



# **Regional Meeting on the Role of SMRs in Future Energy Markets: The Business Case**

**Hosted by**

The International Atomic Energy Agency  
IAEA Headquarters  
Vienna, Austria

**15 to 19 February 2021**

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## **Information Sheet**

### **Purpose**

The purpose of this Regional Meeting is to discuss the role of SMRs in future energy markets from the perspective of the owner of the SMR plant, who will have to justify his investments through a business case. The owner organization may be e.g. an existing electric utility already operating other assets, a new entity needing to conquer its place in the market or an industrial company with non-electric energy demand currently covered otherwise. In order to justify the investment, a business case will need to be made, including typical components like analysis of the competitive landscape, value proposition and strategic positioning. Demonstrating a business case is required for demonstration of the value that a proposed asset (in our case the SMR) or service (for instance 24/7 electricity supply) would generate for the organisation, and to gain access to funding and financing. As operating experience with the SMR category of nuclear power plants is relatively limited, the project risk profiles will need specific attention. Aspects like investment profile, business model and the role of the various stakeholders, e.g. government (national and local), industrial customers, vendors with their supply chain, grid operator and environmental interest groups are part of the discussion. As the plant owner perspective is strongly connected to the plant vendor perspective, including its supply chain, this will also be part of the workshop agenda.

### **Working Language**

The working language of the event will be English.

## **Deadline for Nominations**

Nominations received after **30 November 2020** will not be considered.

## **Project Background**

Small Modular Reactors (SMRs) are newer generation reactors designed to generate electric power up to 300 MW whose components and systems can, in most cases, be shop fabricated and transported as modules to the sites for installation. Modularization and/or small size may enable economic mass production, short construction times and lower capital cost. Some Member States in Europe plan to implement long term strategic programmes by taking a leadership role in the development of SMR designs and technologies for near term deployable domestic use. SMRs may be an option for other countries in Europe that need alternatives to large reactors and fossil power plants.

An initial request from several European Member States (MS) that plan to initiate or to expand their nuclear energy programme have been addressed by the Regional Technical Cooperation Project RER/2/014 - Facilitating Capacity Building for Small Modular Reactors: Technology Developments, Safety Assessment, Licensing and Utilization. The main aim was to help increase their capabilities to make knowledgeable decisions, particularly to become capable to identify and perform assessments of SMRs available for near term deployment.

The IAEA has launched a new project RER/2/017 “Assessing the Role of Low Carbon Energy Technologies for Climate Change Mitigation”. Under the Paris Agreement Member States will develop Nationally Determined Contributions on a regular basis, which can help guiding the integrated national energy and climate plans (NECP). A successful decarbonisation strategy for the power sector will need to rely on a mix of future technologies that may include nuclear power. As a specific category of nuclear technology, SMRs have a few attractive features to offer: 1) suitability for countries/regions with smaller grids, 2) increased load-following capability needed to integrate larger shares of variable renewables, 3) smaller cooling water needs, and 4) better suitability for alternative, non-electric products. However, these SMRs will have to operate in a competitive market environment, where owner companies will make investments only if justified by a business case, including market assessment, analysis of the competitive landscape, cost estimation and risk allocation. As operating experience with the SMR category of nuclear power plants is relatively limited, the maturing of the SMR product and its supply chain, reflected in the project risk profile, will receive specific attention.

Several aspects related to SMRs not adequately addressed in RER/2/014 were therefore included in the RER/2/017 project. As examples these include the load following capabilities of SMRs; cogeneration of SMRs and using SMRs just for production of heat; assessing the financial viability of nuclear power projects using the IAEA’s models and the business perspective as indicated above can be identified.

The IAEA also initiated in 2020 a new, 3-year, Coordinated Research Project (CRP) focusing on the Economic Appraisal of Small Modular Reactors, including micro-reactors. The CRP aims at developing a canvas and a framework for conducting a comprehensive economic analysis, accounting for (1) differences in TRLs (2) specifics of the technologies being considered and (3) potential end-users and revenue streams attached to each concept.

## **Expected Outputs**

The expected main output of this event is an improved understanding of the business case of SMR in future energy markets from the perspective of the owner of the SMR plant. The business landscape for the potential products of SMR will be identified, including customers, competitors and current trade and contracting practices. Participants will also have a greater understanding of investment profile, financing models and the role of the various stakeholders, such as government, grid operator and environmental interest groups as well as the plant vendor, including its supply chain.

A meeting report containing a summary of presentations and discussions on the business case of SMR will be developed after the meeting.

## **Scope and Nature**

This 5-day meeting will provide in-depth presentations and discussions on the business case of SMR in future energy markets from the perspective of the owner of the SMR plant.

The meeting will mostly consist of presentations from IAEA staff, as well as by presentations from international experts in this area. It will also contain interactive components including a simulation on investments in the power sector.

## **Participation**

The workshop is open to 30 participants from each of the participating Member States of RER2017.

## **Participants' Qualifications and Experience**

Participants should have a basic knowledge on SMR technology either with a financial or business background i.e. from the utility sector. Candidates with other relevant experience but strong interest in this topic may be accepted if well justified in the nomination form.

## Application Procedure

Candidates wishing to apply for this event should follow the steps below:

1. Access the InTouch+ home page (<https://intouchplus.iaea.org>) using the candidate's existing Nucleus username and password. If the candidate is not a registered Nucleus user, she/he must create a Nucleus account (<https://websso.iaea.org/IM/UserRegistrationPage.aspx>) before proceeding with the event application process below.
2. On the InTouch + platform, the candidate must:
  - a. Finalize or update her/his personal details, provide sufficient information to establish the required qualifications regarding education, language skills and work experience ('Profile' tab) and upload relevant supporting documents;
  - b. Search for the relevant technical cooperation event (EVT2003826) under the 'My Eligible Events' tab, answer the mandatory questions and lastly submit the application to the required authority.

**NOTE:** Completed applications need to be approved by the relevant national authority, i.e. the National Liaison Office, and submitted to the IAEA through the established official channels by the provided designation deadline.

For additional support on how to apply for an event, please refer to the [InTouch+ Help page](#). Any issues or queries related to InTouch+ can be addressed to [InTouchPlus.Contact-Point@iaea.org](mailto:InTouchPlus.Contact-Point@iaea.org).

Should online application submission not be possible, candidates may download the nomination form for the meeting from the [IAEA website](#).

**NOTE:** A medical certificate signed by a registered medical practitioner dated not more than four months prior to starting date of the event must be submitted by candidates when applying for a) events with a duration exceeding one month, and/or b) all candidates over the age of 65 regardless of the event duration.

## Administrative and Financial Arrangements

Nominating authorities will be informed in due course of the names of the candidates who have been selected, and will at that time be informed of the procedure to be followed with regard to administrative and financial matters.

Selected participants will receive an allowance from the IAEA sufficient to cover their costs of lodging, daily subsistence and miscellaneous expenses. They will also receive either a round-trip air ticket based on the most direct and economical route between the airport nearest their residence and the airport nearest the duty station through the IAEA's travel agency American Express, or a travel grant, or they will be reimbursed travel by car/bus/train in accordance with IAEA rules for non-staff travel.

## **Disclaimer of Liability**

The organizers of the event do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in approving his/her participation, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

## **Note for female participants**

Any woman engaged by the IAEA for work or training should notify the IAEA on becoming aware that she is pregnant.

The Board of Governors of the IAEA approved new International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. The Standards deal specifically with the occupational exposure conditions of female workers by requiring, inter alia, that a female worker should, on becoming aware that she is pregnant, notify her employer in order that her working conditions may be modified, if necessary. This notification shall not be considered a reason to exclude her from work; however, her working conditions, with respect to occupational exposure shall be adapted with a view to ensuring that her embryo or foetus be afforded the same broad level of protection as required for members of the public.

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