Nuclear Energy Agency

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NUCLEAR ENERGY AGENCY

COMMITTEE FOR TECHNICAL AND ECONOMIC STUDIES ON NUCLEAR ENERGY DEVELOPMENT AND FUEL CYCLE

MANDATE OF THE WORKING GROUP ON HYDROGEN VALUE CHAINS (H2-VAL)

2023-2025

This mandate is submitted to the Committee for Technical and Economic Studies on Nuclear Energy Development and Fuel Cycle (NDC) for approval during the 78th meeting of the NDC on 13-14 September 2023. NDC will be invited to note the document NEA/NDC(2023)9/REV1 and approve the mandate of the SMR-ECON presented in the Annex of the document NEA/NDC(2023)9/REV1

The draft mandate NEA/NDC(2023)9/PROV was previously submitted to NDC for approval under written procedure with deadline for comments on 19 April 2023, but consensus wasn't reached.

Based on the comments received the draft mandate was then further discussed and edited with the members sending observations and by the NDC Bureau on 14-15 June 2023.

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MANDATE OF THE WORKING GROUP ON HYDROGEN VALUE CHAINS (H2-VAL)

Members:	All NEA member countries
Full Participant:	European Commission *Under the NEA Statute*
Observer(s) (International Organisation)**:**	International Atomic Energy Agency (IAEA) *By agreement*
Date of creation:	01 May 2023
Start of current mandate:	01 May 2023
End of current mandate:	31 December 2025

Document Reference:

- NDC Programme of Work for 2023-2024 [NEA/NDC(2023)1]
- Report of the 76th NDC meeting of September 7th and 8th, 2022 [NEA/NDC(2023)4/PROV]
- NEA (2022), The Role of Nuclear Power in the Hydrogen Economy, OECD Publishing, Paris, https://www.oecd-nea.org/jcms/pl_73133/the-role-of-nuclear-power-in-the-hydrogen-economy

Background

In November 2022, NEA published a report on "The Role of Nuclear Power in the Hydrogen Economy" (NEA 2022).

In the context of the abovementioned background information, among other publications, to further the understanding of hydrogen value chains, the NTE Working Group on Hydrogen Value Chains (H2-VAL) is created to directly contribute to NDC's work in the area of hydrogen value chains, in particular related to outputs 9.1.4 and 9.1.5 of the NDC Program of Work (PoW) for years 2023-2024, i.e. "Levelised Costs of Hydrogen Production" and "Scenario Analysis of Hydrogen for Synthetic Fuels", respectively.

Mandate

The Working Group on Hydrogen Value Chains (H2-VAL) is to provide a forum for discussion of all stages of hydrogen value chains, i.e. production, transport, distribution, transformation, and storage; and assess the feasibility, market potential and competitiveness of different nuclear-hydrogen systems for the production of low-carbon fuels such as ammonia, syngas (carbon monoxide and hydrogen) and synthetic fuels, thereby supporting the delivery of items of the NDC Programme of Work.

Scope and Objectives

The H2-VAL will provide a forum for exchange of information between experts on the following:

1. Review of key challenges and opportunities for nuclear-hydrogen systems as part of industrial clusters, including electrical and thermal coupling, safety case and possible business models;
2. Discussion of market potential and technical requirements for nuclear-produced hydrogen and associated derivatives (e.g. ammonia, synthetic fuels, etc.);
3. Assessment of possible development strategies for nuclear-based hydrogen value chains, including hydrogen transport, storage and distribution.

The H2-VAL will discuss and validate key technical and economic assumptions, as well as other considerations to inform NEA analyses on nuclear-hydrogen value chains.

Working methods

The H2-VAL will meet as often as needed to carry out activities to support NDC in the delivery of its activity items related to *Levelised Costs of Hydrogen Production* and *Scenario Analysis of Hydrogen for Synthetic Fuels* as assigned in the NDC PoW. Some meetings may be held virtually, at the discretion of the Chair and the NEA secretariat.

All reports, publications and products of the H2-VAL will be submitted to the NDC for approval prior to release.

The H2-VAL will report to the NDC on its progress and activities as requested, and at least on an annual basis.

The NDC may also identify and task the H2-VAL with other activities related to hydrogen value chains.

Membership

The H2-VAL will include a diverse range of experts in the areas of nuclear-hydrogen systems, low-carbon fuels, energy system modelling and hydrogen value chains from government ministries and/or agencies, industry, energy utility companies, research institutions and academia.

Interactions

The H2-VAL will engage with relevant experts and organisations from the nuclear sector, as well as experts from other industries that can contribute to informing discussions on hydrogen value chains.

The H2-VAL will interface with the Generation IV International Forum (GIF) Task Force for Non-Electric Applications of Nuclear Heat (NEANH) and the International Energy Agency (IEA) Hydrogen Technology Cooperation Programme (Hydrogen TCP) Task dedicated to hydrogen from nuclear energy "Task 44". The H2-VAL Working Group will also co-ordinate, as appropriate, with other international organisations (e.g. the IAEA).

Deliverables

The H2-VAL will directly support NDC to deliver activity items on Levelised Costs of Hydrogen Production and on Scenario Analysis of Hydrogen for Synthetic Fuels by end 2024.

In particular, the H2-VAL will contribute to the organisation of a workshop on hydrogen production costs (IOR 9.1.4) and the publication of a standard report on hydrogen value chains (IOR 9.1.5).

The H2-VAL will also produce policy briefs and organise relevant events (e.g. workshops) to collect the necessary evidence to fulfil its mandate.