

Uttar Pradesh Green Hydrogen Policy 2023 (Draft)



Note – Dear Stakeholders, kindly send your comments/suggestions in the draft policy at Email Id - ho_rak@rediffmail.com, or dirupneda@gmail.com, Mob-9415609018

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1. Preamble

Govt of Uttar Pradesh is committed to promote clean and green sources of energy in view of global warming and climate change. UP state is an always receptive new innovative competing technology by way of taking forward administrative and financial measures to promote hydrogen and comparable options. Transition of green hydrogen is one of the major requirements for reduction of emissions and will become most suitable energy source to fulfil India's nationally determined contribution (NDC).

The Government of UP proposes the 'Uttar Pradesh Green Hydrogen Policy 2023' to promote growth and employment in the state while prioritising decarbonisation and the state's contribution to India's climate goals. The policy shall promote green hydrogen/ammonia production, market creation, and demand aggregation. The policy shall ensure a conducive ecosystem in the state to support its ambition to be a leading green hydrogen/ammonia economy.

2. Definitions-

- i. **"Banking of power"**: Banking of power is the process under which a generating plant supplies power to the grid not with the intent of selling it to either a third party or to a licensee but with the intention of exercising its eligibility to draw back this power from the grid for its own use as per the conditions provided in these regulations.
- ii. **"Energy Transition"**: Energy transition is an energy paradigm revolution. In the case of the current energy transition, this means the transition from non-renewable energy sources to renewable sources.
- iii. **"Net Zero"**: Net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere by oceans and forests, for instance.
- iv. **"Green Hydrogen"**: Green Hydrogen are produced by the process of electrolysis of water using renewable energy or banked renewable energy. Biomass-based hydrogen, produced using parolysis of biogas or other biomass products, is also classified as green hydrogen.
- v. **"Green Ammonia"**: Green Ammonia is a derivative of green hydrogen and nitrogen, where the process is also completely carbon-free renewable-based.
- vi. **"Grey Hydrogen"**: Grey hydrogen is produced from natural gas, or methane, using steam methane reformation or auto-thermal reformation but without capturing the greenhouse gases made in the process.
- vii. **"Hydrogen Valley"**: A "Hydrogen Valley" is a geographical area – a city, a region, an island, or an industrial cluster – where several hydrogen applications are combined into an integrated hydrogen ecosystem that consumes a significant amount of hydrogen, improving the economics behind the project.¹

3. Policy Overview

3.1. Title of the policy and operative period-

This policy shall be known as the 'Uttar Pradesh Green Hydrogen Policy 2023' (hereafter 'Policy'). The policy shall come into effect on the date of its notification. It shall remain valid and

operational for the next five years ('Operative Period') or until the government amends this policy or notifies a new policy.

3.2. Scope of the policy

The policy shall support production, consumption, market creation, and other elements across the green hydrogen/ammonia value chain. Green hydrogen has immense potential for uptake in Nitrogenous (N-) Fertilisers, Chemicals, Refineries, Heavy-duty vehicles, Energy storage, Iron & Steel, City Gas Distribution (CGD) and Glass Manufacturing sectors. For building the necessary momentum on policy actions towards a green hydrogen economy in UP, the initial emphasises shall be on Nitrogenous (N-) Fertilisers and Refinery. The policy shall also cover other emerging industries and applications of green hydrogen, aligning with the policies and mission of the Government of India.

3.3. Vision and Objectives

The vision of the policy is to make Uttar Pradesh a leading green hydrogen/ammonia economy in India. It aims to provide a conducive green hydrogen eco system for new and existing investments, promote inclusive growth, support research & innovation, and implement solutions for the holistic and sustainable development of the state.

Objectives:

1. Implement and support the Green Hydrogen Mission and green hydrogen-related policies of Government of India.
2. Enable ease of doing business for setting up and promoting investments in green hydrogen/ammonia production facilities and green hydrogen-based products manufacturing units.
3. Encourage research & innovation in green hydrogen/ammonia production and consumption technologies to reduce the cost of green hydrogen/ammonia to competitive levels.
4. Advance infrastructure development, such as pipeline networks, renewable (RE) capacities, etc., across the green hydrogen/ammonia value chain to promote the emergence of new manufacturing units and hydrogen valleys. Stimulate green hydrogen/ammonia market creation by providing fiscal and non-fiscal incentives.
5. Develop a green hydrogen/ammonia-ready workforce and generate employment opportunities through a skill development programme.
6. Reduce green hydrogen cost to 2.0 USD/Kg in the policy period and make efforts to decline it further to 1 USD/Kg in the long term.

3.4. Targets

Uttar Pradesh shall be a leading green hydrogen/ammonia producer with 0.5 million metric ton per annum (MMTPA) by 2028 and a 100 percent green hydrogen/ammonia consuming state by 2030. The following concepts shall be adopted to achieve the targets in the policy :

3.4.1 To promote use of green hydrogen in the sectors already using hydrogen/ammonia under the mandate determined by National Green Hydrogen Mission and Green Hydrogen policy of Govt of India.

3.4.2 To establish two Centre of Excellence (COE) to implement Research and Development (R&D) and Innovation activities.

3.4.3 The current hydrogen demand in the state stands at around 0.9 million tonnes per annum (Mtpa), primarily used in the N-fertilisers, with some demand in the refinery sector. To harness the above-described opportunity, State shall boost its green hydrogen/ammonia production and uptake by improving the ease of doing business and advancing industrial infrastructure for a green hydrogen/ammonia ecosystem.

4. Improving ease of doing business

The Government of UP has ongoing initiatives to facilitate investments and businesses in the state. The initiatives range from simplifying procedures to undertaking regulatory reforms for ease of doing business. UP shall undertake the following interventions to facilitate existing and new green hydrogen/ammonia investments:

1. UP Govt shall provide the facility of single window clearance platform to prospective investors and entrepreneurs to get online clearances/NOCs from the concerned departments with ease. Single window clearance platform would support new green hydrogen/ammonia investment projects and existing units to support seamless expansion.
2. The government of UP shall undertake the creation of a database on the land bank and water availability and make that available to potential investors.

5. Development of green hydrogen/ammonia ecosystem

The green hydrogen/ammonia ecosystem development will need infrastructure advancements across the value chain. The policy shall support infrastructure development by undertaking the following interventions:

1. Promote blending of green hydrogen in various sectors including city gas distribution on a case-to-case basis. The blending guidelines of Government of India shall apply.
2. Promote carbon dioxide recovery units to usage of carbon producing from bio gas plants and other industries.
3. Develop green hydrogen/ammonia industrial clusters/hubs/valleys in the state. The clusters/hub/valley model essentially promotes green hydrogen/ammonia production around consumption centres.
4. Provide financial support for technology advancement and adoption, such as electrolyzers, carbon dioxide recovery units, etc., to promote a green hydrogen/ammonia ecosystem.
5. Promote the development of hydrogen-ready pipelines to transport green hydrogen/ammonia to feasible distances.
6. Expand adequate water supply and electricity transmission infrastructure and demand aggregation across the state to facilitate the development of green hydrogen/ammonia production units.
7. Provide adequate land at concessional rates for green hydrogen/ammonia production or renewable energy production units planned for green hydrogen, along with the necessary regulatory support in case of the availability of government-owned land.
8. To provide Right of Way (RoW) and to facilitate transportation from production units to consumption centres of Green Hydrogen/ Ammonia and its derivatives.

6. Driving research & development (R&D) and innovations:

- I. The cost of green hydrogen is the major constraint in its adoption. There is a need to encourage innovation to reduce cost over time. Challenges exist related to encouraging demand for green hydrogen in new emerging applications, indigenous manufacturing of electrolyzers, the system's efficiency, transportation, storage, etc. Innovation led by investments in research and development shall help the state and sector overcome existing challenges.
- II. The policy shall support R&D and innovation across the green hydrogen/ammonia value chain through the centre of excellence (CoE) with different academic and research institutions and industries to facilitate the development of a sustainable green hydrogen/ammonia ecosystem. One-time grant of up to 30 percent of the cost incurred, subject to a maximum of Rs 5 crores shall be provided for establishment of CoEs after approval of the state-level committee based on the quality and usefulness of the project.

7. UPNEDA as Nodal Agency:

UP New and Renewable Energy Development Agency (UPNEDA) shall act as nodal agency for implementation of this policy. Nodal agency shall work to fulfil the targets of the policy by providing fiscal & non-fiscal incentives and through facilitation to developers.

8. Fiscal incentives

Fiscal incentives presented in Para 12.1 and 12.3 under "Uttar Pradesh Industrial Investment and Employment Promotion policy 2022", shall be applicable in this policy. Incentives shall be available to projects after setting up of notification of policy.

9- Availability of Land and incentives:

The incentives shall apply if the project is for green hydrogen/ammonia production, consumption, or other elements such as storage or transportation. The incentives shall be provided as follows –

- a) Govt revenue land will be made available on lease for thirty years to PSUs/Govt joint ventures @Rs 1 per acre per annum. This land will be non-transferable and if within three years of allocation land is not used for green hydrogen project i.e. work is not initiated then land will be taken back mandatorily.
- b) Govt revenue land will be made available on lease for thirty years to private entities @ Rs 15000 per acre per annum for setting up green hydrogen project, subject to availability of land. This land will be non-transferable and if within three years of allocation land is not used for green hydrogen project i.e. work is not initiated then land will be taken back mandatorily.
- c) 100 percent exemption from payment of land use conversion charges.
- d) 100 percent exemption from payment of stamp duty on land purchased or leased for Green Hydrogen projects.

10. Availability of Water

UP Irrigation and water resources department will allocate required quantity of water from nearest available source for green hydrogen and renewable energy plants subject to availability of water. Developer will intimate estimated water requirement to concerned department along with details of water consumption and proposed source of water.

11. Operational incentives:

Energy and other operational costs are significant in green hydrogen/ammonia production costs. Central government incentives for green hydrogen/ammonia production shall apply to the state. The policy shall provide the following incentives to reduce the operating cost further and make green hydrogen/ammonia more competitive:

- a) The incentives mentioned below shall apply to renewable energy generation provided for producing green hydrogen/ammonia. The initiatives mentioned below shall apply for the first 10 years from the date of commencement of commercial production of the projects.
 - i. 50 percent exemption from intra-state wheeling/transmission charges.
 - ii. 100 percent exemption from inter-state wheeling/transmission charges
 - iii. 100 percent exemption from cross-subsidy surcharge.
- b) Allowing up to 100% banking of energy for a period of 30 days for renewable energy to be used to produce green hydrogen/ammonia in the state. Banking facility & settlement shall be applicable for the projects becoming operational in the policy period for 25 years or life of project whichever is earlier.
- c) Allowing 100 percent exemption from electricity duty for a period 10 years for renewable energy to be used to produce green hydrogen/ammonia in the state.
- d) The Renewable Energy consumed by the developer partly through open access from Uttar Pradesh or outside state and partly through DISCOM, in that case demand charges on energy consumed from DISCOM shall be applicable as per CRE Regulation of UPERC.
- e) Priority allocation of transmission system shall be provided to renewable energy projects used for green hydrogen production.
- f) Renewable energy consumed for the production of green hydrogen/green ammonia shall count towards RPO compliance of the consuming entity. The renewable energy consumed beyond obligation of the producer shall count towards RPO compliance of the DISCOM in whose area the project is located.

12. Incentives from Govt of India (GOI) –

The incentives announced by the GOI from time to time for green Hydrogen/Ammonia projects shall be available to developers.

12.1 Green Hydrogen project shall be exempted from environment NOC

12.2 Green Hydrogen project shall be exempted from NOC for operations purpose under Pollution control rules of UP Pollution Control Board.

13. State-level committee and its responsibilities:

State level committee shall be formed under the chairmanship of ACS/PS of the department of additional sources of energy Govt of UP, for carrying out all the activities and monitoring and evaluation of the 'Uttar Pradesh Green Hydrogen Policy 2023'.

For effective implementation of the policy, the committee shall have the following members:

1. Additional chief secretary/Principal secretary, Additional sources of energy deptt. – **Chairman**
2. Additional chief secretary/Principal secretary, Finance deptt. Or nominated Representative minimum level of special secretary – **Member**
3. Additional chief secretary/Principal secretary, Revenue deptt. Or – **Member**

nominated Representative minimum level of special secretary	
4. Additional chief secretary/Principal secretary, Law deptt. Or nominated Representative minimum level of special secretary	– Member
5. Additional chief secretary/Principal secretary, Agriculture deptt. Or nominated Representative minimum level of special secretary	– Member
6. Additional chief secretary/Principal secretary, cooperation deptt. Or nominated Representative minimum level of special secretary	– Member
7. Additional chief secretary/Principal secretary, Irrigation deptt. Or nominated Representative minimum level of special secretary	– Member
8. Additional chief secretary/Principal secretary, Energy deptt. Or nominated Representative minimum level of special secretary	– Member
9. Additional chief secretary/Principal secretary, Planning deptt. Or nominated Representative minimum level of special secretary	– Member
10. Chief Executive Officer Invest UP Or nominated Representative minimum level of special secretary	– Member
11. MD UP Power corporation Ltd	– Member
12. MD UP Power Transmission Corporation Ltd	– Member
13. Subject Matter Expert of State/ Central Govt Nominated by UPNEDA	– Member
14. Director UPNEDA	– Member Secretary

The state-level committee shall play specific roles and be empowered to take the following decisions under the policy:

1. Facilitate coordination with various government departments and agencies.
2. Monitor the progress of the policy and to approve the incentives to developers.
3. Interpret any provision of this policy and to recommend the modification in policy provisions to Govt, if any.
4. Add or amend any forthcoming provision, and to issue guide lines.
5. Review the work progress, Revisit and update the targets if needed.

13. Amendment in policy and Employment generation -

The government of Uttar Pradesh has been authorised to successful implementation and necessary amendments.

During the policy period Direct and indirect employment creation is expected around 60,000.