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Agence internationale de l'énergie atomique
Международное агентство по атомной энергии
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The Secretariat of the International Atomic Energy Agency (IAEA) presents its compliments to the IAEA's Member States and has the honour to draw their attention to the **Workshop on the IAEA's Extended Input Output Model for Nuclear Power Plant Impact Assessment (EMPOWER)** (hereinafter referred to as "event") to be held virtually via Cisco WebEx from **20 to 22 June 2022**.

The purpose of the event is to provide an overview of methods and tools for quantifying the macroeconomic effects of energy investments (including nuclear power projects) at the aggregate and sectoral levels; to analyse the limitations of existing methods and tools and how they may be addressed; and to introduce and provide practical training on the IAEA's EMPOWER modelling tool for macroeconomic impact assessment.

The attached Information Sheet provides further details of the event.

The event will be held in English.

Member States are invited to designate one or more participants to represent the Government at this event. Member States are strongly encouraged to identify suitable women participants.

Designations should be submitted to the IAEA through the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) not later than **5 June 2022** using the attached Participation Form (Form A). Completed and authorized Participation Forms should be sent either by email to: Official.Mail@iaea.org or by fax to: +43 1 26007 (no hard copies needed). Copies should be sent by email to the Scientific Secretary of the event, Mr Saied Dardour, Division of Planning, Information and Knowledge Management, Department of Nuclear Energy (Email: S.Dardour@iaea.org). The Scientific Secretary of the event will liaise with the participants directly concerning further arrangements, as appropriate, once the official designations have been received.

Should Governments wish, in addition, to appoint one or more observers to assist and advise the designated participants, they are kindly requested to inform the IAEA of the names and contact details of any such observers by the above date.

The IAEA takes no responsibility for, and the provider of the virtual meeting services has represented and warranted that the Services shall not contain, and that no end user shall receive from the software used to hold the virtual meeting, any virus, worm, trap door, back door, timer, clock, counter or other limiting routine, instruction or design, or other malicious, illicit or similar unrequested code, including surveillance software or routines which may, or is designed to, permit access by any person, or on its own, to erase, or otherwise harm or modify any data or any system, server, facility or other infrastructure of any end user (collectively, a "Disabling Code").

The Secretariat of the International Atomic Energy Agency avails itself of this opportunity to renew to the IAEA's Member States the assurances of its highest consideration.

2022-04-26

Enclosures: Information Sheet

Participation Form (Form A)

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International Atomic Energy Agency
Atoms for Peace and Development

Workshop on the IAEA's Extended Input Output Model for Nuclear Power Plant Impact Assessment (EMPOWER)

Virtual Event

20–22 June 2022

Ref. No.: EVT2202931

Information Sheet

Introduction

Demand for clean, low carbon and sustainable energy keeps growing worldwide. Nuclear power is considered in many countries as part of the response to the global energy and climate change challenge. An increasing number of IAEA Member States are contemplating to add nuclear power to their electricity generation portfolio or to extend their current nuclear generation capacities. The Agency supports its Member States that have decided or are planning to adopt nuclear energy to meet their electricity needs in various ways. It also provides information for broader audiences engaged in energy, environmental and economic policy making.

Impact evaluation of nuclear power on national economy – as mentioned in the IAEA Milestones document[1] – requires development and/or adoption of specific tools and methods. The existing IAEA energy planning modelling tools belong to the partial equilibrium model class which is characterized by a detailed representation of the energy (electricity) sector. Though these tools provide a reliable and robust assessment of alternative paths for the energy sector development, they are less suitable to capture important benefits or detriments *outside* the energy sector itself.

To fill into this gap, and in response to an increasing number of requests from Member States for assistance in this area, the IAEA has developed a new model to support macroeconomic impact analysis, the **E**xtended Input Output **M**odel for Sustainable **Power** Generation (EMPOWER). EMPOWER

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

belongs to the class of the input–output models, one of the most common model archetypes applied in the impact assessment studies of nuclear energy. The great popularity of input–output models among economists is primarily rooted in its capability to capture economic impacts of exogenous shocks to an economic system in a relatively simple framework.

EMPOWER can be applied to study macroeconomic effects of any types of energy investments, including but not limited to nuclear power. In principle, the model can be applied the same way for various energy technology options. EMPOWER is structured to allow the assessment of macroeconomic impacts in the construction and operational phase of NPPs separately. It further specifies four consecutive levels of economic feedback mechanisms in both periods, depending on the availability of data and the interests of the model's users. The model can be used to quantify macroeconomic effects of decommissioning, waste management or funds set aside for disposal of radioactive waste.

EMPOWER includes four sub-modules for both construction and operation phases of the nuclear power project, which is a distinctive feature in comparison with other input-output models. The EMPOWER modules were developed based on the feedback and requests from the Member States expressed at the Coordinated Research Project (CRP) "Assessing the National and Regional Economic Effects of Nuclear Programmes" (2014-2018)[2] The current version of EMPOWER is developed based on the feedback and recommendations collected from the IAEA Member States during the Technical Meeting on Measuring the Macroeconomic Impacts of a Nuclear Power Plant Programme (2019). During the workshop the latest version of EMPOWER will be distributed among participants to collect further feedback and improve user experience in further updates.

Objectives

The main objectives of this Workshop are to:

- Provide an overview of appropriate methods and tools to quantify macroeconomic effects of energy investments at aggregated and sectoral level, including but not limited to nuclear power.
- Analyze the limitations of these methods and tools and how can they be potentially addressed.
- Introduce the IAEA EMPOWER model for macroeconomic impact assessment, including:
    - Non-technical and technical introduction to the structure of the EMPOWER model;
    - Mathematical formulation of the EMPOWER model;
    - Data requirements and data preparation routines in the EMPOWER model;
    - Running individual sub-modules in the EMPOWER model;
    - Interpreting results and preparing graphs in the EMPOWER model; and
    - Discussing limitations of the EMPOWER model.
- Distribute the current version of EMPOWER among participants and collect feedback based on the usage of the model.

[2] IAEA, "Assessing National Economic Effects of Nuclear Programmes", IAEA-TECDOC-1962, IAEA, Vienna, Austria, 2021

Expected Outputs

The output of the workshop would be an improved ability of the Member States to conduct the macroeconomic impact assessments of investments in low-carbon energy sources, including nuclear power.

This improved understanding based on ability to apply the IAEA EMPOWER tool should increase the decision-making capacity of the Member States to make educated choices regarding the development of energy sector in general and national nuclear power programmes in particular.

Target Audience

The event is aimed at energy economists, macroeconomists, energy planners, policy makers, regulators and utilities interested in macroeconomic impact assessments of investments in low-carbon energy sources, particularly, nuclear. Previous experience with the EMPOWER model is not expected but general understanding of macroeconomic models, particularly, of Input-Output class is highly desirable.

Working Language(s)

English.

Participation and Registration

All persons wishing to participate in the event must 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 **5 June 2022**. 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 technical 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.

Additional Information

No registration fee is charged to participants. Attendance to this event does not require travel. Selected candidates will work from their offices or other appropriate space in their hometowns and countries. The IAEA is not in a position to bear any costs of participants in the event (such as computer equipment, call/internet costs or any other costs that may arise out of the web-based training).

The event will be conducted through web-based facilities virtually (online) on the WebEx platform.

IAEA Contacts

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

IAEA
International Atomic Energy Agency

Form A
EVT2202931

Participation Form

Workshop on the IAEA's Extended Input Output Model for Nuclear Power Plant Impact Assessment (EMPOWER)

Virtual Event

20–22 June 2022

To be completed by the participant and sent to the competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA, or National Atomic Energy Authority) of his/her country for subsequent transmission to the International Atomic Energy Agency (IAEA) either by email to: Official.Mail@iaea.org or by fax to: +43 1 26007 (no hard copies needed). Please also send a copy by email to the Scientific Secretaries S.Dardour@iaea.org and D.Subbotnitskiy@iaea.org and to the Administrative Secretaries V.Gartner@iaea.org and E.T.B.Hartzell@iaea.org.

Participants who are members of an invited organization can submit this form to their organization for subsequent transmission to the IAEA.

Deadline for receipt by IAEA through official channels: 5 June 2022

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms
Institution:		
Full address:		
Tel. (Fax):		
Email:		
Nationality:	Representing following Member State/non-Member State/entity or invited organization:	

If/as applicable:

Do you intend to submit a paper? Yes ☐ No ☐

Would you prefer to present your paper as a poster? Yes ☐ No ☐

Title:

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.