

Union Budget 2024 and its implications on the green hydrogen sector in India

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1 Summary

Government support is crucial for the success of green hydrogen. While the Union Budget for 2024-25 did not specifically mention green hydrogen, several measures will aid the sector's development. The National Green Hydrogen Mission (NGHM) received approval to spend INR600 crores for this financial year, representing 3.5% of its total allocation until 2030. However, the NGHM allocation has not increased and we are yet to see how the government will utilize the \$1.5 billion from the World Bank, a considerable portion of which could be allocated to green hydrogen.

Introducing a climate taxonomy to facilitate the development of green bonds is a significant step towards increasing India's share in the green bond market, which currently stands at \$15.4 billion. In comparison, China's share is \$83.5 billion, and Germany's at \$67.5 billion, indicating that India has substantial room for growth in climate capital allocation.

The focus on pumped hydro, SMR (Small Modular Reactors) and battery energy storage will complement the rise in wind and solar energy, enabling a better balance of power and a more resilient grid infrastructure. Although more could be done for the green hydrogen industry during these early stages, the government appears to be holding back on larger support, possibly awaiting further maturity in the sector.

Overall, these allocations for supporting infrastructure will play a crucial role in the growth of the green hydrogen industry.

GH2 in collaboration with EY Parthenon, is excited to present this short overview on the implications from the budget for the green hydrogen sector.

2 Introduction

The Union Budget 2024-25, presented by Finance Minister Nirmala Sitharaman, marks a noteworthy milestone in India's pursuit of sustainable energy solutions, which can be particularly beneficial for the green hydrogen sector. The budget introduces several strategic measures that can foster the development and deployment of green hydrogen, aligning with India's broader goals of energy transition, decarbonization and security.

Key budget allocations and policy measures



01 Funding for green energy and green hydrogen

- ▶ The National Green Hydrogen Mission was launched on 4th January 2023, with an outlay of INR19,744 crores up to FY 2029-30. In the Interim Budget 2024, the National Green Hydrogen Mission (NGHM) saw its allocation increase from INR100 crore in 2023-24 to INR600 crore for 2024-25¹. This stands at around 5% of the total allocation from NGHM for FY 24 to FY25
- ▶ MNRE has received a budgetary allocation of INR19,100 crores² and aims to push schemes such as PM KUSUM, PM Surya Ghar Muft Bijli Yojana, Green Energy Corridors, and bio energy that would add impetus to the green hydrogen value chain



02 Climate finance taxonomy

- ▶ The government will introduce a taxonomy for climate finance, facilitating easier access to preferential financing for green projects, including green hydrogen projects. This taxonomy will support the development of green bonds and funding for renewable energy and emerging sustainable technologies
- ▶ Taxonomies are essential in ensuring that economic activities align with scientifically credible transition pathways, thereby facilitating the effective allocation of climate capital and mitigating the risk of greenwashing. Additionally, a clear taxonomy in India could attract increased climate financing from international entities by providing a definitive understanding of what qualifies as sustainable activity

¹ <https://www.indiabudget.gov.in/doc/eb/sbe71.pdf>

² https://www.business-standard.com/budget/news/transitioning-to-a-green-future-budget-2024-underlines-energy-security-124072301339_1.html

³ <https://energy.economicstimes.indiatimes.com/news/renewable/budget-2024-25-and-the-future-of-energy-transition-in-india/112030823>



03 Emission-based targets and carbon markets

- ▶ The government would enable the creation of a roadmap to transition hard-to-abate industries (iron, steel, aluminium, cement, petrochemicals and fertilizers) from energy efficiency targets to emission-based targets transitioning from the current Performance, Achieve, and Trade (PAT) scheme to the 'Indian carbon market' mode³
- ▶ The PAT scheme encountered several challenges, including an extended and procrastinated compliance timeline, the absence of disciplinary measures for non-compliance, unchallenging targets, an oversupply of Energy Saving Certificates (ESCerts), and a deficiency in data transparency
- ▶ The Indian carbon market possesses the potential to enforce stringent performance targets for industries, impose sizable penalties on defaulters, guarantee market stability and uphold transparency



04 Renewable energy progress

- ▶ In the Interim Budget 2024, wind power received an allocation of INR930 crore (INR 916 crore previous year allocation)⁴. Offshore wind energy would receive viability gap funding (VGF) for an initial capacity of 1 GW, supporting further diversification of renewable energy sources for the production of green hydrogen
- ▶ The budget expands the list of exempted capital goods used in manufacturing solar cells and panels. However, customs duty exemptions on solar glass and tinned copper interconnects have been scrapped to strengthen the domestic supply chain



05 Critical Mineral Mission

- ▶ The budget announcement of a Critical Mineral Mission for domestic production, recycling of critical minerals and overseas acquisition of critical minerals will seek to establish resilient domestic supply chains
- ▶ The finance minister also proposed a waiver on customs duties on 25 critical minerals and reduction of basic customs duties (BCD) on graphite, silicon quartz and silicon dioxide

Inclusion of pumped storage and nuclear power



01 Pumped energy storage

- ▶ The budget highlights the development of pumped energy storage as a priority technology. A new policy will accelerate its adoption, leveraging the potential of around 103 GW⁵ in India. Pumped storage can reduce the intermittency of renewable energy sources, ensuring a stable supply of power for green hydrogen production
- ▶ Coupling pumped storage with renewable energy yields more cost-effective solutions for green hydrogen production than combining renewable energy with battery storage

⁴ <https://www.downtoearth.org.in/economy/union-budget-2024-25-boost-for-renewable-energy-emphasis-on-ev-infrastructure-94210>

⁵ <https://www.teriin.org/project/pumped-storage-plants-essential-indias-energy-transition>



02 Battery energy storage

- ▶ For the first time, the Budget includes an outlay of INR96 crores⁶ for VGF to develop battery energy storage systems in 2024-2025. This push for battery storage will complement pumped storage, enabling greater integration of renewable energy into the electricity grid
- ▶ The Viability Gap Funding for the development of Battery Energy Storage Systems (BESS) scheme was launched in September 2023. The scheme has an initial outlay of INR9400 crores, including a budgetary support of INR3760 crores⁷ to develop 4000 Wh of BESS projects by 2030-31
- ▶ The Critical Mineral Mission will further add in securing domestic supply chains and reserves overseas and assist in bringing down prices of batteries



03 Small modular reactors

- ▶ The government announced collaborations with the private sector to set up Bharat Small Reactors and propel research and development for Bharat Small Modular Reactors (SMR's) and other advanced nuclear technologies. These reactors are expected to diversify India's energy mix and contribute to reducing greenhouse gas emissions



04 Role in green hydrogen production

- ▶ The integration of battery storage, pumped storage and nuclear power is pivotal for the reliable and efficient production of green hydrogen. These technologies ensure a continuous supply of electricity necessary for the electrolysis process
- ▶ The development of Small Modular Reactors (SMRs) in India could pave the way for the production of pink hydrogen, leveraging compact and efficient nuclear technology to provide a steady supply of low-carbon electricity for water electrolysis, this could also yield lower prices

⁶ <https://energy.economictimes.indiatimes.com/news/power/green-power-surge-budget-allocates-1-39-lakh-crore-to-renewable-and-power-sectors/111987885>

⁷ <https://pib.gov.in/PressReleasePage.aspx?PRID=1955112>

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Key implications for the green hydrogen sector

The expansion of renewable energy infrastructure, particularly in solar and wind, will necessitate the upskilling of the workforce. As the industry grows, it would achieve larger economies of scale, leading to reduced costs of green energy. This cost reduction will, in turn, make green hydrogen production more economically viable.

The Budget's emphasis on solar and wind energy, along with investments in offshore wind, pumped hydro energy storage, and Small Modular Reactors (SMRs), will create a diversified energy mix. This diversification will enhance the reliability and flexibility of the grid. This would help address the intermittency of renewable energy sources. Electrolysers will require round the clock green power and emerging standards and certifications will require green hydrogen production from clean energy sources. The introduction of these new renewable sources will also foster job creation and spur economic development. The announcements aim to enhance energy security by reducing dependence on fossil fuels. Initiatives such as the critical mineral mission are vital for energy security. Localizing parts of the value chain will reduce prices for solar panels, batteries, and electrolysers, and increase the availability of these materials for domestic use. Rare earth minerals are crucial components of electrolysers and the mission would help bringing down costs and create domestic supply of those components.

The combined emphasis on solar, wind and energy storage, along with supportive customs duty adjustments, should drive substantial growth in India's renewable energy capacity. This growth will catalyze the development of green hydrogen infrastructure in the coming years.

Overall, these measures will create a more robust and sustainable energy sector, paving the way for green hydrogen production and utilization.

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