



Technical Meeting on the Deployment of Non-Electric Applications Using Nuclear Energy for Climate Change Mitigation

IAEA Headquarters

Vienna, Austria

16–18 April 2018

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Information Sheet

A. Background

Cogeneration (i.e. the production of electricity and heat), in general, has proven to be a highly efficient and environmentally attractive option for energy generation. Yet, nuclear cogeneration is not widely deployed despite the fact that its viability was demonstrated a long time ago. For example, nuclear cogeneration even preceded the entry into operation of the world's first commercial nuclear reactor — the Shippingport reactor in Pennsylvania, USA, which reached its full design power in 1957 — because nuclear heat from the Calder Hall nuclear power plant (NPP) in the UK was used for a nearby fuel processing plant in 1956. Other successful examples of nuclear cogeneration include: the use of hot water in 1963 from the Ågesta NPP in Sweden for district heating in a suburb of Stockholm; the use of heat and electricity in 1972 from the Aktau NPP in Kazakhstan for seawater desalination to supply 120 000 m³/day of fresh water for the city of Aktau; and the use of heat in 1979 from the Bruce NPP in Canada for both heavy water production and industrial and agricultural uses. In view of the many years of accumulated experience with the deployment and operation of nuclear cogeneration, the use of nuclear energy can also be extended to meet various demands for heat and power in the heating and transport sectors. Nuclear cogeneration has proven to be a highly efficient and environmentally attractive means of combining heat and power production, especially when

deployed for the recovery of waste heat. Hence, it can meet the growing interest expressed by several newcomer Member States, as well as by countries with existing operating NPPs, in nuclear cogeneration as an option for several other applications, such as seawater desalination, hydrogen production, district heating/cooling, and providing process steam for various industrial applications along with power production.

Nuclear energy offers a low carbon alternative and has important potential advantages over other sources being considered for future energy generation. There are no technological impediments to extracting heat and steam from an NPP. This has been proven for low temperatures (<200°C) with nuclear assisted district heating and desalination notching up an operating experience of approximately 750 reactor operation years from around 70 NPPs. Detailed site specific analyses are essential for determining the best energy option. The development of small and medium sized reactors would be better suited for cogeneration and would facilitate non-electric applications of nuclear energy. The possibility of large scale distribution systems for heat, steam and electricity supplied from a central nuclear heat source (e.g. a multiproduct energy centre) could attract and serve different kinds of consumers concentrated in industrial parks.

This meeting seeks to establish a forum to discuss the future role of nuclear energy for non-electric applications, especially in the heating and transport sectors. Taking into consideration the global interest in climate change and the use of environmentally friendly energy to meet growing energy demand, the meeting will focus on making use of waste heat as a means of achieving better efficiencies in NPPs and finding alternative solutions for climate change mitigation in accordance with the Paris Agreement adopted at the 21st session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) in December 2015.

B. Objectives

The purpose of the meeting is to:

- Discuss the role of nuclear power and its non-electric applications in efforts to mitigate climate change;
- Explore the use of nuclear cogeneration, and especially of waste heat from NPPs, to meet the increasing demands for heat in the heating and transport sectors;
- Discuss expected challenges in the deployment of nuclear cogeneration, especially with regard to public acceptance; and
- Facilitate the efficient exchange of information regarding the design and operation of cogeneration plants, as well as regarding the associated infrastructure.

C. Expected Outputs

The expected outputs of this meeting are: identifying nuclear cogeneration as a valuable option for mitigating climate change; strengthening the public acceptance of nuclear cogeneration; and a

meeting report summarizing the discussions conducted among the participants on the use of waste heat and the potential deployment of nuclear cogeneration in Member States.

D. Administrative and Financial Arrangements

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

The costs of the meeting are to be borne by the IAEA; no registration fee is charged to participants. Travel and subsistence expenses of participants will not be borne by the IAEA. Limited funds are, however, available to help meet the cost of attendance of certain participants. Such assistance may be offered upon specific request to normally one participant per country provided that, in the IAEA's view, the participant on whose behalf assistance is requested will make an important contribution to the meeting. The application for financial support should be made at the time of designating the participant.

The organizers of the meeting 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 meeting, and it is clearly understood that each Government, in designating participants, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

E. Application Procedure

Designations should be submitted using the attached Participation Form (Form A). Completed forms should be endorsed by the competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA, or National Atomic Energy Authority) and returned through the established official channels. They must be received by the IAEA not later than **28 February 2018**. Designations received after that date or applications sent directly by individuals or by private institutions cannot be considered. Designating Governments will be informed in due course of the names of the selected candidates and at that time full details will be given on the procedures to be followed with regard to administrative and financial matters.

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

F. Working Language

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

G. Venue

The meeting will commence at 9.00 a.m. on Monday, 16 April 2018 in Room C0454, Building C, of the Vienna International Centre (VIC). Meeting participants are requested to arrive at Checkpoint 1/Gate 1 one hour before the start of the meeting on the first day in order to allow sufficient time for the issuing of grounds passes, which are necessary for official visitors to the VIC.

H. Visas

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

I. Organization

Official correspondence with regard to the technical aspects of the meeting should be addressed to the Scientific Secretary:

Mr Ibrahim Khamis

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