

353/81/2024-NT
Government of India
Ministry of New and Renewable Energy
(Hydrogen Division)

Atal Akshay Urja Bhawan,
Lodhi Road, New Delhi 110003
Date: 8th November 2024

To

The Pay & Accounts Officer,
Ministry of New and Renewable Energy,
New Delhi- 110003

Subject: Scheme Guidelines for implementation of Pilot projects for production and use of Green Hydrogen using innovative methods/pathways in the Residential, Commercial, Localized Community, Decentralized/Non-Conventional, applications, including any new sector or technology not covered in previous Mission schemes – reg.

Sir/Madam,

I am directed to convey the sanction of the President of India for the implementation of the scheme for implementation of Pilot projects for production and use of Green Hydrogen using innovative methods/pathways in the Residential, Commercial, Localized Community, Decentralized/Non-Conventional, applications, including any new sector or technology not covered in previous Mission schemes.

2. Objectives of the Scheme are as follows:

- (i) To support innovative models/technologies/pathways for production of Green Hydrogen including inter – alia floating solar based Green Hydrogen production, biomass based Green Hydrogen production and production of Green Hydrogen from wastewater.
- (ii) To support the utilisation of Green Hydrogen and its derivatives as fuel for decentralized applications in cooking, heating, off-grid electricity generation, off road vehicles, on a pilot basis



- (iii) To validate the technical feasibility and performance of Green Hydrogen as a fuel for household / residential and commercial appliances including, city gas, local community applications.
 - (iv) To demonstrate safe and secure use of Green Hydrogen and its derivatives in other new sectors.
3. Implementation Methodology: The Scheme will be implemented as per the detailed Guidelines given at Annexure.
4. The expenditure on this scheme will be met from the budget provisions made under the National Green Hydrogen Mission Head.
5. This issues in exercise of the powers conferred on this Ministry and with the concurrence of IFD vide their Diary. No. 298 dated 8th November 2024.
6. This has the approval of Hon'ble Minister of New and Renewable Energy.

Yours faithfully,



Sujit Pillai

Scientist F

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Enclosed: Annexure

Copy to:

1. Secretary, Ministry of New and Renewable Energy (MNRE)
2. All Central Government Ministries and Departments
3. All Members of the Empowered Group under the Mission
4. All Members of the Advisory Group under the Mission
5. CEO, NITI Aayog, Sansad Marg, New Delhi
6. State Nodal Agencies (SNAs) of all States/UTs
7. Major Public Sector Enterprises operating in Renewable Energy/Power Sector
8. Principal Director of Audit, Scientific Audit-II, DGCAR, I.P. Estate, Delhi-11002
9. Director General (Local Bodies), Office of the Comptroller & Auditor General, Deendayal Upadhyay Marg, New Delhi

10. Solar Energy Corporation of India (SECI), 6th floor, Plate-B, NBCC office, Block tower-2, East Kidwai Nagar, New Delhi. 110023
11. Indian Renewable Energy Development Agency Limited (IREDA), 3rd floor, August Kranti Bhavan, Bhikaji Cama place, New Delhi-110066

Internal distribution:

1. PS to Hon'ble Minister of New and Renewable Energy and Consumer Affairs, Food and Public Distribution
2. PS to Hon'ble Minister of State for New and Renewable Energy and Power
3. PSO to Secretary, MNRE
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Annexure

Scheme Guidelines for implementation of Pilot projects for production and use of Green Hydrogen using innovative methods/pathways in the Residential, Commercial, Localized Community, Decentralized/Non-Conventional, applications, includes any new sector or technology not covered in previous Mission schemes

1. Introduction

1.1. The National Green Hydrogen Mission, hereafter mentioned as the 'Mission', was launched on January 4 2023 with an outlay of Rs. 19744 crores with an aim to make India a Global Hub for production, usage and export of Green Hydrogen and its derivatives. It will contribute to India's goal to become Aatmanirbhar (self-reliant) through clean energy and serve as an inspiration for the global Clean Energy Transition. The Mission will lead to significant decarbonisation of the economy, reduced dependence on fossil fuel imports, and enable India to assume technology and market leadership in Green Hydrogen. Under the Mission, along with other initiatives, the Ministry of New & Renewable Energy (MNRE) proposes to implement pilot projects for production or usage of Green Hydrogen in order to replace fossil fuels and fossil fuel-based feedstock.

1.2. The production of Green Hydrogen via decentralized mode, i.e. rooftop solar, small/micro hydel plants, floating solar, wastewater and biomass utilization will be advantageous for localized applications. In addition to this, use of Green Hydrogen and its derivatives for community-level applications, such as heating, cooking, and off-grid electricity generation or storage, holds immense potential in driving India's decarbonization efforts. By replacing LPG in cooking stoves, diesel in off - grid power generation, and conventional fuels in household heating systems, communities can significantly reduce their carbon emissions and improve air quality. Additionally, utilization of Green Hydrogen-based fuels in new sectors including off-road vehicles, such as those used in construction and mining, offer a sustainable solution in reducing emissions from these energy-intensive sectors.

1.3. In order to evaluate different innovative production pathways for Green Hydrogen and its derivatives and to assess the feasibility of hydrogen utilization in residential and commercial applications in decentralized mode, eligible projects will

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be supported under the Mission. These projects will be implemented by the Scheme Implementing Agencies (SIAs) designated for specific sectors under this initiative.

2. Innovative models for production and utilization of Green Hydrogen

2.1. Para 4.7 of the Mission Document states that Innovative models to source Green Hydrogen through use of decentralized renewable energy generation such as rooftop solar and small/micro hydel plants will also be explored. Decentralised Green Hydrogen production will be advantageous to reduce the requirement of its transportation for end-use. This would also allow for optimal utilization of various resources such as land, water, renewable energy potential etc. Decentralized production may also be explored through Biomass-based hydrogen production systems and Modular electrolyzers connected to rooftop solar or other decentralized RE plants like small hydro etc. To optimize water requirements, the use of industrial or municipal wastewater for hydrogen production, wherever feasible, will also be emphasized.

2.2. Para 3.2 of the Mission Document states that the Mission will support replacement of fossil fuels and fossil fuel-based feedstocks with renewable fuels and feedstocks based on Green Hydrogen. This will include replacement of Hydrogen produced from fossil fuel sources with Green Hydrogen in ammonia production and petroleum refining, blending Green Hydrogen in City Gas Distribution systems, production of steel with Green Hydrogen, and use of Green Hydrogen-derived synthetic fuels (including Green Ammonia, Green Methanol, etc.) to replace fossil fuels in various sectors including mobility, shipping, and aviation.

2.3. The decentralized mode as stated in para 2.1, will also apply to local community-based applications, operated in decentralized modes. Para 7.2 of the Mission Document states that Hydrogen can also be blended to a certain degree in most natural gas networks without requiring significant investments. Older networks will require retrofitting/upgradation of system components, but new and upcoming networks are likely to be compatible with high blend ratios of hydrogen.

2.4. Thrust areas under this scheme will be to provide support for development/ selection/ validation of innovative/viable technologies, for the production and utilization of Green Hydrogen in decentralized local community sector and off-road vehicles, including those sectors not covered by other mission schemes.

3. Objectives of the Scheme

- (i) To support innovative models/technologies/pathways for production of Green Hydrogen including inter – alia floating solar based Green Hydrogen production, biomass based Green Hydrogen production and production of Green Hydrogen from waste water.
- (ii) To support the utilisation of Green Hydrogen and its derivatives as fuel for decentralized applications in cooking, heating, off-grid electricity generation, off road vehicles, on a pilot basis.
- (iii) To validate the technical feasibility and performance of Green Hydrogen as a fuel for household / residential and commercial appliances including, city gas, and local community applications.
- (iv) To demonstrate safe and secure use of Green Hydrogen and its derivatives in other new sectors.

4. Budgetary Outlay: Rs. 200 cr till FY 2025 – 26.

5. Rationale and the Salient Features

5.1. These pilot projects will help in identification of innovative models/pathways for production and decentralized utilization of Green Hydrogen. The pilot projects will help understand operational issues and gaps in terms of current technology readiness, regulations, implementation challenges, infrastructure and supply chains. These will serve as valuable inputs for future scaling and commercial deployment of different Green Hydrogen production pathways and utilization models, in the residential, commercial and other new sectors.

5.2. The production of Green Hydrogen via different innovative models/pathways and use of Green Hydrogen and its derivatives in the household, commercial and other new sectors, through the proposed pilot projects, will lead to setting up of necessary facilities including refueling stations, storage and distribution networks, resulting in establishment of a Green Hydrogen ecosystem in these new sectors.

5.3. Salient features of the Scheme are given below:

- i. Projects with an intention to develop a Pilot Scale/ Demonstration project for innovative technology or application will be supported.
- ii. The scheme will be implemented by Scheme Implementing Agency (SIA) which could be either NISE (National Institute of Solar Energy), NIBE (National Institute of Bio Energy) or Solar Energy Corporation of India (SECI). The SIA shall be entitled to a fee of 0.5 % of the total amount sanctioned ensuring that the expenditure for the scheme including service charges does not exceed Rs. 200 crores.
- iii. The SIAs shall issue the call for proposals for projects under the scheme for award of pilots through a transparent process.
- iv. Besides Calls for Proposals, the interested institution/ individuals may also submit proposals, in relevant areas at anytime to the MNRE. Such proposals will be evaluated for financial support on case-to-case basis according to their relevance to Ministry's priorities and suitability for financial support.
- v. MNRE will issue administrative sanctions for the projects under the Scheme based on the recommendations of Project Appraisal Committee (PAC)
- vi. The Executing agencies (EAs) selected for the pilots will implement the project, share knowledge and viability and the outcome of the pilot projects through project completion report, monitoring reports, workshops, and publications to disseminate findings, best practices, and lessons learned from the pilot.
- vii. The Scheme aims to leverage existing resources and infrastructure available with Government Ministries/Departments/Institutions for production, manufacturing, testing and other required work for the utilisation of Green Hydrogen and its derivatives.
- viii. The scheme would fund expenditure related to equipment/retrofitting for production of Green Hydrogen and its derivatives through innovative models/pathways and their applications. Operating expenses on account of production of renewable electricity or its sourcing, land and water sourcing etc. will not be funded under the scheme.
- ix. Financial support for projects will be evaluated and granted taking into consideration the specific needs, merits, and feasibility of each project.

6. Implementation Methodology

6.1. Selection of Project: The SIA will identify the project / proposals suitable for new development / retrofitting, considering factors like innovation, financial support sought as a factor of total project cost, scope for future scaling up and commercial deployment and quantum of Green Hydrogen production.

6.2. Call for proposals: The SIA will issue Call for Proposals for the projects. The proposal shall be submitted directly to the SIA. In case of a consortium/partnership-based proposal, a lead agency should be mentioned, which shall function as EA for that project.

- (i) The eligible EAs would include CPSUs, State-PSUs, State Corporations, NGOs, Indian R&D institutions/Research labs/academic institutions, JVs/ Partnerships/ Consortiums of such entities.
- (ii) The EAs must have the required capabilities to advance the completed pilot projects towards commercial scale up.

6.3. Evaluation and Award: The proposals will be evaluated first by a Screening Committee within the SIA, followed by a Project Appraisal Committee (PAC) in accordance with the criteria specified in the Call for Proposals. The final approval will be given by the Advisory Group of the NGHM. The letter of Award shall be issued to the EA by the SIA upon receipt of administrative sanction from MNRE.

6.4. Execution and Commissioning: Work shall be executed as per the approved scope of work. The SIAs shall make all necessary efforts to complete the pilot project, in all aspects, before the timeline mentioned in the Call for Proposal.

6.5. Technical and Regulatory approvals: The EA shall be solely responsible for obtaining the design, retrofitting, safety, applicable environmental and regulatory approvals, as required.

6.6. Testing and Certification: The EA shall get necessary testing and certification compliance from concerned agencies.

7. Funding and Disbursement

7.1. Stages of disbursement of CFA is given below:

S.No.	Stages of Disbursement	Percentage of CFA to be released
1	Issue of Letter of Award (LoA)	20%
2	Milestone based disbursements	70%
3.	On completion	10%
	Total	100%

Funds will be released to the SIAs by MNRE on the recommendation of the Project Appraisal committee (PAC).

8. Timelines and Penalty Provisions

8.1. The grants released shall be exclusively earmarked for the project and should not be diverted for any other purpose.

8.2. If the EA fails to utilize the grant for the purpose for which it has been sanctioned or fails to complete the project as per DPR, it shall refund the entire amount of the grant, with interest as per GFR to MNRE.

8.3. The Call for proposals should indicate a suitable timeline for completion of the project. Extension of up to six months may be granted for completion of the project on the basis of adequate justification with the approval of the Steering Committee, without any penalty. Any extension beyond six months shall only be granted with the approval of the Hon'ble Minister of New and Renewable Energy, with suitable penalties which shall be specified by the SIA in the Call for Proposals issued.

8.4. MNRE reserves the right to retract the sanction, cancel or short-close projects in consultation with the Steering Committee in cases where the EA(s) or the project(s) face unreasonable delays or fail to comply with the objectives/ provisions of this Scheme or the Mission.



9. Monitoring Framework

9.1. **Steering Committee:** Overall monitoring of the scheme and projects undertaken will be carried out by a Steering Committee (SC) under the chairpersonship of Secretary, MNRE with members and experts from relevant organisations. The Steering Committee shall be responsible for overall monitoring and implementation of this scheme and suggest modifications and course corrections for its successful implementation.

9.1.1. In case of any ambiguity in the interpretation of any of the provisions of this scheme, the decision of MNRE shall be final. The SC will also facilitate/recommend measures to resolve difficulties, if any.

9.2. **Project Appraisal Committee:** A Project Appraisal Committee (PAC) under the chairpersonship of Mission Director, National Green Hydrogen Mission (NGHM) with members from Central/State Departments and other organisations shall evaluate and monitor the pilot projects and recommend projects for sanction of Central Financial Assistance (CFA). The PAC may engage sector experts for various projects, after approval of the Secretary, MNRE. The PAC shall monitor sanctioned projects on a quarterly basis for the allocation of funds based upon the progress of the project. The PAC shall send recommendations to MNRE for the release of CFA based on the report of SIAs.

9.3. The SIAs shall also devise a monitoring mechanism to track the progress under the pilot projects.

9.4. Quarterly monitoring reports shall be submitted by the SIAs to MNRE.

9.5. Expenditure of funds will be monitored by MNRE. Utilization Certificates shall be provided by the SIA as per the provisions of GFR.

10. Project Completion

10.1. The SIAs shall submit the Project Completion Report (PCR) to the PAC within one month from the completion of project. PCR shall include the following:

- (i) Technical aspects of the project, including the design concept hardware, software, and other technologies used.
- (ii) Technical challenges encountered during the project, and how they were overcome.



- (iii) Outcome of the project comprising of techno-economic viability, technical knowhow generated along with the data collected during the execution of the project.
- (iv) Recommendations for future projects, based on the lessons learned from project.

11. Guidelines for safeguard of Intellectual property: MNRE shall issue the necessary guidelines for the safeguard of any Intellectual Property Rights such as Publications, Patents, Registered Designs or Trademarks etc. which are generated through projects funded under this scheme. The guidelines may also be a part of the Call for Proposals to be issued by the SIAs.

12. Power to amend Scheme Guidelines

12.1. MNRE may issue necessary amendments in the Scheme Guidelines, as and when required, with the approval of the Hon'ble Minister of New & Renewable Energy.

