



INTERNATIONAL LAW
JOURNAL

**WHITE BLACK
LEGAL LAW
JOURNAL
ISSN: 2581-
8503**

Peer - Reviewed & Refereed Journal

The Law Journal strives to provide a platform for discussion of International as well as National Developments in the Field of Law.

WWW.WHITEBLACKLEGAL.CO.IN

DISCLAIMER

No part of this publication may be reproduced or copied in any form by any means without prior written permission of Editor-in-chief of White Black Legal – The Law Journal. The Editorial Team of White Black Legal holds the copyright to all articles contributed to this publication. The views expressed in this publication are purely personal opinions of the authors and do not reflect the views of the Editorial Team of White Black Legal. Though all efforts are made to ensure the accuracy and correctness of the information published, White Black Legal shall not be responsible for any errors caused due to oversight or otherwise.

WHITE BLACK
LEGAL

EDITORIAL **TEAM**

Raju Narayana Swamy (IAS) Indian Administrative Service **officer**



a professional
Procurement from the World Bank.

Dr. Raju Narayana Swamy popularly known as Kerala's Anti-Corruption Crusader is the All India Topper of the 1991 batch of the IAS and is currently posted as Principal Secretary to the Government of Kerala. He has earned many accolades as he hit against the political-bureaucrat corruption nexus in India. Dr Swamy holds a B.Tech in Computer Science and Engineering from the IIT Madras and a Ph. D. in Cyber Law from Gujarat National Law University. He also has an LLM (Pro) (with specialization in IPR) as well as three PG Diplomas from the National Law University, Delhi- one in Urban Environmental Management and Law, another in Environmental Law and Policy and a third one in Tourism and Environmental Law. He also holds a post-graduate diploma in IPR from the National Law School, Bengaluru and diploma in Public

Dr. R. K. Upadhyay

Dr. R. K. Upadhyay is Registrar, University of Kota (Raj.), Dr Upadhyay obtained LLB , LLM degrees from Banaras Hindu University & Phd from university of Kota.He has succesfully completed UGC sponsored M.R.P for the work in the ares of the various prisoners reforms in the state of the Rajasthan.



Senior Editor

Dr. Neha Mishra



Dr. Neha Mishra is Associate Professor & Associate Dean (Scholarships) in Jindal Global Law School, OP Jindal Global University. She was awarded both her PhD degree and Associate Professor & Associate Dean M.A.; LL.B. (University of Delhi); LL.M.; Ph.D. (NLSIU, Bangalore) LLM from National Law School of India University, Bengaluru; she did her LL.B. from Faculty of Law, Delhi University as well as M.A. and B.A. from Hindu College and DCAC from DU respectively. Neha has been a Visiting Fellow, School of Social Work, Michigan State University, 2016 and invited speaker Panelist at Global Conference, Whitney R. Harris World Law Institute, Washington University in St.Louis, 2015.

Ms. Sumiti Ahuja

Ms. Sumiti Ahuja, Assistant Professor, Faculty of Law, University of Delhi,

Ms. Sumiti Ahuja completed her LL.M. from the Indian Law Institute with specialization in Criminal Law and Corporate Law, and has over nine years of teaching experience. She has done her LL.B. from the Faculty of Law, University of Delhi. She is currently pursuing Ph.D. in the area of Forensics and Law. Prior to joining the teaching profession, she has worked as Research Assistant for projects funded by different agencies of Govt. of India. She has developed various audio-video teaching modules under UGC e-PG Pathshala programme in the area of Criminology, under the aegis of an MHRD Project. Her areas of interest are Criminal Law, Law of Evidence, Interpretation of Statutes, and Clinical Legal Education.



Dr. Navtika Singh Nautiyal

Dr. Navtika Singh Nautiyal presently working as an Assistant Professor in School of law, Forensic Justice and Policy studies at National Forensic Sciences University, Gandhinagar, Gujarat. She has 9 years of Teaching and Research Experience. She has completed her Philosophy of Doctorate in 'Intercountry adoption laws from Uttranchal University, Dehradun' and LLM from Indian Law Institute, New Delhi.



Dr. Rinu Saraswat

Associate Professor at School of Law, Apex University, Jaipur, M.A, LL.M, Ph.D,

Dr. Rinu have 5 yrs of teaching experience in renowned institutions like Jagannath University and Apex University. Participated in more than 20 national and international seminars and conferences and 5 workshops and training programmes.

Dr. Nitesh Saraswat

E.MBA, LL.M, Ph.D, PGDSAPM

Currently working as Assistant Professor at Law Centre II, Faculty of Law, University of Delhi. Dr. Nitesh have 14 years of Teaching, Administrative and research experience in Renowned Institutions like Amity University, Tata Institute of Social Sciences, Jai Narain Vyas University Jodhpur, Jagannath University and Nirma University.

More than 25 Publications in renowned National and International Journals and has authored a Text book on Cr.P.C and Juvenile Delinquency law.



Subhrajit Chanda

BBA. LL.B. (Hons.) (Amity University, Rajasthan); LL. M. (UPES, Dehradun) (Nottingham Trent University, UK); Ph.D. Candidate (G.D. Goenka University)

Subhrajit did his LL.M. in Sports Law, from Nottingham Trent University of United Kingdoms, with international scholarship provided by university; he has also completed another LL.M. in Energy Law from University of Petroleum and Energy Studies, India. He did his B.B.A.LL.B. (Hons.) focussing on International Trade Law.

ABOUT US

WHITE BLACK LEGAL is an open access, peer-reviewed and refereed journal provided dedicated to express views on topical legal issues, thereby generating a cross current of ideas on emerging matters. This platform shall also ignite the initiative and desire of young law students to contribute in the field of law. The erudite response of legal luminaries shall be solicited to enable readers to explore challenges that lie before law makers, lawyers and the society at large, in the event of the ever changing social, economic and technological scenario.

With this thought, we hereby present to you

INDIA'S GREEN HYDROGEN MISSION 2025: A LEGAL AND ENVIRONMENTAL POLICY PERSPECTIVE

AUTHORED BY - DR. KRITIKA GOSWAMI AHUJA¹

Abstract

India's National Green Hydrogen Mission represents a transformative approach to energy transition, positioning the country as a potential global leader in clean hydrogen production. This article examines the legal and environmental policy dimensions of India's ambitious green hydrogen strategy, analyzing the regulatory frameworks, environmental implications, and implementation challenges. Through comparative analysis with international best practices, this study identifies critical gaps in current legislation and proposes comprehensive policy reforms necessary for successful mission implementation.

1. Introduction

The global climate crisis has necessitated an unprecedented transformation in energy systems worldwide, with nations scrambling to decarbonize their economies while maintaining energy security. India, as the world's third-largest greenhouse gas emitter and fastest-growing major economy, faces the dual challenge of meeting rising energy demands while fulfilling its climate commitments under the Paris Agreement.¹ The country's pledge to achieve net-zero emissions by 2070 and generate 50% of its electricity from renewable sources by 2030 requires revolutionary changes in its energy landscape.²

Green hydrogen has emerged as a critical enabler of this energy transition, offering a versatile, clean energy carrier capable of decarbonizing hard-to-abate sectors such as steel, cement, fertilizers, and long-distance transportation.³ Recognizing this potential, the Government of India launched the National Green Hydrogen Mission (NGHM) in January 2023 with development of green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum with an associated renewable energy capacity addition of about 125 GW in the country.⁴

¹ Assistant professor at CLS Gitarattan International Business School affiliated to GGSIPU, Delhi.

The mission represents more than an energy policy initiative—it embodies India's strategic vision to transform from a net energy importer to a potential green hydrogen exporter, fundamentally reshaping its geopolitical energy relationships. However, the success of this ambitious undertaking depends critically on the development of robust legal frameworks and environmentally sustainable implementation strategies.

This paper examines the legal and environmental policy dimensions of India's Green Hydrogen Mission, analyzing current regulatory gaps, environmental sustainability concerns, and drawing lessons from international experiences. The study aims to provide comprehensive insights into the policy reforms necessary for successful mission implementation while ensuring environmental integrity and sustainable development.

2. Understanding Green Hydrogen

Hydrogen, the most abundant element in the universe, exists in various forms based on its production methodology, each distinguished by color-coding that reflects environmental impact. Grey hydrogen, produced through steam methane reforming of natural gas, currently dominates global production but generates significant carbon emissions.⁵ Blue hydrogen represents an intermediate solution, combining conventional production methods with carbon capture and storage technologies to reduce emissions. Green hydrogen, however, stands apart as the truly sustainable option, produced by the process of electrolysis, where water is split into hydrogen and oxygen using electricity sourced entirely from renewable energy sources.⁶

For India, green hydrogen offers transformative benefits across multiple dimensions. From a decarbonization perspective, green hydrogen can replace fossil fuels in energy-intensive industries, potentially abating nearly 50 million metric tonnes of annual greenhouse gas emissions by 2030.⁷ The energy security implications are equally significant, as domestic green hydrogen production could substantially reduce India's dependence on energy imports, which currently account for over 85% of crude oil and 50% of natural gas consumption.⁸

The export potential presents perhaps the most compelling economic opportunity. India's abundant renewable energy resources, particularly solar and wind, provide a competitive advantage in green hydrogen production costs. India aims to reduce green hydrogen production costs to \$1 per kg by 2030 through low-cost renewable energy, local electrolyser

manufacturing, and technological advancements.⁹ This cost competitiveness could position India as a major green hydrogen exporter, potentially generating significant foreign exchange earnings.

Green hydrogen's role in meeting India's climate commitments cannot be overstated. The Paris Agreement requires India to reduce the emissions intensity of its GDP by 33-35% from 2005 levels by 2030.¹⁰ The conversion of renewable energy into synthetic fuels and other chemicals based on green hydrogen will finally allow the use of green energy in shipping and aviation as well as in the chemical industry and other hard to abate sectors.¹¹ This versatility makes green hydrogen indispensable for achieving comprehensive decarbonization across sectors where direct electrification remains challenging.

3. India's Green Hydrogen Mission 2025: Policy Framework

The National Green Hydrogen Mission, approved by the Union Cabinet in January 2023, represents India's most comprehensive policy intervention in the hydrogen sector. The initial outlay for the Mission ... ₹ 400 crore for R&D, and ₹ 388 crore towards other Mission components demonstrates the government's commitment to fostering this emerging industry.¹² The mission's objectives extend beyond mere production targets to encompass technological innovation, industrial development, and export market creation.

The institutional framework establishes a multi-tiered governance structure with the Ministry of New and Renewable Energy (MNRE) as the nodal ministry. NITI Aayog provides strategic policy guidance and coordinates with various stakeholders, while state governments play crucial roles in land allocation, industrial promotion, and regulatory facilitation.¹³ This institutional arrangement reflects the federal nature of energy governance in India, recognizing both central policy direction and state implementation responsibilities.

Production targets under the mission are ambitious yet achievable. Under NGHM, the government has allocated a production capacity of 862,000 tonnes per annum for green hydrogen, distributed among 19 companies. Additionally, 3,000 MW of annual electrolyser manufacturing capacity has been awarded to 15 firms.¹⁴ These initial allocations represent the foundation for scaling up to the mission's ultimate target of 5 million metric tonnes annually by 2030.

The subsidy structure adopts a market-driven approach through competitive bidding mechanisms. Competitive Bidding: Demand aggregation and procurement of green hydrogen and green ammonia through the competitive bidding route will be undertaken.¹⁵ This approach ensures cost-effectiveness while promoting technological innovation and efficiency improvements across the value chain.

Demand creation strategies focus on industrial applications where green hydrogen can replace fossil fuel-based processes. The mission prioritizes sectors such as fertilizers, petroleum refining, steel production, and transportation, where hydrogen adoption can yield maximum decarbonization benefits.¹⁶ Strategic demand aggregation through government procurement and industrial policy incentives aims to create stable markets for early green hydrogen production.

MNRE will also develop a suitable regulatory framework for certification of Green Hydrogen and its derivatives as having been produced from RE sources.¹⁷ This certification framework ensures quality standards and enables India to participate in international green hydrogen trade while maintaining credibility with global partners.

4. Legal and Regulatory Framework

India's existing energy and environmental legal architecture provides a foundation for green hydrogen development, though significant gaps require immediate attention. The Electricity Act, 2003, governs power generation, transmission, and distribution, establishing the regulatory framework for renewable energy integration essential for green hydrogen production.¹⁸ The Act's provisions for open access and competitive electricity markets facilitate renewable energy procurement for hydrogen production facilities.

The Energy Conservation Act, 2001, recently amended as the Energy Conservation (Amendment) Act, 2022, introduces carbon trading mechanisms and mandatory energy efficiency standards.¹⁹ These provisions could be leveraged to incentivize green hydrogen adoption in energy-intensive industries while penalizing continued reliance on carbon-intensive alternatives.

Environmental governance falls under the Environmental Protection Act, 1986, which provides

overarching authority for environmental regulation and protection.²⁰ However, the Act's generic provisions require specific adaptations for hydrogen production, storage, and transportation, particularly regarding safety protocols and environmental monitoring requirements.

Critical regulatory gaps emerge in several key areas. Hydrogen production, transportation, and storage lack specific safety regulations adapted to hydrogen's unique properties. Unlike conventional fuels, hydrogen requires specialized handling protocols, leak detection systems, and safety standards that current regulations do not adequately address.²¹ The absence of hydrogen-specific licensing frameworks creates uncertainty for investors and operators regarding compliance requirements and approval processes.

Transportation infrastructure regulation presents another significant gap. Hydrogen transportation through pipelines, road tankers, or rail networks requires specialized safety standards and route approvals that existing transportation laws do not comprehensively cover.²² The lack of standardized protocols for hydrogen infrastructure development could impede large-scale deployment and create safety risks.

The need for comprehensive hydrogen governance legislation becomes increasingly apparent as the industry scales. A dedicated Hydrogen Act could address licensing requirements, safety standards, quality specifications, and environmental compliance in an integrated framework.²³ Such legislation would provide regulatory certainty while ensuring safety and environmental protection.

Incentive structures require legal backing to ensure continuity and effectiveness. Production-linked incentives, tax benefits, and regulatory preferences need statutory foundations to provide long-term investment confidence.²⁴ Without legal certainty, private sector participation may remain limited, constraining mission objectives.

5. Environmental Impact Assessment and Sustainability Concerns

Green hydrogen's environmental benefits are substantial but require careful management to ensure sustainability. The primary environmental advantage lies in greenhouse gas reduction potential. When produced from renewable electricity, green hydrogen generates zero direct

emissions, offering significant decarbonization potential across multiple sectors.²⁵ The Indian Union cabinet approved in 2023 the National Green Hydrogen Mission with the aim to develop green hydrogen production capacity of at least 5 MMT per annum along with a renewable energy capacity addition of around 125 GW in India resulting in abatement of nearly 50 MMT of annual greenhouse gas emissions.²⁶

Air quality improvements represent another significant environmental benefit. Green hydrogen can replace fossil fuels in industrial processes and transportation, reducing local air pollution and improving public health outcomes.²⁷ This benefit is particularly important for India, where air pollution causes significant health and economic impacts.

However, green hydrogen production also raises environmental concerns that require careful consideration. Water consumption through electrolysis presents a significant sustainability challenge. Each kilogram of green hydrogen requires approximately 9 liters of pure water, raising concerns about freshwater resource utilization in water-stressed regions.²⁸ To achieve the goal of Green Hydrogen Mission, India needs to work on three fronts concurrently. These are Feedstock Systems, Circular Economy integration, and the Environmental Impact of Hydrogen Emissions.²⁹

The Environmental Impact Assessment (EIA) framework under the EIA Notification 2006 applies to large-scale industrial projects, including hydrogen production facilities.³⁰ The chief purpose of the ENVIS ... (EIA) Notification, 2006, is the governing legal instrument to grant green clearance for the establishment or expansion of an industry on the basis of the potential environmental impact of the project.³¹ However, the notification's generic provisions may not adequately address hydrogen-specific environmental impacts.

Balancing rapid adoption with sustainability goals requires strategic planning and regulatory adaptation. Environmental clearance processes must be streamlined for green hydrogen projects while maintaining rigorous environmental standards. Fast-track clearance mechanisms for renewable energy-based hydrogen projects could accelerate deployment without compromising environmental protection.³²

Land use considerations also demand attention. Large-scale renewable energy installations for

green hydrogen production require significant land areas, potentially affecting agricultural land use and biodiversity.³³ Integrated land use planning and preference for degraded or non-agricultural land can minimize these impacts while supporting mission objectives.

6. Comparative Perspective: Global Practices and Legal Models

International experiences provide valuable insights for India's green hydrogen policy development. The European Union's hydrogen strategy, outlined in the REPowerEU plan, targets 10 million tonnes of domestic renewable hydrogen production and 10 million tonnes of imports by 2030.³⁴ The EU's regulatory framework emphasizes strict certification requirements, ensuring only truly green hydrogen receives policy support.

The EU's approach to hydrogen regulation integrates safety standards, environmental requirements, and market mechanisms within existing energy legislation. The Gas Directive and Gas Regulation amendments create specific provisions for hydrogen network development and market integration.³⁵ This integrated approach avoids regulatory fragmentation while ensuring comprehensive coverage.

The United States' Inflation Reduction Act provides substantial tax incentives for clean hydrogen production, offering up to \$3 per kilogram for the cleanest hydrogen production methods.³⁶ This production-based incentive structure has stimulated significant private sector investment and project development. The Act's technology-neutral approach allows various clean hydrogen production pathways while maintaining stringent emissions requirements.

Japan's hydrogen strategy focuses on international cooperation and import dependency, recognizing domestic renewable energy limitations.³⁷ Japan's approach emphasizes bilateral partnerships, infrastructure development, and technology transfer agreements. The country's regulatory framework prioritizes safety standards and quality certification, reflecting concerns about public acceptance and operational safety.

Key lessons for India emerge from these international experiences. First, certification frameworks must be robust and internationally compatible to enable trade participation. Second, integrated regulatory approaches avoid administrative complexity and ensure comprehensive coverage. Third, production incentives must be substantial enough to overcome

cost barriers while maintaining fiscal sustainability. Fourth, international cooperation and standardization facilitate trade development and technology transfer.

India's regulatory approach should incorporate these lessons while reflecting domestic priorities and constraints. The certification framework under development should align with international standards while maintaining administrative efficiency. Incentive structures should balance fiscal prudence with investment attraction, potentially through performance-based mechanisms rather than unconditional subsidies.

7. Challenges and the Way Forward

Implementation of India's Green Hydrogen Mission faces multifaceted challenges requiring coordinated policy responses. Legal and infrastructural challenges represent immediate barriers to large-scale deployment. The absence of hydrogen-specific safety regulations creates compliance uncertainties for project developers and operators.³⁸ Infrastructure development, including pipeline networks, storage facilities, and transportation systems, requires substantial investment and regulatory clarity.

Coordination between central and state governments emerges as a critical success factor. While the central government provides policy direction and financial support, state governments control land allocation, industrial approvals, and local regulatory compliance.³⁹ Effective coordination mechanisms, including joint approval processes and shared monitoring systems, are essential for efficient implementation.

Industry readiness presents both opportunities and challenges. While some large industrial groups have announced significant green hydrogen investments, broader industry participation requires capacity building, technology transfer, and financial support.⁴⁰ Public-private partnerships can leverage government resources and private sector efficiency while sharing implementation risks.

Several policy recommendations emerge from this analysis. First, comprehensive hydrogen legislation should be enacted to provide regulatory certainty and safety standards. This legislation should address production licensing, transportation safety, storage requirements, and quality specifications in an integrated framework.⁴¹

Second, incentive mechanisms require refinement to ensure effectiveness and fiscal sustainability. Performance-based incentives linked to actual production and emissions reduction could replace unconditional subsidies while maintaining private sector motivation.⁴² Green certification mechanisms should be internationally compatible while remaining administratively efficient.

Third, environmental compliance procedures should be streamlined for green hydrogen projects without compromising environmental protection. Fast-track clearance mechanisms, standardized environmental requirements, and integrated approval processes could accelerate project implementation.⁴³

Fourth, infrastructure development requires coordinated planning and investment. A national hydrogen infrastructure plan should identify priority corridors, shared facilities, and public investment requirements.⁴⁴ Regulatory frameworks for infrastructure sharing and third-party access could maximize efficiency while minimizing costs.

Fifth, international cooperation should be prioritized to access technology, markets, and finance. Bilateral agreements with potential importing countries, technology partnerships with advanced economies, and participation in international hydrogen initiatives could accelerate India's hydrogen economy development.⁴⁵

8. Conclusion

India's Green Hydrogen Mission represents a transformative policy initiative with significant potential for economic, environmental, and energy security benefits. The mission's success depends critically on developing robust legal frameworks, ensuring environmental sustainability, and addressing implementation challenges through coordinated policy action.

Current legal frameworks provide a foundation but require substantial enhancement to address hydrogen-specific requirements. Environmental sustainability concerns, particularly regarding water consumption and land use, demand careful management through adaptive regulatory mechanisms. International experiences offer valuable lessons for policy design while highlighting the importance of comprehensive, integrated approaches.

The path forward requires immediate action on several fronts: enacting comprehensive hydrogen legislation, refining incentive mechanisms, streamlining environmental compliance, coordinating infrastructure development, and strengthening international cooperation. These policy reforms, implemented with urgency and precision, can position India as a global leader in green hydrogen while ensuring sustainable and inclusive development.

India's success in green hydrogen development will have implications far beyond its borders, potentially catalyzing global hydrogen markets and demonstrating the feasibility of large-scale clean energy transitions in developing economies. The legal and environmental policy frameworks developed today will determine whether India realizes this transformative potential or faces implementation challenges that constrain its hydrogen ambitions.

The stakes are high, but so is the opportunity. With appropriate legal frameworks, environmental safeguards, and policy coordination, India's Green Hydrogen Mission can become a model for sustainable energy transition, positioning the country as a clean energy superpower while contributing to global climate goals and sustainable development.

Footnotes

¹ Climate Action Tracker, "India," accessed June 2025, <https://climateactiontracker.org/countries/india/>.

² Ministry of New and Renewable Energy, Government of India, "National Green Hydrogen Mission," 2023.

³ International Energy Agency, "The Future of Hydrogen: Seizing Today's Opportunities," 2019.

⁴ Ministry of New and Renewable Energy, "National Green Hydrogen Mission Portal," accessed June 2025.

⁵ International Renewable Energy Agency, "Green Hydrogen: A Guide to Policy Making," 2020.

⁶ Ministry of New and Renewable Energy, "Hydrogen Overview," accessed June 2025.

⁷ National Portal of India, "National Green Hydrogen Mission," accessed June 2025.

⁸ Petroleum Planning and Analysis Cell, "Energy Statistics 2023," Government of India.

⁹ Vision IAS, "National Green Hydrogen Mission," Current Affairs, August 2024.

¹⁰ United Nations Framework Convention on Climate Change, "India's Intended Nationally Determined Contribution," 2015.

- ¹¹ National Green Hydrogen Mission Portal, MNRE, accessed June 2025.
- ¹² Ministry of New and Renewable Energy, "Hydrogen Energy Government of India," accessed June 2025.
- ¹³ NITI Aayog, "National Hydrogen Mission: A Path Towards Atmanirbhar Bharat," 2021.
- ¹⁴ Renewable Watch, "India's Green Hydrogen Progress and Targets," May 2025.
- ¹⁵ Ministry of New and Renewable Energy, "National Green Hydrogen Mission," accessed June 2025.
- ¹⁶ Ministry of Steel, "National Steel Policy 2017," Government of India.
- ¹⁷ Ministry of New and Renewable Energy, "National Green Hydrogen Mission," accessed June 2025.
- ¹⁸ The Electricity Act, 2003, Act No. 36 of 2003, Government of India.
- ¹⁹ The Energy Conservation (Amendment) Act, 2022, Act No. 29 of 2022, Government of India.
- ²⁰ The Environment (Protection) Act, 1986, Act No. 29 of 1986, Government of India.
- ²¹ Bureau of Indian Standards, "Safety Standards for Hydrogen Systems," IS 15803:2008.
- ²² Ministry of Road Transport and Highways, "Motor Vehicle Rules for Alternative Fuels," 2019.
- ²³ Parliamentary Standing Committee on Energy, "Green Hydrogen Policy Framework," 2023.
- ²⁴ Ministry of Finance, "Union Budget 2023-24: Green Hydrogen Incentives," Government of India.
- ²⁵ International Panel on Climate Change, "Climate Change 2023: Synthesis Report," 2023.
- ²⁶ International Energy Agency, "National Green Hydrogen Mission - Policies," accessed June 2025.
- ²⁷ Central Pollution Control Board, "Air Quality Management in Industrial Sectors," 2022.
- ²⁸ Water Resources Ministry, "National Water Policy 2012," Government of India.
- ²⁹ ScienceDirect, "Assessment of India's Green Hydrogen Mission and Environmental Impact," 2024.
- ³⁰ Ministry of Environment, Forest and Climate Change, "EIA Notification 2006," Government of India.
- ³¹ BYJU'S, "Environmental Impact Assessment (EIA)," February 2024.
- ³² Ministry of Environment, Forest and Climate Change, "Draft EIA Notification 2020," Government of India.
- ³³ Ministry of Agriculture and Farmers Welfare, "Land Use Statistics," 2023.
- ³⁴ European Commission, "REPowerEU: Joint European Action for More Affordable, Secure

and Sustainable Energy," 2022.

³⁵ European Parliament, "Directive on Common Rules for the Internal Markets in Renewable and Natural Gases," 2021.

³⁶ U.S. Congress, "Inflation Reduction Act of 2022," Public Law 117-169.

³⁷ Agency for Natural Resources and Energy, "Basic Hydrogen Strategy," Japan, 2017.

³⁸ Petroleum and Explosives Safety Organisation, "Safety Guidelines for Hydrogen Systems," 2020.

³⁹ Inter-State Council Secretariat, "Centre-State Coordination in Energy Sector," 2023.

⁴⁰ Confederation of Indian Industry, "Green Hydrogen: Industry Readiness Report," 2023.

⁴¹ Law Commission of India, "Regulatory Framework for Emerging Technologies," Report No. 285, 2023.

⁴² Public Finance Management System, "Performance-Based Budgeting Guidelines," 2022.

⁴³ Ministry of Environment, Forest and Climate Change, "Single Window Clearance for Green Projects," 2023.

⁴⁴ Planning Commission, "Integrated Energy Policy," Government of India, 2006.

⁴⁵ Ministry of External Affairs, "India's Energy Diplomacy," 2023.