भारत सरकार

पत्तन, पोत परिवहन और जलमार्ग मंत्रालय

लोक सभा

अतारांकित प्रश्न सं. 3364 जिसका उत्तर
शुक्रवार, 7 अगस्त, 2026/16 श्रावण, 1948 (शक) को दिया जाना है

पत्तनों पर राष्ट्रीय हरित हाइड्रोजन मिशन

†3364. श्रीमती कमलेश जांगड़े :

क्या पत्तन, पोत परिवहन और जलमार्ग मंत्री यह बताने की कृपा करेंगे कि:

(क) क्या राष्ट्रीय हरित हाइड्रोजन मिशन के अंतर्गत ग्रीन हाइड्रोजन हब के रूप में विकसित करने के लिए देश में किन्हीं प्रमुख पत्तनों की पहचान की गई है अथवा अनुमोदित किया गया है;

(ख) यदि हां, तो ऐसे पत्तनों का नाम क्या हैं और उनके चयन के लिए किन कारकों पर विचार किया गया है; और

(ग) क्या सरकार ने इन पत्तनों पर हाइड्रोजन से संबंधित अवसंरचना और परियोजनाओं के कार्यान्वयन के लिए कोई दिशानिर्देश या ढांचा जारी किया है, यदि हां, तो तत्संबंधी ब्यौरा क्या है?

उत्तर

पत्तन, पोत परिवहन और जलमार्ग मंत्री

(श्री सर्बानंद सोणोवाल)

(क) से (ग): राष्ट्रीय हरित हाइड्रोजन मिशन (एनजीएचएम) के तहत, नवीन और नवीकरणीय ऊर्जा मंत्रालय (एमएनआरई) ने निम्नलिखित महापत्तनों की हरित हाइड्रोजन हब के रूप में पहचान की हैं:-

i. दीनदयाल पत्तन (कांडला, गुजरात)
ii. वी. ओ. चिदंबरनार पत्तन (तूतीकोरिन, तमिलनाडु) और
iii. पारादीप पत्तन (ओडिसा)

नवीन और नवीकरणीय ऊर्जा मंत्रालय ने 27 जून 2025 के का. ज्ञा. संख्या. 353/12/2025-एनटी के माध्यम से राष्ट्रीय हरित हाइड्रोजन मिशन (एनजीएचएम) के तहत "भारत में हाइड्रोजन घाटी नवाचार क्लस्टर (एचवीआईसी) और हरित हाइड्रोजन हब की स्थापना के लिए संशोधित योजना दिशानिर्देश" जारी किए हैं। इन संशोधित योजना दिशानिर्देशो के **अनुबंध-3** में हरित हाइड्रोजन केंद्र **(अनुबंध)** की मान्यता की प्रक्रिया संबंधी प्रावधान है।

*****

F No. 353/12/2025-NT
Government of India
Ministry of New and Renewable Energy
(Hydrogen Division)

Atal Akshay Urja Bhawan, Lodhi Road,
New Delhi 110003
Date: 27th June 2025

To

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

Subject: Revised Scheme Guidelines for setting up Hydrogen Valley Innovation Cluster (HVIC) and Green Hydrogen Hubs in India under National Green Hydrogen Mission (NGHM)

Sir/Madam,

I am directed to convey the sanction of the President of India for the implementation of the 'Revised Scheme for setting up Hydrogen Valley Innovation Cluster (HVIC) and Green Hydrogen Hubs in India under National Green Hydrogen Mission (NGHM)'.

2. Objectives:

Objectives of the Scheme are as follows:

Component A: HVIC

i. The HVICs will be strategically established in distinct regions across the country, showcasing the diverse applications of GH_2 in various sectors.
ii. Serving as test beds for innovative GH_2 technologies, these clusters will also function as living labs, enabling experiential learning and insights from small-scale hydrogen implementations.
iii. HVIC would foster business innovation, new business models, and techno-economic viability through strategic linkages that connect hydrogen producers to off-takers.
iv. It will be the responsibility of each HVIC to identify and arrange for necessary land and build-up space for the setting up of the HVIC at identified locations. There is no provision of funding towards the cost of acquisition of land for setting up HVIC.
v. In order to maintain a balance between demand and supply, HVICs are designed to create the requisite demand for the uptake of GH_2 or its derivatives by developing the capability to localize and integrate the hydrogen value chain,

securing commitments from end-users for GH_2 applications, and implementing a comprehensive plan for sustainability beyond NGHM funding.

vi. Outcomes of HVIC will enable in the development of future robust policy and regulatory frameworks essential for supporting and accelerating the implementation of various other components of the NGHM including the Hydrogen Hub for accelerating the GH_2 ecosystem.

vii. Green Hydrogen (GH_2) production will adhere to the standards as defined by the Government of India (GoI).

Component B: Green Hydrogen Hubs

i. Hydrogen hub is an identified geographical region where there exists a network of Hydrogen producers, end use (domestic or export) with sufficient supporting infrastructure of Hydrogen storage, processing, and transportation.

ii. Hydrogen hub might be located inland or near ports to enable exports of GH_2 and its derivatives. Potential locations for such hubs would be regions having clusters of refineries/ fertilizer production plants and other end use industries in close vicinity.

iii. The Hydrogen hub should have a planned/announced capacity of at least 1,00,000 Metric Tonnes Per Annum (MTPA). Higher production capacity will get priority.

iv. Leveraging existing infrastructure for Hydrogen production, transportation, storage, and utilization will be encouraged.

v. The infrastructure, projects, and key resources will be mapped under the PM Gati Shakti portal to ensure optimal and coordinated development.

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. DST shall nominate a Scheme Implementing Agency (SIA) for implementation of the HVIC scheme. The Ministry of New & Renewable Energy (MNRE) and its nominated Scheme Implementing Agency (SIA) will be the Implementing Agency for Green Hydrogen Hubs in India under National Green Hydrogen Mission (NGHM).

6. The "Revised Scheme Guidelines for setting up Hydrogen Valley Innovation Cluster (HVIC) and Green Hydrogen Hubs in India under National Green Hydrogen Mission (NGHM)" will supersede the 'Scheme Guidelines for setting up Hydrogen Hubs in India under the National Green Hydrogen Mission (NGHM)', issued by MNRE on 15th March 2024 (vide F No 353/7/2024-NT).

7. This issues in exercise of the powers conferred on this Ministry and with the concurrence of IFD vide their Diary. No. 124 dated 26/06/2025.

8. This has the approval of Hon'ble Minister of New and Renewable Energy.

Yours Sincerely,

(Prasad Chaphekar)
Deputy Secretary

Enclosed: Annexure

Copy to:

1. All Central Government Ministries and Departments
2. All Members of the Empowered Group under the Mission
3. All Members of the Advisory Group under the Mission
4. CEO, NITI Aayog, Sansad Marg, New Delhi
5. State Nodal Agencies (SNAs) of all States/UTs
6. Major Public Sector Enterprises operating in Renewable Energy/Power Sector
7. Principal Director of Audit, Scientific Audit-II, DGCAR, I.P. Estate, Delhi- 110002
8. Director General (Local Bodies), Office of the Comptroller & Auditor General, Deen Dayal Upadhyay Marg, New Delhi
9. Solar Energy Corporation of India (SECI), 6th floor, Plate-B, NBCC office, Block tower-2, East Kidwai Nagar, New Delhi. 110023
10. Indian Renewable Energy Development Agency Limited (IREDA), 3rd floor, August Kranti Bhavan, Bhikaji Cama place, New Delhi-1 10066

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 of New and Renewable Energy and Power
3. PSO to Secretary, MNRE
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5. All Scientist-F/Scientist-E/Director, MNRE
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7. All Scientists-C/Under Secretaries, MNRE
8. All Scientist-B. MNRE
9. NIC, MNRE for uploading on the MNRE website
10. CA, MNRE for cash Section
11. Hindi Section of Hindi Version
12. Sanction Folder

(Prasad Chaphekar)
Deputy Secretary

Annexure

Ministry of New and Renewable Energy

Government of India

***

Revised Scheme Guidelines for setting up Hydrogen Valley Innovation Cluster (HVIC) and Green Hydrogen Hubs in India under National Green Hydrogen Mission (NGHM)

1. Introduction

1.1 The National Green Hydrogen Mission (NGHM), hereafter mentioned as the 'Mission', was launched on **4th January 2023** having an outlay of **Rs. 19,744 Crore** with an aim to make India a Global Hub for production, usage, and export of Green Hydrogen (GH_2) 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.

1.2 Mission Innovation (MI) 2.0 is a global platform dedicated to driving a decade of action and investment in research, development, and demonstration to make clean energy affordable, attractive, and accessible to all, Department of Science and Technology (DST) serves as the nodal agency in India. Under MI 2.0, the Clean Hydrogen Mission—co-led by Australia, Chile, the European Union, the United Kingdom, and the United States, with India (DST) as a core coalition member—aims to reduce the cost of clean hydrogen to USD 2 per kilogram by 2030. Additionally, MI 2.0 seeks to establish 100 hydrogen valleys worldwide by 2030.

2. Background

Hydrogen Valley Innovation Cluster (HVIC)

2.1 The Hydrogen Valley Innovation Cluster (HVIC) is a first-of-its-kind concept in India, conceptualized by the DST to demonstrate a complete GH_2 value chain—encompassing production, storage, and transportation. As part of this initiative, HVIC will be implemented at the pilot level on a small scale. By deploying this approach across multiple pilot projects at distinctive geographical locations in India and for varying utilization, HVIC aims to validate its potential as a viable and scalable energy solution for various industrial applications.

2.2 The outcomes of this initiative are expected to provide valuable insights for establishing large-capacity Hydrogen Hubs in India. DST has developed HVIC initiative through extensive consultations with key stakeholders, including Government Ministries, departments, academicians, researchers, industry leaders, and start-ups. This initiative aligns with the objectives of MI and is also in line with the goals of the NGHM.

2.3. HVICs will function as living lab for innovating hydrogen supply chain from production to transport, storage and consumption. These will provide learnings for scale up to large size hubs of Green Hydrogen and its derivatives.

Green Hydrogen Hubs

2.4 As per the Mission document, the Mission will identify and develop regions capable of supporting large scale production and/or utilization of Hydrogen as Green Hydrogen Hubs. Along with other initiatives, the Mission envisages establishment and development of large-scale Hydrogen Hubs which will act as a foundation for development of Hydrogen eco-system and will act as backbone of the decarbonisation efforts in the country. Given the technical and logistical challenges inherent in transporting hydrogen over long distances, a cluster-based production and utilization model would enhance the viability of Green Hydrogen projects in the initial years. This would, in turn, enable economies of scale and convergence of key infrastructure requirements in geographically proximate areas.

2.5 In line of the above, Ministry of New and Renewable Energy (MNRE) had issued Scheme Guidelines for setting up Hydrogen Hubs in India under NGHM, vide OM no 353/7/2024-NT dated 15.03.2024. Under the scheme guidelines, it is planned to set up at least two such Green Hydrogen Hubs with a budgetary outlay of Rs 200 Cr by FY 25-26.

Revised Proposal

2.6 Given that the activities of HVIC are designed with the objective of providing valuable inputs for the establishment of large-capacity Hydrogen Hubs, it is proposed to initially implement HVIC projects at select potential locations on a pilot basis. This implementation will be supported through NGHM budget, with suitable amendments to the existing Hydrogen Hub scheme.

2.7 Consequent to the deliberations by the Empowered Group on 28th March 2025, it was decided to include the four recommended HVICs as part of the Hydrogen Hub activity component under the NGHM. These 'Revised Scheme Guidelines for setting up Hydrogen Valley Innovation Cluster (HVIC) and Green Hydrogen Hubs in India under National Green Hydrogen Mission (NGHM)' will supersede the 'Scheme Guidelines for setting up Hydrogen Hubs in India under National Green

Hydrogen Mission (NGHM)', issued by MNRE on 15th March 2024 vide F No 353/7/2024-NT.

2.8 Accordingly, the revised scheme guidelines for setting up HVIC and Green Hydrogen hubs in India under NGHM, are categorised as follows:

A) **Component A:** Hydrogen Valley Innovation Cluster (HVIC)
This component deals with the inclusion of four recommended HVICs pilots as part of the Hydrogen Hub activity under NGHM, with an allocation of Rs 172.00 Cr. This component will be monitored and supervised by DST, which will designate an autonomous institute to function as the SIA.

B) **Component B**: Green Hydrogen Hubs. This component has two parts: -
Component B1: Preparation of Detailed Project Reports (DPRs): Support for preparation of DPRs for Green Hydrogen Hubs, with an allocation of Rs 28 Cr. Preparation of DPRs for Green Hydrogen hubs to be set up in each state shall be supported with a cap of Rs 3 Cr per DPR. Preferably one DPR will be supported for each state.
Component B2: Recognition of potential Green Hydrogen Hubs: MNRE may also recognize other potential locations as Green Hydrogen Hubs without any financial support so that they become eligible for other benefits/advantages, facilitated by Central/State Governments. Procedure for seeking recognition of Green Hydrogen Hubs is included in Annexure 3.

3. Salient features of the revised scheme

3.1 Component A: HVIC

3.1.1 The HVICs will be strategically established in distinct regions across the country, showcasing the diverse applications of GH_2 in various sectors.

3.1.2 Serving as test beds for innovative GH_2 technologies, these clusters will also function as living labs, enabling experiential learning and insights from small-scale hydrogen implementations.

3.1.3 HVIC would foster business innovation, new business models, and techno-economic viability through strategic linkages that connect hydrogen producers to off-takers.

3.1.4 It will be the responsibility of each HVIC to identify and arrange for necessary land and build-up space for the setting up of the HVIC at identified locations. There is no provision of funding towards the cost of acquisition of land for setting up HVIC.

3.1.5 In order to maintain a balance between demand and supply, HVICs are designed to create the requisite demand for the uptake of GH_2 or its derivatives

by developing the capability to localize and integrate the hydrogen value chain, securing commitments from end-users for GH_2 applications, and implementing a comprehensive plan for sustainability beyond NGHM funding.

3.1.6 Outcomes of HVIC will enable in the development of future robust policy and regulatory frameworks essential for supporting and accelerating the implementation of various other components of the NGHM including the Hydrogen Hub for accelerating the GH_2 ecosystem.

3.1.7 Green Hydrogen (GH_2) production will adhere to the standards as defined by the Government of India (GoI).

3.2 Component B: Green Hydrogen Hubs

3.2.1 Hydrogen Hubs will help in boosting hydrogen production, to match domestic as well as export demands, and to achieve large-scale, commercially viable hydrogen ecosystems. This will accelerate the deployment of Green Hydrogen technologies, attract greater investments from the private sector, and promote production and usage of hydrogen to decarbonize the economy. A network of Green Hydrogen producers, users, and supporting infrastructure is a key feature of the Hydrogen Hub.

3.2.2 It is envisaged that the Hydrogen hubs will have pooling of resources from Government of India, State Governments, Local Government, and the industry, to help the development of the Hydrogen ecosystem in a coordinated manner. Hydrogen hubs will lead to the creation of sufficient job opportunities.

3.2.3 Salient features of the Hydrogen Hubs are as follows:

I. Hydrogen hub is an identified geographical region where there exists a network of Hydrogen producers, end use (domestic or export) with sufficient supporting infrastructure of Hydrogen storage, processing, and transportation.

II. Hydrogen hub might be located inland or near ports to enable exports of GH_2 and its derivatives. Potential locations for such hubs would be regions having clusters of refineries/ fertilizer production plants and other end use industries in close vicinity.

III. The Hydrogen hub should have a planned/announced capacity of at least 1,00,000 Metric Tonnes Per Annum (MTPA). Higher production capacity will get priority.

IV. Leveraging existing infrastructure for Hydrogen production, transportation, storage, and utilization will be encouraged.

V. The infrastructure, projects, and key resources will be mapped under the PM Gati Shakti portal to ensure optimal and coordinated development.

4. Procedures for selection

4.1 Component A: HVIC

4.1.1 In April 2023, a call for proposals for the HVICs was announced on the DST website. Subsequently, DST established a National Expert Advisory Committee (NEAC) to oversee the evaluation and selection process. The selection was based on merit, overall preparedness, resource mobilization capability, strategic partnerships, and the proposed implementation model.

4.1.2 The evaluation process was conducted in two stages:

I. **Soliciting Expression of Interest (EOI):** An initial screening to assess the eligibility and preparedness of proposals.

II. **Detailed Project Evaluation:** A comprehensive assessment of the Detailed Project Report (DPR) submitted by shortlisted EOIs.

Based on these evaluations, the NEAC recommended four HVICs for financial support.

4.2 Component B: Green Hydrogen Hubs

4.2.1 Under this Component, SIA nominated by MNRE will invite proposals to prepare DPRs for the development of Green Hydrogen Hubs, as per the revised scheme guidelines.

4.2.2 **Call for proposals:** The proposals should be submitted directly to SIA. Each submitted project should contain the name of Executing Agency (EA). In case of consortium, a lead agency should be identified, which shall function as EA.

(i) The eligible agencies for sending project proposals for DPR preparation include CPSUs, State-PSUs, Private sector, State Corporations, Autonomous Bodies, JVs/Partnerships/Consortiums of such entities.

(ii) The necessary capabilities need to exist with the EAs for concerned DPR preparation. Details will be specified in the Call for Proposal.

4.2.3 Evaluation and award: The proposals will be evaluated by a Project Appraisal Committee in accordance with the detailed criteria specified in the Call for Proposals. The letter of Award shall be issued to the EA by the SIA upon receipt of administrative sanction from MNRE.

4.2.4 Under component B2, MNRE may also recognize potential hydrogen hubs without any financial support, based on the proposals submitted to MNRE directly. The proposal shall be submitted through the State Government or any other line ministries of the central government.

5. Implementation Methodology

5.1 Component A: HVIC

5.1.1 The recommendations of the National Expert Advisory Committee (NEAC), constituted by DST, for providing financial support to four HVICs shall be implemented with complete adherence to the overall objectives, goals, deliverables, resource mobilisation, and financial contribution as determined.

5.1.2 DST shall nominate a Scheme Implementing Agency (SIA) for implementation of the Component A: HVIC under these scheme guidelines. The nominated SIA shall be responsible for managing the award and execution processes, monitoring fund disbursement and utilization, conducting review meetings and on-site visits, convening meetings of the Project Appraisal Committee and the Steering Committee, overseeing project progress reporting, and managing intellectual property in accordance with Government of India guidelines.

5.1.3 Execution and commissioning: Work shall be executed as per the approved scope of work and the sanction issued to this effect to each HVIC by SIA. The production of green hydrogen must be achieved after 18 months of receipt of the letter of Award/Sanction.

5.1.4 Technical/ Regulatory approvals: Each selected HVIC will be solely responsible for obtaining the safety, environmental, and other approvals as and when required, to comply with the law of the land.

5.1.5 Testing and Certification: Each HVIC shall get necessary testing and certification compliance from concerned agencies.

5.1.6 SIA will be eligible for a fee up to 1% of the amount disbursed to HVICs

5.2 Partnership Model for Component A - HVIC

5.2.1 All HVICs will be implemented in consortium mode by engaging relevant partners from hydrogen value chain. The participation of R&D institutions will be essential to provide research and innovation elements to the HVIC pilots. Each HVIC will be managed by a not-for-profit, newly established Section 8 company-led, Lead institute should enable to create new section 8 company.

5.2.2 The various partners who may be engaged in HVICs include the following:

i. Indian entities with expertise in the Hydrogen sector.
ii. Knowledge Clusters who are already engaged in the GH_2 ecosystem.
iii. National / State funded R&D Labs.
iv. Industries working on the Hydrogen Value supply chain.
v. Central Government / State Government supported or recognized (Public or Private) academia and urban or other local bodies.
vi. GoI / State Government recognized not-for-profit (Societies/ Trusts or Research Foundations), having research and innovation as one of the imperative mandates;

R&D centers recognized as Scientific Industrial Research Organization (SIRO) by DSIR with Industry partners.

vii. GoI-funded incubators / Startups incubated – DPIIT registered in any of the recognized Technology Business in the hydrogen domain.

viii. Any other entity including private companies, startups, technology and service providers that can add value to HVIC can be a partner.

5.3 Mandatory Activities of each HVIC

The activities of each HVIC will include,

i. Production: Use diverse production methods - electrolysis and Bio-routes.

ii. Storage and Transportation: Focus on efficient, safe storage (compressed, pressurized, etc.) and transport systems (tube trailer, pipes etc).

iii. Utilization: Highlight applications in transport, ammonia production, chemical industries, Direct Reduction of Iron etc.

iv. Research and Innovation Pillars: Cover Research, Development and Innovation leading to development and demonstration of indigenous technologies, operational, and business innovations securing long-term off-take commitments.

v. Training / capacity building

5.4 Managing grant from NGHM budget

The letter of Award/Sanction shall be issued to each HVIC by DST, after the administrative approval by MNRE.

1. Section 8 company managing each HVIC shall function as the Lead under the scheme.
2. Fund Utilization: The lead institute will enable the creation of a Section-8 Company, to which grants will be released by SIA.
3. Funds can be used for:
    a) CAPEX: Site preparation (example: fabrication and civil engineering, design, engineering, manufacture, supply, transportation, un-loading, storage, civil & structural works, erection, testing & commissioning), equipment, electrolyzer procurement, renewable energy plants and similar assets.
    b) OPEX: Includes the following but not limited to manpower, plant engineering, raw material, fuel, utility, consumables, travel, and contingencies.
        i. The funds for CAPEX and OPEX shall be utilised as per the approved timeline in DPR approved by the DST-constituted NEAC.
        ii. Additional funds, if desired by any HVICs, can be sourced from external partners.

Note: It will be the responsibility of each HVIC to identify and arrange for necessary land and build-up space for the setting up of the HVIC at identified locations. There is no provision of funding under NGHM towards the cost of acquisition of land for setting up HVICs.

4. Sustainability Responsibility:
    - Section-8 companies must ensure long-term viability of the HVIC by
        i. Scaling production capacity.
        ii. Identifying new partners and off-takers.
        iii. Reducing hydrogen production costs through innovations.
5. Project Adjustments:
    - Minor budget revisions may be made during implementation-based on NEAC/ Project Appraisal Committee recommendations, considering the nascent stage of India's GH_2 ecosystem.
6. Public-Private Partnership (PPP): –
    - Industry and academic partners willing to contribute towards the funding with respect to their specific area in the Hydrogen value chain would be preferred.
7. Each HVIC will be a PPP-driven project, to be co-funded by NGHM, Industry, and each Lead Applicant.

5.5 Disbursement of Financial Support from NGHM

5.5.1 Fund Disbursement of HVIC (Component A)

Each HVIC will be supported through Central Financial Assistance (CFA) under PPP mode till FY 25-26, while industry contributions (i.e. lead applicant/ Industry/ consortium) can be availed up to five years. Stages of disbursement of Central Financial Assistance from NGHM are as follows.

S.No.	Stages of Disbursement	Percentage of CFA to be released
1	Date of issue of administrative approval/sanction	40%
2.	As per the utilisation of 80% of committed funding*	40%
3.	Production of first lot of Green Hydrogen	20%
	Total	100%

* This release is contingent upon the submission of the Utilization Certificate for 80% of the first instalment and a minimum expenditure of 30% of the contribution by the Lead Institution/ industry/consortium.

* DST to ascertain that Industry contribution is matching with the Government support.

5.5.2 DST may also specify further terms and conditions for the grant of financial assistance for general financial prudence.

5.5.3 Funds will be released to the SIAs by MNRE (through CNA) as recommended by NEAC, as mentioned in para 5.5.1 sl no 1. Further funds shall be released as per the recommendation of Project Appraisal Committee (PAC).

5.5.4 The amount of CFA will the total amount inclusive of all taxes.

5.5.5 Funds will be released to the section 8 company by the SIA on specified conditions and terms as stipulated by DST.

5.5.6 Section 8 company will remit the accrued interest and other charges to the Consolidated Fund of India as per rule 230 (8) of GFRs 2017.

5.5.7 The SIA shall be entitled to service charges at 1% of the sanctioned CFA, to be provided separately as part of Rs 172 crore allocated for the HVIC Component.

5.5.8 In addition, fund may also be utilized for workshop, result dissemination activities, progress review meeting etc. Up to 50% of the SIA allocation may be utilised towards such events over the course of the programme, subject to prior PAC approval and funded from within this allocation.

5.5.9 The allocation of funds across components is indicative & fungible and MNRE may reallocate funds between components as required.

6. Fund Disbursement

6.1 Component B1: Preparation of DPRs for Green Hydrogen Hubs

S.No	Stages of Disbursement	Percentage of CFA to be released
1	Date of issue of administrative approval/sanction	30%
2.	Submission of draft DPR to be presented to Project Appraisal Committee (PAC)	40%
3	On acceptance of final DPR	30%
	Total	100%

Component B: Rs 28 Cr shall be utilised for developing DPRs for Green Hydrogen Hubs (Component B1), with a cap of Rs 3 Cr per DPR.

MNRE may also recognize other locations as Green Hydrogen Hubs without any financial support so that they become eligible for other benefits/advantages, if any (Component B2).

Funds allocated under Component A may also be utilised for up to 1% of the service charges of the SIA, for Component B1.

The allocation of funds across components is indicative & fungible and MNRE may reallocate funds between components, as required.

7. Other Provisions

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

7.2 If the Lead Applicant 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.

7.3 The Call for proposals should indicate a suitable timeline for completion of the project. Extension of up to one year may be granted for completion of the project on the basis of adequate justification, with the approval of the Steering Committee.

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

8. Monitoring Framework

8.1 For Component A:

8.1.1 Steering Committee (SC)

8.1.2 Overall monitoring of the scheme and projects undertaken will be carried out by a Steering Committee (SC) under the Chairmanship of Secretary, DST (for Component A) and comprising of members viz., Mission Director, National Green Hydrogen Mission (NGHM), and other members as nominated. The Steering Committee shall have mandate for overall monitoring and implementation of this scheme and suggest modifications and course corrections for its successful implementation.

8.1.3 The SC will also facilitate/ recommend measures to resolve difficulties, if any.

8.1.4 In case of any ambiguity in the interpretation of any of the provisions of this scheme, the decision of MNRE shall be final.

8.2.1 Project Appraisal Committee (PAC):

8.2.2 For Component A, the PAC shall be constituted under the Chairmanship of Scientist G, DST, with other members nominated by DST and MNRE. The PAC shall monitor, review, and evaluate the project proposals and recommend projects for sanction of Central Financial Assistance (CFA). The PAC shall monitor HVICs on a quarterly basis for the utilisation of funds based upon the progress of the project. The PAC shall send its recommendations to MNRE for release of CFA for Component A. Further responsibilities of PAC under component A are listed under annexure 1.

8.2.3 DST shall also devise a monitoring mechanism to track the progress of components A – project progress report (annexure 2), that may be shared with MNRE.

8.3 For Component B:

8.3.1 Steering Committee (SC)

8.3.2 Overall monitoring of the scheme, and evaluation of projects undertaken will be done by a Steering Committee (SC) under the chairmanship of Secretary, Ministry of New and Renewable Energy (MNRE) and comprising of members viz., Mission Director, National Green Hydrogen Mission (NGHM), and other members as nominated. The Steering Committee shall be responsible for overall monitoring and implementation of the component B of the scheme, and suggest modifications and course corrections for its successful implementation.

8.3.3 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.

8.4.1 **Project Appraisal Committee:**

8.4.2 A Project Appraisal Committee (PAC) under the Chairmanship of Mission Director, NGHM, shall monitor /review/ evaluate the project proposals and recommended projects for sanction of CFA. The PAC shall monitor projects on a quarterly basis for the allocation of funds based upon the progress of the project. The PAC shall send recommendations for the release of CFA.

8.4.3 The SIA shall also devise a monitoring mechanism to track the progress on quarterly basis and submit to MNRE.

9. Project Completion for Component A

9.1 Each HVIC shall submit the Project Completion Report (PCR), to DST within one month of project completion. The PCR shall include the following:

1. Technical aspects of the project, including the hardware, software, and other technologies used.
2. Technical challenges encountered during the project, and how they were overcome.
3. Outcome of the project, comprising technical know-how generated along with the data collected during the execution of the project.
4. Recommendations for future projects, based on the lessons learned from the project.

Note: PAC may request that each HVIC include other relevant information deemed necessary to prepare a more comprehensive PCR.

10. Guidelines for Safeguard of Intellectual Property for Component A

DST will ensure (for each HVIC) the issue of safeguarding of any foreground Intellectual Property Rights, such as Publications, Patents, Registered Designs, or Trademarks, etc., which are generated through projects funded under this scheme.

10.1 Intellectual property rights, licensing, confidentiality, and non-compete

The operation of the consortium will be governed by a consortium agreement, signed between consortium members, and duly submitted to the concerned DST office.

1. How ownership of intellectual property (e.g., patents or copyrights) generated as a result of the funded project activities will be assigned and shared.
2. How other intellectual property generated as a result of the funded project activities and that is not to be registered but to be protected (e.g., trade secrets) will be protected by all consortium members.
3. Terms for the use or modification of the above intellectual properties by other consortium members during and after the end of the project.
4. Terms for the use or modification of intellectual property that was owned by one or more consortium members and that was not generated as part of the funded project but will be utilized in the project.
5. Terms of confidentiality that all consortium members agree upon.
6. 'Non-compete' clauses, if any, that all consortium members agree upon.

10.2 Guidelines for safeguard of Intellectual property for Component B: The SIA 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 implementing agency.

11. Power to Amend Revised Guidelines

MNRE may make the necessary amendments in the scheme guidelines, as and when required, with the approval of Hon'ble Minister, New and Renewable Energy.

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Annexure 1: Responsibilities of PAC for Component A

1. Review HVIC project progress report (annexure 2), implementation and management.
2. Project Monitoring: Track the progress of HVIC projects to ensure alignment with objectives and timelines by convening regular meetings.
3. Periodic Reviews: Conduct regular reviews of funded projects to assess performance, and milestones achieved and recommend necessary adjustments.
4. Conflict Resolution: Address and resolve conflict arising during the execution of the scheme.
5. Ensuring effective collaboration and coordination with each Section 8 company to facilitate smooth operations and achieve the objectives of the HVIC.
6. Guiding the governance and operational aspects of the HVICs.
7. Coordinating the activities of the HVIC with other concerned government departments as necessary.
8. Project Budget utilisation.

Annexure 2: Project Report

The project report shall include but not be limited to the following:

- Introduction: Overview of project and reporting period.
- Status Overview: Summary of progress, milestones achieved, and challenges.
- Key Accomplishments: Highlights of significant achievements.
- Work Completed: Breakdown of tasks completed.
- Work in Progress: Overview of ongoing activities.
- Status of objectives against the timeline suggested in the detailed project report
- Budget status: Funds received and utilization
- Issues and Solutions: Discussion of challenges and proposed solutions.
- Resource Utilization: Analysis of resource usage.
- Risks and Mitigation: Assessment of project risks and mitigation strategies.
- Changes to Plan: Any modifications to the project plan, scope, or timeline.
- Upcoming Milestones: Overview of next steps and milestones.
- Recommendations: Suggestions for future actions.
- Conclusion: Summary of key findings and conclusions.

Annexure 3: Procedure for Recognition of Green Hydrogen Hubs without any Financial Support (Component B2)

1.0 Background

1.1 The National Green Hydrogen Mission, hereafter mentioned as 'Mission', was launched on 4th January 2023 with an outlay of Rs. 19,744 Crore with an aim to make India a Global Hub for production, usage, and export of Green Hydrogen (GH_2) 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. Along with other initiatives, the Mission envisages the establishment and development of large-scale Hydrogen Hubs, which will act as a foundation for the development of the Hydrogen ecosystem and will act as the backbone of the decarbonization efforts in the country.

1.2 Given the technical and logistical challenges inherent in transporting hydrogen over long distances, a cluster-based production and utilization model would enhance the viability of Green Hydrogen projects in the initial years. This would, in turn, enable economies of scale and convergence of key infrastructure requirements in geographically proximate areas.

2.0 Hydrogen Hubs

2.1 Para 7.8 of the Mission Document states that the Mission will identify and develop regions capable of supporting large-scale production and/or utilization of Hydrogen as Green Hydrogen Hubs. This scheme for the recognition to promote Green Hydrogen Hubs will focus on the development of supporting infrastructure at key locations. The Green Hydrogen Hubs and associated infrastructure will be planned in a manner so as to promote an integrated development of the region based on its potential. In this regard, the proposal shall be submitted through the State Government or any other line ministries of the Central Government.

3.0 Purpose

This document prescribes broad eligibility parameters and procedures to be envisaged for recognizing Green Hydrogen Hubs by a competent executive agency (EA)

i. The Green Hydrogen Hubs can be established/set up in any part of the country considering strategic and economic advantages.
ii. The interested agency/company/public entity may submit their interest to MNRE.
iii. The proposal should provide adequate details about the land allotted by the State government, local authority, or outright purchase/lease by the developer.

iv. The necessary clearance or support may also be furnished, if applicable for establishing Green Hydrogen Hubs.

4.0 Development of Infrastructure

The development of the following core infrastructure for the common facility at Green Hydrogen Hubs should be considered;

i. Storage and transportation facilities for Green Hydrogen/its derivatives
ii. Development or upgradation of pipeline infrastructure
iii. Green Hydrogen powered vehicle re-fuelling facility
iv. Hydrogen compression and/or liquefaction technologies, as required
v. Hydrogen storage systems, including bulk liquid, gaseous, materials-based technologies, or subsurface options (e.g., salt caverns, depleted oil and gas fields, unused coal mines etc.)
vi. Water treatment facility and associated storage facility
vii. Development of bunkering facilities in case of ports including provision of bunker barges for handling large vessels such as Very Large Crude Carriers (VLCC)
viii. Infrastructure upgradation for shipping, including expansion of port/jetty infrastructure for exports.
ix. Power transmission infrastructure to the nearest existing grid substation and establishment of new dedicated substations
x. Land re-development
xi. Energy Storage to manage RE intermittency
xii. Effluent Treatment Plants
xiii. Any other infrastructure required

5.0 Objectives of the scheme

i. To identify and develop regions capable of supporting large-scale production and/or utilization of Hydrogen as Green Hydrogen Hubs.
ii. Development of Green Hydrogen Projects inside the Hubs in an integrated manner to allow pooling of resources and achievement of scale
iii. Enhance the cost-competitiveness of Green Hydrogen and its derivatives vis-à-vis fossil-based alternatives
iv. Maximize production of Green Hydrogen and its derivatives in India within the stated financial support
v. Encourage large-scale utilization and exports of Green Hydrogen and its derivatives
vi. Enhance the viability of Green Hydrogen assets across the value chain

6.0 Rationale and the Salient Features

6.1 Hydrogen Hubs will help in boosting hydrogen production, to match domestic as well as export demands, and to achieve large-scale, commercially viable hydrogen ecosystems. This will accelerate the deployment of Green Hydrogen technologies, attract greater investments from the private sector, and promote production and usage of hydrogen to decarbonize the economy. A network of Green Hydrogen producers, users, and supporting infrastructure is a key feature of the Hydrogen Hub.

6.2 It is envisaged that the Hydrogen hubs will have pooling of resources from Government of India, State Governments, Local Government, and the industry - to help the development of the Hydrogen ecosystem in a coordinated manner. Hydrogen hubs will lead to the creation of sufficient job opportunities.

6.3 Salient features of the scheme are as follows:

i. Hydrogen hub is an identified geographical region where there exists a network of Hydrogen producers, end use (domestic or export) with sufficient supporting infrastructure of Hydrogen storage, processing, and transportation.

ii. Hydrogen hub might be located inland or near ports to enable exports of Green Hydrogen and its derivatives. Potential locations for such hubs would be regions having clusters of refineries/ fertilizer production plants and other end-use industries in close vicinity.

iii. The Hydrogen hub should have a planned/announced capacity of at least 1,00,000 MTPA. Higher production capacity will get priority.

iv. Leveraging existing infrastructure for Hydrogen production, transportation, storage, and utilization will be encouraged.

7.0 Technical/ Regulatory approvals: The EA shall be solely responsible for obtaining the safety, environmental, and other approvals as required.

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

9.0 Project Completion: EAs shall submit the Project Completion Report (PCR) to MNRE within three months of the completion of the project. PCR shall include the following:

i. Technical aspects of the project, including the 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 technical know-how generated along with the data collected during the execution of the project.

iv. Recommendations for future projects, based on the lessons learned from the project.