GREEN INVESTORS

Bridging India's Certification Framework to EU RFNBO Standards

GHCI & RFNBO – Synergies & Differences and Why They Matter

Simon Byrtus, 26th June 2025

igef Indo-German Energy Forum

H2Uppp
International Hydrogen Ramp-up Program

GH2 India

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Green Investors builds a bankable, diversified hydrogen portfolio, investing capital and expertise to secure future green energy supply

Strategic Focus on Hydrogen

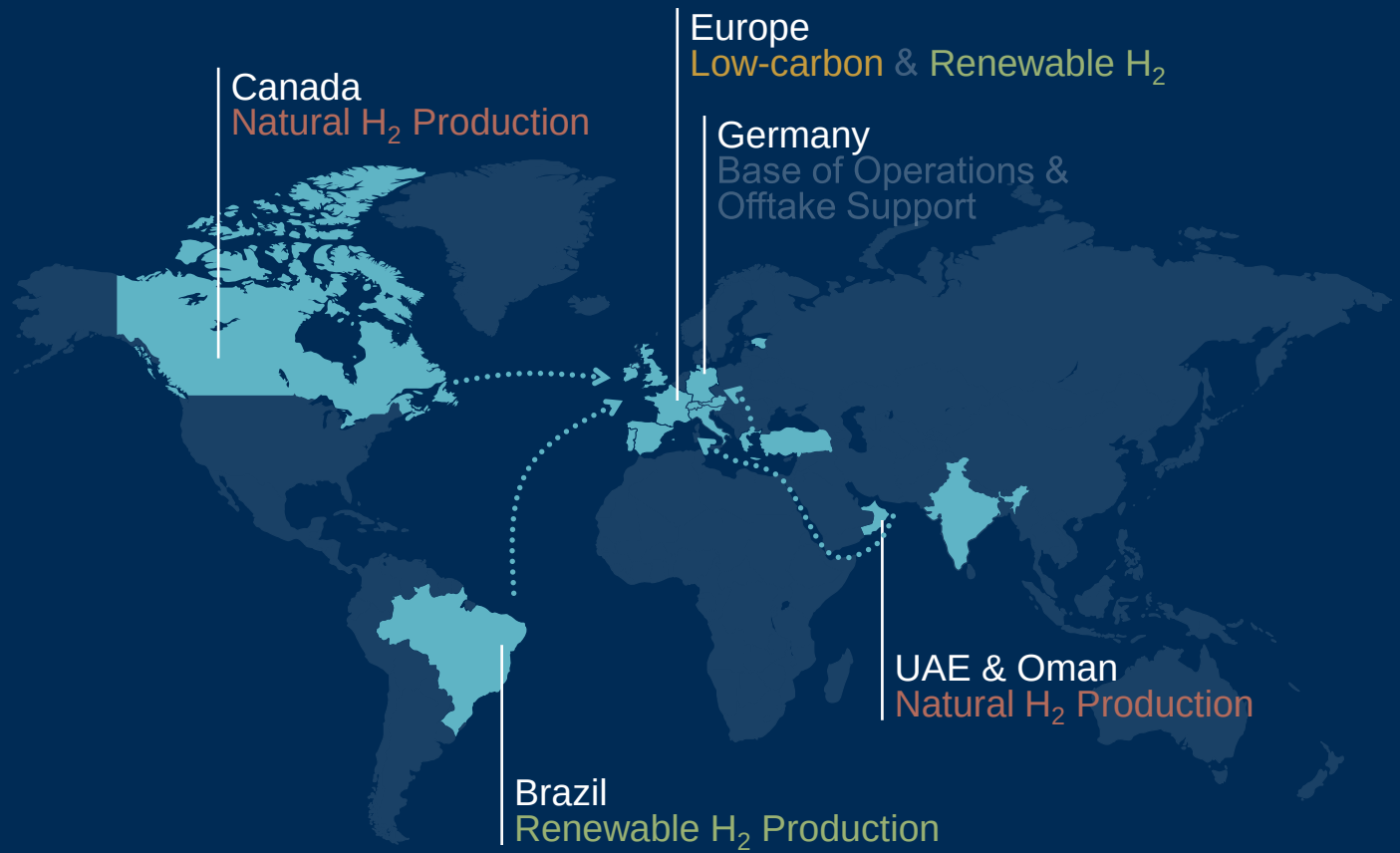
Initiated by a German family office, we build a bankable, diversified hydrogen and derivatives portfolio, supplying Europe and Germany with top-tier, technology-open production projects, therefore lowering risk for offtakers and financiers

Investment and Partnership Approach

We selectively invest in best-in-class projects, contributing capital, expertise and partnership tailored to each project's stage, aligning our success with the project's outcome

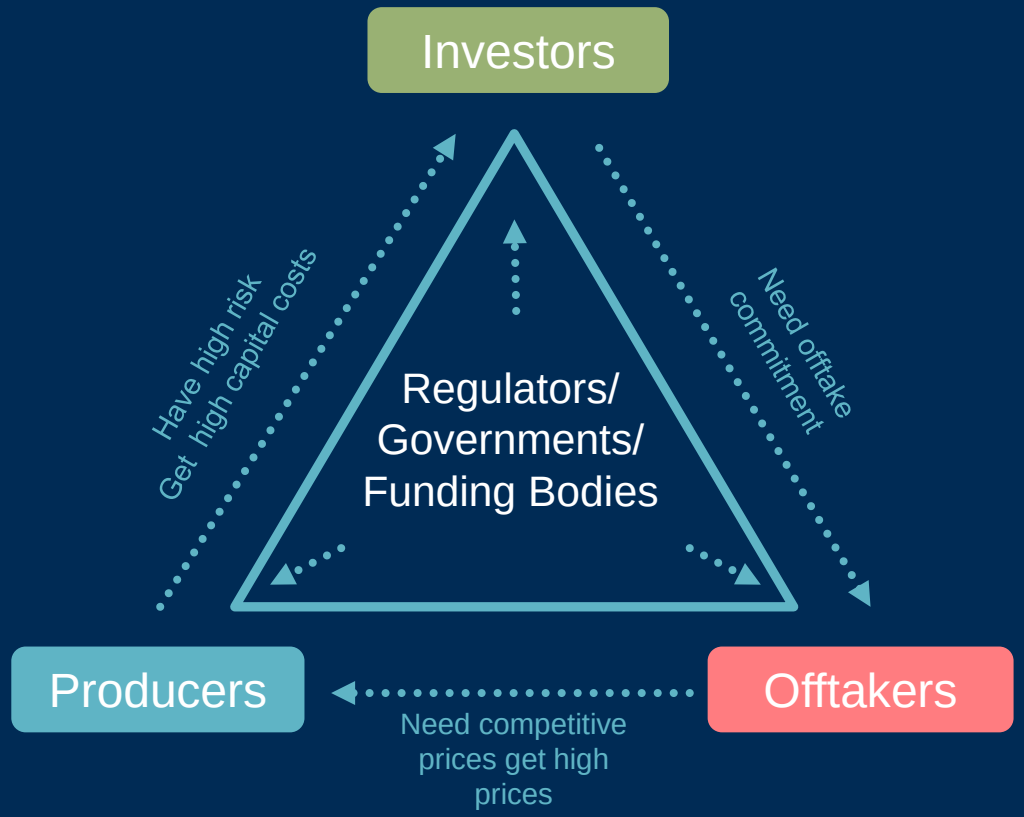
Global Financial Reach and Network

Established in 2011, we leverage a strong financial network across the EU, North America, Middle East and Southeast Asia to support the hydrogen economy and accelerate the energy transition



Most projects fail to reach a FID due to silo-thinking, with producers, investors, and offtakers focused on their own needs

Governments are trying to solve the trilemma with grants and incentives, but private capital is still lacking



Investors love certainty and returns

- Seek long-term participation in booming industries
- Require high equity returns and liquidity security
- Aim for risk minimization and security

Producers offer huge potential at risks

- Require substantial upfront funding without certainty
- Uncertainty in regulatory framework
- Industry is still in infancy and rarely investment-ready

Offtakers need to decarbonize competitively

- Need to comply with quotas and CO2 pricing
- Need plannable frameworks to get H2-ready
- Security of renewable hydrogen supply at competitive costs

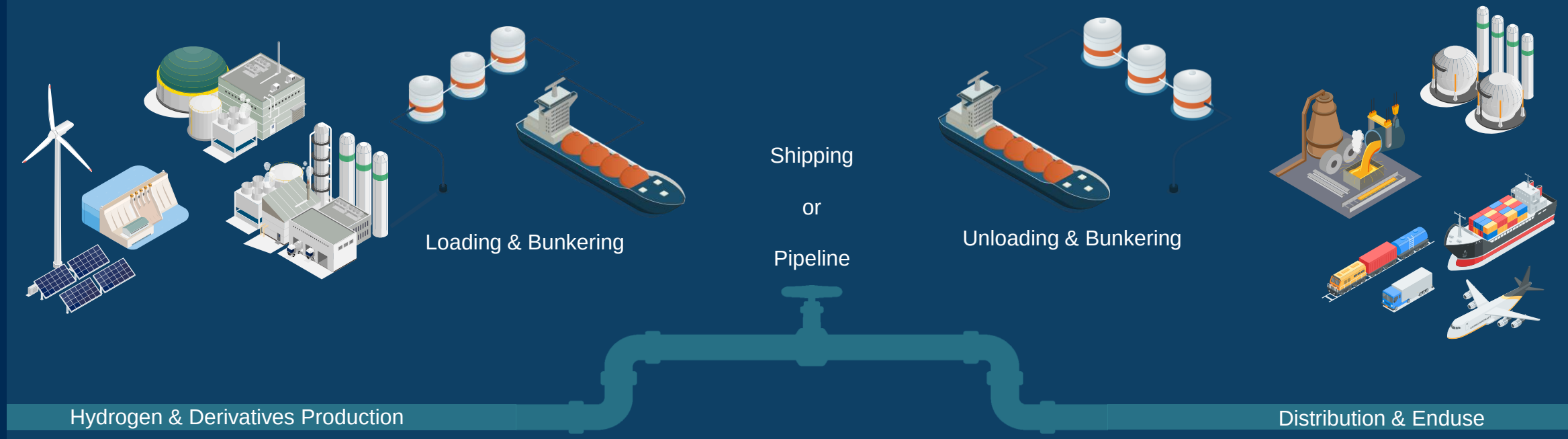
We want to connect low-cost projects with decarbonizing offtakers and facilitate comprehensive and bankable supply chains

We integrate *Producers'*, *Investors'*, and *Offtakers'* needs into horizontal value and supply chains by:

Developing supply of low-cost & -risk production

Reserving Transport & Bunkering Capacity

Securing Offtake & solving distribution



Project developers, investors and offtakers are invited to benefit from our expertise, market insights and network

For Producers

Project Development & Regulatory Expertise

Creating best-in-class production projects in the lowest cost quartile

- Lead and consult on identifying and optimizing high-potential hydrogen projects
- Provide comprehensive regulatory expertise, ensuring compliance with all local, national, and international standards of low-carbon and renewable hydrogen
- Implement risk mitigation strategies and efficiency improvements, ensuring cost-effective, reliable production

For Investors

Strategic Investment & ESG Portfolio Curation

Unlocking early-stage capital to catalyze large-scale investments

- Deploy capital directly into hydrogen production projects with high probability of realization
- Collaborate with institutional investors and partners to secure funding for long-term supply growth, including assistance with grant applications and public financing
- Develop and structure long-term supply agreements to guarantee access to predictable, competitively priced hydrogen portfolio creation

For Offtakers

Diversified Supply & Market Insights

Ensuring supply security, regulatory compliance, and competitiveness

- Aggregate hydrogen output from multiple projects within the portfolio, ensuring diversified and stable supply sources
- Access funding and grants for cost-effective and plannable H2-ready investments
- Offer market access solutions, allowing offtakers to integrate hydrogen into operations seamlessly through flexible supply contracts

Organizations working with Green Investors

DB · SIEMENS · ZUKUNFT GAS · Fraunhofer · VDE · WHU Otto Beisheim School of Management · Hydrogen Europe · TÜVRheinland Genau. Richtig. · GASAG · thyssenkrupp · ANDRITZ · giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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The road to stable regulatory framework and reliable certification schemes for bankable projects in India is winding…

Uncertainties for RFNBO producers

Feb. 2023

› RED III electricity-sourcing rules + GHG methodology

answering grey zones such as construction emissions and "equivalent bidding zones".

Jun. 2023

› **Delegated Acts into force + first Commission Q&A**

Grid India assigned as nodal agency for Grid Related Information

Nov. 2024

› **EU-MNRE Workshop on** „Certification"

Sep. & Dec. 2024

› Draft Green Hydrogen Certification Initiative (GHCI)

› **CertifHy, ISCC, RedCert recognised by EU**

First voluntary scheme able to certify RFNBO outside Europe giving projects audit pathways

Mar. 2025

› MNRE / IGEF / GH2 India: Workshop on "EU RFNBO Certification" with IND project developers

Ongoing study on lessons learned from Certification Workshops

April 2025

› **GHCI Scheme launched** (coupled to SIGHT payouts)

Makes GHCI mandatory for any subsidised tonne

July 2025

› **Launch Whitepaper + Webinar**: „Bridging India's Certification Framework to EU RFNBO standards"

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MNRE launches India’s Green Hydrogen Certification Scheme (GHCI) for credible, traceable green-hydrogen certification with 7 objectives

Main Objectives of GHCI

- **Outline the governance structure** of the certification mechanism — define roles and responsibilities
- **Detail the scope and system boundaries** for the Green Hydrogen certification procedure
- **Provide guidelines for calculating GHG-emission intensity** during Green Hydrogen production
- **Define monitoring requirements** for production, including assessment and improvement steps
- **Set the verification approach** and designate a nodal authority to issue Green Hydrogen certificates
- **Create a reporting mechanism** for production data and implement continuous tracking
- **Establish the certification procedure as a Guarantee of Origin (GO)**

MNRE Minister Pralhad Joshi launches Green Hydrogen Certification scheme

While GHCI builds the foundation for India to become a global hub and exporter of green Hydrogen, how does it deal with EU RFNBO?

- **Export ambition meets regulation:**
  GHCI exists to qualify hydrogen for Indian incentives **and** global sales, so its success also hinges on how it harmonizes with EU's RFNBO rulebook
- **Policy check-up:**
  A quick side-by-side view exposes gaps policymakers must close now to keep India's hydrogen flowing into Europe without trade frictions
- **Developer playbook:**
  Knowing where the two schemes align—or clash—lets project teams design plants that secure Indian funding while staying EU-ready for exports

GHCI

RFNBO

IGEF and Green Investors are launching a white paper to overcome compatibility gaps and give recommendations for action to policy makers and project developers alike

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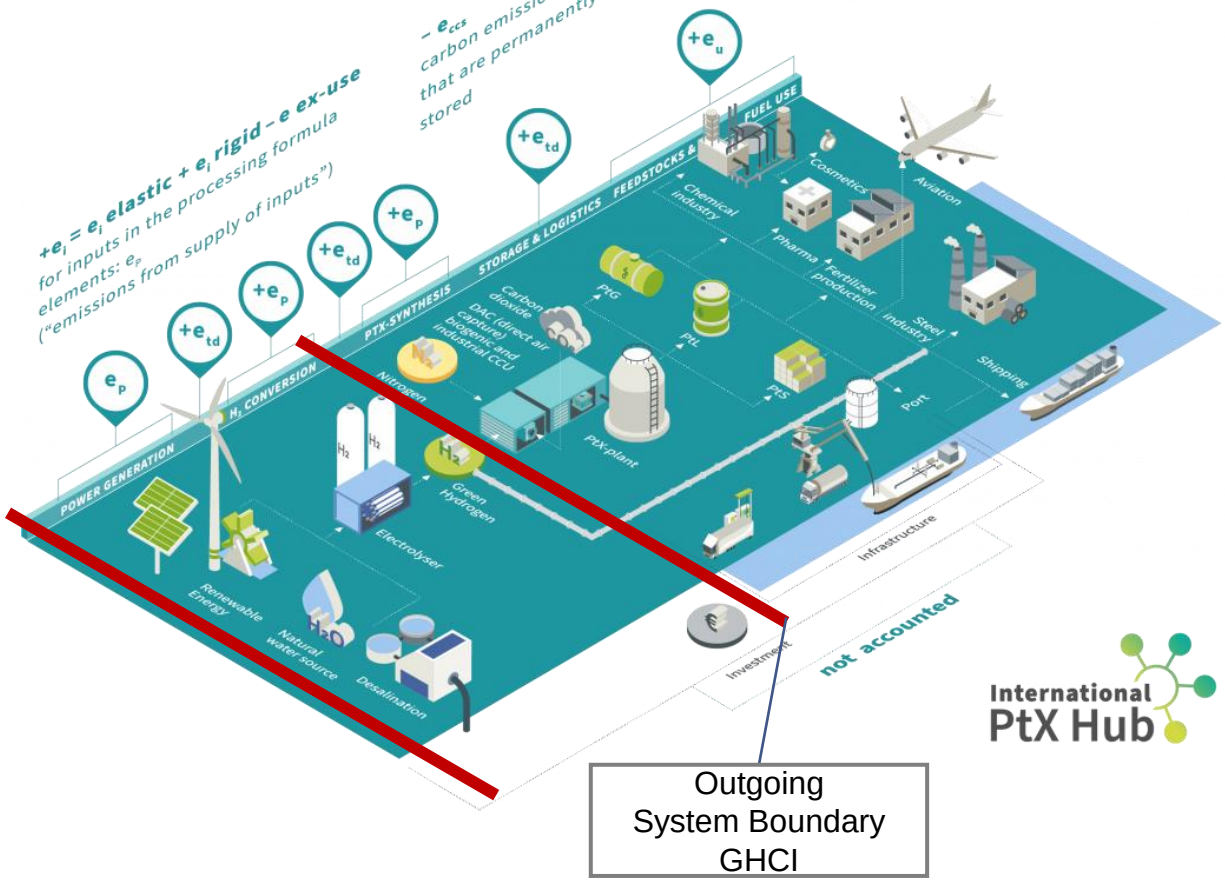
Overview on major differences between GHCI and RFNBO

- GHCI allows for Hydrogen **made from Biomass**, RFNBO (Renewable Fuel of Non-Biological Origin) explicitly excludes such production route
- GHCI balances GHG-emissions for Hydrogen production while **RFNBO methodology accounts for derivatives, logistics & end use**
- GHCI allows **banking for electricity**; RFNBO demands real-time correlation
- GHCI does not **not have a bidding zone** logic but relies on national grid physical delivery
- GHCI's absolute 2 kg_{CO2}/kg_{H2} limit
- RFNBO's implicit 3.4 kg_{CO2}/kg_{H2} however **RFNBO has different system boundaries**



Gap-Analysis between GHCI and RFNBO - Deep Dive on Delegated Act and its rules on power sourcing

Criterion (starting from EU rule)	RED III / RFNBO requirement	GHCI treatment	Gap / comment
Additionality (Art 5)	Renewable plant must be commissioned ≤ 36 months before the electrolyser and receive **no operating or investment aid** (in force 1 Jan 2028)	**No additionality clause.** Any existing RE allowed; aid to RE asset not restricted.	Developers using subsidised Indian RE must separate the so produced Hydrogen from export batches (which where produced with non-subsidized RE) to keep RFNBO eligibility.
Temporal correlation	Monthly matching until 31 Dec 2029; hourly matching from 1 Jan 2030 (poss. delay to 2035)	**None.** Renewable power may be taken directly, via storage, or **virtually banked**; compliance proven on a 12-month basis	Large divergence; India permits banking and yearly averaging
Geographical correlation	Same bidding zone, or interconnected zone with price ≥ producer zone; applies equally to imports (Art 7)	**Not defined.** Any RE physically delivered to the Indian grid qualifies; GHCI treats entire national grid as eligible	“equivalent bidding zone” discussion ongoing
Permitted electricity proofs	Direct line, co-located storage, PPA with matched Guarantees of Origin; no generic RECs	Direct supply, on- or off-site storage, **grid banking**, “green-tariff” or power-exchange (G-DAM) purchases; **RECs or carbon credits *not* valid**	Banking & green tariff acceptable in GHCI but *not* under RFNBO
Grand-fathering (pre-2028)	Plants operational < 1 Jan 2028 exempt from additionality until 2037; still need correlation	GHCI has no phased timelines	EU provides long transition path; India one-step rule
Verification of power data	Hourly SCADA records from 2030; submitted to voluntary-scheme auditor	Hourly meters required, but **reporting uploaded monthly**; no hour-matching check	Same hardware can serve both, but reports diverge

Gap-Analysis between GHCI and RFNBO - Deep Dive on Methodology for GHG-Emission-Calculation

Aspect	EU RFNBO methodology	India GHCI methodology (Apr 2025)	Key difference
Reference standard	Annex I of Reg. (EU) 2023/1185, RED III Art 25 (2)	ISO 19870:2023 + ISO 14064, integrated in GHCI Clause 8	EU uses its own formula; GHCI adopts ISO framework [a]
GHG threshold	≥ 70 % savings vs. fossil comparator ⇒ ≈ ≤ 3.4 kg CO_2-eq /kg H_2 (LHV)	≤ 2.0 kg CO_2-eq /kg H_2 12-month average	GHCI threshold tighter but only includes Hydrogen production boundaries not derivatives and logistics like RFNBO
System boundary	Feedstock extraction → electrolysis → compression → transport to first storage/distribution point; **includes** CO_2 capture for e-fuels and off-site electricity transmission losses	Water treatment, electrolysis, purification, drying, compression, onsite storage; **excludes** construction, off-site storage & external transport	GHCI "gate-only", RFNBO full well-to-dispatch
Electricity emission factor	Hourly measured if direct, or residual mix if grid; default factors in Annex	Indian CEA grid factor; transmission losses added	Different databases & temporal granularity
Materiality threshold	<1 % per source may be ignored; max 10 % total	<1 % per source; max 5 % total (Clause 8.6)	GHCI is stricter on cumulative exclusions
Verification	Annual audit by an EU-recognised voluntary scheme (e.g. CertifHy)	Annual audit by BEE-accredited **ACV**; Final Certificate issued each FY	Different auditor pools but similar frequency

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What Project Developers should know… when exporting GH2 to Europe and applying for funding grants in India

SIGHT (Strategic Intervention for Green Hydrogen Transition)

- Funding follows **place of production**, not **place of use**
- **Projects could receive Indian SIGHT incentives even if 100 % of the hydrogen is exported**
- The production-linked subsidy in **Component II – SIGHT Mode-1** is paid on every kilogram produced in India that holds a “Final GHCI certificate”, irrespective of where the molecule is finally consumed

Double Counting

- The same hydrogen **cannot** draw two different SIGHT incentives (Mode-1 and Mode-2) and will most likely not be able to earn CCTS carbon credits if exported as RFNBO
- If the Hydrogen produced is certified as RFNBO and is consumed in EU the emission saving can only be billed **ONCE.** Carbon Credits can‘t be then sold again (the gramm of CO2 saving just happens once)
- **BUT** if produced kg of Hydrogen for export is ring fenced with RFNBO certification (avoid that GHCI AND RFNBO certificate is connected to the same kg otherwise GHCI certificate can be used to be converted to CCTS) previously granted subsidy for the same kg can be kept

What Project Developers should know… about RFNBO rules when Mode-1 money from SIGHT is involved

EU criterion	Potential clash?	How to stay safe
70 % GHG saving (≈ ≤ 3.4 kg CO_2-eq/kg H_2)	None—GHCI's 2 kg limit is stricter, however system boundaries need to be taken care of. Additional emissions for derivative processes and logistics could overshoot the RFNBO threashold	Keep the GHCI LCA file; the EU auditor should be able to use most of it
Additionality – RE plant < 36 months old **and** *no operating/investment aid* to that plant	Only if your PV/Wind asset also got Indian subsidies	Use an unsubsidised PPA or repay any viability-gap grant
Temporal match – monthly → hourly from 2030 (maybe 2035)	GHCI allows banking; H2Global and EU buyers will ask for hourly data	Install 15-min SCADA now; aggregate monthly for GHCI, hourly for EU
Geographical link – same or equivalent "bidding zone"	Still case-by-case for India	Provide evidence of dedicated RE capacity + cross-zone power-flow modelling in the EU scheme audit

What Project Developers should know…
Can Indian SIGHT–subsidised hydrogen still win EU support?

Question	Short reply
1. Does SIGHT Mode-1 funding block you from German-Dutch H2Global contracts?	**No.** H2Global explicitly allows producers to combine its cost-of-difference payment with “subsidies from different sources … local schemes in the country of production” as long as the amounts are **declared and no tonne is over-compensated**
2. Will the same hydrogen qualify as an EU-recognised RFNBO?	**Yes—if you meet the Delegated-Act rules.** The Indian OPEX incentive is paid on **hydrogen**, not on the renewable-power plant, so it does **not** trip the “no aid to the power installation” clause in Article 5(b) of Regulation EU 2023/1184. You still need an EU-recognised voluntary scheme (ISCC EU, CertifHy, etc.) to issue the actual RFNBO certificate.
3. What must developers do to stay compliant?	Keep two ledgers (GHCI vs. EU scheme), ensure the **renewable-electricity asset has zero operating/investment aid**, and tell Hintco in your H2Global bid exactly how much INR / kg you already receive so the premium can be adjusted.

What Project Developers should know…
About Monitoring, Reporting, Verification (MRV) for GHCI & RFNBO

Step	What happens under GHCI	Comparable step under EU RFNBO
Monitoring	Hour-by-hour metering of renewable electricity in-feed, electrolyser power draw, H_2 production, compression etc.	Same, but from 1 Jan 2030 the EU requires *hourly* matching of green power to H_2 output (monthly until then)
Reporting	Monthly data are aggregated over the Indian financial year and uploaded to the Implementing Agency's portal	Monthly (and later hourly) data are stored and handed to the EU scheme auditor; summary is submitted to the European database
Verification	An **Accredited Carbon Verifier (ACV)**, licensed by India's Bureau of Energy Efficiency, audits the data once per year before a *Final GHCI certificate* is issued	An external auditor accredited by the chosen EU scheme performs a yearly audit before an RFNBO certificate lot is generated

- If production is exported, the **same raw meters** can feed both MRV systems, but the **reporting packages and auditors are different**. That is why developers should:
  - set up a **single automated data historian** that logs everything at ≥15-minute resolution, and
  - build **two report generators** on top—one formatting the outputs for the GHCI portal, one for the EU scheme template

Important compatibility questions and practical approaches for certification

Item	GHCI requirement	EU-RFNBO requirement	Why you must keep them **separate**
Chain-of-custody system	Indian registry operated under the Green Hydrogen Certification Initiative (serial numbers issued per tonne of H_2)	Voluntary scheme recognised by the European Commission (e.g. ISCC EU, CertifHy). Through each scheme certification bodies issue their own "Proof of Sustainability" or "RFNBO certificate" with a different number range	A single tonne of hydrogen must not carry *two* certificates with full GHG credit – that would be double counting
Emission factor set	ISO 19870/14064; static grid factors published by CEA	Delegated Acts to RED III; JRC default factors or supplier-specific data	Using the "wrong" factor set in either system will invalidate the certificate
Eligibility for carbon markets	Certificates may be converted into allowances in the Indian Carbon Credit Trading Scheme (CCTS)	EU certificates can be surrendered against the Renewable-Energy quota of the buyer, *not* for EU ETS	If you claim CCTS credits **and** sell the physical product into the EU, you have monetised the same environmental attribute twice

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Key-Take-Aways from today

- **The GHCI is a great step towards a credible chain of custody**
  - Harmonizing or aligning certification schemes GHCI & RFNBO will take away risks from investor and offtake perspective
- **Currently GHCI and RFNBO can work side by side, but not for the same kg of Hydrogen**
  - Mode 1 of SIGHT (production subsidy) can be granted for GHCI but RFNBO status for the same kg would allow **double counting**
  - Using GHCI for Carbon Credits or other incentives for domestic consumption in India AND benefit from RFNBO standard for EU shouldn't be possible
- **Indian Mode-1 (SIGHT) incentives and EU RFNBO certification are compatible**
  - But only when the environmental attribute of each kilogram is allocated once and the renewable-power asset is subsidy-free
  - Getting that right is mostly a matter of book-keeping discipline and metering design, not of conflicting laws
- **The two schemes could work complementary:**
  - GHCI gives rupee cash-flow at the plant gate; H2Global (or future EU import tenders) tops up the delivered-Europe price—provided developers disclose the first when bidding for the second and your renewable power remains subsidy-free
  - That way, EU buyers could confidently book RFNBO emission savings, and developers keep every public-funding door open
  - Indian subsidies commits project developers to **full GHCI compliance and rigorous yearly verification but** does not lock developers into the Indian market. With the right data infrastructure, they can satisfy both GHCI and EU RFNBO in parallel

Recommendations for Policy Makers and Project Developers

Project Developers

Run twin ledgers from day 1
GHCI ledger for subsidy-linked tonnes; EU ledger for export/RFNBO tonnes. Never move a batch from one ledger to the other

Keep your renewable-power asset subsidy-free
Any Indian CAPEX or OPEX aid to the wind/PV plant breaches RFNBO Article 5(b). Structure a merchant or fixed-price PPA instead

Design for hourly data, even if India only needs monthly
Put 15-minute (or better) SCADA on power inflow and hydrogen outflow; store raw files for five years. Aggregation to monthly for GHCI is trivial—re-creating missing hourly data later is impossible

Disclose Indian incentive in every EU bid
Hintco (H2Global) or any future EU import auction will adjust the strike price to avoid over-compensation. Non-disclosure = potential claw-backs and reputational damage

Ring-fence export batches against CCTS conversion
Label them “non-transferable” (or retire the GHCI serial number) the moment they leave the plant gate for export.

Policy Makers

Seal the double-counting loophole

- MNRE: Issuing a binding rule that any hydrogen (or derivative) batch exported under an EU-recognised certificate is **ineligible** for Indian CCTS carbon credits would be desirable from an industry perspective and further harmonize regulatory frameworks

- EU: clarify in the RFNBO guidance how imports that have already unlocked a producer-country OPEX grant or Carbon Credit revenues should be flagged in Union Database

Publish derivative-scope roadmap
MNRE should confirm by mid-2025 whether & when GHCI will cover NH_3, methanol, SAF

Thank you

Simon Byrtus
simon.byrtus@green-investors.com
+49 162 316 9930