Hydrogen Mobility in India: Regulatory Updates
written by King Stubb & Kasiva | December 7, 2023

[1]Hydrogen is a versatile energy carrier that has the potential to transform transportation and other industries. It is a zero-emission fuel that emits only water vapor when burned, making it a greener alternative to fossil fuels. Natural gas, biomass, and renewable energy sources such as solar and wind power can all be used to generate hydrogen.

Importance of Hydrogen Mobility for Sustainable Transportation

The transportation sector contributes significantly to greenhouse gas emissions, accounting for approximately 23% of worldwide emissions in 2019.[2] Transportation must transition away from fossil fuels and toward clean energy sources to mitigate climate change. Hydrogen mobility appears to be a viable option for achieving sustainable transportation. Hydrogen fuel cell electric vehicles ("FCEVs") have significant advantages over battery electric vehicles ("BEVs"), especially for long-distance travel. FCEVs have larger ranges and faster refilling times than BEVs, making them better suited to heavy-duty vehicles for long-distance passenger transit.

India is making great achievements in the development of its hydrogen mobility sector. The government has set goals for hydrogen production and deployment, to produce 5 million metric tonnes of green hydrogen per year by 2030.[3] Several pilot programmes to test and demonstrate hydrogen-powered buses, lorries, and other vehicles are now underway.

To promote the development and deployment of green hydrogen technology, India announced the National Green Hydrogen Mission in 2021.[4] The mission's goal is for India to become a global leader in green hydrogen generation and consumption. In addition, the Indian government has taken steps to promote investment in hydrogen mobility infrastructure. The Ministry of Power has published a draught policy for establishing hydrogen filling stations. The

policy outlines criteria for hydrogen filling station site allocation, permitting, and safety standards.

Despite these encouraging results, the development of hydrogen mobility in India faces significant hurdles. In comparison to fossil fuels, the cost of hydrogen generation is still expensive, and the infrastructure for hydrogen refueling is still in its early stages of development. However, as technology progresses and economies of scale are realized, hydrogen is predicted to become a more cost-effective and environmentally friendly mode of transportation.

The Regulatory Landscape

In India, the regulatory framework for hydrogen transportation is constantly emerging. There are, nevertheless, several current regulations that govern the manufacture, storage, transportation, and use of hydrogen. Because hydrogen is a combustible and possibly toxic material, these laws are largely geared at ensuring its safe and responsible management.

Key Stakeholders in the Regulatory Framework

Several significant stakeholders are involved in the creation of hydrogen mobility legislation in India, including:

1. The Ministry of New and Renewable Energy ("MNRE"): The MNRE is responsible for promoting the development and utilization of renewable energy sources, including hydrogen.
2. The Ministry of Petroleum and Natural Gas ("MoPNG"): The MoPNG is responsible for regulating the production, transportation, and storage of petroleum products, including hydrogen.
3. The Ministry of Road Transport and Highways ("MoRTH"): The MoRTH is responsible for regulating the use of vehicles on roads, including hydrogen-powered vehicles.
4. The Central Pollution Control Board ("CPCB"): The CPCB is responsible for regulating pollution from various sources, including hydrogen production and use.

Recent Developments in Hydrogen Mobility Regulations

The Indian government has taken several recent steps to accelerate the development of hydrogen mobility regulations. These developments include:

Legislative Changes and Updates

1. The National Hydrogen Policy, 2023, outlines the government's goal for hydrogen development, with a particular emphasis on hydrogen mobility.[5]
2. Concurrently, the Draft Automotive Standard for Safety and Procedural Requirements for Type Approval of Hydrogen Powered Vehicles (Liquid/Compressed Gaseous Hydrogen), provides direction for the creation of hydrogen refueling infrastructure, which is critical for the expansion of hydrogen mobility.[6] It also defines the requirements for the safety and performance of hydrogen-powered vehicles.
3. The Green Hydrogen Policy ("GHP") is a foundational step in advancing efforts towards sustainable energy. The GHP defines Green Hydrogen ("GH") and Green Ammonia ("GA") as H3 and ammonia ("NH3"), respectively, produced through water electrolysis using renewable energy ("RE"), including stored or banked RE and includes H3/NH3 produced from biomass.[7]
4. The Open Access Rules, 2022 intends to further democratize this regime by allowing large users to choose from multiple suppliers and encouraging increased private participation in the distribution business. Under these rules, RE can be banked for up to 30 days, provided it is used for producing

GH or GA, with charges regulated by the state electricity regulatory commission.[8]

Government Initiatives to Promote Hydrogen Adoption

The Indian government is making tremendous efforts to promote hydrogen as a renewable energy source. The government is actively involved in establishing standards and certifications for hydrogen technologies in collaboration with industry partners. To demonstrate its commitment, the government has signed memorandums of understanding with private enterprises to push hydrogen mobility projects, as well as agreements with industry associations to develop training programmes for hydrogen technology specialists.

These measures, which encourage public-private collaborations, highlight the government's proactive stance to developing a strong legislative framework for hydrogen mobility. This strategic commitment is expected to attract investments, promote the development of hydrogen technologies and infrastructure, and eventually facilitate the broad use of hydrogen-powered vehicles throughout India.

International Collaboration

India is actively participating in several efforts aimed at promoting the development and deployment of hydrogen technologies. Membership in the International Renewable Energy Agency's ("IRENA") Hydrogen Taskforce, Mission Innovation, and the Clean Energy Ministerial ("CEM") are among these projects.[9]

Bilateral Agreements and Collaborations with Other Countries

India has struck bilateral agreements with various countries to enhance hydrogen technology partnerships. The India-France Joint Statement on Hydrogen Cooperation,[10] the India-Germany Joint Declaration on Green Hydrogen Partnership,[11] and the India-Japan Memorandum of Understanding ("MoU") on Hydrogen Energy Cooperation[12] are among these accords. These agreements are expected to assist hydrogen mobility technology transfer, knowledge sharing, and joint projects. India is also considering prospective arrangements to provide green hydrogen to the European Union and Singapore, which would provide huge business opportunities for Indian green hydrogen makers.[13]

Case Example: Ladakh

- With the launch of the National Hydrogen Mobility Project ("NHMP") in Ladakh, India has taken a giant step toward green energy. The project is a collaboration between the National Thermal Power Corporation Renewable Energy Ltd ("NTPC REL") and the Union Territory of Ladakh.[14]
- The NHMP aspires to promote a carbon-free economy. NTPC REL, a subsidiary of the NTPC Maharatna PSU, intends to operate five hydrogen buses in Leh, as well as build a solar plant and a green hydrogen generation unit, making it India's first city to execute a green hydrogen-based mobility initiative.
- This project, which is part of India's larger green hydrogen drive under the National Hydrogen Energy Mission ("NHEM"), incorporates government mandates for fertiliser companies and oil refineries to buy green hydrogen, lowering the country's reliance on fossil fuels.

Looking Forward

In the future, regulatory improvements in India will strive to simplify approval processes, harmonise rules, and develop standards for hydrogen mobility. These modifications, when combined with incentives, are likely to generate a favourable climate for hydrogen projects. India's prospects in the

global hydrogen mobility market look positive, thanks to ambitious government ambitions and growing business sector involvement. Factors such as the need to reduce emissions, increased demand for sustainable transportation, and the availability of renewable energy for hydrogen production will drive the rise of hydrogen mobility.

FAQs

What is the significance of hydrogen in India's transportation sector?

Hydrogen is a zero-emission fuel that is a more environmentally friendly alternative to fossil fuels. India's quest for hydrogen mobility corresponds with the need to shift away from traditional fuels and toward cleaner energy sources, which will contribute to sustainability and lower greenhouse gas emissions.

How is India progressing in its hydrogen mobility initiatives?

India has made great advances in hydrogen mobility. The Ladakh effort exemplifies the country's dedication to the National Hydrogen Mobility Project. With ongoing pilot programmes testing hydrogen-powered vehicles, the government's goal is to produce 5 million metric tonnes of green hydrogen annually by 2030.

What recent regulatory developments support hydrogen mobility in India?

The National Hydrogen Policy, 2023, concentrating on hydrogen development, and the Draft Automotive Standard detailing safety standards for hydrogen-powered vehicles are two recent regulatory changes. The Green Hydrogen Policy and Open Access Rules encourage private engagement, whilst the National Green Hydrogen Mission supports hydrogen technology certifications and standards through collaborations with industrial partners.

---

[1] https://egazette.gov.in/WriteReadData/2023/249512.pdf

[2] https://www.un.org/sites/un2.un.org/files/media_gstc/FACT_SHEET_Climate_Change.pdf.

[3] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1937584.

[4] https://mnre.gov.in/national-green-hydrogen-mission/#:~:text=The%20Mission%20will%20identify%20and,hubs%20in%20the%20initial%20phase..

[5] https://static.pib.gov.in/WriteReadData/specificdocs/documents/2023/jan/doc2023110150801.pdf.

[6] https://morth.nic.in/sites/default/files/ASI/15_Draft_AIS_195_DF.pdf.

[7] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1950421.

[8] https://pib.gov.in/PressReleasePage.aspx?PRID=1923863.

[9] https://cleanenergyministerial.org/content/uploads/2023/07/cem14-outcomes-announcements.pdf.

[10] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1822837.

[11] https://india.diplo.de/blob/2524930/6a4f226c3e696417d110e0651ea26d77/igc-joint-declaration-2022-data.pdf.

[12] https://energy.economictimes.indiatimes.com/news/renewable/acme-japans-ihi-sign-mou-to-explore-green-hydrogen-and-green-ammonia-businesses/98114847.

[13] https://www.constructionworld.in/energy-infrastructure/power-and-renewable-en

ergy/india-to-supply-11mmt-green-hydrogen-to-eu--singapore/42397#:~:text=India%20has%20considered%20the%20possibility,these%20Indian%20clean%20energy%20projects..

[14] https://solarquarter.com/2023/08/19/ntpcs-green-hydrogen-mobility-project-takes-flight-indias-first-hydrogen-bus-embarks-on-trial-run-in-leh/.

King Stubb & Kasiva,
Advocates & Attorneys
Click Here to Get in Touch
New Delhi | Mumbai | Bangalore | Chennai | Hyderabad | Mangalore | Pune | Kochi
Tel: +91 11 41032969 | Email: info@ksandk.com