



# **Educational Workshop on Regulatory Challenges in Small Modular Reactors**

**Hosted by the**

**Government of the Federative Republic of Brazil**

**through the**

**National Nuclear Energy Commission (CNEN)**

**Rio de Janeiro, Brazil**

**7–11 October 2024**

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## **Information Sheet**

### **Introduction**

The Small Modular Reactors (SMR) Regulators' Forum is a regulator to regulators group. Its Terms of Reference states that the purpose of this Forum is to identify, enhance understanding of and address key regulatory challenges that may emerge in SMR regulatory discussions. This will help enhance safety and efficiency in SMR regulation, including licensing, and enable regulators to inform changes, if necessary, to their requirements and regulatory practices. The IAEA is functioning as Scientific Secretary to promote and facilitate the Forum's activities. In 2019, the Steering Committee of the SMR Regulators' Forum decided to disseminate the identified regulatory challenges related to SMRs to embarking countries through educational workshops.

SMRs offer a viable alternative to larger nuclear power reactors due to their smaller size and potential inherent safety characteristics. In terms of needed political and financial commitments, SMRs can be built in larger numbers, more quickly and in remote locations throughout the world. For these reasons, SMRs might represent a more attractive option to both embarking countries and countries expanding their existing nuclear power programmes. Those States have varying capabilities — ranging from no nuclear experience to experience with laboratory scale nuclear facilities and industrial applications, the operation of research reactors or the handling of radioactive material in large amounts. In this context, States may struggle with the licensing of SMRs due to uncertainties regarding applicable safety requirements, which at present focus mainly on the reactor designs commercially deployed. National safety requirements need to take into account the specific features of SMRs and the application of a

graded approach to existing safety requirements. According to IAEA Safety Standards, from the earliest phase of the development of safety infrastructure, the prime responsibility for safety rests with the prospective facility operating organization. The government, on the other hand, is required to establish an effective governmental, legal and regulatory framework to support a high level of safety.

As design and deployment activities related to SMRs around the world are progressing, the workshop will provide insights into the discussions held during the SMR Regulators' Forum meetings over the last three phases of its work. Regulatory bodies' staff participating in the workshop will benefit from the exposure to the common positions developed by the Forum's working groups, thus clarifying regulatory views regarding SMR safety demonstration proposals and regulatory practices that may need to be re-evaluated. The workshop will be supplemented by presentations on the current SMR technologies and country-specific presentations by invited expert members of the SMR Regulators' Forum, and will provide an ample opportunity for exchanging information and experiences between the lecturers and the participants, as well as among the participants themselves.

## **Objectives**

The purpose of the workshop is to enhance the knowledge of Member States' regulatory bodies on challenges identified by members of the Forum in regulating SMRs and to inform changes, if necessary, to their requirements and regulatory practices.

## **Target Audience**

This workshop is intended for the regulatory bodies of countries embarking on a nuclear power programme or countries considering expanding their nuclear power programmes and considering the deployment of SMRs in the medium term.

## **Working Language(s)**

English.

## **Topics**

The following topics will be covered during the workshop:

- Introduction to the SMR Regulators' Forum, its activities and outputs;
- Applicability of the IAEA Safety Standards to SMRs;
- Overview of SMR technologies;
- IAEA initiatives on SMR, including NHTS collaborative work;
- Application of Defence-in-Depth and graded approach to SMRs;
- Emergency Planning Zone for SMRs;
- Licensing process challenges related to SMRs;
  - Key regulatory interventions;
  - First of a Kind (FOAK) vs nth of a Kind (NOAK) Designs;
  - Licensing of multiple module/unit facilities; and
  - Process for leveraging other regulatory bodies' reviews and for cooperative reviews.

- Design and Safety Analysis for SMRs;
  - Multi-unit, multi-module aspects of SMRs;
  - Considerations in the use of passive and inherent safety features in SMR designs;
  - Aspects of beyond design basis analysis relevant to SMRs;
  - Integrated approach among Safety, Security and Safeguards (the 3S); and
  - Consideration of confinement/ containment systems for non-water cooled SMRs.
- Manufacturing, construction, commissioning, operations issues;
  - Manufacturability, supply chain management and commissioning of SMRs;
  - Collection and Use of Experience in the Lifecycle of Small Modular Reactor facilities;
  - Conduct of Maintenance in an SMR;
  - Conduct of Co-activities and Combined Activities on a Multiple Unit SMR Facility Site;
  - Regulatory Considerations in Pre-Licensing Engagement for Long-Lead Requests and Items (LLI); and
  - Conduct of Authorised Activities: Impact on Stakeholders' Organisational Capabilities (Designers, Vendors, Manufacturers, Supply Chains, Operators).

A half-day visit to the facilities of the Institute of Radioprotection and Dosimetry (IRD/CNEN) or to ARGONAUTA research reactor at the Institute of Nuclear Engineering (IEN/CNEN) will also be included.

## Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State, participants are requested to send the **Participation Form (Form A)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by **02 August 2024**. Participants who are members of an organization invited to attend are requested to send the **Participation Form (Form A)** through their organization to the IAEA by the above deadline.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and financial matters.

Participants are hereby informed that the personal data they submit will be processed in line with the [Agency's Personal Data and Privacy Policy](#) and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. Further information can be found in the [Data Processing Notice](#) concerning IAEA InTouch+ platform.

## Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per

country, provided that, in the IAEA's view, the participant will make an important contribution to the event.

The application for financial support should be made using the **Grant Application Form (Form C)** which has to be stamped, signed and submitted by the competent national authority to the IAEA together with the Participation Form (Form A) by **02 August 2024**.

## Venue

Rio de Janeiro, Brazil.

## Visas

Participants who require a visa to enter Brazil should submit the necessary application as soon as possible to the nearest diplomatic or consular representative of Brazil.

## Organization

### Scientific Secretary

**Ms Paula Calle Vives**

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretary/Secretaries and correspondence on other matters related to the event to the Administrative Secretary.