



नवीन एवं
नवीकरणीय ऊर्जा मंत्रालय
MINISTRY OF
NEW AND
RENEWABLE ENERGY



NGHM
NATIONAL GREEN HYDROGEN MISSION

भारत सरकार | GOVERNMENT OF INDIA

नवीन और नवीकरणीय ऊर्जा मंत्रालय | MINISTRY OF NEW AND RENEWABLE ENERGY

राष्ट्रीय हरित हाइड्रोजन मिशन | NATIONAL GREEN HYDROGEN MISSION (NGHM)

**INVITATION FOR
EXPRESSION OF INTEREST (EoI)**

From Prospective Agencies

“Expert Institution to Support Hydrogen Safety Panel under National Green Hydrogen Mission (NGHM)”

IMPORTANT DATES	
Start date of EoI issuance	13-10-2026
Last date for submission of EoI	21 days from date of publication

Issued by
National Green Hydrogen Mission
Ministry of New and Renewable Energy, Government of India
Atal Akshay Urja Bhawan, Opp. CGO Complex, Lodhi Road, New Delhi – 110003

This EoI document is neither an agreement nor an offer. MNRE reserves the right to accept or reject any or all EoIs, or to annul the process at any stage without assigning any reason, in accordance with GFR and applicable rules.

For All Communication w.r.t. EoI use the following details

Physical Submission

Shri Ishoo Ratna Srivastav
Director, National Green Hydrogen Mission
Ministry of New and Renewable Energy
Atal Akshaya Urja Bhawan, CGO Complex,
Lodhi Road, New Delhi – 110003, India

Online Submission

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NOTICE FOR INVITING EXPRESSION OF INTEREST (EoI)

Subject: Inviting Expression of Interest from perspective agencies for selection of an Expert Institution to support the National Hydrogen Safety Panel (NHSP) under the National Green Hydrogen Mission (NGHM).

The Government of India is implementing the National Green Hydrogen Mission (NGHM) with the objective of making India a global hub for the production, utilization and export of Green Hydrogen. A critical pillar of the Mission is the establishment of a robust, harmonized hydrogen safety framework across the entire value chain — ensuring public confidence, regulatory readiness, and alignment with global best practices.

2. The Ministry of New & Renewable Energy (MNRE), as the nodal Ministry for NGHM, has constituted the National Hydrogen Safety Panel (NHSP) to guide the development of hydrogen safety frameworks, standards, and protocols. To support the NHSP and strengthen national capacity in hydrogen safety, MNRE intends to engage a nationally recognized Expert Institution to function as the dedicated nodal agency for hydrogen safety under NGHM. This Expression of Interest (EoI) seeks details of prospective agencies who wish to participate in the selection process for the expert institution.

3. The selected Expert Institution will work in close coordination with MNRE, NHSP, and relevant academic, industrial, and regulatory stakeholders. The engagement will be for an initial period of two years, extendable by one year based on performance and approval of the NGHM Advisory Group.

4. This is a two-stage process in line with GFR principles for specialized consultancies: (i) Expression of Interest (EoI) for shortlisting capable institutions/consortia based on demonstrated expertise and capacity; (ii) Detailed Technical & Financial Proposals from shortlisted entities through QCBS (70:30) or as decided by MNRE/NHSP.

5. The salient features of the assignment, eligibility criteria, shortlisting methodology, and prescribed formats are provided in this EoI document. The detailed Terms of Reference (ToR) will be shared with shortlisted institutions along with the Stage-ii RFP.

6. Interested nationally recognized institutions, autonomous bodies, reputed academic/research organisations, Section-8 companies, or consortia with demonstrable expertise in hydrogen/industrial safety are invited to submit their EoI within the stipulated timeline.

7. MNRE does not make any representation regarding the accuracy or completeness of information in this EoI. Any assumptions or interpretations by applicants shall be at their own risk. MNRE reserves the right to modify, amend, or cancel any provisions of this EoI. All updates/corrigenda will be uploaded only on the MNRE Website/NGHM Portal.

8. MNRE reserves the right to accept or reject any EoI or annul the process at any stage without assigning any reason and without incurring any liability. Issuance of this EoI does not imply that MNRE is bound to shortlist any institution or issue RFP.


(Ishoo Ratna Srivastav)
Director

National Green Hydrogen Mission | Ministry of New and Renewable Energy
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1. INTRODUCTION & OBJECTIVE

The National Green Hydrogen Mission (NGHM), with an outlay of ₹19,744 crore, aims to establish India as a global hub for green hydrogen. Safe and reliable scale-up of hydrogen technologies across production, storage, transportation, and end-use sectors (steel, mobility, maritime, power, fertilizers, refineries) is fundamental to Mission success, investor confidence, public acceptance, and export competitiveness.

MNRE has constituted the National Hydrogen Safety Panel (NHSP) to provide expert guidance on hydrogen safety standards, protocols, and regulatory harmonization. The Expert Institution will serve as the dedicated nodal technical agency supporting NHSP and MNRE in building a world-class, India-specific yet globally aligned hydrogen safety ecosystem.

2. SCOPE OF SERVICES (SUMMARY ToR)

The Expert Institution shall support MNRE and NHSP across the following key areas:

- i. Nodal Technical Support: Function as the nodal institution for hydrogen safety; provide technical, analytical and advisory support across the green hydrogen value chain to MNRE, NHSP and stakeholders.
- ii. Standards & Regulatory Harmonization: Identify gaps; recommend and support development of India-specific hydrogen safety codes, standards and protocols harmonized with ISO, IEC, NFPA, EU directives and global best practices. Provide inputs to BIS, PESO, PNGRB, OISD and participate in technical standards formulation.
- iii. Applied R&D Support: Provide inputs for indigenous development of sensors, leak detectors, fire suppression systems, materials compatibility, and other critical safety equipment and systems.
- iv. Testing & Certification Infrastructure: Undertake gap analysis of national testing, certification and validation infrastructure for hydrogen systems, components and safety equipment; recommend augmentation roadmap.
- v. National Hydrogen Safety Knowledge Repository: Create and maintain a national database of incidents, accidents, near-misses, reliability data and lessons learned. Develop incident reporting templates and publish annual “Hydrogen Safety Status Report”. Establish National Hydrogen Safety Knowledge Portal.
- vi. Training & Capacity Building: Develop curricula, short-term & long-term training modules and the National Hydrogen Safety Certification Program (NHSCP) for operators, first responders, regulators, industry professionals and other stakeholders.
- vii. Safety Audits, Protocols & Risk Frameworks: Support NGHM in conducting safety audits, preparing safety protocols/guidelines, and developing risk assessment frameworks including Risk Acceptance Criteria (RAC) for different applications.
- viii. Outreach & Awareness: Support NGHM outreach through workshops, webinars, publications, white papers for policymakers, and development of awareness materials for educational institutions and the public.

- ix. International Collaboration: Facilitate partnerships and knowledge exchange with global hydrogen safety programs (U.S. HSP, EU EHSP, Canadian CHSP, Norway SH2IFT and others). Organize joint studies, comparative analyses and exchange programs.
- x. Any other activity related to hydrogen safety as required for effective implementation of NGHMs.

Indicative Team Structure & Sub-Groups

Sub-Group	Focus Area	Key Outputs / Deliverables	Manpower / Expert
Standards, Codes & Regulatory Harmonization	Development & harmonization of hydrogen safety codes, standards, and protocols	i. Technical/white papers on gaps vs. global norms ii. Recommendations to BIS, PESO, PNGRB, OISD iii. Model guidelines for commissioning/operation iv. Participation in Technical Standards Formulation	1
Incident & Reliability Database	National repository of incidents, accidents, near-misses, failure rates, reliability data	i. National Hydrogen Safety Knowledge Portal ii. Templates for incident reporting Annual "Hydrogen Safety Status Report" iii. Sample site visits and Audit Reports (10 every year)	1
Sector-Specific Safety (Steel, Mobility, Maritime, Power/Industry)	Address unique risks in each sector	i. White papers on sectoral risks ii. Guidelines for refueling stations, testing, pipelines, vessels, port safety	1
Applied Research	-	i. R&D on sensors, detectors, fire suppression ii. International best practices	1

Training & Capacity Building	Develop curricula & certification programs	i. Short-term & long-term training courses ii. National Hydrogen Safety Certification Program (NHSCP)	
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Note: One of the experts will be designated as Team Leader (minimum 10 years experience in hydrogen/gas industry safety). The host institution shall provide supporting staff and manage routine operations without additional financial liability to NGHM. Project-specific costs will be met from the Programme Management head of NGHM.

3. ELIGIBILITY CRITERIA

Only nationally recognized institutions meeting the following criteria are eligible to submit EoI (individually or as lead of a consortium):

- i. Legal Entity: Registered under Companies Act 1956/2013, or LLP Act 2008, or applicable Act for autonomous bodies/government institutions/academic/research organisations/Section-8 companies. Must be operational for at least three (3) years and hold valid GST registration.
- ii. Domain Expertise: Demonstrable expertise and prior work in hydrogen safety, energy safety, standards development, risk assessment, incident analysis, testing/certification frameworks, or related regulatory support in collaboration with bodies such as BIS, PESO, PNGRB, OISD, or international safety organizations.
- iii. Applied Research & Knowledge Partnership: Proven capability in applied R&D, knowledge management, training program development, and multi-stakeholder coordination (industry-academia-regulator) in safety-critical domains.
- iv. Infrastructure & Partnerships (Preferred): Access to or formal partnerships for accredited laboratories, simulation tools, testing facilities, or training infrastructure relevant to hydrogen/energy systems. Existing international linkages with hydrogen safety programs (US, EU, etc.) will be advantageous.
- v. Non-Blacklisting: The institution (and all consortium members) must not be blacklisted, debarred, or declared ineligible by any Central/State Government, PSU, or statutory authority as on the date of EoI submission.
- vi. Conflict of Interest: No existing or potential conflict of interest that may affect objective performance of the assignment. Full disclosure required.
- vii. Consortium: Consortia are permitted and encouraged to bring complementary strengths (e.g., research institution + training partner + industry safety expert). The Lead Member must meet the core eligibility; all members must submit declarations. Experience of only the applying registered entity/consortium members will be considered.

Special Note on Specialized Domain (GFR perspective): Hydrogen safety is a highly specialized, safety-critical technical area requiring demonstrated expertise in hydrogen/energy safety engineering, established research capability, prior experience with national/international standards bodies, and proven capability in incident analysis and safety framework development. While GFR provisions for MSEs/Startups are respected, relaxation in core technical experience criteria has not been provided to maintain the integrity and quality of this safety-critical assignment. However, the consortium route enables capable MSEs/Startups and smaller specialized entities to participate meaningfully alongside larger technically qualified institutions.

4. TEAM REQUIREMENTS (INDICATIVE)

Team Leader : Minimum 10 years of relevant experience in safety of hydrogen, natural gas, or high-risk energy/process industries. Strong credentials in standards development, regulatory engagement, risk assessment, and leadership of multi-disciplinary teams. Must be available full-time or as dedicated resource for the assignment.

Domain Experts: Minimum 5 years of relevant experience in one or more of the sub-group areas (standards & codes, incident databases, sectoral safety, applied research, training & certification, outreach, international collaboration). Experts should have domain knowledge of hydrogen technologies/safety or closely related fields (process safety, chemical engineering, fire & explosion safety, regulatory affairs).

Supporting Staff: To be provided by the host institution for day-to-day coordination, documentation, logistics, and administrative support — without additional cost to NGH/MNRE.

Priority: In-house/core team members of the applying institution will be given preference over purely external hires. Consortium partners should demonstrate clear integration and value addition.

5. SHORTLISTING CRITERIA & METHODOLOGY

EOIs will be evaluated by an Evaluation Committee constituted by MNRE in consultation with NHSP. Proposals meeting all eligibility criteria will be evaluated. Minimum qualifying score: 60 out of 100 marks. Top-ranked institutions (normally up to 6) will be shortlisted for Stage-ii (detailed Technical & Financial Proposal).

Evaluation Parameters (Total: 100 Marks)

S. No.	Evaluation Parameter	Description & Focus	Max Marks
1	Institutional Capability & Relevant Experience	Track record (min 3 years, preferably 6+ years) in hydrogen/energy safety, standards development, risk assessment, incident analysis, regulatory support, training/audits. Quality and relevance of past assignments with	25

S. No.	Evaluation Parameter	Description & Focus	Max Marks
		government/regulatory bodies. Strength of consortium synergy and leadership demonstrated.	
2	Proposed Team Composition & Hydrogen Safety Expertise	Qualifications, domain experience and availability of Team Leader (min 10 years) and domain experts (min 5 years in relevant sub-areas). Balance of in-house vs consortium resources. Clarity of roles and integration plan. Hydrogen-specific credentials will be weighted higher.	25
3	Technical Approach, Methodology & Work Plan	Quality, feasibility and innovation of proposed methodology for standards harmonization, national database creation, sectoral frameworks, training/certification programs, outreach and international collaboration. Clear milestones, risk mitigation, understanding of NGHM priorities and safety-critical nature of assignment.	20
4	Infrastructure, Linkages & Partnerships	Access to accredited labs, testing/simulation facilities, training infrastructure. Existing or proposed collaborations with BIS/PESO/PNGRB/academia/industry. International linkages with global hydrogen safety programs (US HSP, EU EHSP etc.). Strength of formal MoUs/partnerships.	15
5	Overall Quality, Clarity & Understanding	Professional quality and completeness of EoI submission. Demonstrated understanding of challenges in scaling hydrogen safety for NGHM (public confidence, regulatory readiness, sectoral diversity, global alignment). Responsiveness to EoI requirements.	15

Shortlisting Process: Evaluation Committee may seek clarifications (in writing or through virtual interaction) from any EoI applicant for verification. Shortlisted institutions will be notified individually and the list published on *MNRE /NGHM* Portal. Detailed RFP/ToR and submission formats for Stage-2 will be provided only to shortlisted entities. MNRE/NHSP reserves the right to vary the number shortlisted based on quality of responses received.

6. REQUIREMENTS FOR EoI SUBMISSION

EoIs must be submitted only through the Soft (nghm.nhsp@gmail.com) & Hard Copy in the prescribed sequence. All documents must be digitally signed by the Authorized Representative. The EoI shall be in English.

Documents to be submitted:

1. Cover Letter / EoI Submission Form (as per Annex A format) on letterhead, signed and sealed.

2. Self-Certification of Minimum Eligibility and Non-Blacklisting (as per Annex B) with supporting registration/GST certificates.
3. Institutional Profile: Brief about the institution/consortium (2-3 pages) including legal status, governance, key facilities, and core competencies relevant to hydrogen safety.
4. Relevant Experience: Details of at least three (3) relevant assignments in last five years (use format similar to Annex C). Attach work orders/completion certificates/LoIs as supporting evidence (scanned, legible). Only experience of the applying entity/consortium members will be considered.
5. Proposed Team: High-level organogram, designation of Team Leader, summary profiles/CVs (1 page each max) of key experts highlighting hydrogen/energy safety experience, qualifications and role proposed.
6. Brief Technical Approach & Methodology Note (maximum 5 pages): Outline of how the institution proposes to address the scope (standards harmonization, database, sectoral frameworks, training, outreach, international collaboration). Include high-level work plan with milestones, risk mitigation measures, and value proposition for NGHM.
7. Infrastructure & Partnerships Statement: Description of available/accessible labs, testing facilities, training infrastructure, existing MoUs or proposed partnerships with regulatory bodies, academia, industry, and international hydrogen safety programs.
8. Power of Attorney (if applicable) authorizing the signatory to submit the EoI on behalf of the institution/consortium.
9. Any other supporting documents (annual reports, brochures, MoUs, publications) – optional but useful for demonstrating capability.

Note: Detailed CVs, full methodology, itemized financials, and exhaustive documentation are NOT required at EoI stage. These will be sought from shortlisted institutions in Stage-2. EoIs with excessive or irrelevant material may be penalized for lack of focus.

7. INDICATIVE TIMELINE FOR EoI PROCESS

S.No.	Activity	Indicative Timeline
1	Date of EoI Issue / Publication on Portal	D0 (as notified)
2	Last date for receiving queries/requests for clarification	D0 + 7 days
3	Client's response to queries (through email only)	Pre-bid + 10 days
4	EoI Submission Due Date	D0 + 21 days (17:00 hrs IST)
5	Opening & Evaluation of EoIs; Shortlisting	D0 + 22 to D0 + 35 days
6	Notification to shortlisted Institutions & Publication of list	By D0 + 36 days

7	Issue of detailed RFP / Stage-ii invitation to shortlisted agencies	By D0 + 42 days
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Note: The Client reserves the right to modify the timeline. All updates will be notified exclusively on the MNRE /NGHM Portal. Applicants are advised to regularly check the portal.

8. GENERAL INSTRUCTIONS & RIGHTS OF MNRE

8.1 All communications regarding this EoI shall be made only through the *MNRE /NGHM* Portal. No other mode of communication will be entertained.

8.2 MNRE reserves the right, at any time and without liability, to: (a) suspend, cancel or modify the EoI process or any part thereof; (b) extend timelines; (c) seek clarifications or additional information from any applicant; (d) reject any or all EoIs; (e) shortlist any number of qualified institutions; or (f) proceed with Stage-ii in any manner deemed appropriate.

8.3 Applicants must uphold the highest standards of professional ethics. Any engagement in corrupt, fraudulent, coercive, undesirable or restrictive practices will result in rejection of EoI, forfeiture of any deposits (if applicable), and debarment from future participation in MNRE/NGHM procurements.

8.4 All information submitted shall become the property of MNRE. Applicants shall treat all information received from MNRE as strictly confidential.

8.5 Dispute Resolution: Any dispute arising out of or relating to this EoI shall first be attempted to be resolved amicably. Unresolved disputes shall be subject to the exclusive jurisdiction of courts at New Delhi. The laws of India shall govern this process.

8.6 No advance payment or EMD is required at the EoI stage. Applicable EMD, Performance Security and payment terms will be specified in the Stage-ii RFP stage for shortlisted institutions.

ANNEX A: FORMAT FOR EoI SUBMISSION LETTER

[To be submitted on the letterhead of the Lead Institution / Authorized Signatory]

To,

The Director, National Green Hydrogen Mission, Ministry of New and Renewable Energy, Atal Akshay Urja Bhawan, Lodhi Road, New Delhi – 110003

Subject: Submission of Expression of Interest (EoI) for Selection of Expert Institution to Support the National Hydrogen Safety Panel (NHSP) under NGHM – EoI dated [Date]

Sir/Madam,

With reference to the above EoI, we hereby submit our Expression of Interest for selection as the Expert Institution to Support the NHSP under NGHM. We confirm that we have examined the EoI document in full and have no reservations to its terms.

We certify that all information furnished in this EoI (including annexures and supporting documents) is true, correct and complete. Nothing has been concealed or misrepresented. We understand that any false information may result in rejection of our EoI, debarment, and other actions as per applicable law.

We confirm that we meet all the Eligibility Criteria prescribed in the EoI and are submitting this EoI as [Name of Lead Institution] [individually / as Lead of Consortium comprising: _____].

We agree to keep this EoI valid for 120 days from the EoI Due Date. We further agree to abide by all terms and conditions of the EoI and the subsequent RFP (if shortlisted).

We hereby authorize MNRE/NHSP to verify any information provided by us with our clients, partners or any other source.

Authorized Signatory Name: _____ Designation: _____
Name of Institution: _____
Address: _____ Telephone: _____
Email: _____ Seal of Institution

Enclosures: As per checklist in Section 6 of EoI

ANNEX B: SELF-CERTIFICATION OF ELIGIBILITY & NON-BLACKLISTING

[To be submitted on letterhead, signed by Authorized Signatory]

This is to certify that [Name of the Bidder / Lead Institution], having its registered office at [Address], satisfies the Minimum Eligibility Criteria prescribed in the EoI for Selection of Expert Institution to Support the NHSP under NGHM, and specifically confirms the following:

1. We are a legally registered entity under the Companies Act, 1956/2013 or LLP Act, 2008 or applicable Act governing autonomous bodies / academic / research / Section-8 institutions (as applicable).
2. We are duly registered under GST and hold a valid GST Registration Certificate.
3. We have been operational for the last three (3) years or more.
4. We hereby certify that we (and all proposed consortium members) are not currently blacklisted, debarred, suspended or declared ineligible by any Central/State Government, Public Sector Undertaking or statutory authority in India.
5. No blacklisting order is in force against us as on the date of this EoI submission. [If blacklisted in the past, full details and supporting documents are enclosed.]
6. We understand that if at any stage it is found that the information provided is false, misleading, or that we did not meet the eligibility conditions, MNRE reserves the right to reject our EoI, forfeit any deposits, invoke performance security (if applicable), place our organization on a negative list, and initiate other actions as per law.

Authorized Signatory Name & Designation: _____ Name of
Institution: _____ Seal

Enclosures: Certificate of Incorporation/Registration; GST Certificate; Details of past blacklisting (if any)

ANNEX C: FORMAT FOR HIGHLIGHTING RELEVANT EXPERIENCE

(One form per relevant assignment; maximum 3-5 assignments to be submitted. Attach supporting documents: Work Order / LoI / Completion Certificate / Client Certificate)

Assignment _____ Name: _____

Name of Client: _____ Country / Location: _____

Approx. Contract Value (INR): _____ Duration (Months): _____
Completion Date: _____

Role of Your Institution: Lead / Consortium Partner / Sub-contractor

Brief Description of Services Provided (focus on hydrogen/energy safety, standards, risk, training, regulatory aspects):

Key Outcomes / Deliverables Achieved:

Client	Reference	(Name,	Designation,	Contact):
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Names of Key Professionals from Your Team & Their Roles:

IMPORTANT NOTES FOR APPLICANTS

- This EoI is the first stage of a transparent, competitive process aligned with GFR and best practices for specialized technical consultancies in a safety-critical domain.
- Shortlisting does not guarantee award of work. Stage-2 will involve detailed evaluation (Technical + Financial) of proposals from shortlisted institutions, potentially including presentation before NHSP.
- All updates, clarifications and the detailed RFP for Stage-2 will be published only on the Government e-Marketplace (GeM) Portal. Applicants must regularly monitor the portal, *MNRE /NGHM website*.
- For any queries, use only the *MNRE /NGHM* Portal clarification facility within the stipulated window.
- MNRE and NGHM look forward to receiving Expressions of Interest from institutions committed to building a world-class, safe and trusted green hydrogen ecosystem for India.

— National Green Hydrogen Mission, MNRE —

Terms of Reference (ToR)**Selection of Expert Institution to Support Hydrogen Safety Panel under NGHM****1. Background**

The Government of India has launched the National Green Hydrogen Mission (NGHM) with the vision of making India a global hub for the production, utilization, and export of Green Hydrogen, thereby advancing energy security, reducing dependence on fossil fuel imports, and contributing to climate goals. The Mission targets 5 MMT of annual Green Hydrogen production by 2030, supported by large-scale electrolyser deployment, renewable energy integration, and the creation of enabling infrastructure. A central pillar of this vision is the prioritization of safety across the hydrogen value chain, ensuring public confidence, trust among users, and alignment with globally accepted norms.

In this context, the National Hydrogen Safety Panel (NHSP), has been constituted under NGHM by the Ministry of New & Renewable Energy (MNRE). The proposed Institution will work in close coordination with NHSP and MNRE and relevant academic and industrial stakeholders. The NHSP will function as the Expert Advisory Committee for the selected Institution.

The Institution will directly support NGHM's outcomes by:

- Facilitating development of India-specific hydrogen safety codes and standards to enable safe scale-up of hydrogen production, storage, transport, and end-use.
- Building national capacity in hydrogen safety through expert inputs, training and certification programs for operators, responders, regulators, and industry professionals.
- Establishing a national incident and reliability database to provide evidence-based inputs for risk management and regulatory frameworks.
- Supporting industry awareness to strengthen trust in hydrogen technologies for accelerated adoption.

Internationally, institutions such as the U.S. Hydrogen Safety Panel (HSP), the European Hydrogen Safety Panel (EHSP), the Canadian Hydrogen Safety Program (CHSP), Norway's SH2IFT, DVGW Germany and DNV Norway initiative have demonstrated the importance of dedicated safety centres in enabling safe deployment of hydrogen technologies. The selected Institution will adopt similar best practices to Indian conditions, ensuring alignment with NGHM objectives and the Government of India's broader vision of achieving energy independence, de-carbonization, and leadership in the global hydrogen economy.

2. Objectives

The Institution shall:

- Function as the nodal Institution for hydrogen safety, providing technical support to NGHM and all stakeholders across the hydrogen value chain.
- Identify, recommend and support (if not currently available) development of India-specific codes, standards, and protocols for hydrogen production, storage, transportation, and end-use, ensuring harmonization with global norms (ISO, IEC, NFPA, EU directives).
- Provide inputs for research & development in hydrogen safety, including indigenous development of sensors, leak detectors, fire suppression systems, and other critical safety equipment as R&D topics for the projects awarded under the NGHM.
- Undertake gap analysis of testing and certification infrastructure for hydrogen systems, components, and safety equipment, enabling reliable performance validation and compliance with national standards.
- Create and maintain a national knowledge repository on hydrogen incidents, accidents, near-misses, reliability data, and lessons learned, accessible to industry, academia, regulators, and first responders.
- Identify topics for training and capacity-building programs on Hydrogen safety matters for industry professionals, operators, first responders, regulators including certification programs.
- Support NGHM for creating industry awareness through workshops, webinars and publications to strengthen trust and confidence in hydrogen technologies.
- Support NHSP/NGHM for international collaboration.
- Support NGHM in developing Auditing Mechanism to be set up for each consumer process/installation who is part of this Ecosystem and transition mechanism from existing fuel to H₂ or blending or Dual Fuel system.

3. Scope of Work

The Institution shall undertake the following activities:

(a) Codes and Standards Development

- Interact with BIS, PESO, OISD, PNGRB, and other agencies to formulate draft and harmonize hydrogen safety codes and standards.
- Maintain a continuous feedback loop from NHSP reviews to regulatory bodies.
- Compare Indian standards with globally accepted norms (ISO, IEC, EU directives, U.S. NFPA codes), gap analysis & provide suggestions and participation in Technical Standards Formulation

(c) Training and Capacity Building

- Develop modules for short-term and long-term training programs on hydrogen safety.

(d) Knowledge Repository and Database on NGHM Portal

- Provide information regarding Hydrogen Safety Knowledge to support Webpage for NGHM Portal similar to U.S. H2Tools and EU HIAD.
- Analyse and maintain databases on accidents, failure rates, and reliability.
- Support to disseminate key information to industry, academia, regulators, and first responders.

(e) Outreach and Collaboration

- Support NHSP to build partnerships with global hydrogen safety programs (U.S. HSP, EU EHSP, Canadian CHSP, Norway SH2IFT).
- Support policy makers with evidence-based inputs for Safety Standards & Regulations.
- Support NGHM to conduct safety audits, safety protocols, guidelines for entire chain and give recommendations; report preparation for NHSP/NGHM based on the Risk Assessment & guidelines.

4. Governance Structure

The Institution shall be functioning under the following oversight structure:

- **Steering Committee:**
 - Chaired by Secretary, MNRE.
 - Members: representatives from departments, Selected Institution and industry associations.
 - Functions: Overall guidance, oversight for the outcomes and objectives, incident analysis.
- **Advisory Committee:**
 - NHSP shall serve as the Advisory Committee.
 - Functions: provide technical guidance, review activities, recommend research priorities, and advise on codes and standards.
 - Meetings: quarterly, with provision to co-opt experts as required.
- **Secretariat:**
 - Institution shall function as the Secretariat to the NHSP, providing administrative and logistical support.

- **Hub-and-Spoke Model:**
 - NHSP will work as hub & spoke and Institution will provide inputs.
 - Spokes with NISE, BIS, PESO, industry, academia, and testing centres.
 - Ensures coordinated national effort with convergence to NGHM objectives.

5. Deliverables

The Institution shall contribute in developing draft for:

- India-specific hydrogen safety codes and standards.
- Technical papers, analysis and safety advisories.
- National hydrogen incident and reliability database.
- Prepare modules on hydrogen safety related training and certification programs
- Outreach and industry awareness initiatives (2 workshops and 4 webinars per year).
- Explore for International collaboration and best practice adoption.

6. Duration and Review

- The Institution shall be engaged with an initial tenure of 2 years, with extension of 1 year if approved by NGHM /Advisory Group.
- Mid-term review after 1 years, in order to assess effectiveness and alignment with NGHM objectives.
- Annual performance reports shall be submitted to MNRE through NHSP.

Sub-Groups/Manpower

Sub-Group	Focus Area	Key Outputs / Deliverables	Manpower / Expert
Standards, Codes & Regulatory Harmonization	Development & harmonization of hydrogen safety codes, standards, and protocols	i. Technical/white papers on gaps vs. global norms ii. Recommendations to BIS, PESO, PNGRB, OISD iii. Model guidelines for commissioning/operation iv. Participation in Technical Standards Formulation	1
Incident & Reliability Database	National repository of incidents, accidents, near-misses, failure rates, reliability data	i. National Hydrogen Safety Knowledge Portal ii. Templates for incident reporting Annual “Hydrogen Safety Status Report” iii. Sample site visits and Audit Reports (10 every year)	1
Sector-Specific Safety (Steel, Mobility, Maritime, Power/Industry)	Address unique risks in each sector	i. White papers on sectoral risks ii. Guidelines for refueling stations, testing, pipelines, vessels, port safety	1
Applied Research	-	i. R&D on sensors, detectors, fire suppression ii. International best practices	
Training & Capacity Building	Develop curricula & certification programs	i. Short-term & long-term training courses ii. National Hydrogen Safety Certification Program (NHSCP)	1

Any one of the above experts will be designated to function as team leader to coordinate all segments of the Institute and act as the single point of contact for the NHSP/NGHM. As the Institute is expected to be housed within the selected organisation, routine operational tasks

will be managed by the host institution without incurring additional financial liabilities to NGHM, MNRE; project-specific costs, however, will be met from the Programme Management Head of the NGHM, and funds for Institute activities will be disbursed accordingly.
