IAEA
International Atomic Energy Agency
Atoms for Peace and Development

19th INPRO Dialogue Forum on Enhancing Public Acceptance of Nuclear Energy through Institutional Innovations

Virtual Event

7-10 December 2021

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Information Sheet

Introduction

The International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) was launched in 2000, in accordance with resolution GC (44)/RES/21, adopted in that year by the General Conference of the International Atomic Energy Agency (IAEA). The project's objectives are to help ensure that nuclear energy remains available in the 21st century and is developed in a sustainable manner. Moreover, INPRO seeks to bring together all interested Member States, including technology holders and users, so that they can jointly consider the actions necessary to achieve desired innovations in nuclear energy. The current membership of INPRO comprises 42 IAEA Member States and the European Commission. In 2014, the INPRO Group became a Section within the Division of Nuclear Power in the IAEA's Department of Nuclear Energy.

The INPRO Dialogue Forums offer a platform for technology holders, technology users and other stakeholders to share information, perspectives and knowledge on issues related to sustainable nuclear energy development. The Dialogue Forum focus not only on technology, but also institutional aspects, such as market, resources, effects of regulation and public acceptance issues.

While Nuclear energy has been one of the major sources of electricity with its role in achieving sustainable development and mitigating climate change, public acceptance and national policy uncertainties still constitute hurdles to the once envisaged nuclear renaissance.

Public attitudes and the policies of nations and institutions toward nuclear energy have changed over time. Many researchers have explored the determinants of public acceptance of nuclear power and the impact on national policies. These researchers identified various factors such as benefits, risks, upfront costs, knowledge, and trust as base characteristics to understand the issue of public acceptance. Researchers have also identified driving forces related to these factors which depend on experience in operating nuclear power plants and the geographical, environmental, political, economic, and cultural conditions of a country.

Among many benefits, energy security has been considered a major contributor to the public support and government policy for nuclear energy development. Recently, the positive impact of nuclear energy on climate change created a penetration of acceptance of this technology into the ranks of environmentalists.

On the other hand, risks of nuclear power such as safety, security, proliferation, and environmental impacts are exceptionally high among the public in comparison with other types of technologies. In addition, numerous studies have shown that the nuclear accidents at Three Mile Island (1979), Chernobyl (1986), or Fukushima (2011) have significantly eroded public acceptance of nuclear power.

Japan, with public confidence in nuclear power at record low levels following the accident, suspended operations at 46 of the country's 50 operational power reactors. In 2019, just nine Japanese nuclear power reactors have resumed operation. Germany decided to phase out nuclear power entirely by 2022. Belgium confirmed plans to exit nuclear power by 2025. In Italy, a government-backed plan to bring back nuclear power, shuttered since 1990, fizzled. Countries such as Spain, Korea, and Switzerland decided not to build new nuclear plants. Between 2011 and 2020, some 48 GWe of nuclear capacity was lost globally as a total of 65 reactors were either shut down or did not have their operational lifetimes extended.

For a significant improvement of public acceptance of nuclear energy, both technological and institutional innovations to maximize the benefits and minimize the risks and the up-front costs of nuclear energy are essential.

More than two thirds of operational reactors are over 30 years old and will either be retired in the coming decades or have their lifetimes extended. Existing rectors must maintain safety and reliability while staying economically competitive to build public acceptance and confidence and provide governments assurance of the viability and sustainability of a nuclear power programme. Hence, we have to build a safe bridge between ageing reactors and the deployment of advanced technologies including SMRs, microreactors, and Gen IV designs which must be safe, economical and sustainable as well as present Gen III reactors being built now and in the next 2 decades.

However, there are a number of barriers faced by innovative nuclear research, development, demonstration and deployment that come with very high cost, technical risks, and long lifetime cycles. The required investments to resolve the technological barriers and research risks are large and arguably beyond the means of most individual member states.

While technological innovations to address the above concerns have received a lot of attention, institutional innovations to overcome those barriers have received relatively little attention. There are several innovative institutional initiatives that can help address public concerns with nuclear energy. Examples include:

- Cooperation to develop innovative technologies and to improve access to safe and economical technologies (e.g., Gen IV, CORDEL)
- Cooperation to harmonize regulatory practices (e.g., IAEA Regulatory Cooperation Forum, WENRA, MDEP)
- Cooperation to address consequences of serious nuclear accidents (e.g., IAEA and international response to the Fukushima accident)
- Cooperation to address issues related to the backend of the nuclear fuel cycles (e.g., multinational repositories, IFNEC)

- International instruments to address safety, security and proliferation concerns (e.g., CNS, NPT, etc)
- Cooperation to provide comprehensive leadership, communications, and technical training to support the next generation of nuclear leaders (e.g., WNU, the IAEA facilitated International Nuclear Management Academy (INMA), the IAEA's Nuclear Energy Management and INPRO Schools).

The above examples can help improve public perception of nuclear energy and it is useful to explore how effective these initiatives are in addressing public concern and to explore potential improvements. One area that has not received sufficient attention is the role that educational institutions can play in enhancing public acceptance of nuclear energy by providing not only education and novel research but also a non-biased and credible outreach to the various stakeholders, including the public.

Therefore, more attention should be given to the role of institutional innovations while keeping in mind the importance of technical innovations. Furthermore, joint effort of member states in regional and globe girdling alliances is essential for the institutional and technological innovations.

Objectives

The INPRO Steering Committee, at its 28th meeting in October 2019 and 29th meeting in November 2020, endorsed the organization of an INPRO Dialogue Forum on Public Acceptance of Nuclear Energy to be held in Vienna in 2021. The Dialogue Forum 19 provides a platform for experts and policy makers from Member States to share experiences, discuss and cooperate on issues related to institutional and technical innovations for the improvement of public acceptance and to strengthen the capacity of Member States for the innovative research, development, deployment, and sustainable operation of nuclear energy.

The objectives of the 19th INPRO Dialogue Forum are to:

- Recognize the importance of public acceptance and robust government policy needed for a sustainable nuclear power programme.
- Identify different institutional and technological factors that affect public acceptance of nuclear energy.
- Explore the role of institutional and technological innovations for enhancing public acceptance and government backing.
- Explore the roles that various institutions can play to enhance public acceptance of nuclear energy, with a focus on educational institutions.
- Share best practices and lessons learned from cases of success or failure in different organizations and countries
- Share new ideas and suggestions for innovations that will bring significant improvement of public acceptance.

Target Audience

The INPRO Dialogue Forum is primarily open to participants from the INPRO Member States. It is also open to other interested IAEA Member States and international organizations.

Working Language(s)

The working language of the event will be English with no interpretation provided. All communications, abstracts and papers must be submitted to the IAEA in English.

Topics

The event will consist of several sessions, and all contributions, presentations, and discussions will be categorized as follows:

- Keynote sessions on a theoretical framework and its related sciences in public acceptance;
- The current status of public acceptance;
- The current status of innovations;
- The role of technological innovations;
- The role of institutional innovations; and
- The role of educational institutions.

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 further transmission to the IAEA **by 5 November 2021.** 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 matters.

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 Secretaries of the event, Mr Wonho Choi (Email: W.Choi@iaea.org), and Mr Maxim Gladyshev (Email: M.Gladyshev@iaea.org) both of the Division of Nuclear Power, Department of Nuclear, and to the Administrative Secretaries, Ms Karron Marie Robinson-Onorati (Email: K.Robinson-Onorati@iaea.org) and Ms Stefania Emmanouilidou (Email: s.emmanouilidou@iaea.org).

Papers and Presentations

The IAEA encourages participants to give presentations on the work of their respective institutions that falls under the topics listed above.

Participants who wish to give presentations are requested to submit an abstract of their work together with the **Participation Form (Form A)** and the attached **Form for Submission of a Presentation (Form B)** to their competent national authority (e.g., Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or their organization for onward transmission to the IAEA not later than **5 November 2021**.

The abstract will be reviewed as part of the selection process for presentations. The abstract should be provided in A4 page format, should extend to no more than 2 pages (including figures and tables) and should not exceed 700 words. It should be sent electronically to Mr Wonho Choi, the Scientific Secretary of the event (see contact details below), not later than **5 November 2021**. Authors will be notified of the acceptance of their prosed presentations by **19 November 2021.**

The event is, in principle, open to all officially designated persons. The IAEA, however, reserves the right to limit participation should this become necessary due to limitations imposed by the available seating capacity. It is therefore recommended that interested persons take the necessary steps to obtain their official designation as early as possible.

Additional Information

The meeting will be held virtually through web-based facilities (Cisco WebEx) by the IAEA from 7 to 10 December 2021. Consideration will be given regarding the time and duration of the meeting to accommodate different the time zones. Selected participants will be informed in due course on the procedures to be followed regarding the communication platform that will be used, the starting time and length of the sessions, and the functional modes to be used during the online sessions.

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