

Regulatory Compliances for Commissioning of Green Hydrogen Projects in India

Report by:

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Background

With the launch of the Green Hydrogen Mission by the Government of India in 2021, to promote the production and use of green hydrogen in the country, there has been a lot of debate and discussion on the policy making aspect relating to the said mission. The Mission proposes to extend various facilitative policy provisions for transmission, connectivity, banking, open access, and energy storage for Green Hydrogen production projects. Consequently, the Government unveiled the Green Hydrogen Policy in February, 2022, with the aim of facilitating the commissioning of such projects that will produce, transmit and distribute green hydrogen. The utilization of green hydrogen in various sectors has been discussed in very much detail in the Mission.

However, for the commissioning of Green Hydrogen Projects and the successful fulfilment of the supply chain, a more well formulated and a dedicated piece of legislation is awaited. Whilst the government is in process of formulating any such laws, the stakeholders shall rely on the existing legislations which govern the manufacturing of the grey and blue hydrogen, and such other legislations that may be relevant.

In order to understand the existing laws and to enlist the legal compliances involved at various stages of the production and distribution of green hydrogen, the Indo- German Energy Forum in collaboration with Maheshwari & Co. has prepared this detailed note listing the approvals for setting up a green hydrogen plant in India (electrolyzer route including desalination plant/ no biomass or biogas).

Definition of Green Hydrogen

The [standard issued by the Ministry of New and Renewable Energy \(MNRE\)](#), Government of India vide notification dated 18.08.2023, outlines the emission thresholds that must be met in order for hydrogen produced to be classified as 'Green', i.e., from renewable sources. The scope of the definition encompasses both electrolysis-based and biomass-based hydrogen production methods.

After discussions with multiple stakeholders, the Ministry of New & Renewable Energy has decided to define Green Hydrogen as having a well-to-gate emission (i.e., including water treatment, electrolysis, gas purification, drying and compression of hydrogen) of not more than 2 kg CO₂ equivalent / kg H₂.

The notification of the Green Hydrogen Standard for India can be accessed [here](#).

Stages of Green Hydrogen Project

- Commissioning Stage
- Storage Stage
- Distribution Stage

Commissioning Stage

At the commissioning stage of the green hydrogen projects, there are various approvals and licenses which are to be undertaken by the establishing entity from several regulatory authorities. Presently there are no specific rules or regulations for setting- up green hydrogen/ green ammonia/ electrolyser manufacturing units, and such projects will be governed primarily by the existing legal and regulatory framework keeping in mind the various requirements of green hydrogen projects.

The set-up process will broadly involve:

- i. Formation of a project entity (if separately required) and raising finance for the project
- ii. Identification and procurement of site for the manufacturing facility
- iii. Procurement of regulatory permits/ licenses/ approvals (central and state)
- iv. Project financing
- v. Procurement of electricity from renewable sources such as solar, wind etc., and ensuring adequate water source.
- vi. Procurement of electrolyser equipment and installation
- vii. Production of Green hydrogen
- viii. Storage of green hydrogen
- ix. Transportation and distribution of green hydrogen

For the process stated above, the following approvals and licenses shall be obtained from the competent authorities:

- A. Consent to Establish and Consent to Operate
- B. No Objection Certificate from the Fire Department
- C. Environmental Clearance from the concerned regulatory body
- D. Registration under the Factories Act
- E. Approval from the Petroleum and Explosive Safety Organization (PESO)

Consent to Establish (CTE) is a primary clearance for entities intending to setup any project in India. Meanwhile, the Consent to operate serves as a legal consent that entities have to apply after establishing the unit and meeting conditions of CTE. The respective State Pollution Control Board (SBCB) grants both these consents with different validity duration. Central Pollution Control Board (CPCB) has categorized all industrial sectors/projects under Red, Orange, Green and White categories based on predetermined pollution index under prevailing legislation.

The process for securing Consent to establish (CTE) and **Consent to Operate (CTO)** seeks filing of application with the concerned SPCB. Applicants are required to facilitate mandatory documents and scrutiny fees for this purpose.

Post application submission, Authority undertakes the following activities:

- On-site scrutiny of the production units
- Assessment of the environmental management system

Fundamental Documents Required For CTE And CTO Application Filing - While every state adhere to specific requirement, the following documentations are generally required across every state to obtain Consent under Air Act, 1981 & Water Act, 1974.

Consent to Establish

- Site plan of the production unit/project
- Brief project report which covers the details of raw material, proposed product, the capital cost of the establishment (land and plant machinery), water-balance, water source, and its proposed quantity
- Land documentation such as rent deed/ Registration deed/ Lease deed
- Details of air pollution control/ Water Pollution control equipment
- MOA /Partnership Deed

Consent to Operate

- Copy of the last Consent granted by competent Authority
- Layout schematics manifesting the detail of manufacturing processes
- Latest analysis report of effluent, solid wastes, fuel gases, and hazardous wastes.
- Balance sheet copy attested by CA
- Detail relating to land in case trade effluent is discharged on land for percolation
- Occupation registration accorded by Town & Country Planning Department in case of area development projects/ Building & construction projects
- MOA /Partnership Deed

No objection Certificate from the Fire Department

The No object Certificate (NOC) before the commencement of any project or establishment, has to be taken from the concerned Department of Fire Services of the concerned State. The purpose of Fire NOC is to ensure that the property is fire resistant and unlikely to damage to person or property caused by any fire accidents. The documents required to obtain a NOC from the Fire Department differs from State to State.

Environmental Clearance from the concerned regulatory body

The construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule of the Environment Impact Assessment Notification, 2006, entailing capacity addition with change in process and or technology shall be undertaken in any part of India only after the prior environmental clearance from the Central Government, or as the case may be, by the State Level Environment Impact

Assessment Authority. An application seeking prior environmental clearance in all cases shall be made in the prescribed Form annexed in the notification.

The prior environmental clearance granted for all other projects and activities, except the ones specifically mentioned in the notification shall be valid for a period of 5 (five) years. This period of validity may be extended by the regulatory authority concerned by a maximum period of five years provided an application is made to the regulatory authority by the applicant within the validity period.

Registration under the Factories Act

All/any factory that falls within the interpretation of its definition provided under Section 2(m) of the Factories Act. Section 41B of the Act, however, lays down the mandatory obligation of disclosure by the occupier carrying out hazardous process, which as per Article 29 of Schedule I of the Act includes “Highly flammable liquids and gases” under the list of industries carrying out hazardous process. Hydrogen being a highly flammable gas falls within the ambit of the said provision.

Factory licenses may be procured online, and depending on the product proposed to be manufactured, further requirements such as approvals for use of hazardous substances, plastics, chemicals etc., may be undertaken.

Approval from the Petroleum and Explosive Safety Organization (PESO)

The approval from Petroleum and Explosive Safety Organization (PESO) is required to be obtained to undertake the filling of compressed gas in cylinders, for the purpose of storage of such compressed gas in a storage shed attached to the filling premises.

Registration under the PNGRB Act is also necessary to be obtained as it regulates the refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas, to protect the interests of consumers and entities engaged in specified activities. Since, green hydrogen, is a new area being explored with regard to policy making, the existing legislations are to be relied upon while dealing with the distribution and transportation of the produced hydrogen.

Storage Stage

At the stage of storage, there are numerous legal compliances and approvals that an establishing entity shall undertake, to store the manufactured hydrogen that shall follow its transportation and distribution. The statutes that govern the manufacture and storage of the hydrogen are:

- A. The Manufacture, Storage, and Import of Hazardous Chemical Rules, 1989;
- B. The Gas Cylinders Rules, 1981

The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989, (hereinafter referred to as “the Rules”) defines Hazardous Chemicals under Section 2(e) by laying down certain criteria in the Schedules of the Rules. The chemical properties of hydrogen fulfil the abovementioned criteria and hence, falls within the ambit of hazardous chemical.

Therefore, the production and storage of hydrogen shall be governed by these rules until no specific legislations are made in this regard. The Rules entail the rules and guidelines that the occupier or manufacturer or any person involved in the handling of such hazardous chemical, shall abide by while manufacturing, storing or importing such chemicals.

Schedule 5 of the Rules lays down a detailed list of authorities that are prescribed with different sets of functions according to the entailed provisions. However, the concerned authority for the grant of approval under Rule 7, the submission of the safety reports under Rule 10, and Preparation of on-site emergency plans as per Rule 13, is the Central Pollution Control Board or State Pollution Control Board or Committee under Environment (Protection) Act, 1986 as the case may be.

The Gas Cylinders Rules, 1981 (the “Cylinder Rules”) have been framed in accordance with the Indian Explosives Act 1884, with a view to provide more detailed and comprehensive provisions regarding the filling, possession, import, storage and transport of gas cylinders. Gas Cylinder has been defined under Rule 2 (xvi) as “any closed metal container having a volume exceeding 500 milliliter but not exceeding 1000 litres intended for the storage and transport of compressed gas, including any liquefied petroleum gas (LPG) container fitted to a motor vehicle as its fuel tank, but not including any other such container fitted to a special transport or under carriage.” Additionally, Rule 3 lays down the general restrictions and compliances for the filling, possession, import and transport of cylinders.

Distribution Stage

Following the manufacturing and storage, comes the stage of Transport and Distribution of the manufactured hydrogen. The produced hydrogen may be transported and distributed in two ways: (i) liquefaction of the produced gas; or (ii) supply through the existing pipeline structures. The statutes governing the licenses and approvals to carry out the transport and distribution of hydrogen are governed under the following:

- A. License under the Gas Cylinders Rules, 1981
- B. Registration and Authorization under the Petroleum and Natural Gas Regulatory Board Act, 2006
- C. Approval under the Petroleum and Natural Gas Regulatory Board (Authorizing Entities to Lay, Build, Operate or Expand City or Local Natural Gas Distribution Networks) Regulations, 2008.
- D. Approval under the Petroleum and Natural Gas Regulatory Board Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP) Regulations, 2010
- E. Approvals under the Static and Mobile Pressure Vessels (Unfired) Rules, 2016

License under the Gas Cylinders Rules, 1981-

The provisions relating to approvals and licenses covered under the aforesaid Act have already been discussed above. In addition to this, the Cylinder Rules lay down the legal compliances that shall be undertaken by the commissioning entity, post- commissioning of the hydrogen project.

Registration and Authorization the Petroleum and Natural Gas Regulatory Board Act, 2006 (the “PGRB Act”)-

The PGRB Act aims provide for the establishment of Petroleum and Natural Gas Regulatory Board to regulate the refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas, to protect the interests of consumers and entities engaged in specified activities. Since, green hydrogen, is a new area being explored with regard to policy making, the existing legislations are to be relied upon while dealing with the distribution and transportation of the produced hydrogen. Hence, at this juncture the provisions of the PGRB Act shall be discussed in detail for the distribution of green hydrogen through pipelines.

Approval under the Petroleum and Natural Gas Regulatory Board (Authorizing Entities to Lay, Build, Operate or Expand City or Local Natural Gas Distribution Networks) Regulations, 2008 (the “PGRB Regulations”)-

The PGRB Regulations have been formulated in furtherance to the PGRB Act, which enlists the compliances that have been discussed in Act. Rule 3 of the PGRB Regulations deals with the provision of Applications for entities which are laying, building, operating or expanding,

or which proposes to lay, build, operate or expand a CGD (geographical area for a city or local natural gas distribution network) network.

The other provisions relating to the development of technical and safety standards, determination of capacity of natural gas distribution network, and the determination of the Natural gas pipeline tariff under the PNGRB Act have been dealt under the Petroleum and Natural Gas Regulatory Board (Procedure for development of Technical Standards and Specifications including Safety Standards) Regulations, 2009, the Petroleum And Natural Gas Regulatory Board (Determination of Natural Gas Pipeline Tariff) Regulations, 2008, and the Petroleum and Natural Gas Regulatory Board (Determining Capacity of City or Local Natural Gas Distribution Network) Regulations, 2015, respectively.

Approval under the Petroleum and Natural Gas Regulatory Board Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP) Regulations, 2010-

The purpose of the formulation of the aforesaid Regulations is to develop a concise and informative ERDMP to enable the entity to mitigate the emergency as quickly as possible, and to prevent escalation of event both on-site and off-site, minimize impact on people and any damage caused to any property. The compliances enlisted under the ERDMP Regulations shall be mandatorily complied with by the entity engaged in any activities on which the said regulation is applicable.

Approvals under the Static and Mobile Pressure Vessels (Unfired) Rules (the “SMPV Rules”), 2016-

The SMPV Rules govern the design, License, operation and maintenance of LNG storage and regasification station for LPG, Natural Gas and other compressed gases. Rule 45 of the SMPV Rules lays down the provisions relating to obtaining of License for storage of compressed gas. According to Rule 46, any person who intends to obtain such licence shall get a prior approval of specification and plans of vessels and premises proposed to be licensed.

Further, Rule 48 deals with the License for transport of compressed gas which casts an obligation on an entity which intends to transport compressed gas, to obtain such license. The procedure, however, to obtain such licence and the particulars to be furnished thereon before the Chief Controller, has been provided under Rule 50 of the SMPV Rules.

Schedule I, consists the format, forms and fees for the Licenses stated in the SMPV Rules, as well as the list of Licensing Authority that shall grant the respective licenses.

Conclusion

Considering the rapid evolution of clean and green energy, particularly green hydrogen, it is imperative, that in order to achieve the target set by the Government of India, a proper channelization of resources and a comprehensive legal framework is essential. To ensure the prior, the government has set out various incentives and facilitative policies for the stakeholders, to encourage the adaptation of green hydrogen and to achieve the phase-wise targets. However, for the later, emphasis shall be laid on the above mentioned statutes that provides the detailed provisions for the manufacture, storage, distribution and transportation of hydrogen from the existing projects or industries.

Post thorough research and detailed study of the said provisions, it may be understood that the existing legal framework, if not exhaustive, is inclusive of the activities undertaken for the manufacture, storage and transportation of green hydrogen. Additionally, with the formulation of the [National Single Window System](#) (NSWS) portal by the government, there seems a lot of ease in obtaining approvals and licenses from varied Ministries, Departments and other Regulatory Bodies.

The involvement of diversified statutes and the concerned regulatory authorities established thereunder, may be reduced and uniformity and singularity in the governing regulatory body, so as to ensure a hassle-free application process for the obtainment of the necessary approvals and licenses, may be considered for implementation.

A noteworthy procedural factor that warrants discussion is the NSWS portal, which serves as a one platform for all approvals and licenses to be issued by the relevant Ministry or Departments at both the Central and State levels. This portal provides information on the specifics of the approvals, including the governing statute, required form, fee, and anticipated timeline for processing. However, some more streamlining and synchronization of the portal to enhance its comprehensiveness may also be considered.

In furtherance to this, it is pertinent to note that the pace at which the government is acting upon the hydrogen mission targets, it is expected that with the a more comprehensive legal framework, clarifications on the incentives and the channelization of the resources, the target of 2047 will not be a mammoth task to achieve.

