India 2026 Green Hydrogen Strategy for Hard-to-Abate Industry and Net Zero

By Sudarshan Karweer · 17 September 2026 · growthifye.com

A 2026 India guide to green hydrogen for industry: economics, policy, offtake, MRV, CCTS and bankable deployment pathways.

India's 2026 Green Hydrogen Strategy for Hard-to-Abate Industry

Indian industry has already captured many low-hanging decarbonisation options: energy-efficiency upgrades, captive solar, open-access renewable procurement, waste-heat recovery and first-wave fuel switching. The harder question in 2026 is what comes next for sectors where direct electrification is technically constrained, process emissions remain material, or export customers are asking for a credible pathway to deep emissions reduction.

That is where green hydrogen enters the conversation.

For most industrial plants, hydrogen is not the first decarbonisation lever. It is usually the later-stage lever after efficiency, renewable electricity and practical electrification have been assessed. But for fertilisers, refineries, steel, chemicals, long-duration high-temperature heat and selected reducing-agent applications, green hydrogen is moving from pilot narrative to strategic planning item. The key is to separate technically sound use cases from expensive symbolism.

For Indian C&I consumers, developers, lenders and policymakers, the practical challenge is not whether green hydrogen is promising in the abstract. It is whether a specific project can compete against fossil alternatives, meet reliability needs, fit within policy incentives, and stand up to scrutiny on emissions accounting, offtake structure and bankability.

This article sets out a 2026 practitioner view on where green hydrogen fits in Indian industrial decarbonisation, what the economics look like, how policy support changes viability, and how companies should sequence decisions alongside broader [Net-zero roadmaps & MACC](/coreservices/netzerodecarbonisation/netzeroroadmapsandmacc) planning.

Where green hydrogen actually fits in Indian industry

In 2026, the most credible green hydrogen demand in India remains concentrated in applications that already use hydrogen or can justify it as a chemical feedstock or reducing agent.

The strongest use cases include:

- Ammonia and fertiliser production, where grey hydrogen replacement has direct emissions benefits and clear process integration logic
- Refineries, especially for hydrotreating and desulphurisation, where hydrogen is already a critical input
- Methanol and chemical intermediates, where green hydrogen can decarbonise part of the molecule pathway depending on carbon source
- Iron and steel, particularly DRI-linked pathways where hydrogen blending or higher-H2 reduction can become relevant over time
- High-temperature industrial heat in niches where electric alternatives are difficult, though economics are still challenging in many cases

© Growthifye · Vriddhim Business Advisory LLP · info@growthifye.com · +91 84510 99371

- Heavy transport fuels and e-fuels only in selected cases, generally after more efficient direct electrification options are exhausted

By contrast, green hydrogen is usually not the best first answer for:

- Low- and medium-temperature process heat where electric boilers or heat pumps can work
- General captive power replacement where direct renewable power procurement is cheaper and more efficient
- Space heating or steam loads that can be electrified at lower abatement cost
- Decarbonisation programmes driven only by branding rather than process need or carbon-cost exposure

This hierarchy matters because hydrogen loses energy at each conversion step. If a plant can use renewable electricity directly, it will usually beat hydrogen on both cost and efficiency. In Indian conditions, this is especially true where open-access solar-wind hybrids are available in the roughly Rs 4.0-6.5/kWh delivered range depending on state, banking rules, time-of-day exposure and network charges. Once power is converted into hydrogen and then back into heat or power, costs rise quickly.

2026 economics: what the numbers are saying

The central question for industrial decision-makers is levelised cost of hydrogen, not just electrolyser capex.

In India in 2026, green hydrogen economics are being shaped by five variables:

- Renewable electricity cost and profile
- Electrolyser capex and utilisation factor
- Water treatment and balance-of-plant costs
- Storage, compression and transport needs
- Policy incentives under the National Green Hydrogen Mission and related state measures

For many industrial projects, renewable electricity still accounts for 60-75% of hydrogen production cost. That means site-specific power strategy is the biggest lever.

A practical 2026 range for green hydrogen production cost in India, excluding aggressive subsidy assumptions, often lands around Rs 260-420/kg for well-structured projects. The lower end may be achievable for high-utilisation projects with strong renewable sourcing, co-location benefits and support under incentive schemes. The upper end is more common where utilisation is poor, storage requirements are high, or delivered electricity costs are elevated.

Grey hydrogen from natural gas or other fossil-linked routes can still remain materially cheaper in many cases, especially where gas pricing is favourable or legacy assets are depreciated. That creates the core commercial hurdle.

However, project viability improves where one or more of the following apply:

- Existing captive hydrogen demand avoids market-creation risk
- Buyers face export pressure related to embodied carbon, especially into carbon-sensitive markets
- CCTS compliance cost or internal carbon price assumptions raise the value of abatement
- Concessional debt, VGF-style support or production-linked incentives reduce effective cost
- Oxygen by-product value can be monetised near industrial clusters

- Renewable power can be co-optimised with other plant loads to improve asset utilisation

For users comparing fuels on an energy basis, 1 kg of hydrogen contains roughly 33.3 kWh of lower-heating-value energy. But usable economics depend on burner retrofits, purity requirements, compression pressure, process redesign and safety systems. Plants should avoid simplistic Rs/kg comparisons without conversion-efficiency analysis.

Policy and regulatory context in India in 2026

India’s green hydrogen market in 2026 is no longer just policy intent. It is a policy stack.

The National Green Hydrogen Mission remains the anchor, with continuing focus on domestic manufacturing, pilot deployment, demand creation and export positioning. For industrial users, the most relevant policy interfaces are often not headline mission announcements but the operational details around renewable power access, transmission charges, banking treatment, certification and offtake recognition.

Key 2026 considerations include:

- ISTS-related renewable transmission benefits, where applicable, though project eligibility and timelines need careful review
- State-level open-access implementation, including wheeling, cross-subsidy surcharge treatment and banking restrictions
- Green hydrogen and green ammonia certification frameworks, which matter for export claims and buyer acceptance
- Emerging compliance-carbon architecture under India’s Carbon Credit Trading Scheme, which raises the strategic value of auditable abatement
- International carbon-accounting alignment for companies exposed to customer disclosure, financed-emissions questions or procurement standards
- Article 6 market developments, especially where additionality and corresponding-adjustment issues may affect carbon value claims

For exporters, the intersection with European and global low-carbon procurement is increasingly important. Even where a product is not immediately hydrogen-based, buyers are asking for transition pathways showing how hard-to-abate emissions will be reduced over time. Hydrogen-readiness can therefore matter before hydrogen volumes themselves scale.

This is also where [Carbon accounting & disclosure](/coreservices/netzerodecarbonisation/carbonaccountinganddisclosure) and Carbon markets & MRV become commercially material rather than reporting exercises. If a company cannot prove the emissions profile of hydrogen production and use, much of the strategic value is lost.

Bankable use-case design: what lenders and offtakers now expect

In 2026, hydrogen projects are crossing from demonstration to diligence. That means lenders, boards and counterparties want more than a technology note.

A bankable green hydrogen case in India usually needs six clear workstreams.

First, define the use case precisely. Is hydrogen replacing grey hydrogen, LPG, furnace oil, PNG, coking coal input, or a reducing agent? Each pathway has different abatement logic, retrofit cost and operational risk.

Second, establish the power architecture. Dedicated solar alone rarely provides the utilisation needed for competitive hydrogen unless storage or grid balancing is built in. Hybrid solar-wind structures, FDRE-type procurement logic, RTC-backed contracts or grid-firmed renewable strategies often improve electrolyser loading. A plant running an electrolyser at 25-30% utilisation looks very different from one operating at 50-70%.

Third, quantify water and site infrastructure. Water intensity is manageable in many industrial contexts but cannot be ignored. Roughly 9 litres of demineralised water are required per kg of hydrogen at stoichiometric level, with higher practical requirements after treatment losses and plant operations. In water-stressed states, this becomes a permitting and social-license issue.

Fourth, map storage and logistics. Onsite consumption is far simpler than merchant transport. Compression, cylinder/cascade movement, ammonia conversion, pipeline options and safety compliance can each materially alter project economics.

Fifth, lock in the abatement accounting framework. Companies need a robust baseline, operating boundary, emissions factor treatment for grid power, renewable matching rules and MRV protocol that can satisfy internal audit, lenders, customers and future carbon-market or compliance interfaces.

Sixth, structure commercial risk allocation. Who takes volume risk if plant operations fluctuate? What happens if renewable curtailment rises? Is there a take-or-pay offtake? How are change-in-law and certification risks allocated? These questions now matter as much as stack efficiency.

The right sequencing versus electrification and renewable power

A recurring mistake in industrial decarbonisation planning is considering hydrogen in isolation.

In most Indian industrial facilities, the lowest-cost sequencing in 2026 still looks something like this:

- Measure and clean up data across fuels, steam, power, products and operating boundaries
- Execute efficiency and waste-heat opportunities with short-to-medium paybacks
- Maximise direct renewable electricity adoption through rooftop, captive, group captive or open-access structures
- Electrify process loads where technically practical and tariff-competitive
- Use biomass, biogas or alternative lower-carbon fuels where supply chain quality is credible
- Reserve green hydrogen for the residual hard-to-abate segment where other levers are insufficient

This sequencing is not ideological; it is financial. A MACC for a typical industrial site in India still places many efficiency and renewable-power measures below hydrogen on cost per tonne of CO_2e abated. Green hydrogen becomes compelling when the residual emissions are costly to remove by other means, when the process specifically requires molecules rather than electrons, or when market access depends on deeper decarbonisation.

For example:

- A ceramics or food-processing plant may find electric heat and renewable power far more economical than hydrogen for much of its load
- A refinery with existing hydrogen demand may unlock a clearer substitution pathway
- A steel producer evaluating future DRI transition may need to start hydrogen-readiness planning years before full economics are favourable

- A fertiliser player may use phased blending and dedicated renewable procurement to create a staged decarbonisation path

The practical takeaway is simple: hydrogen should sit inside the plant's overall abatement curve, not outside it.

MRV, emissions claims and carbon-market implications

Hydrogen strategy without credible MRV is a risk.

As Indian industry moves deeper into BRSR Core assurance, customer-level product disclosures, CCTS readiness and cross-border carbon scrutiny, emissions claims around hydrogen must be evidence-based. This is especially true where projects may seek carbon-market value, climate-linked financing benefits or low-carbon product premiums.

An effective MRV stack for green hydrogen in 2026 should cover:

- Baseline fossil-fuel or grey-hydrogen emissions
- Renewable power source, metering and temporal matching logic
- Electrolyser consumption and utilisation data
- Water sourcing and treatment data where relevant to ESG review
- Compression, storage and transport energy use
- Plant-level and product-level allocation methodology
- Audit trail for certificates, invoices, meter data and process records
- Reconciliation with corporate Scope 1 and Scope 2 inventories, and Scope 3 where supplier or product claims are involved

This becomes even more important where companies are considering future participation in carbon markets. Not every hydrogen project will generate tradable carbon value, and double-counting risks need careful treatment. But high-integrity data is now a strategic asset regardless of whether credits are pursued.

For firms exposed to export supply chains, hydrogen-related abatement may also influence embedded-emissions narratives over time, particularly for steel, chemicals and downstream manufactured goods. Buyers are increasingly differentiating between generic renewable claims and traceable process decarbonisation.

What Indian companies should do now

In 2026, the right question is not "Should we do green hydrogen?" It is "For which process, at what cost, under which policy structure, with what emissions outcome, and compared to which alternatives?"

A disciplined next-step plan for industrial companies should include:

- Build a site-level and product-level emissions baseline with auditable boundaries
- Identify residual hard-to-abate loads after efficiency, renewable power and electrification
- Develop a use-case-specific techno-economic model using actual plant load data, not generic assumptions
- Evaluate power sourcing options across captive, open-access, hybrid and firmed-renewable structures
- Test sensitivity to delivered power cost, electrolyser utilisation, carbon price assumptions and offtake terms

- Screen state policy conditions, land, water and evacuation constraints
- Design an MRV protocol before capex commitment, not after commissioning
- Integrate hydrogen into broader capex sequencing and financing strategy

For RE developers and EPC players, the opportunity is increasingly in integrated offerings: renewable supply, electrolyser integration, storage logic, utility interface and performance-backed delivery. For lenders, the focus should remain on utilisation certainty, contractual design, policy durability and data credibility.

Green hydrogen will not decarbonise all of Indian industry in this decade. But it can become an essential wedge for sectors that cannot reach credible net-zero pathways through electrification and renewable power alone. The winners will be those who treat hydrogen not as a slogan, but as a rigorously screened industrial input with measurable emissions value.

If your organisation is evaluating hydrogen for refineries, fertilisers, steel, chemicals or high-temperature industrial processes, contact Growthifye's advisory desk. We help clients assess bankable pathways across [RE-led decarbonisation](/coreservices/netzerodecarbonisation/releddecarbonisation), Green fuels transition, MRV and industrial implementation.

Explore Growthifye's related capabilities

This analysis connects directly to our advisory practice: [Carbon accounting & disclosure](/coreservices/netzerodecarbonisation/carbonaccountinganddisclosure) · [Net-zero roadmaps & MACC](/coreservices/netzerodecarbonisation/netzeroroadmapsandmacc) · [RE-led decarbonisation](/coreservices/netzerodecarbonisation/releddecarbonisation) · [Industrial efficiency & electrification](/coreservices/netzerodecarbonisation/industrialefficiencyandelectrification).

ABOUT THE AUTHOR

Sudarshan Karweer — Chief Executive Officer, Growthifye

Over 23 years in management consulting — concept to scale — building and scaling new-age digital and energy businesses. An EY alumnus, Sudarshan leads Growthifye's renewable energy & storage advisory, EPC, transmission engineering and green-financing practices for developers, utilities and C&I consumers across India.
Contact: info@growthifye.com · +91 84510 99371 · growthifye.com

This article is for general information only and does not constitute engineering, financial or legal advice. © Growthifye. Sharing with attribution is welcome.