



01 September 2026

Novotel Mumbai International Airport, Mumbai

POST EVENT REPORT

Building India's Green Hydrogen Value Chain
Mobility, Manufacturing, Water, Infrastructure
and Market Adoption

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Executive Summary

The 4th Green Hydrogen India Symposium (GHIS 4) was held on 1 September 2026 at the Novotel Mumbai International Airport, under the theme “Building India’s Green Hydrogen Value Chain - Mobility, Manufacturing, Water, Infrastructure and Market Adoption.” Organised by GH2 India, the symposium brought together over 30 speakers spanning government, developers, OEMs, component manufacturers, financiers, legal advisors and research institutions to take stock of India’s green hydrogen ecosystem roughly 18 months on from the mission’s early announcements.

The day opened with a market-data-rich welcome address from GH2 India, a country keynote from the Netherlands Consulate General framing India as a strategic hydrogen-export partner to Europe, and global markets outlook that used the NEOM Green Hydrogen Project in Saudi Arabia and China’s gigawatt-scale delivery as proof points that green hydrogen has crossed from pilot-stage hype into bankable, scalable reality.

Six thematic panels that ensued were mobility, electrolyser value-chain localisation, hydrogen-versus-biofuels pathways, water-resilient hydrogen hubs, green steel demand, and scaling from pilots to markets, interspersed with technology spotlights from Thermax (SOEC electrolysis) and Alfa Laval (waste-heat-driven desalination), and a manufacturing spotlight from HyChasers Gas Equipment on balance-of-plant localisation.

Across sessions, a consistent set of themes emerged: demand visibility (not technology readiness) is the binding constraint on scaling; component-level localisation (membranes, electrodes, catalysts, interconnect plates) lags behind balance-of-plant localisation; continuity and extension of policy support, particularly the ISTS transmission-charge waiver, is seen as critical to remaining cost-competitive with China; water availability is emerging as a first-order siting and design constraint for hydrogen hubs; and green steel, mobility and data-centre power are maturing as parallel, complementary demand verticals alongside the traditional refinery/ammonia offtake base.



Session-wise Summary

The following summaries are compiled from the official event transcripts and are organised in the order they occurred on the agenda.

Welcome Address and Context Setting



Ms. Yashaswini Basu,
Legal & Policy Associate, GH2 India

Opened the symposium, welcoming delegates to the fourth edition and noting the ecosystem's growth since GHIS 1 in January 2025 and recalling the early days of tracking a handful of live and pipeline projects on a small spreadsheet, compared to today's tracked pipeline of over 440,000 TPA of hydrogen-equivalent projects. She introduced Mr. Nishaanth Balashanmugam, Director and CEO of GH2 India, who delivered the welcome address.

Welcome address & context setting

"India is poised to become the world's second-largest hydrogen market by 2035"

Mr. Nishaanth Balashanmugam
CEO & Director, GH2 India



Welcome Address and Context Setting

Mr. Nishaanth Balashanmugam presented a detailed market update covering both global and domestic developments:

100+ Mt

Global annual hydrogen demand (IEA); Middle East crisis hit ~1/6 of global production this year

#3 → #2

India's global rank today; on track for 2nd-largest hydrogen market by 2035 (~4x growth)

6.5 Mt

India's existing traditional hydrogen consumption per year (~10% global share)

0 → 2.2 Mt

Contracted green ammonia capacity signed since Jan 2026 — ~9% of India's 2030 target

3 GW

Electrolyser capacity incentivised under NGHM; ~\$5B capex commitments over next 3 years

65–70%

Domestic value-add in balance-of-plant; stack components (membranes, PTLs) ~36% import-dependent

Mobility snapshot

92%

Of global FCEVs & refuelling infra concentrated in Korea, China, US, Japan

15 buses

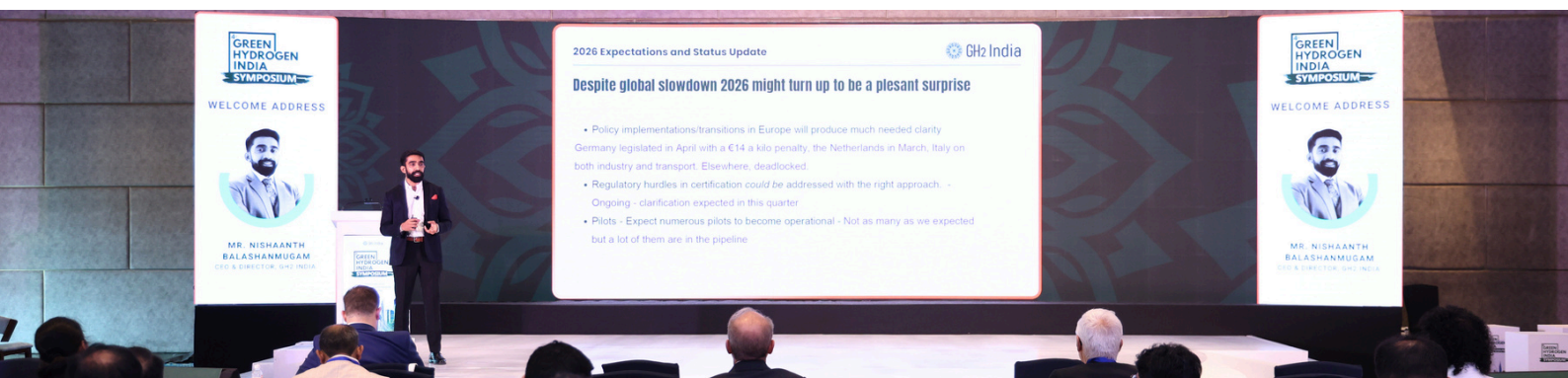
Running today in Delhi NCR under MNRE-backed pilots

27+42

Buses & trucks planned across 21 routes; 16 refuelling stations planned

Since January 2026 India has secured over **2.2 MMT** of binding green ammonia supply in domestic and international markets

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Country Keynote — Netherlands

Country keynote — Netherlands

India as Europe's green hydrogen gateway partner

Mr. Nabil Taouati

Consul General, Mumbai,
Netherlands Ministry of Foreign Affairs



Ecosystem, not just production

- **Rotterdam hydrogen network — first section live** : Connects Shell's 200 MW Holland Hydrogen I and Air Liquide's 200 MW electrolyser at Maasvlakte — production, infrastructure, storage, ports and demand built in parallel.

India–Netherlands momentum in 2026

- **Largest national pavilion**: India's delegation at the World Hydrogen Summit, Rotterdam
- **Green Hydrogen Roadmap** : Launched alongside a joint renewable-energy working group

The export opportunity

10 MT

EU RePowerEU target: renewable
hydrogen imports by 2030

Green & Digital Sea Corridor

Proposed link: Indian production
→ shipping → EU demand, via
Rotterdam

Global Hydrogen Markets Outlook and India's Competitive Position



Global hydrogen markets outlook

2026: the confidence test is ending

Mr. Mikaa Blugeon-Mered

VP, International Advisory Board, GH2 India

Proof point: gigawatt-scale is real

2.2 GW

NEOM electrolysis capacity

\$6B+

Capex, 23 financing institutions

Q2 2027

Commercial ops (built, Aug 2026)

China: the standout performer

200 +

Electrolyser OEMs, headed for consolidation

15 GW

Operating / under construction (Mar 2026)

45 GW +

Manufacturing capacity

Global Hydrogen Markets Outlook and India's Competitive Position

Market maturity & the FID picture

- **1% → 2.3%** Low-carbon H2 share of 100+ Mtpa global market today; self-sustaining threshold expected before 2030
- **3x** More projects moving forward globally than being cancelled, despite FIDs down 20% in 2025 (IEA)

Pipelines: infrastructure is catching up

- **15,000+ KM** H2/derivative pipelines live, building or in design (Germany, Netherlands, Belgium, China, Spain)
- **38,000+ KM** European Hydrogen Backbone, incl. H2Med (2 Mtpa, targeted 2032)

Geopolitics as catalyst

- **"Hydrogen is freedom"** — Middle East-linked disruption to ammonia, urea & methanol trade is sharpening energy-security urgency in Morocco, South Korea, South Africa, India and Australia



Closing message: AI/data-centre demand is an emerging driver even in the US; China's 15th Five-Year Plan is a defining moment for the sector. India's 2 Mt+ of signed offtakes is "just the beginning" — the call is to aim higher.

Panel 1

Green hydrogen mobility: Global trends & India's domestic ecosystem



Speakers:

Mr. Vinod Pawar (Cummins India)

Dr. Jitendra Kumar Gupta (Shell)

Moderator:

Mr. Mikaa Blugeon-Mered (GH2 India)

Overview:

Panel 1: The Future of Green Hydrogen Mobility: Global Trends and India's Domestic Ecosystem examined the opportunities and challenges in scaling hydrogen-powered mobility in India and globally. The discussion covered hydrogen internal combustion engines, vehicle safety and regulatory frameworks, hydrogen production and distribution models, storage technologies, and infrastructure requirements. Panellists highlighted the importance of developing purpose-built hydrogen technologies and strengthening safety standards to support wider adoption.

Panel 1

The session explored different approaches to hydrogen production, distribution, and storage, recognising that the optimal model will depend on renewable resource availability, supply security, and the scale of deployment. While distributed hydrogen production was considered suitable for pilot projects and demonstrations, centralised large-scale production and evolving distribution networks were identified as more practical pathways for commercial deployment. The discussion also highlighted ammonia and liquid hydrogen as potential options for large-scale and long-distance hydrogen transport.

A key takeaway was the need for stable government-backed demand, regulatory clarity, cost competitiveness, and collaboration across the mobility ecosystem to move hydrogen beyond the demonstration stage. The interactive Q&A addressed hydrogen storage pressures, refuelling infrastructure, vehicle integration, and the potential role of hydrogen in aviation. Overall, the session provided valuable insights into the technical, regulatory, infrastructure, and commercial pathways required to accelerate hydrogen mobility in India.



Cummins: built from the ground up

New engine architecture (not a converted diesel/CNG unit) – high-tumble combustion + direct injection, targeting diesel-truck power density

Mr. Vinod Pawar

Technical Director – New Generation Engine Development,
Cummins India

Panel 1



Cummins: built from the ground up

New engine architecture (not a converted diesel/CNG unit) – high-tumble combustion + direct injection, targeting diesel-truck power density

Mr. Vinod Pawar

Technical Director – New Generation Engine Development,
Cummins India



There are technical challenges with green ammonia, especially management of intermittency. There will be a platter of solution based on various factors that could lead to distributed, centralized with transport via pipeline, road, or ships. Ammonia as hydrogen carrier can evolve as it has mild storage conditions, but its toxicity need to be managed well.

Dr. Jitendra Kumar Gupta,

Technology Lead – Low Carbon Ammonia and Hydrogen Supply Chain, Shell

Panel 1

Regulation & real-world progress

60,000 km

MNRE Phase 1 pilot trial run; no dedicated H2 vehicle regulation yet — ARAI engaged

6 engines

Delivered to Tata Motors — concrete near-term commercialisation step

350 bar

Standard storage pressure today; 700 bar & liquid/solid-state developing globally

Centralised vs. distributed production

On Paris' on-site refuelling model (11 stations): distributed production works for pilots in India today, but centralised, large-scale production remains the safer, more economical path at scale — pending more safety training & operational experience

Escaping the "demonstration trap"

Stable, government-backed demand signals are the key lever. Even green ammonia — the "most mature" derivative — still has supply-chain gaps, particularly integrating intermittent renewable power with Haber-Bosch synthesis

Audience poll



Hydrogen in aviation? Cautiously optimistic "yes" from both panellists — high energy density is the draw, storage remains the open question

Panel 2

Building the Green Hydrogen Value Chain: Electrolysers, Components and Manufacturing Scale-Up



Speakers:

Mr. Harsh Khaitan (BVK Hydrotech India)
Ms. Rucha Shevde (AGFA)
Mr. Siddharth Gupta (L&T Electrolysers)
Mr. Aditya Dhingra (Yonder by Ador)

Moderator:

Mr. Nishaanth Balashanmugam (GH2 India)

Overview:

Panel 2 focused on scaling India's green hydrogen value chain through electrolyser manufacturing, component localisation, and technology innovation. The discussion highlighted progress in domestic manufacturing while identifying continued import dependence for key components such as membranes and electrodes. Panellists emphasised the need for stronger demand, targeted incentives, policy continuity, and a robust domestic component ecosystem to achieve cost competitiveness and scale.

Panel 2

Four voices, four pieces of the stack



LARSEN & TOUBRO

80% → 85%

Local content addition on its 400 MW Hazira plant will be achieved in the next 18 months.

Demand, not capability, is the constraint.

BVK
HYDROTECH

China+1

Indian-made electrodes/GDL; catalyst coating is the hardest, most proprietary step. Stronger export traction than domestic — wants a lower PLI entry bar than ₹100 cr.

AGFA 

4 GW sold

of membranes of which 1.5 GW was in the last year alone; first 100 MW sent to L&T. Would localise in India given a stable ~5 GW/yr demand signal.

 **Yonder**
Powered by Ador

1% → 1%

Each 1% gain in rectifier efficiency cuts LCOH ~1%. Backs modular "n+1" power-train design for uptime.

The shared diagnosis

25 GW +

India's announced annual electrolyser manufacturing capacity — yet almost none of the operating order book has scaled beyond the megawatt range

Panel 2

From the floor



(Prof. Prakash Ghosh, IIT Bombay): stack refurbishment economics — 40,000 hrs (high current-density) vs. 80,000 hrs (standard alkaline) — and local membrane savings traced mainly to labour/finishing, not raw materials



Technology spotlight

Thermax's bet on alkaline and SOEC

Mr. Pawan Mehndiratta

SBU Head – Green Hydrogen, Thermax

with **Mr. Mikaa Blugeon-Mered**, GH2 India

Why SOEC — the efficiency case

40 kWh/kg

Thermax SOEC target

vs

55 kWh/kg

Typical alkaline today

Uses waste heat/steam from refineries, ammonia & steel plants — ~25% efficiency gain over conventional alkaline

Two technology partnerships

Ceres (SOEC)

System integration & BoP, not the stack. 500 kW pilot, Pune, by end-2026 (18-month localisation). Targeting ~40% of global SOEC system cost.

HydrogenPro (Norway)

Backed by LONGi, MHI, Andritz. Thermax EPC + HydrogenPro alkaline electrodes — joint 30+ MW solution for India.

Fireside Chat – Thermax

What actually wins deals

2–3 of 15–20

Indian OEMs (out of 180–200 globally) judged capable of a bankable, supportable 20-year solution — reliability beats headline efficiency/capex

Commercial model

2 years on-site O&M + digital monitoring bundled in, not just equipment supply

Roadmap: 1–20 MW SOEC pilots over the next few years → 100–300 MW deployments by 2028–29. Expects hybrid alkaline + SOEC + PEM projects to become the norm, as already seen in China's largest deployments.



Presentation – HyChasers Gas Equipment



Manufacturing spotlight

Building local supply chains for electrolyzers

Mr. Chintan Gokulbhai Gondaliya

Director & Co-founder,
HyChaser Gas Equipment

**600,000+
JOBS**

The real prize behind NGHM's 5 Mt target — a genuinely localised supply chain, not tonnage alone, should shape near-term policy

India vs. China: localisation gap

85% vs 10%

China's domestic sourcing vs. India's, for large alkaline projects

35%

India's power-electronics readiness — a relative bright spot

45%

India's process piping & vessels readiness

Presentation – HyChasers Gas Equipment

Where the cost actually sits

60%

Balance-of-plant

vs

40%

Electrolyser stack

HyChasers' case study:
100% India-made BoP,
paired with an imported
stack

The reframe: soft demand = breathing room

Today's subdued domestic demand gives smaller Indian component makers time to mature technology & quality — before a future surge forces reliance on imports by default. Main gap: a trust/credibility deficit vs. established Chinese vendors, to be closed via certification bodies, testing labs & manufacturer clustering.

Three closing recommendations

- Prioritise BoP over stack-only localisation
- Move early on bio-based electrolyzers
- Invest now — for domestic & export markets

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Panel 3

Hydrogen and Biofuels: Competing Pathways or Complementary Solutions?



Ms. Chandni Sharma
Communications & Policy Associate

Ms. Sharma welcomed participants to the afternoon session and introduced Panel 3: “Hydrogen and Biofuels: Competing Pathways or Complementary Solutions?” She briefly reflected on the key discussions from the morning sessions before outlining the panel’s focus on the complementary role of hydrogen and biofuels in developing commercially viable and sustainable clean-fuel pathways.



Speakers:

Dr. Vishnu Budama (Pune Hydrogen Valley)
Mr. Siddharth R Mayur (h2e)
Mr. Saumil Shah (Thermax)

Moderator:

Mr. Rajesh Mehta (TNO)

Panel 3

Overview:

Panel 3 explored how hydrogen and biofuels can work as complementary pathways for decarbonisation across different sectors. The discussion highlighted emerging applications in chemicals, mobility, sustainable aviation fuel, methanol, and data-centre power, while emphasising the importance of distributed production, certification, technology innovation, and stronger domestic supply chains. The panel also showcased the potential of hydrogen and biofuels to support India's transition toward cleaner, more resilient energy systems.



Panel 3

Verdict: complementary, not competing

Different maturity, different sectors — hydrogen for refining, ammonia, mobility & steel; biofuels (ethanol, SAF, green methanol) for road, aviation & marine



WHERE THE WORLD GOES GREEN

A live demonstrator

₹400/kg

Chlor-alkali traders' grey-H₂ price to specialty chemical clusters — near parity with green H₂, so little/no premium to switch, plus export carbon-credit upside

2+2+1

2 production plants, 2 hydrogen buses, 1 refuelling station — full value-chain demonstrator, live today



Certified, and deliberately distributed

India's first ISCC-Plus & RED II-certified biogenic H₂/methanol plant

Strategy: many small (~1 t/day) plants close to customers, not a few large export hubs — minimising transport emissions. "Certification is a short-term cost, but a long-term enabler."



Three parallel routes

Biomass gasification + CO₂ capture → methanol



Ethanol-plant CO₂ + green H₂ → methanol



Ethanol → SAF (linked to an NTPC tender)

Panel 3

Deep dive: SOFC power for AI/data centres

Since 2016

Bloom Energy SOFC running in Bangalore, still performing 8–9 yrs on

1.5–1.6 → 1.2

Modelled PUE improvement from SOFC-CHP vs. typical data-centre PUE

58%

India's natural gas import share – the case for waste-to-energy over imported gas

Localisation gap flagged:

Solid-oxide interconnect plates come from just 1–2 global suppliers.

Panel's call:

India should "decriminalise failure" in R&D to close such gaps faster.





Technology spotlight

Ultra-pure water from waste heat recovery

Mr. Snehal Suryawanshi

Head of Cleantech – India & Lead,
Sustainability, Alfa Laval

The Technology Spotlight session showcased Alfa Laval's innovative approach to producing ultra-pure water for electrolysis by recovering waste heat from electrolyser operations. The solution demonstrated how integrating heat recovery and thermal desalination can reduce water-treatment requirements, improve resource efficiency, and contribute to lowering the levelised cost of hydrogen (LCOH), highlighting the potential for more efficient and sustainable green hydrogen production.

The idea, in one loop

**Electrolyser
waste heat
(70–85°C)**



**Plate heat-
exchanger vacuum
desalination**



**Ultra-pure water
for electrolysis**

Replaces conventional RO + demineralisation trains — avoids membrane fouling from raw seawater, and recovers heat otherwise rejected to cooling towers/chillers, directly lowering LCOH

Presentation – Alfa Laval

Environmental footprint

+0.1%

Estimated local seawater salinity increase from brine return, against a ~3.7% baseline – minimal impact, with precedent from decades of similar plate-based thermal desalination in submarines, naval bases & offshore drilling platforms.

India footprint & pipeline

85 km

Service-engineer spacing
across India's national network

90+

Planned freshwater-generator
installations across steel & green
H2 hub projects

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Panel 4

Water-resilient hydrogen hubs Designing hubs that give water back



Speakers:

Mr. Sundeep Kumar Gupta (Hero Future Energies)

Mr. Sandeep Choubey (VA Tech Wabag)

Moderator:

Mr. Arjun Mehta (Alignergy Advisory)

Overview:

The session focused on building water-resilient green hydrogen hubs by addressing water availability, desalination, wastewater management, and environmental considerations. The discussion highlighted the need to integrate water infrastructure into hub planning, promote water-positive solutions, and adopt sustainable desalination and recycling practices to support large-scale green hydrogen production.

Panel 4

The core tension

Water for export-oriented green hydrogen production vs. water for agriculture and local livelihoods in already water-stressed regions of India



The "water-positive" hub

400 MLD

One of Southeast Asia's largest desalination orders — the scale reference point

Proposal

Hubs designed to generate surplus treated water for surrounding agriculture & industry, plus wastewater/sludge recycling — modelled on shared data-centre infrastructure



Water as a siting criterion

Water availability should sit alongside renewable-resource quality as a first-order siting factor. Coastal hub decisions must account for brine discharge impact on marine ecosystems. Favours localised, in-hub desalination over piped/imported water.

The near-term reality check

Direct seawater electrolysis is emerging but early-stage — today's commercial electrolyzers still need highly purified feedwater, keeping desalination central to hub design

Panel 4



Scale of the challenge

India's 5 Mt green hydrogen ambition implies water needs running into tens of millions of litres/year — reinforcing the case for water as a shared, hub-level utility, not a per-project responsibility.

Panel 5

Green steel: Unlocking the next frontier of industrial demand



Speakers:

Mr. Prabodha C Acharya (JSW Steel)

Mr. Prashanth Dwivedi (Jindal Steel)

Dr. Deepak Yadav (CEEW)

Moderator:

Mr. Mohit Bhargava (IECC)

Overview:

The session explored the potential of green hydrogen to drive the next phase of decarbonisation in India's steel sector. Panellists discussed technology pathways, cost competitiveness, green steel demand, policy frameworks, and the need for reliable clean energy and hydrogen supply. The discussion highlighted the importance of bankable demand, scalable technologies, and integrated hydrogen-steel hubs to accelerate the transition toward low-carbon steel production.

Panel 5



Phased Pilot

5 MW → 30%

Phase 1 pilot blending green H₂ into coal-gasification DRI syngas — ~30% substitution achieved with no change to downstream metallurgy

JSW Steel's four structuring points

- H₂ is one lever, not a silver bullet
- Pilot-ready ≠ scale-ready
- "Green steel" demand is aspirational, not priced offtake
- Reward emissions cuts, don't mandate a route

Scale needs 4 things at once: affordable clean H₂, fit-for-purpose technology, bankable demand, and competitiveness-protecting policy



No single definition, and a "sweet spot"

Gas-based DRI seen as the realistic medium-term "sweet spot" over pure coal or pure hydrogen routes (tempered by India's gas price volatility). India's Ministry of Steel credited as an early mover on a formal green-steel framework. CBAM flagged as an under-leveraged lever — with the risk that exports simply redirect to non-CBAM markets.

Panel 5



\$8–9/kg

Auction-discovered price,
Europe & China

<\$2–3/kg

Price needed for green H2 to
work in steelmaking

India remains a comparatively high-cost green hydrogen producer today

Consensus: co-locate hydrogen and steel production ("hub + hub" model). Green-procurement premiums on Indian public infrastructure to date have added just ~0.3–0.5% net cost.

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Panel 6

Scaling Adoption: What Will It Take to Move from Pilots to Markets?



Speakers:

Mr. Sachin Chugh (Arup)
Mr. Anuj Sharma (Waree)
Mr. Sanjay Nagrare (Ocior)
Ms. Roochi Loona (DSK Legal)
Mr. Harish Jayaram (Hygenco)

Moderator:

Mr. Nishaanth Balashanmugam (GH2 India)

Overview:

The session focused on the key enablers required to transition green hydrogen projects from pilots to commercial-scale markets. Panellists highlighted the importance of reliable grid connectivity, long-term offtake agreements, supportive policies, shared infrastructure, technology validation, and innovative financing and risk-management frameworks. The discussion emphasised that coordinated efforts across developers, technology providers, financiers, insurers, and policymakers will be essential to scale projects and strengthen India's green hydrogen competitiveness.

Panel 6

Developers: transmission is the real bottleneck

₹16 lakh+/MW

Rising CTU system-strengthening charges — even as green ammonia has reached rough price parity with grey

~Dec 2030

Scheduled expiry of the ISTS charge waiver — flagged as a key risk to cost-competitiveness vs. China

- Extend the ISTS waiver
- Continue state subsidies (Odisha model)
- Shared water/port infra (IDCO ~100 MLD)
- Longer offtake tenures (10+ yrs)

WAAREE®
One with the Sun

De-risking the technology

1 GW/yr

Upcoming alkaline electrolyser plant, Balasar, Gujarat — plus an "electrolyser-as-a-service" model to shift capex risk off customers

5 MW test-bed

India-based stack testing (load, degradation, H₂/O₂ crossover safety) for lenders & insurers



Panel 6



Financing and engineering risk

Financing still mirrors early-stage (not mature) solar/wind — lenders want more sponsor recourse; blended finance increasingly common. Engineering: water planning, transmission coordination and technology-flexible plant design from day one are the risks most often underestimated scaling pilot → gigawatt.

The insurance parallel

2–3% → <0.5%

How solar panel insurance premiums fell over a decade as underwriters gained confidence — the model electrolyzers need to follow

Tenure economics



Renewables

25–30 yrs



Electrolyzers

20–25 yrs



Ammonia loops

40 yrs

Asset lives far exceed typical 10-year offtake contracts — short tenures undervalue the assets. Mature projects now carve out ~20% for shorter/merchant sales once an anchor tenure is secured. Water theme resurfaces: shared, hub-level desalination (Odisha's model) reiterated as essential at scale.

Closing Reflections and Vote of Thanks

The issues we face today are very different from three years ago as several projects have completed or are at FEED stage or pre-certification nearing FID. The common ask from across the value chain is demand creation

Mr. Nishaanth Balashanmugam
CEO & Director, GH2 India



The headline takeaway

India's green hydrogen ecosystem has moved meaningfully from early-stage pilots and announcements toward measurable installed capacity, signed commercial contracts, and an increasingly capable — if still uneven — domestic supply chain

Four priorities for the next phase



Demand visibility

Converting announced capacity into firm, bankable offtake



Transmission & fiscal continuity

Particularly extension of the ISTS charge waiver



Water infrastructure

Shared, hub-level desalination and treatment capacity



Component-level localisation

Closing the gap on membranes, electrodes, stacks

Key Cross-Cutting Themes and Takeaways

10 takeaways from GHIS 4

Themes that recurred across multiple sessions of the day

- | | |
|---|---|
| 1 Demand visibility, not tech readiness, is the binding constraint
Capacity has outpaced firm, bankable offtake (Panels 2, 5, 6) | 2 Policy continuity is the top ask
ISTS waiver extension beyond ~2030, mandated offtake, predictable incentive timelines |
| 3 Localisation has progressed unevenly
BoP at 35–70% domestic; stack components (membranes, catalysts) still import-heavy | 4 Water is now a first-order siting constraint
Co-equal to renewable access; shared hub-level infrastructure is the practical path |
| 5 Technology plurality will persist
Alkaline, PEM, AEM, SOEC to co-exist by application; SOEC gaining ground where waste heat exists | 6 Green steel's demand-definition-tech triangle
Pilots ahead of demand; no single definition; policy should reward outcomes, not routes |
| 7 Financing still resembles early-stage renewables
More sponsor recourse required; blended finance & insurance-market maturity needed | 8 Geopolitics has been a net catalyst in 2026
Energy-security concerns + China's gigawatt delivery (NEOM) reinforced global confidence |
| 9 India–Netherlands: a template for export access
RFNBO/RED certification alignment is the critical path to EU offtake | 10 Hydrogen and biofuels are complementary
Different sectors, different time horizons — pursue in parallel, not as alternatives (Panel 3) |



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GH2 India's 2025 Annual report

A summary and review of our activities in 2025



Reach us at: team@gh2.org.in | www.gh2.org.in