



Technical Meeting

on the Role of Nuclear Hydrogen Production in a Low Carbon Economy

IAEA Headquarters

Vienna, Austria

8–10 April 2019

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Information Sheet

A. Introduction

Currently, hydrogen is predominantly produced using steam methane reforming, a fossil-based technology. To make the system carbon neutral, amongst other things, this process requires the integration of carbon capture and storage plants into the overall system. Studies show that hydrogen can be produced using electricity and high temperature heat through water splitting based on either electrolysis or thermochemical cycle technologies. Both technologies are considered the most promising routes towards large-scale clean hydrogen production for near-term deployment.

Nuclear hydrogen production is viewed as an important clean method for producing hydrogen, serving to mitigate climate change in the short and long term in the power, heat and transportation sectors. The potential of nuclear hydrogen production is continuously growing with continuing progress in research, development, and deployment of pertinent high temperature nuclear reactors and process technologies in several countries, which have a renewed interest in hydrogen economy as part of national sustainable energy strategies. One of the potential paths towards ‘greening’ district heating and domestic hot water needs is the use

of hydrogen as feed for gas grids supplying domestic boilers. In addition, the increased production of hydrogen fuel cell vehicles worldwide is expected to increase interest in nuclear hydrogen production. This will bring a sustainable and ready-to-implement solution to help decarbonize the transportation sector, mainly for light-duty vehicles in the short term, and for long-distance road transport, shipping, and aviation in the long term.

The storage of hydrogen, produced using nuclear energy, is expected to play a key role in balancing supply and demand in future nuclear-renewable hybrid energy systems integrated into smart grids and in load following operations. In the short term, the direct use of nuclear power for hydrogen production through local or decentralized electrolysis can be easily implemented. In the long term, storing hydrogen produced during off-peak times is going to be vital in addressing the seasonal fluctuations in demand, and in stabilizing the energy supply/demand issues when more renewable energy systems are integrated into national and international grids. This requires innovative development in large-scale hydrogen storage methods and technologies. Furthermore, the use of combined heat and power systems that employ hydrogen fuel cells in micro and large-scale applications is another attractive path towards decarbonizing the power and heat sectors. Such systems still require further practical considerations before being ready for commercial use. These disruptive alternative technologies still have a number of challenges to overcome.

The IAEA is organizing this technical meeting as a forum to exchange information on the potential of nuclear hydrogen production to decarbonize the energy, heat and transportation sectors, and to discuss the challenges facing the implementation of such projects. Furthermore, introduction and training on the IAEA's Hydrogen Economic Evaluation Program (HEEP) tool will be provided.

B. Objectives

The purpose of the event is to evaluate the options for nuclear hydrogen production and its role in a future hydrogen economy, taking into account the various climate change scenarios; to examine the cost of nuclear hydrogen production depending on the technologies that are used; and to provide training on the IAEA's Hydrogen Economic Evaluation Program (HEEP) and collect feedback on the tool for further development.

C. Working Language

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

D. Expected Output

The expected output of this event is a technical report summarizing the discussions held during the event, the input from the participants on the status of and advances in nuclear hydrogen technologies, and the challenges facing the deployment of nuclear hydrogen projects; to increase the awareness of the role of nuclear hydrogen production towards climate change mitigation; and to train participants on the IAEA HEEP tool and collect their feedback on it.

E. 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 **15 February 2019**. 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 above deadline.

For Member States receiving technical cooperation assistance, applications for financial support should be made at the time of designating the participant.

Designating Governments will be informed in due course of the names of the selected candidates and will at that time be given full details of the procedures to be followed with regard to administrative and financial matters.

Please note that the IAEA is in a transition phase to manage the entire registration process for all regular programme events electronically through the new InTouch+ (<https://intouchplus.iaea.org>) facility, which is the improved and expanded successor to the InTouch platform that has been used in recent years for the IAEA's technical cooperation events. Through InTouch+, prospective participants will be able to apply for events and submit all required documents online. National authorities will be able to use InTouch+ to review and approve these applications. Interested parties that would like to use this new facility should write to: InTouchPlus.Contact-Point@iaea.org.

F. 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 **15 February 2019**.

It should be noted that compensation is not payable by the IAEA for any damage to or loss of personal property. The IAEA also does not provide health insurance coverage for participants in IAEA events. Arrangements for private insurance coverage on an individual basis should therefore be made. The IAEA will, however, provide insurance coverage for accidents and illnesses that clearly result from any work performed for the IAEA.

G. Venue

The event will begin on **Monday, 8 April 2019**, and will be held at the Vienna International Centre (VIC) where the IAEA's Headquarters are located. Exact details of the venue will follow in direct

correspondence between the IAEA organizers and the participants. Participants must make their own travel and accommodation arrangements.

General information on the VIC and other practical details, such as a list of hotels offering a reduced rate for IAEA participants, are listed on the following IAEA web page: <http://www-pub.iaea.org/iaeaevents/GeneralInfo/Guide/VIC>.

Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present an official photo identification document in order to be admitted to the VIC premises.

H. Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

I. IAEA Contacts

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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 Secretary.