International Partnership for Hydrogen and Fuel Cells in the Economy

India Update

43rd IPHE Steering Committee Meeting

10-11 June 2025

Santiago, Chile

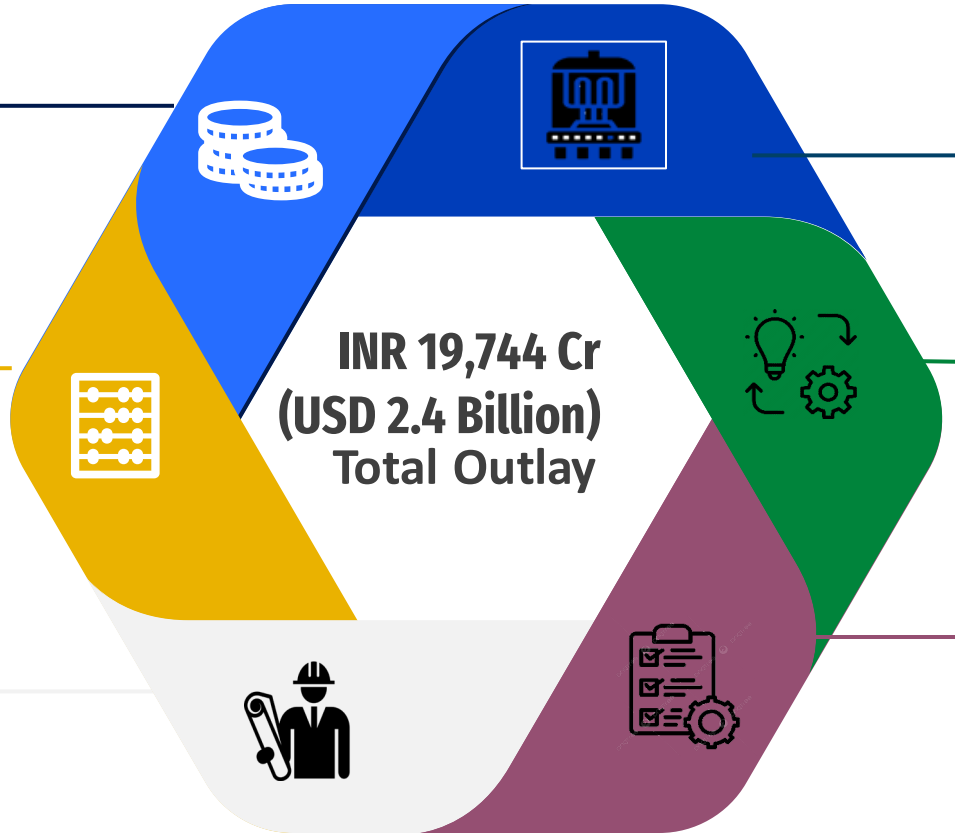
India's Green Hydrogen Mission Overview

Launched National Green Hydrogen Mission (NGHM) in January 2023 with following targets to be achieved by 2030

- At least 5 MMT GH_2 Annual Production
- 60-100 GW Electrolyser Capacity
- 125 GW RE Capacity for GH2 Generation
- 50 MMT Emissions Averted
- INR 1 Lakh Crore (USD 12.5 Billion) Import Savings
- INR 8 Lakh Crores (USD 100 Billion) Investment
- Creation of 6 Lakh Jobs (0.6 Million)

Announcements / New Initiatives- *India*

Budget Outlay under NGHM



INR 17,490 Cr
(USD 2.1 Billion)
Strategic Interventions for Green Hydrogen Transition (SIGHT)

INR 1066 Cr
(USD 175 Million)
Pilot Projects

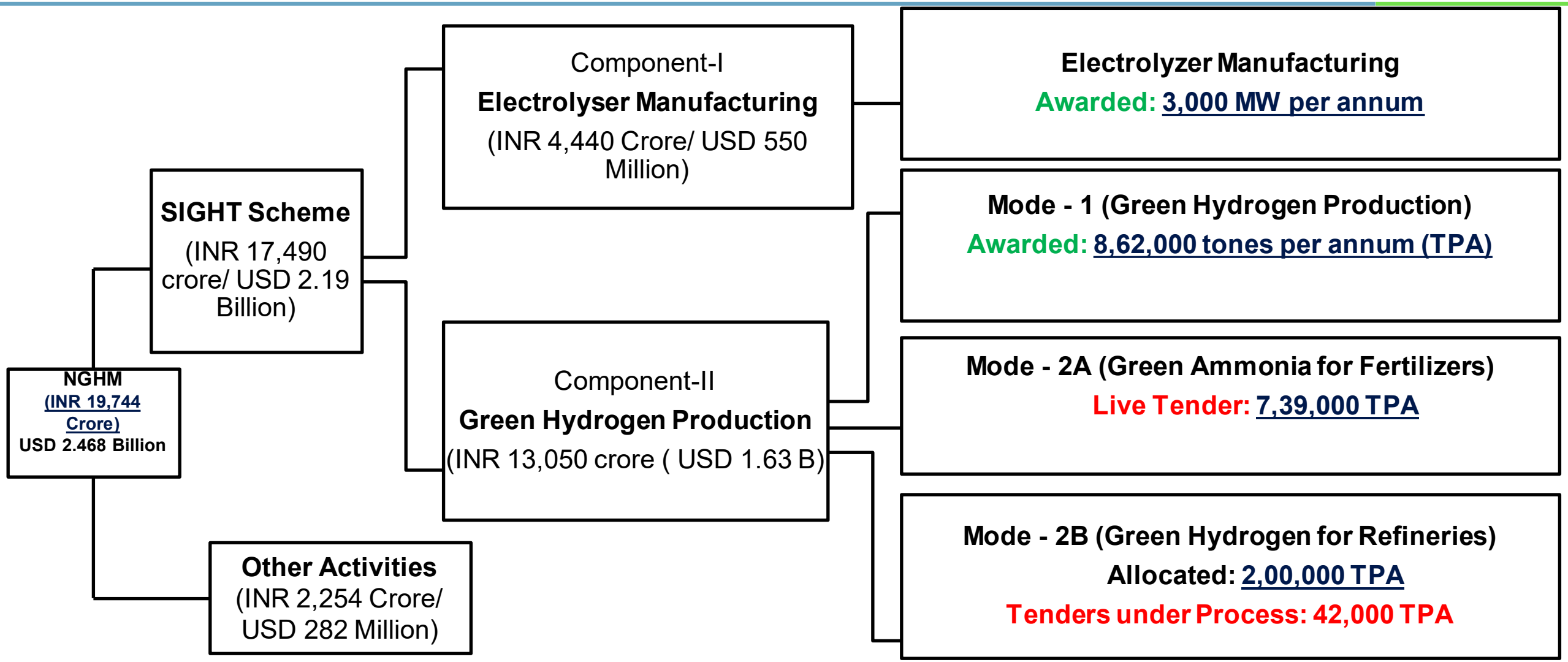
INR 353 Cr
(USD 46 Million)
Other Components

INR 400 Cr
(USD 50 Million)
Hubs and other Emerging Technologies

INR 400 Cr
(USD 50 Million)
R&D

INR 35 Cr
(USD 4 Million)
Skill Development

Announcements / New Initiatives- *India*



Announcements / New Initiatives- *India*

- Incentives have been awarded for a capacity of 4,50,000 tons-per-annum (TPA) of Green Hydrogen production
- SECI signed a MoU with H2Global Stiftung to establish a collaborative framework to promote Green Hydrogen initiatives
- Scheme Guidelines for pilot projects for production and use of GH2 using innovative methods/pathways issued
- 7 pilot projects have been awarded to use hydrogen in Steel sector
- 5 pilot projects have been awarded in Transport sector to deploy 37 hydrogen fueled vehicles (10 buses and 27 trucks) and 9 hydrogen refueling stations across ten identified routes
- 23 projects have been awarded for R&D across Green Hydrogen Production, Application and Safety themes
- CfP for Centres of Excellence (CoE) in R&D issued and over 100 proposals received
- 3 projects have been awarded for developing Testing facilities across Green Hydrogen value chain
- Regulations, Codes and Standards: 111 standards have been adopted/published
- Scheme for Green Hydrogen Certification in India (GHCI) has been released.

Pilot Projects – Steel Sector

Outlay: INR 455 Crore (USD 56.8 M) **Timeline:** 5 years (till 2029-30)

Scheme Implementing Agency (SIA): MECON Limited (under M/o Steel)

- 7 projects awarded (around INR 454 Crore).
- The above projects will be commissioned between October 2026 and December 2027.
- Technologies under development:
  - **Scheme A :** Pilot project to produce DRI using 100 % Hydrogen using vertical Shaft
  - **Scheme B :** Use of hydrogen in existing Blast Furnace to reduce coal/coke consumption
  - **Scheme C :** Injection of Hydrogen in vertical shaft based DRI making to partially substitute the Natural Gas or other reducing gas

Pilot Projects – Road Transport Sector

Outlay: INR 496 Crore (USD 62 M) **Timeline:** 3 years (till 2025-26)

Scheme Implementing Agency (SIA): Automotive Research Association of India (ARAI)

- 5 projects awarded (around INR 208 Crore/ USD 26 M) for deploying **37 Hydrogen fuelled vehicles** (10 Buses and 27 Trucks) and **9 Hydrogen Refuelling Stations** across **10 different routes**

1. Greater Noida – Delhi – Agra	6. Thiruvananthapuram – Kochi
2. Bhubaneshwar – Konark – Puri	7. Kochi – Edappally
3. Ahmedabad – Vadodara – Surat	8. Jamnagar – Ahmedabad
4. Sahibabad – Faridabad – Delhi	9. NH-16 Visakhapatnam – Bayyavaram
5. Pune – Mumbai	10. Jamshedpur – Kalinga Nagar

- The above projects will commence trials from March-June 2025 and complete by March 2027
- Tata Motors has launched the trials of hydrogen-powered heavy-duty trucks on 4th March 2025
- 2nd round of proposals will be invited shortly.

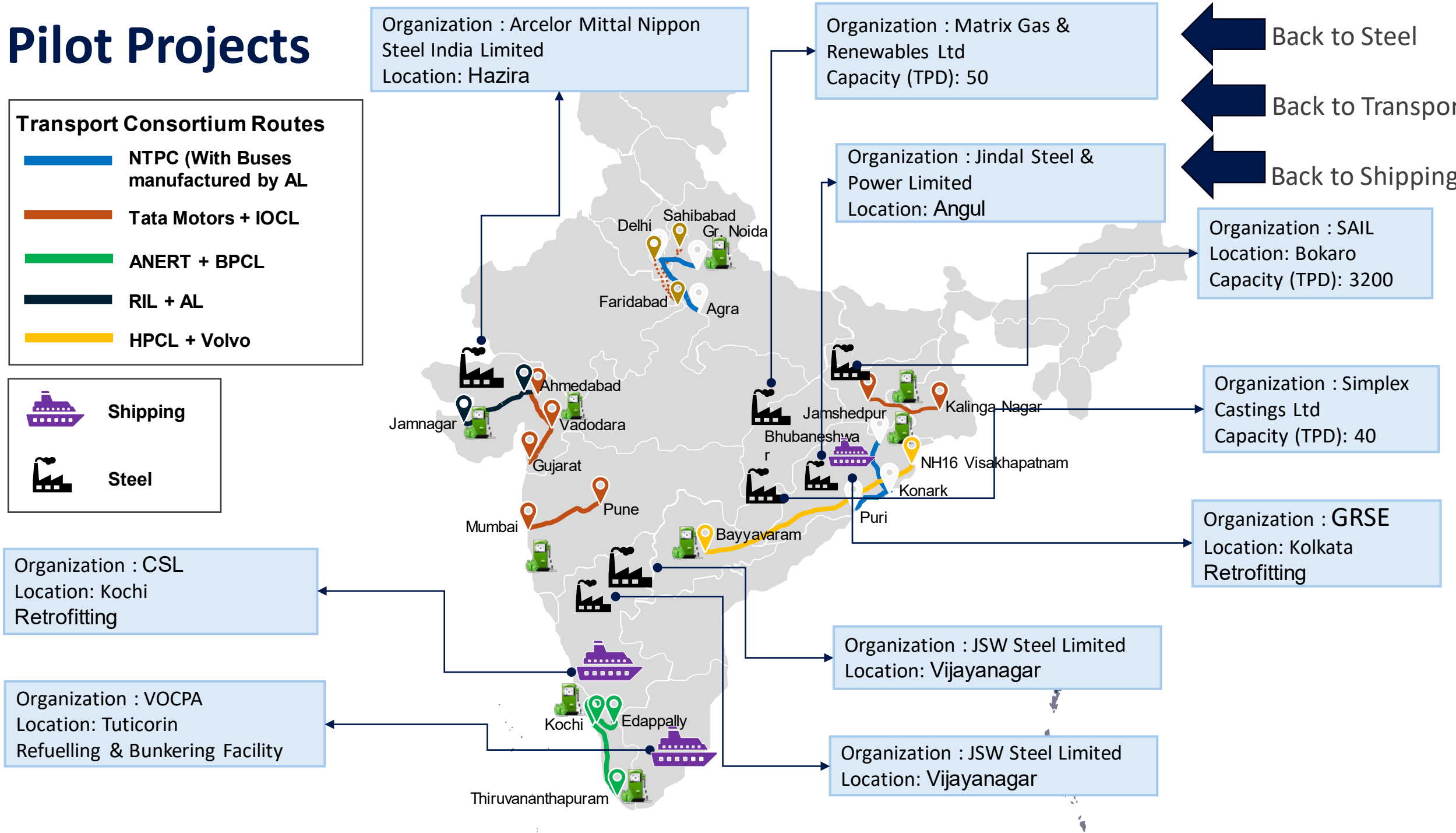
Pilot Projects – Shipping Sector

Total Outlay: INR 115 Crore (USD 14 Million) **Timeline:** 2 years (till 2025-26)

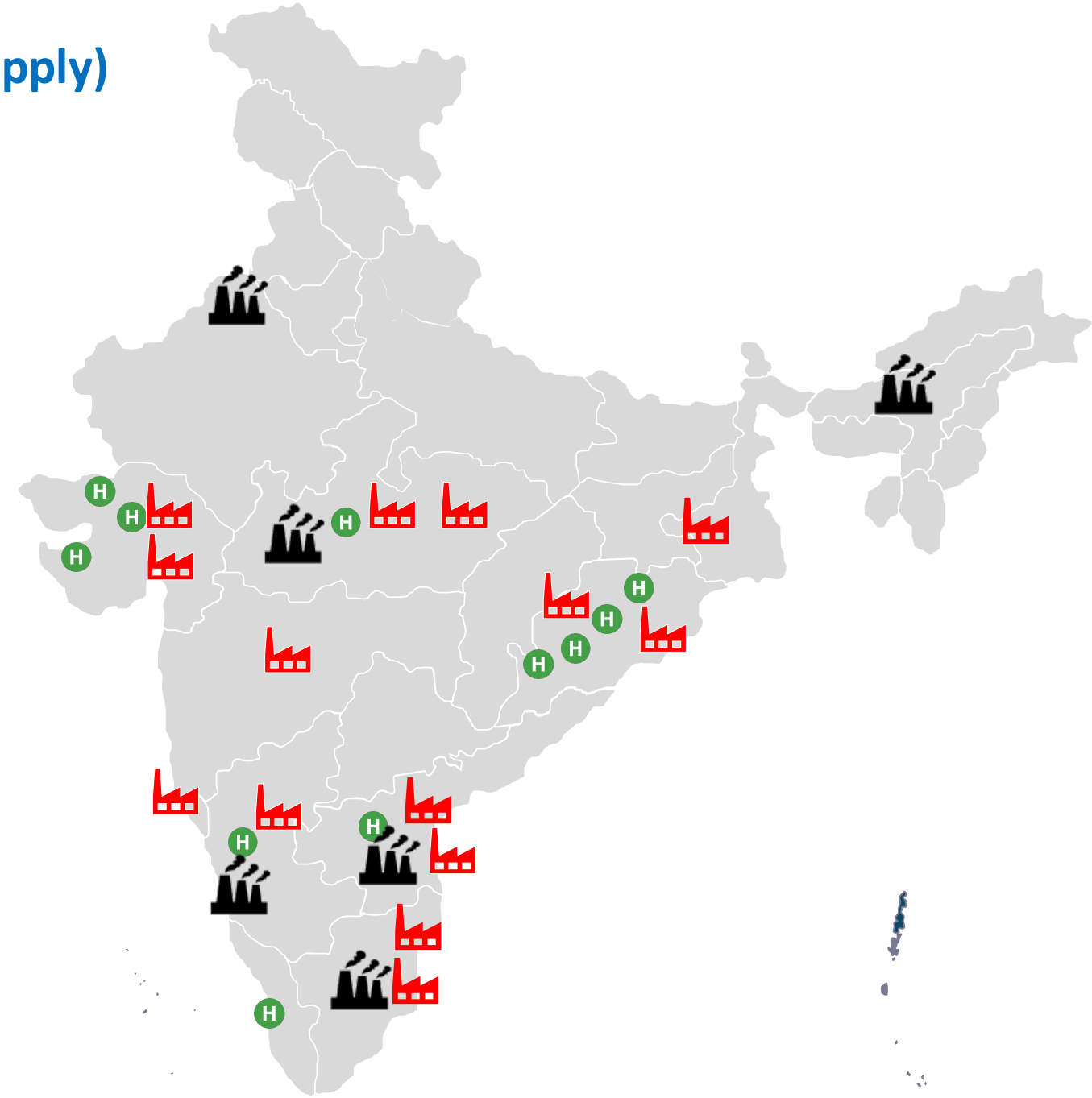
- **Component A: Retrofitting of Vessels (Outlay INR 80 crore; USD 10 Million)**
  - **Scheme Implementing Agency (SIA):** Shipping Corporation of India (SCI)
  - Two offshore support vessels (120T BP AHTS) identified for retrofit.
  - RFP document for undertaking the project on EPC reimbursable basis issued to GRSE.
  - GRSE shipyard has engaged a design firm for carrying out basic design & detailed engineering.
  - GRSE Shipyard has earmarked a Drydock in main yard in Kolkata for executing the work.

- **Component B: Establishment of Bunkering and Refuelling Facility of GH2 (Outlay INR 35 Cr; USD 4 Million)**
  - **Scheme Implementing Agency (SIA):** V.O. Chidambaranar Port Authority
  - DPR prepared by VOCPA for development of bunkering and refuelling facility with 750m^3 Green Methanol bunkering, as pilot project at VOCPA. Project would be completed by January 2026.

Pilot Projects



GH2 / GA (Production and Supply)



H GH2 Projects

Fertilizer Units (SIGHT 2A)

Refineries (SIGHT 2B)

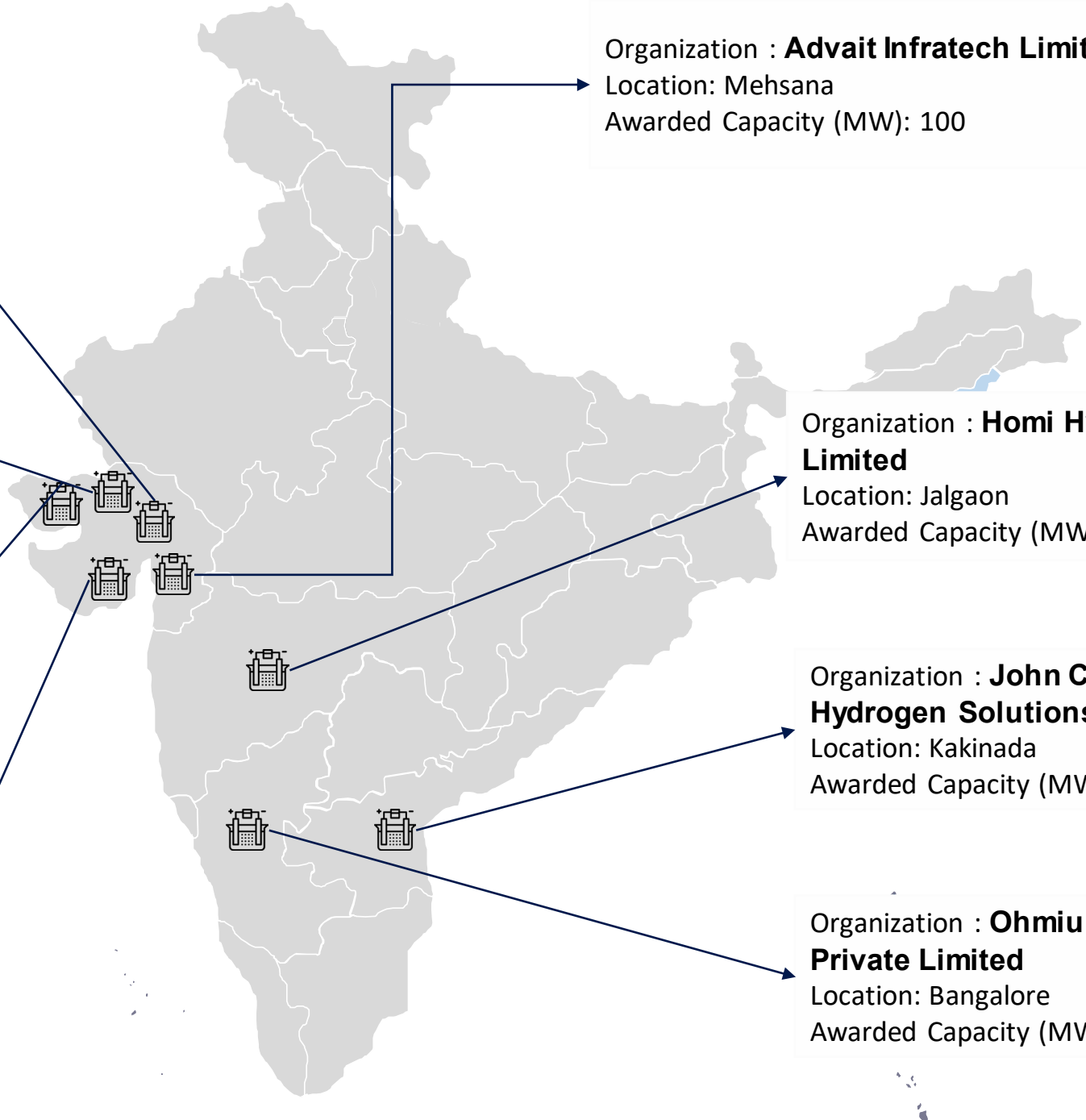
Electrolyser Manufacturing

Organization : **Matrix Gas and Renewable Limited**
Awarded Capacity (MW): 63

Organization : **Reliance Electrolyser Manufacturing Limited**
Location: Jamnagar
Awarded Capacity (MW): 300

Organization : **L&T Electrolysers Ltd.**
Location: Hazira, Surat
Awarded Capacity (MW): 300

Organization : **Adani New Industries Limited (ANIL)**
Location: Mundra
Awarded Capacity (MW): 198.5



Organization : **Advait Infratech Limited**
Location: Mehsana
Awarded Capacity (MW): 100

Organization : **Homi Hydrogen Private Limited**
Location: Jalgaon
Awarded Capacity (MW): 101.5

Organization : **John Cockerill Greenko Hydrogen Solutions Pvt Ltd**
Location: Kakinada
Awarded Capacity (MW): 300

Organization : **Ohmium operations Private Limited**
Location: Bangalore
Awarded Capacity (MW): 137

Examples of Lessons Learned and Impact: *India*

Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
Pilot projects in Transport, Shipping and Steel Sector	i. Deployment of Green Hydrogen or its derivatives in hard-to-abate sectors ii. Validation of technical feasibility, performance and evaluation of economic viability
Guidelines for Implementation of SIGHT programme • Component - I: Electrolyzer Manufacturing • Component -II: Green Hydrogen (Mode 1)	i. Maximizing indigenous electrolyser manufacturing and Green Hydrogen production in a cost-effective manner ii. Reduced import dependencies
• SIGHT Mode 2A (aggregation model for Green Ammonia) • SIGHT Mode 2B (aggregation model for Green Hydrogen)	i. Demand aggregation, maximizing production & domestic offtake ii. Enhancing cost-competitiveness iii. Price discovery, market visibility, Project development experience, and large-scale utilization iv. Reducing import dependencies

Profile June 2025 - *India*

Status of Deployments

- **Electrolyser Manufacturing:** 3000 MWPA awarded to 15 companies
- **GH2 Production:** 862,000 TPA awarded to 18 companies
- **Green Ammonia aggregation:** Bids invited for 739,000 TPA
- **Green Hydrogen aggregation:** 42,000 TPA for Green Hydrogen generation units have been tendered by refineries
- About **2.55 MMTPA** of Green Ammonia production for export and about **0.3 MMTPA** for domestic consumption tied up by producers

Leading Government Initiatives

- Notification of **Green Hydrogen Standard of India**
- **Electrolyser manufacturing** and **Green Hydrogen Production** under SIGHT programme
- Implementation of various **pilot projects in Steel, Shipping and Mobility sectors**
- Funding of **Testing facilities, Infrastructure, and Institutional support**
- **Funding of R&D** in Green Hydrogen domain
- Development of **Regulations, Codes and Standards**
- Creation of **Hydrogen Hubs**
- **Skill and Capacity Building**
- **Green Hydrogen Certification Scheme**

Deployment Goals

5 MMTPA Green Hydrogen Production by 2030

Goals or Focus Areas

- **60-100 GW** Electrolyser Capacity
- **50 MMT CO_2** Emissions to be averted
- **Import Savings** of INR 1 Lakh Crore (USD 12.5 Billion)
- **Investment** of INR 8 Lakh Crores (USD 100 Billion)
- Creation of **6 Lakh jobs (0.6 Million)**

Funding

INR 19,744 Cr
(USD 2.4 Billion)

Thank you

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