Integrated Work Plan

An IAEA strategic planning framework to support Member States in introducing nuclear power

IAEA
International Atomic Energy Agency

IAEA Support in Competence Building for Nuclear Power Infrastructure Development

E-LEARNING

18 modules used:

- for initial training
- as a pre-requisite for participation in INIT events and other in-house training activities

NUCLEAR COMPETENCY FRAMEWORK AND INFRASTRUCTURE BIBLIOGRAPHY

Agency's documents and resources for:

- each phase and issue
- each organization
- training needs analysis
- training events

INTEGRATED NUCLEAR INFRASTRUCTURE TRAINING (INIT)

Interregional technical cooperation project:

- training course on infrastructure for nuclear power
- workshops and training courses on specific Milestones issues

INTEGRATED WORK PLAN

Tailor made support:

- to address the gaps identified
- to ensure timely Agency input to programme development
- delivered as cross-Departmental integrated plan

Integrated Work Plan (IWP)

Introduction

Today, nuclear power produces about 10% of the world's electricity, accounting for around one third of all low carbon electricity generation. Thirty-one countries currently operate nuclear power plants, with several of them planning to expand their nuclear fleet. Another 30 countries or so are considering or embarking on new nuclear power programmes (so-called nuclear 'newcomers') to diversify their energy mix. They consider nuclear power as a large scale, reliable and dispatchable source of energy, which can contribute to their economic and social development and to mitigating climate change.

A nuclear power programme requires a long term commitment and a national nuclear infrastructure that provides governmental, legal, regulatory, institutional, managerial, technological, human resource, industrial and stakeholder support throughout its life cycle. The adherence to international legal instruments, and the adoption of internationally accepted nuclear safety standards, nuclear security guidance and safeguards requirements are essential in establishing a responsible nuclear power programme.

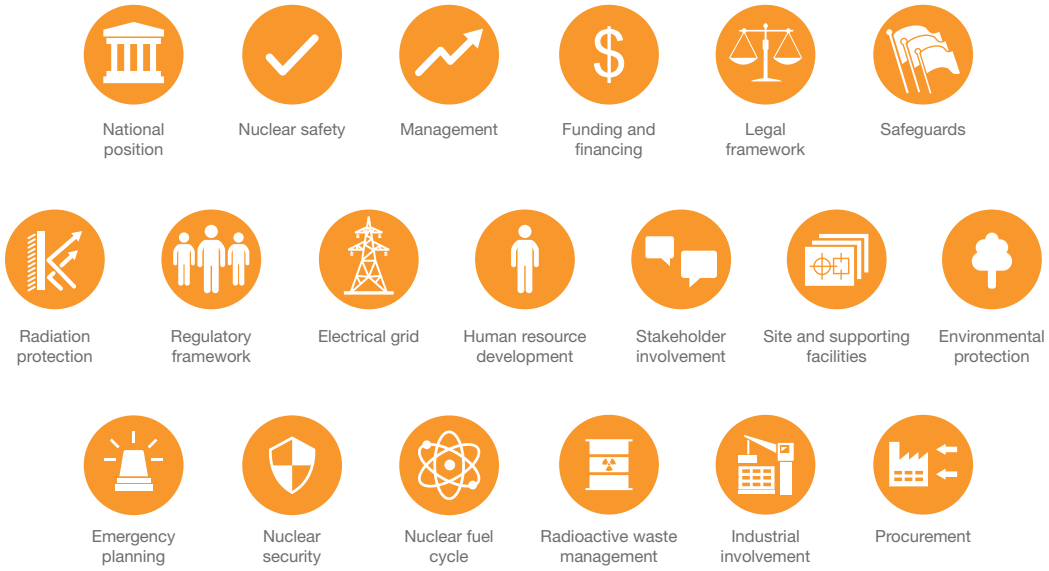
It is each country's sovereign decision whether to include nuclear power in its national energy mix. However, when countries proceed with this option, the IAEA is ready to support them through a variety of activities and services to do so safely, securely and sustainably.

A key coordination mechanism for this IAEA support is the **Integrated Work Plan (IWP).** This plan, jointly developed by the IAEA and the nuclear newcomer country, is a strategic planning framework that defines the IAEA's integrated activities to support the country's nuclear power infrastructure development.

The integrated IAEA services for Member States embarking on or expanding nuclear power programmes are based on the **IAEA Milestones Approach,** a result-oriented programme management guide that helps countries to understand and prepare for the long term commitments and obligations that nuclear power requires (see p. 8). It is documented in *Milestones in the Development of a National Nuclear Infrastructure* (IAEA Nuclear Energy Series No. NG-G-3.1 (Rev.1)).

Barakah nuclear power plant, United Arab Emirates (Photo: ENEC)

The 19 Nuclear Infrastructure Issues of the IAEA Milestones Approach



Each of the 19 infrastructure issues of the Milestones Approach is addressed in the Integrated Work Plan, to help Member States close any gaps identified during INIR or other IAEA review missions. The order in which the 19 infrastructure issues are presented does not imply relative importance. All issues require appropriate attention.

The 19 nuclear infrastructure issues of the Milestones Approach serve as the basis for a comprehensive assessment of the status of a country's national nuclear infrastructure during an IAEA Integrated Nuclear Infrastructure Review (INIR) mission, conducted upon invitation by a Member State. Prior to these missions, countries undertake a self-evaluation of their national nuclear infrastructure and document this in a Self-Evaluation Report. Countries may also request other IAEA peer review missions in later phases of developing their nuclear power programmes.

The results of these missions assist a Member State in determining its infrastructure status more precisely and in identifying additional development needs including assistance from the IAEA.

National Action Plan

The recommendations and suggestions of the INIR mission and other IAEA review missions, when applicable, are expected to help the Member State develop and regularly update its longer term comprehensive National Action Plan for the development of its nuclear power infrastructure.

The National Action Plan is a document belonging to the Member State, and its scope goes beyond IAEA support activities. It is maintained by the country's highest authority responsible for the overall nuclear power programme development and provides details of all major national activities to be carried out in a given time period. It outlines the required inputs and resources from all sources, including the IAEA and national, bilateral or multilateral support.

Upon request, the IAEA may assist Member States in the implementation of their national action plans. The complexity of such plans, and the extent of possible input from the IAEA for each of the 19 nuclear infrastructure issues calls for a holistic and integrated support framework: the Integrated Work Plan.

Integrated Work Plan (IWP)

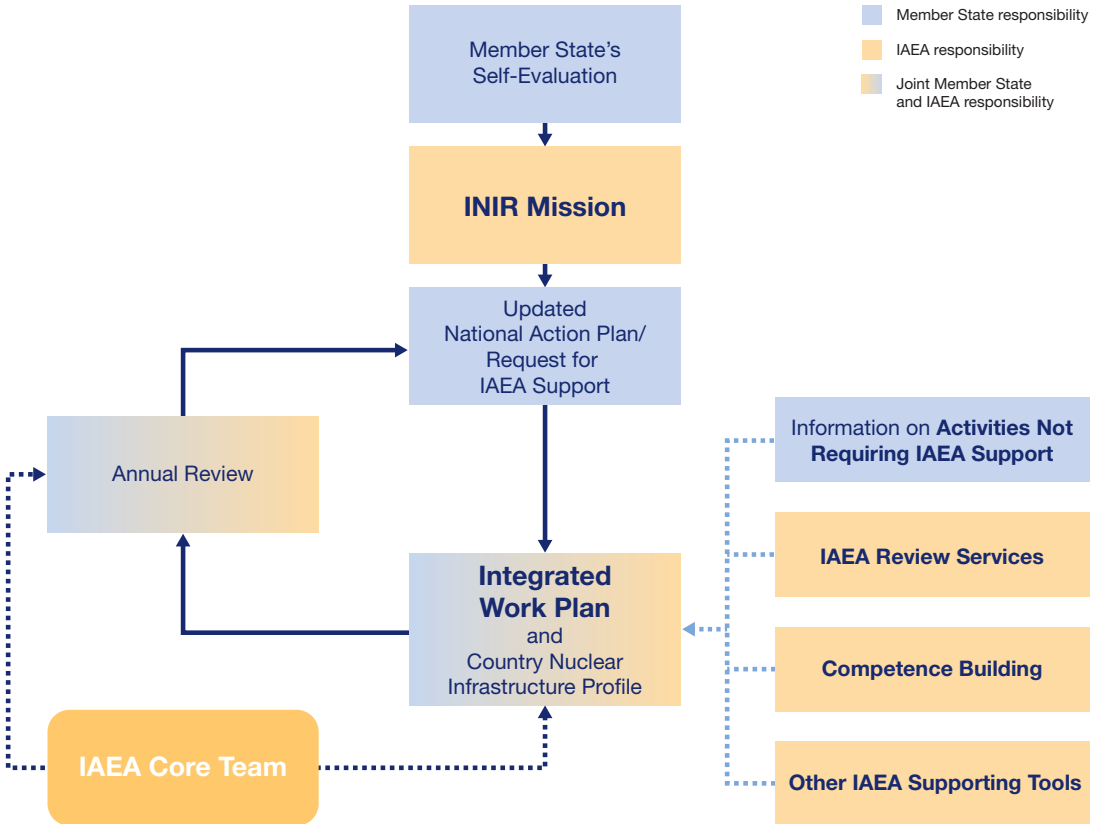
In 2011, the IAEA developed the concept of the IWP as an effective tool for planning, prioritizing, integrating and coordinating IAEA assistance for embarking Member States that have hosted an INIR mission. Over time, about 20 IAEA Member States have had active IWPs to support the development of their new nuclear power programmes.

The IWP is a strategic and result-oriented planning document, jointly developed by the IAEA and the Member State. It describes the relevant activities to be delivered by the IAEA to support an embarking country in addressing any gaps identified through self-evaluation and/or an INIR mission. The IWP prioritizes the planned activities under existing or planned IAEA technical cooperation and extrabudgetary projects to align them with the timeline of the Member State's national nuclear power programme. The IWP thus has a longer horizon than typical IAEA support. It is updated annually by the IAEA and the Member State concerned.

The IWP also includes references to activities that do not require IAEA support, for example a country's bilateral or national support for infrastructure development, or services obtained from consultants. This helps the IAEA to ensure that its own assistance remains relevant and overlaps are avoided.

The IWP contributes to building and maintaining a long term relationship with an embarking country. Moreover, countries use IWPs as a coordinating tool to streamline and prioritize their requests for support from the Agency.

IWP and Overall Process of IAEA Assistance to Embarking Member States



Objectives of the IWP

An IWP has several objectives:

- Ensure that the IAEA's assistance, requested by a Member State, is targeting areas of critical importance, as identified by the Member State based on the INIR mission (and any other IAEA review missions or advisory services) and is in line with the country's nuclear power programme development;
- Enable the IAEA to coordinate its support and provide an appropriate package of services and assistance corresponding to available resources and the Member State's capacity;
- Enable the Member State to plan the request of complementary assistance from other bilateral and national sources within the scope of its National Action Plan;
- Encourage the Member State to include all national key organizations involved in the nuclear power programme in the planning and implementation of the required assistance.

The United Arab Emirates (UAE) helped to develop and implement the concept of an "Integrated Work Plan" that was further adapted to all embarking countries. Ambassador Hamad Alkaabi, Permanent Representative of the UAE to the IAEA (third from right) and IAEA staff at the signing ceremony of the IWP for the UAE, IAEA, June 2013. (Photo: IAEA)

"Based on the findings of the INIR missions, an IWP for Bangladesh was developed as the guiding document and analytical tool for assigning tasks and responsibilities to different national stakeholders and integrating all activities required for developing the nuclear infrastructure for the Rooppur nuclear power plant."

Mohammad Shawkat Akbar, Project Director, Construction of Rooppur Nuclear Power Plant Project and Managing Director, Nuclear Power Plant Company Bangladesh Limited, Bangladesh

IAEA Core Teams

The main coordination mechanism for the IWP process is country-specific Core Teams which help with the planning and implementation of the country's IWP. The IAEA sets up a cross-departmental Core Team for each embarking country that requests IAEA assistance in developing a nuclear power programme.

Core Team members are nominated by the IAEA Department of Technical Cooperation, Department of Nuclear Energy, Department of Nuclear Safety and Security, Department of Safeguards and the Office of Legal Affairs. Their work is coordinated by the Nuclear Infrastructure Development Section in the Department of Nuclear Energy.

The individual Core Team members have technical roles, responsibilities and accountabilities within the IWP. They contribute to the IWP process as qualified experts in their areas of expertise and discuss and define technical activities to support Member States in developing their nuclear infrastructure through the IWP.

The Bangladesh Member State Team meets with the IAEA Core Team to discuss the country's IWP at the IAEA Headquarters in Vienna, December 2018. (Photo: IAEA)

IWP Timeline

An IWP covers a period of two to four years with a defined level of funding, based on ongoing or planned IAEA technical cooperation projects, regular budget and extra-budgetary assistance projects, as well as nationally planned and funded activities and bilateral assistance projects. It identifies activities implemented through IAEA technical cooperation projects and direct assistance activities from the relevant IAEA technical departments and the Office of Legal Affairs.

The IWP timeline follows the country's key programme developments including the licensing process, helping the Member State to request specialized IAEA peer review missions and advisory services in a timely manner and in line with the progress of the nuclear power programme and the nuclear power plant project.

"The IWP has streamlined cooperation with the IAEA and ensured alignment with overall program objectives where plans were targeted towards specific national needs. Workshops and review services in particular were fruitful, hands-on and interactive, utilizing the IAEA's experience and international best practices."

Zaid Al Shareef, Director, Nuclear Infrastructure Development Programme, King Abdullah City for Atomic & Renewable Energy (K.A.CARE), Saudi Arabia

Participants at an IWP meeting for Saudi Arabia, held at the IAEA Headquarters in Vienna, January 2020. (Photo: IAEA)

Maintaining and Updating the IWP

The IWP is reviewed and updated once a year in a joint meeting of the Member State and the IAEA Core Team, to assess results achieved and identify any changes, challenges and evolving priorities. The Member State team, in general, comprises the nuclear energy programme implementing organization, or NEPIO, the nuclear regulatory body, the future owner/operator of the nuclear power plant and technical support organizations.

IAEA integrated nuclear infrastructure training activities are defined during such meetings to best respond to the country's programme development needs, such as training courses, workshops, scientific visits and seminars, covering one or several of the 19 nuclear infrastructure issues of the Milestones Approach.

Maintaining an updated IWP, which reflects the Member State's activities to address recommendations of IAEA peer reviews and advisory services and is consistent with the status of the country's nuclear power programme development, enhances the efficiency and effectiveness of cooperation between the country and the IAEA.

Construction site of the Akkuyu nuclear power plant, Turkey, August 2020. (Photo: Akkuyu Nuclear JSC)

"The IWP has provided us with an opportunity to coordinate the planning and implementation of IAEA supported activities in an integrated manner for the development of Turkey's nuclear power programme. It has helped us to identify with the IAEA the activities to be undertaken in response to the recommendations and suggestions of the INIR mission. It also provides a clear platform for the design of IAEA technical cooperation projects."

Ibrahim Halil Dere, Director General, Directorate of Nuclear Energy and International Projects, Ministry of Energy and Natural Resources, Turkey

Ostrovets nuclear power plant, Belarus (Photo: Ministry of Energy, Belarus)

Country Nuclear Infrastructure Profiles

The IAEA also established a dynamic database for presenting and monitoring the status of a nuclear newcomer country's infrastructure development, following a self-evaluation or an INIR mission: the Country Nuclear Infrastructure Profiles (CNIP) database.

The CNIP is a management tool within the IAEA for planning, monitoring progress, and extending and optimizing IAEA assistance. Both the IWP and the CNIP are developed in direct discussions between the Member State organizations involved in IAEA support projects and the IAEA Core Team.

INIR, IWP and CNIP Processes

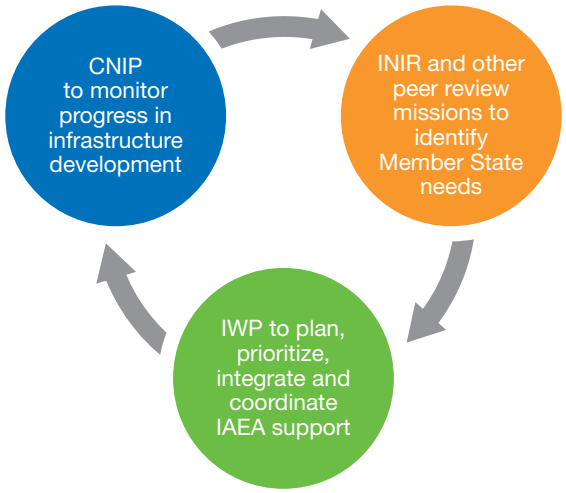


Illustration of the INIR, IWP and CNIP processes for continuous integrated support and monitoring of the status of a country's nuclear infrastructure development. This cycle can be repeated every 1-3 years until Milestone 3 is reached.

Summary

Countries developing a new nuclear power programme benefit from coordinated IAEA assistance, documented in a country's IWP and CNIP. The IAEA has recently revised the procedure for developing and updating IWPs, considering the experience gained over the past few years. The IWP for a Member State is intended to address the recommendations and suggestions made during INIR and other IAEA review missions and advisory services for which the Member State is seeking assistance.

The IWP is an excellent tool to facilitate coordinated support to a country in developing its nuclear power programme in a timely and consistent manner, within the framework of the IAEA's technical cooperation and other extrabudgetary or regular budget funded programmes.

"The Republic of Belarus implements its national nuclear power programme based on the IAEA Milestones Approach. The IWP is one of the mechanisms to implement this ingenious methodology. It has helped us to ensure that Belarus has all the required effective support through IAEA technical cooperation projects."

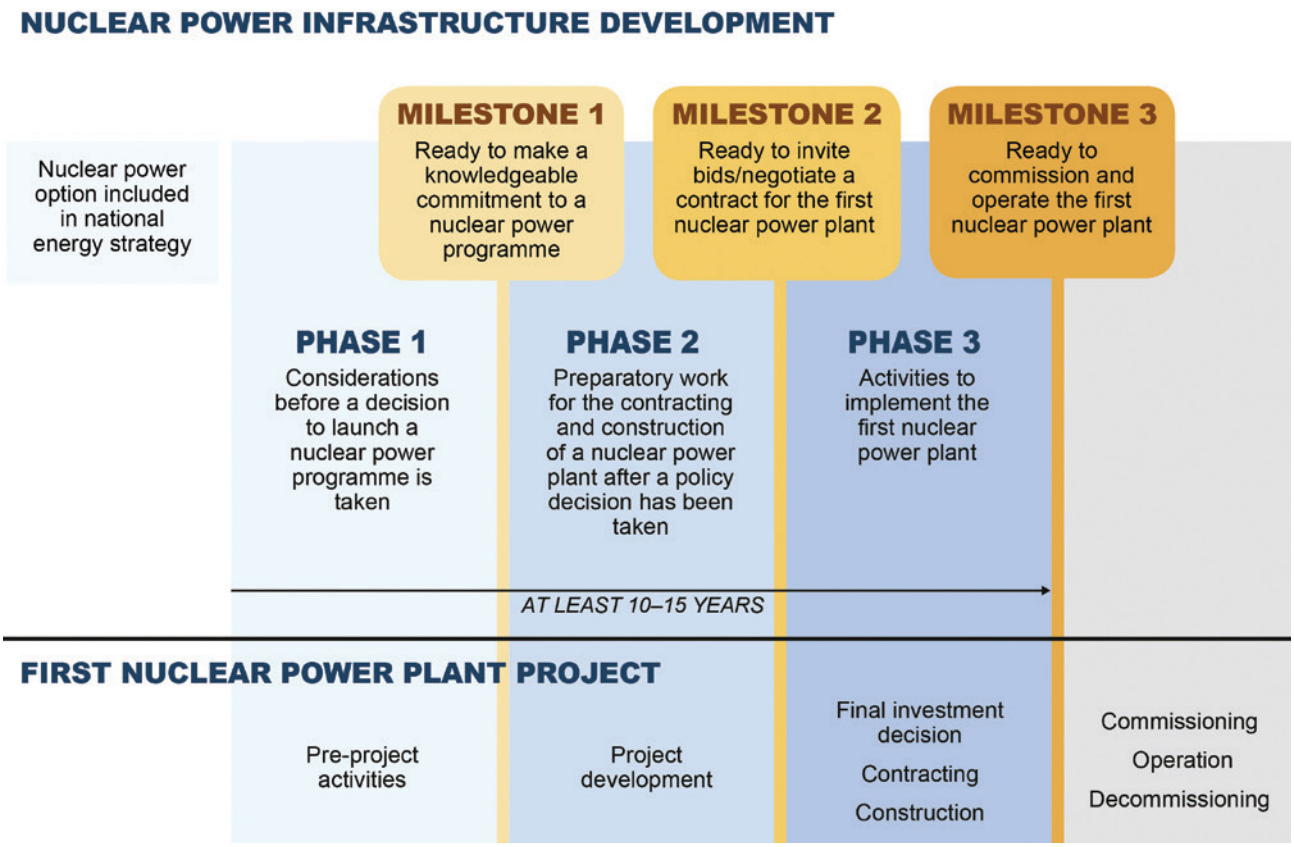
Liliya Dulinets, Deputy Director, Nuclear Energy Department, Ministry of Energy, Belarus

IAEA Milestones Approach

The IAEA Milestones Approach supports countries in creating an enabling environment for the implementation or expansion of a nuclear power programme, and helps them to understand and prepare for the associated commitments and obligations.

This result-oriented approach comprises three phases of programme development (consider, prepare, construct), three milestones to be achieved (decide, contract, commission and operate) and 19 infrastructure issues to be addressed in building a nuclear power programme, such as national position, nuclear safety, nuclear security, safeguards, legal and regulatory frameworks, human resource development, stakeholder involvement, radioactive waste management and others (see p. 2).

The Milestones Approach is documented in the IAEA Nuclear Energy Series *Milestones in the Development of a National Infrastructure for Nuclear Power* (NG-G-3.1 (Rev. 1)) and, together with other supporting documents, is widely used around the world. Its framework and terminology have been broadly accepted.



Related Publications

- *Milestones in the Development of a National Infrastructure for Nuclear Power,* IAEA Nuclear Energy Series No. NG-G-3.1 (Rev. 1) (2015)
- *Establishing the Safety Infrastructure for a Nuclear Power Programme,* IAEA Safety Standards Series No. SSG-16 (2020)
- *Establishing the Nuclear Security Infrastructure for a Nuclear Power Programme,* IAEA Nuclear Security Series No. 19 (2013)
- *Guidance for States Implementing Comprehensive Safeguards Agreements and Additional Protocols,* IAEA Services Series No. 21 (2012/updated 2016)
- *Integrated Nuclear Infrastructure Review: An IAEA Peer Review Service to Assist Member States in the Introduction or Expansion of Nuclear Power Programmes* (IAEA booklet, 2020)
- *Integrated Nuclear Infrastructure Training: IAEA Support for New and Expanding Nuclear Power Programmes* (IAEA booklet, 2020)

E-learning for Nuclear Newcomers

an IAEA interactive series of e-learning modules covering various aspects of developing a nuclear power programme

https://www.iaea.org/topics/infrastructure-development/e-learning-for-nuclear-newcomers

Nuclear Infrastructure Bibliography

a comprehensive listing of all relevant IAEA publications and other materials:

https://www.iaea.org/topics/infrastructure-development/bibliography

"The IWP is an important tool for Member States to monitor the progress in the development of a nuclear power programme in line with the IAEA Milestone Approach. Kenya has greatly benefitted and has consistently reviewed its IWP with great strides made so far".

Eng. Collins Juma, MBS, Chief Executive Officer and National Liaison Officer, Nuclear Power and Energy Agency, Kenya

For More Information

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