGridFinancingfram reportinterportinterportinterport								
	Thu	rite-ups	11.Stakeholder Involvement	4.Funding/ Financing		13.Environmental Protection				Debriefing on Thursday's interviews	y's name
	Wed	efing/feedback on w	18.Industrial Involvement	9.Electrical Grid		12.Site & Supporting Facilities	19. Procurement		16.Nuclear Fuel Cycle	17. Radioactive Waste Management	write-ups by <i>Countr</i>
	Tue	Debri	09:30- Opening 6.Safeguards 18.Industrial 11.Stakeholder necessary) preliminary 09:30- Plenary 6.Safeguards 18.Industrial 11.Stakeholder hecessary) hereint 10:50 1.National 1.National 11.Stakeholder Preparation of (Team only) Position Position Position Preparation of Preparation of Exit m	15.Nuclear Security		2.Nuclear Safety	8.Radiation Protection		14.Emergency Planning	10.Human Resource Development	Meeting/Review of
	Mon	Registration	Opening Plenarv	1.National Position		3. Management			5.Legal Framework	7.Regulatory Framework	Team
	Sun	Team Meeting									
	Sat	Travel						T			
Date	Time	09:00- 09:30	-06-30-	10:50		11:20- 13:00		Lunch	14:00– 15:20	15:40- 17:00	17:30– 19:00

ATTACHMENT 2: Typical Agenda for the Main INIR Mission to Country's name — Phase 1 INIR Mission

APPENDIX III

CRITERIA FOR CLASSIFICATION OF 'ACTIONS NEEDED' AND IDENTIFICATION OF RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

The following are the criteria for classification, as described in detail in chapters 2 and 3 of the Evaluation Methodology [2]:

- (a) **Significant actions needed** the review observations indicate that important work still needs to be initiated or completed to meet the condition.
- (b) **Minor actions needed** the review observations indicate that some addition work or steps are needed to meet the condition or that plans for the next phase need to be enhanced.
- (c) No actions needed the available evidence indicates that all the work to meet the condition has been completed.

The judgment whether the 'actions needed' to be undertaken by the Member State are significant or minor is based on the importance of the work to the overall programme and/or the resources needed to complete it. The classification is done through a consensus within the INIR team, and is not based solely upon the judgment of any individual team member.

It should be noted that if the mission is conducted early in a milestones' phase, typically most of the conditions will be classified as 'significant actions needed'.

Recommendations

Recommendations are proposed when the expectations of the condition have not been met. A recommendation should:

- Emphasize WHAT needs to be done, not "how";
- Be based on the IAEA Milestones Approach / Evaluation Methodology;
- Be succinct, self-explanatory and achievable;
- Be supported by the Review Observation text a 'gap' must be identified; already planned work can still be a recommendation if it is required to reach the milestone.

Suggestions

Suggestions propose consideration of new or different approaches to develop infrastructure and enhance performance, or to point out better alternatives to current work. A suggestion:

- Should be clear and self-explanatory;
- Should be supported by the Review Observation text;
- May relate to work already planned or underway for the next phase.

Good practices

A good practice is identified in recognition of an outstanding practice or arrangement, superior to those generally observed elsewhere. It is more than fulfillment of the conditions or expectation and worthy of the attention of other countries involved in the development of nuclear infrastructure as a model in the drive for excellence.

APPENDIX IV

EXAMPLE OF MAIN INIR MISSION REPORT AND ITS ATTACHMENTS

The templates for the *cover page* and typical *contents* of a Phase 1 main INIR report are shown in the next two pages. The pages that follow these templates include examples of the table summarizing the evaluation results (Summary Form) and the Standard Evaluation Form for the National Position issue in Phase 1 [2]. These forms are provided to the INIR team members as a Word template file for collecting the review results during the conduct of the mission and presenting them during the debriefing meetings with the host counterpart and for the preparation of the preliminary draft report of the mission.



MISSION REPORT ON THE INTEGRATED NUCLEAR INFRASTRUCTURE REVIEW (INIR) – PHASE 1

Counterpart: [Name of the Host Counterpart Entity/Organization]

> [Insert Mission Dates] [Town], [Country]

CONTENTS

EX	ECUTIVE SUMMARY
1.	INTRODUCTION
2.	OBJECTIVES OF THE MISSION
3.	SCOPE OF THE MISSION
4.	WORK DONE
5.	MAIN CONCLUSIONS
6.	EVALUATION RESULTS FOR PHASE 1
AT	TACHMENT 1: REVIEW OBSERVATIONS, RECOMMENDATIONS AND
SU	GGESTIONS FOR PHASE 1
AT	TACHMENT 2: LIST OF THE INIR TEAM MEMBERS AND COUNTERPARTS76
AT	TACHMENT 3: REFERENCES
AT	TACHMENT 4: ACRONYMS92

EXAMPLE 1: SUMMARY OF EVALUATION RESULTS

It should be noted that the results summarized in the following tables neither validate the country actions and programmes, nor certify the quality and completeness of the work done by a country. The form below shows a typical Evaluation Results for the first four infrastructure issues in a Phase 1 mission as included the INIR mission report. The complete form will include all 19 issues.

1. National Position		Phase 1					
Condition	Act	ions Neede	d				
	SIGNIFICANT	MINOR	NO				
1.1. Safety, security and non-proliferation needs recognized			х				
1.2. NEPIO established	X						
1.3. National strategy defined	X						
2. Nuclear Safety	Phase 1						
Condition	Actions Needed						
National Position In Safety, security and non-proliferation needs cognized In Safety, security and non-proliferation needs cognized In Nethons In Key elements of nuclear safety understood In Key element soft nuclear safety understood In Key element soft nuclear safety understood In Commitment to management systems that comote and support a strong safety culture evident Funding and Financing In Strategies established for funding and financing	SIGNIFICANT	MINOR	NO				
2.1. Key elements of nuclear safety understood	x						
2.2. Support through international cooperation intended			x				
3. Management		Phase 1					
Condition	Act	ions Neede	d				
	SIGNIFICANT	MINOR	NO				
3.1. Commitment to management systems that promote and support a strong safety culture evident		x					
4. Funding and Financing		Phase 1					
Condition	Act	ions Neede	d				
	SIGNIFICANT	MINOR	NO				
4.1 Strategies established for funding and financing	X						

EXAMPLE 2: ATTACHMENT TO INIR MISSION REPORT

The Standard Evaluation Form for a typical infrastructure issue has a similar structure to the evaluation forms used in SER. Here is the example for the *National position* (3 forms) for Phase 1 conditions. All the forms are to be completed during the mission by assigned team members.

1. National position Phase 1 Condition 1.1: Long term commitment made and importance of safety, security and non-proliferation recognized Phase 1 Summary of the condition to be demonstrated A clear statement adopted by the government of its intent to develop a nuclear power programme and of its commitment to safety, security and non-proliferation, with evidence that their importance is embedded in the ongoing work programme. Examples of how the condition may be demonstrated (1) A clearly stated government commitment; (2) Evidence of clear responsibilities for each infrastructure issue, with government coordination of activities. Observations Areas for further action Significant Minor Minor RECOMMENDATIONS SuggESTIONS S-1.1.1 GOOD PRACTICES						
1. National position Condition 1.1: Long term commitment made and importance of safety, security and non-proliferation recognized Phase 1 Summary of the condition to be demonstrated A clear statement adopted by the government of its intent to develop a nuclear power programme and of its commitment to safety, security and non-proliferation, with evidence that their importance is embedded in the ongoing work programme. Examples of how the condition may be demonstrated (1) A clearly stated government commitment; (2) Evidence of clear responsibilities for each infrastructure issue, with government coordination of activities. Observations Significant Areas for further action Significant R-1.1.1 SUGGESTIONS S-1.1.1 GOOD PRACTICES CP 111 CP 111						
1. National position Condition 1.1: Long term commitment made and importance of safety, security and non-proliferation recognized Phase 1 Summary of the condition to be demonstrated A clear statement adopted by the government of its intent to develop a nuclear power programme and of its commitment to safety, security and non-proliferation, with evidence that their importance is embedded in the ongoing work programme. Examples of how the condition may be demonstrated (1) A clearly stated government commitment; (2) Evidence of clear responsibilities for each infrastructure issue, with government coordination of activities. Observations Significant Areas for further action Significant SUGGESTIONS Significant SUGGESTIONS Significant GOOD PRACTICES GOOD PRACTICES						
Observations						
Areas for further action	Significant					
	Minor	Initiment made and importance of its intent intervention recognized Phase 1 statement adopted by the government of its intent to develop ar power programme and of its commitment to safety, security -proliferation, with evidence that their importance is embedded agoing work programme. A clearly stated government commitment; Evidence of clear responsibilities for each infrastructure issue, with government coordination of activities. iccant or				
RECOMMENDATIONS						
R-1.1.1						
SUGGESTIONS						
Of safety, security and non-proliferation recognized Filase 1 Summary of the condition to be demonstrated A clear statement adopted by the government of its intent to develop a nuclear power programme and of its commitment to safety, security and non-proliferation, with evidence that their importance is embedded in the ongoing work programme. Examples of how the condition may be demonstrated (1) A clearly stated government commitment; (2) Evidence of clear responsibilities for each infrastructure issue, with government coordination of activities. Observations Significant Areas for further action Significant Minor Minor RECOMMENDATIONS Suggession S-1.1.1 GOOD PRACTICES GP-1.1.1 GOOD PRACTICES						
GOOD PRACTICES						
GP-1.1.1						

1. National position Phase 1 Condition 1.2: The NEPIO established Phase 1							
Summary of the condition to be demonstrated	position 1.2: The NEPIO established Phase 1 1.2: The NEPIO: (a) Has clear terms of reference that call for a comprehensive review of all infrastructure issues relevant to making a decision to proceed with a nuclear power programme; (b) Is recognized by all relevant minister or directly to the head of government; (b) Is recognized by all relevant minister or directly to the head of government; (c) Reports to a senior minister or directly to the head of government; (c) Has appropriate human and financial resources; (e) Involves all relevant stakeholders, including the country's major utilities, the regulatory body for security and radiation safety, other relevant government agencies, legislative representatives and other decision makers. f how the all ybe ed (1) The charter establishing the NEPIO and to whom it reports; (2) Evidence that the roles and responsibilities of the NEPIO are known by all its members and by other government ministries; (3) A document defining objectives and timescales and an adequate scope of investigations; (4) A clear description of how the NEPIO operates in terms of funding, planning, reporting, scope of studies and use of consultants; (5) Evidence of relevant interactions between the head of NEPIO and appropriate ministries, such as those responsible for energy and the environment. 1s rther action Significant Minor Ninor						
Examples of how the condition may be demonstrated	 (1) The ch (2) Eviden are knowninistri (3) A docu adequa (4) A clear funding consult (5) Eviden all infra commis (6) Eviden NEPIO responsi 	arter establishing the NEPIO and to ce that the roles and responsibilities wen by all its members and by other es; ment defining objectives and timesc its scope of investigations; description of how the NEPIO opera- i, planning, reporting, scope of studie ants; ce that the NEPIO has adequate sl structure issues either directly or the ssioning specialist studies; ce of relevant interactions between the and appropriate ministries, such as sible for energy and the environment	whom it reports; of the NEPIO government ales and an tes in terms of es and use of kills to address rough the head of those it.				
Areas for further action	Significant						
	Minor						
RECOMMENDATIONS							
R-1.2.1							
SUGGESTIONS							
S-1.2.1							
GOOD PRACTICES							
GP-1.2.1							

1. National position Phase 1 Condition 1.3 National strategy defined Phase 1									
Summary of the	A comprehensive report, defining and justifying the national strategy for nuclear power, including:								
condition to be	(a) An an	alvsis of energy demand and energy al	ternatives:						
demonstrated	(b) An eva	aluation of the impacts of nuclear power	er on the						
	nation	al economy, for example gross domest yment;	ic product and						
	(c) A preli techno	minary technology assessment to ider logies that are consistent with nationa	itify al expectations;						
	(d) Consid	leration of siting possibilities and grid of	capacity;						
	(e) Consid and op	leration of financing options, owners perator responsibilities;	ship options						
	(f) Consid to spe	leration of long term costs and oblig nt fuel, radioactive waste and decomr	gations relating nissioning;						
	(g) Consid suppor owner/	leration of the human resource needs t needs of the regulatory body and the operator;	s and external ne						
	(h) Recog severe consec addres	nition that there remains a non-zero per accident and the need to deal with the quences of such an accident will need used;	oossibility of a he d to be						
	(i) Consid issues of deve	leration of the demands of each of th and a plan for how they will be met in elopment.	ne infrastructure the next phase						
	Note: Any p provide sign important th	Note: Any prefeasibility study conducted during provide significant input to the comprehensive reimportant that the report fully address all 19 infra							
Examples of how the	(1) List of	the studies that are feeding into the re	port(s);						
condition may be	(2) Currer	t status and conclusions;							
demonstrated	(3) Conter	nts list for the report(s);							
	(4) Execu	tive summary of the report(s);							
	(5) Evider	ice of ministerial review of the report(s).						
Observations									
Areas for further action	Significant								
	Minor								
RECOMMENDATIONS									
R-1.3.1									
SUGGESTIONS									
S-1.3.1									
GOOD PRACTICES									
GP-1.3.1									

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TEMPLATE FOR MEMBER STATE'S ACTION PLAN PROGRESS REPORT

Recommendation/suggestion	Actions taken by Member State	Status	Evidence	IAEA assessment
National position				
[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]				
Nuclear safety				
[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]				
Management				
[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]				
Funding and Financing				
[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]				

us Evidence IAEA assessment												
Status												
Actions taken by Member State												
Recommendation/suggestion	Legal framework [Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	Safeguards	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	Regulatory framework	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	Radiation protection	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]		Electrical grid	Electrical grid	Electrical grid [Copy and paste all the recommendations and suggestions as they are written in the main	Electrical grid [Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]

IAEA assessment									37
Evidence									
Status									
Actions taken by Member State									
Recommendation/suggestion	Human resource development [Copy and paste all the recommendations and suggestions as they are written in the main [NIR mission report]	Stakeholder involvement [Copy and paste all the recommendations and suggestions	as they are written in the main INIR mission report] Site and sunnorting facilities	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	Environmental protection	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	Emergency planning	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	

IAEA assessment										
 Evidence				-						_
Status										
Actions taken by Member State										
Recommendation/suggestion	Nuclear security [Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	Nuclear fuel cycle	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	 Kadioactive waste management	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	Industrial involvement	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	Procurement	[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]	

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