

Ministry of New & Renewable Energy (MNRE)
Government of India
Hydrogen Division

Atal Akshay Urja Bhawan
Lodhi Road, New Delhi-110003
Dated: November 4, 2024

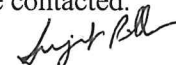
OFFICE MEMORANDUM

Subject: "Call for Proposals" for setting up Centre of Excellence (CoE) under Research and Development (R&D) Scheme of National Green Hydrogen Mission (NGHM)-regarding

The Ministry of New & Renewable Energy (MNRE) is implementing the R&D Scheme, issued vide Order no. 353/61/2023-NT dated 15.03.2024 under NGHM for promoting indigenous technology development for wide spread deployment of Green Hydrogen and its derivatives in an efficient and cost-effective manner across the country. The scheme will strengthen research and innovation capacity in the country.

2. MNRE invites proposals for establishment of Centre of Excellence (CoE) under R&D Scheme from the eligible entities. The guidelines for submission of proposals indicating objectives, financing, application form etc. are given in the **Appendices (I and II)**. The last date of submission of applications is December 19, 2024.

3. The proposals may be submitted online on the portal <https://research.mnre.gov.in>. For any further details, Mr. Sujit Pillai, Scientist-F, MNRE ([email: sujit.pillai@gov.in](mailto:sujit.pillai@gov.in)) may be contacted.



(Sujit Pillai)

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F. No.353/61/2023 -NT
Ministry of New & Renewable Energy (MNRE)
Government of India

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Call for Proposals for Setting up Centres of Excellence (CoEs) Under Research and Development Scheme of the National Green Hydrogen Mission (NGHM)

1. Background

- 1.1. The National Green Hydrogen Mission (NGHM), hereafter mentioned as the 'Mission' launched on 4th January 2023 with an outlay of Rs. 19,744 Crore aims 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.
- 1.2. The Mission has allocated Rs. 400 crores for Research and Development (R&D) activities. As part of the R&D efforts under the Mission, the R&D roadmap was launched on 07.10.2023 and the R&D Scheme for Green Hydrogen was issued on 15.03.2024. The R&D Scheme aims at scaling up the R&D efforts to promote indigenous technology development for wide spread deployment of Green Hydrogen Technology in an efficient and cost-effective manner across the country.
- 1.3. Under the R&D Scheme, the Ministry proposes to set up Centres of Excellence (CoEs) for supporting integrated research in Green Hydrogen sector, typically covering multiple areas in the Green Hydrogen value chain viz., production, transport & storage, applications and safety.

2. Vision

To establish world-class Centres of Excellence for Green Hydrogen in India, driving innovation, sustainability, and energy independence. The CoEs developed under the R&D Scheme on Green Hydrogen will also help in accelerating transition to a carbon-neutral economy by fostering advancements in Green Hydrogen production, storage, and utilization.

3. Role of CoE

3.1. Centres of Excellence (CoEs) would serve as hubs for cutting-edge research, skill development, information dissemination and industry collaboration. CoEs would provide strategic guidance, foster synergies among stakeholders, implement cutting-edge research projects to improve process and system efficiencies and develop new products in the Green Hydrogen value chain. CoEs would also aggregate and channelize expertise and resources in various components of Green Hydrogen ecosystem.

3.2. As per Para 4.1.(iv) of the R&D Scheme Guidelines issued on 15.03.2024, a network approach will be undertaken involving the academia-industry-government to ensure seamless transfer and commercialization of new technology. Therefore, CoEs will work closely with industry on transfer and commercialization of developed technologies.

4. Objectives

This Call for Proposals aims to achieve the following objectives:

- (i) To develop and establish CoEs as hubs for strengthening Green Hydrogen ecosystem in the country.
- (ii) To build and leverage industry-academia-government partnerships to achieve the targets set under the National Green Hydrogen Mission.
- (iii) To identify novel solutions for Green Hydrogen production, storage, and transportation of Green Hydrogen and its derivatives, which have potential to achieve high Technology Readiness Levels (TRLs).
- (iv) To act as accelerator to support the scaling up of technologies that have already reached a certain level of development (TRL 5-7).
- (v) To help develop and demonstrate pilot projects with novel and innovative solutions in Green Hydrogen value chain, which can then be deployed nationwide.
- (vi) To enhance skillsets and facilitate technical trainings to the workforce.
- (vii) To increase public awareness, acceptance, and adoption of clean Hydrogen solutions.

- (viii) To act as knowledge partner for the industries and other stakeholders in the Green Hydrogen ecosystem.

5. Eligible Entities

Project proposals to develop Centres of Excellence (CoEs) with financial support under the R&D Scheme can be submitted by Academic Institutions, R&D Institutions, Government Institutions, PSUs, Private Research Institutions. Industries having adequate experience and infrastructure can also participate in partnership with the above-mentioned entities. Consortium/ Joint Venture of two or more entities mentioned above can also submit proposal for funding.

6. Focus Areas

6.1. An indicative list of focus areas under this Call for Proposal to establish CoEs are listed below:

6.1.1. Hydrogen Production

Improvement in efficiency and durability of conventional alkaline and other electrolysis technologies. This may include development of high performance electrolyzer membranes or Solid Oxide Electrolysis materials, development of advanced long life-time catalysts with the goal of lowering overpotential significantly and enhancing photovoltaic electrolysis integration efficiency.

Development of Sea Water Electrolysis Technology with improved performance parameters.

Bio-pathways for Green Hydrogen Production: Improvement in equipment design, process efficiency, purification methods and feedstock compatibility.

6.1.2. Hydrogen Storage and Transportation

Demonstration of alternative high-density Hydrogen carriers (capacity >4wt%) for Hydrogen storage and transportation: Investigation and design of chemical Hydrogen carriers capable of efficiently storing and releasing Hydrogen and exploration of novel molecules and reaction pathways with the goal of achieving quantifiable advancements in energy density, reversibility, and ease of regeneration.

Development of Advanced Hydrogen Compression Technologies, such as novel compressor designs and/or materials, aiming to achieve quantifiable improvements in efficiency, reliability, and overall energy consumption during compression for transportation.

6.1.3. Hydrogen Applications

Development of improved Hydrogen based Internal Combustion Engines with better efficiency, reliability and combustion stability.

Development fuel cell engines for niche Green mobility applications such as high endurance drones, hyperlocal passenger/ delivery vehicles, underwater and aerial unmanned surveillance vehicles and benchmarking the techno-economic performance of such applications against global competition.

Indigenization of Hydrogen Refueling System components to reduce the capital and maintenance costs.

Indigenous development of components for various kinds of fuel cells.

Utilisation of Green Hydrogen in industrial application or its derivatives.

7. Evaluation and Monitoring Process

7.1. The proposals will be evaluated based on the following criteria:

(a) Initial short-listing carrying 70% marks will be based on the following criteria:

1. Relevance, quality, quantified objectives and deliverables. (15 marks)
2. Background and availability of experienced manpower in relevant area. (15 marks)
3. Extent of Collaboration among academic, research institutes, and industries. (15 marks)
4. Financial contribution by each collaborative partners (substantiated with documents). (10 marks)
5. Availability of necessary infrastructure for the CoE (space, laboratory etc.). (15 marks)

(b) The shortlisted entities would be evaluated based on presentations. This step carries 30% marks.

7.2. Proposals received will be evaluated through a three-stage process. Under Stage-I of the evaluation process, the proposals received will be assessed for completeness and relevance by an internal screening committee of MNRE. The proposals screened-in under Stage-I would proceed to Stage-II of the evaluation process wherein the screened-in proposals will be reviewed by an expert committee constituted by MNRE. This committee will assess the proposals as per the criteria outlined in para 7.1. (a). In the Stage-III, the Principal Investigators (PIs) and Co-Principal Investigators (Co-PIs) of the shortlisted proposals will be invited to make a presentation before the Advisory Group of NGHM. Proposals will be awarded to the selected entities based on total marks achieved by the bidders. Sanction(s) will be issued by MNRE based on recommendation of the Advisory Group.

7.3. MNRE will review progress of the sanctioned projects on a quarterly basis. In addition, reports on monthly progress would be submitted by the supported CoEs to MNRE.

8. Funding Pattern

- 8.1. Selected entities would be eligible for total financial support up to 50% of the project cost. Balance cost is to be borne by the successful bidder.
- 8.2. For details on disbursement of funds and other terms and conditions for release of funds, Para-6.1.2 and para 6.1.3 of the R&D Scheme guidelines issued vide Order no. 353/61/2023-NT dated 15.03.2024 will be followed.
- 8.3. Those entities who have received funding from other sources are not eligible for funding in this call for proposals.

9. Proposal Submission Guidelines

- 9.1 The interested eligible entities may submit the proposals, online on the portal <https://research.mnre.gov.in>, in the prescribed format. No physical application will be accepted.
- 9.2 The proposals should clearly define the objectives, activities and the deliverables.

9.3 The CVs of the Project Investigators (PI) should be brief and should highlight their competence and experience related to the proposed project area. Consortium may be formed wherever required by clearly explaining the need for forming the consortium and the roles and responsibilities of each partner.

9.4. The extent of participation and contribution of the industry partner (technical and financial) should be clearly defined. The industry partner must demonstrate their experience in Green Hydrogen technologies. Additionally, they shall indicate clear commitment towards bringing additional financial resources to the CoE.

9.5. Regarding the proposals already received in the Ministry, the PIs are required to re- submit the proposal online for further consideration with modifications, if any.

10. Intellectual Property Rights (IPR)

The grantee institution(s) will be responsible to protect the Intellectual Property Rights (IPR) being generated through the CoE's work as per the provisions given in the R&D Scheme dated 15.03.2024, including amendments, if any.

11. Important Dates

OPENING DATE FOR SUBMISSION OF PROPOSAL: 04/11/2024

CLOSING DATE FOR RECEIPT: 19/12/2024

12. Contact Information

For any further clarification and online submission of the proposal, please contact the following:

Mr. Sujit Pillai, Scientist-F at 011 20849083

[e-mail: sujit.pillai@gov.in](mailto:sujit.pillai@gov.in)



Ministry of New and Renewable Energy
Proforma for Submission of Proposals for CoEs

Sl.No.	Item	Details
1.	CoE Title:	
2.	Applicant Category	Academic Institutions R&D Institutions Government Institutions PSUs Private Research Institutions Industries in partnership with above mentioned entities Consortium/ JV (mention lead partner with composition)
3.	Objectives of Proposed CoE	
4.	Summary of the Proposal with Justification and Year-wise Deliverables & Outcomes (in terms of products, processes, papers, IPRs etc.)	
5.	Total Project Cost with MNRE share requested	
6.	Timelines (in terms of Work Plan)	

7.	In case of Consortium/ JVs, detailed explanation of role of each partner	
8.	Principal Investigator (Name and Contact details including telephones, fax and email) (CV to be enclosed)	
9.	Co-Principal Investigator(s) (Name, address and contact details including telephones, fax and email) (CV to be enclosed)	
10.	Break-up of sources of balance cost (including share of partner institutions in the total cost (substantiated with letters/agreements)	
11.	Status of Work being done in other National/International Institutions/ Industries (To be properly referenced with citations in peer reviewed scientific Journals wherever possible):	
12.	Details of functioning of CoE	

S 1. N	Item	Amount (Rs.)				
		Total Cost	1 st Ye	2 nd Ye	3 rd Ye	4 th Yea
13. Proposed cost: (Details of equipment along with justification to be provided separately in the Format as per Annexure I)	1. Equipment					
	2. Manpower					
	3. Consumables					
	4. Contingencies/ Other Costs					
	5. Travel					
	6. Institutional Overhead charges					
	Total					
15. Pilot Technology Development details (if any)						
16. Other Information (provide separately in Annexure II (A – E))						

Details of Costs of Various Components and Justification**a) Cost of Equipment:**

Sl. No.	Name of the Equipment along with make & model	Imported/ Indigenous	Estimated Costs (in Foreign Currency also for imported equipment) *	Justification
1.				
2.				
3.				

*Including transport, insurance and installation charges.

b) Manpower Cost

Sl. No.	Designation/ Numbers	Justi- fication	Monthly Emolum ents	Amount (Rs.)					Total (m. m.)
				1 st Yr (m. m.*)	2 nd Yr (m. m.)	3 rd Yr. (m. m.)	4 th Yr. (m.m.)	5 th Yr. (m. m.)	

*Man months to be given within brackets before the budget amount.



c) Cost of Consumables:

Sl.No.	Item	Quantity & Cost	Amount (Rs.)					Total
			1 st year	2 nd year	3 rd year	4 th year	5 th year	
1.		Quantity/						
		Total cost (Rs.)						
		Foreign Exchange						
2.								
3.								
	Total	Total Cost: Rs.						
		Foreign Exchange: Component (US \$)						

d) Travel Cost:

S. No.	Travel (Domestic/ International)	Justification	Amount (Rs.)					Total
			1 st year	2 nd year	3 rd year	4 th year	5 th year	
1.								
2.								

**Certificate from the Principal Investigator (On the letter head of
the Organization)**

Project Title:

1. I am submitting the above titled project proposal to MNRE for financial support.
2. I agree to abide by the terms and conditions of the MNRE research grant.
3. I have not submitted the proposal for CoE elsewhere for financial support.
4. I have requested for funds for the items, which are not available with the institution for the proposed work and are absolutely essential.
5. I will not proceed on long term/ study leave/ deputation during the period of project implementation, without prior permission from MNRE
6. I have enclosed the following documents/ materials:
 - i) Similar certificate from Investigator(s) from other participating institutions (if any):
 - ii) Name and address of up to five experts/institution interested in the subject/output of the project:

Date:

Place: Name and signature of Principal Investigator

Endorsement by the Head of the Institution

Certified that CoE Proposal entitled " ----- " is prepared by Dr/Shri/Smt/Kum -----and has not been submitted to any other institution for funding. The institute will provide necessary regular staff and infrastructure facilities for the project work and such facilities have not been requested in the proposal. The institute will ensure compliance of the terms and conditions of the financial grant by MNRE and other conditions of the project.

Place & Date

**Name, Signature and Seal
Head of the Grantee Organization**

ANNEXURE-II(B)

INFRASTRUCTURAL FACILITIES AVAILABLE AT THE HOST INSTITUTION

ITEM	YES	NO	Not Required
a) Workshop			
b) Water & Electricity			
c) Standby power supply			
d) Laboratory Space & furniture			
e) Air-Conditioned room for equipment			
f) Telecommunication			
g) Transportation			
h) Administrative & Secretarial support			
i) Library facilities			
j) Computational facilities			
k) Any other (Please mention)			

ANNEXURE-II(C)

INFRASTRUCTURAL FACILITIES AVAILABLE AT THE PARTNER INSTITUTION(S)

ITEM	YES	NO	Not Required
a) Workshop			
b) Water & Electricity			
c) Standby power supply			
d) Laboratory Space & furniture			
e) Air-Conditioned room for equipment			
f) Telecommunication			
g) Transportation			
h) Administrative & Secretarial support			
i) Library facilities			
j) Computational facilities			
k) Any other (Please mention)			

ANNEXURE-II(D)

Availability of equipment which are relevant for the project
(Including test & measuring, calibration etc. and accessories relevant to the project)

S.No.	Name of the equipment and accessories	Model and make	Remarks
1.			
2.			
3.			
4.			
5.			

NOTE: Please make sure that the aforementioned facilities and equipment will be available for the project.



BIODATA OF PI/ Co-PIs

- a) Name
- b) Date of Birth
- c) Academic qualifications
- d) Areas of expertise
- e) Experience
- f) Awards received, if any
- g) Publications (Nos.)
 - Books
 - Research papers
 - Patents
- h) List of publications (Papers published during last 10 years)
- i) List of projects completed indicating briefly title, sponsoring agency, duration and outcome of project
- j) Details of materials/prototype/device already developed in past

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