



International Conference on Green Hydrogen 2023

India Perspective

India's Energy & Emission Targets

2030

- 50% of Installed Capacity from non-fossil fuels
- Reducing emission intensity of GDP to 45% below its 2005 level

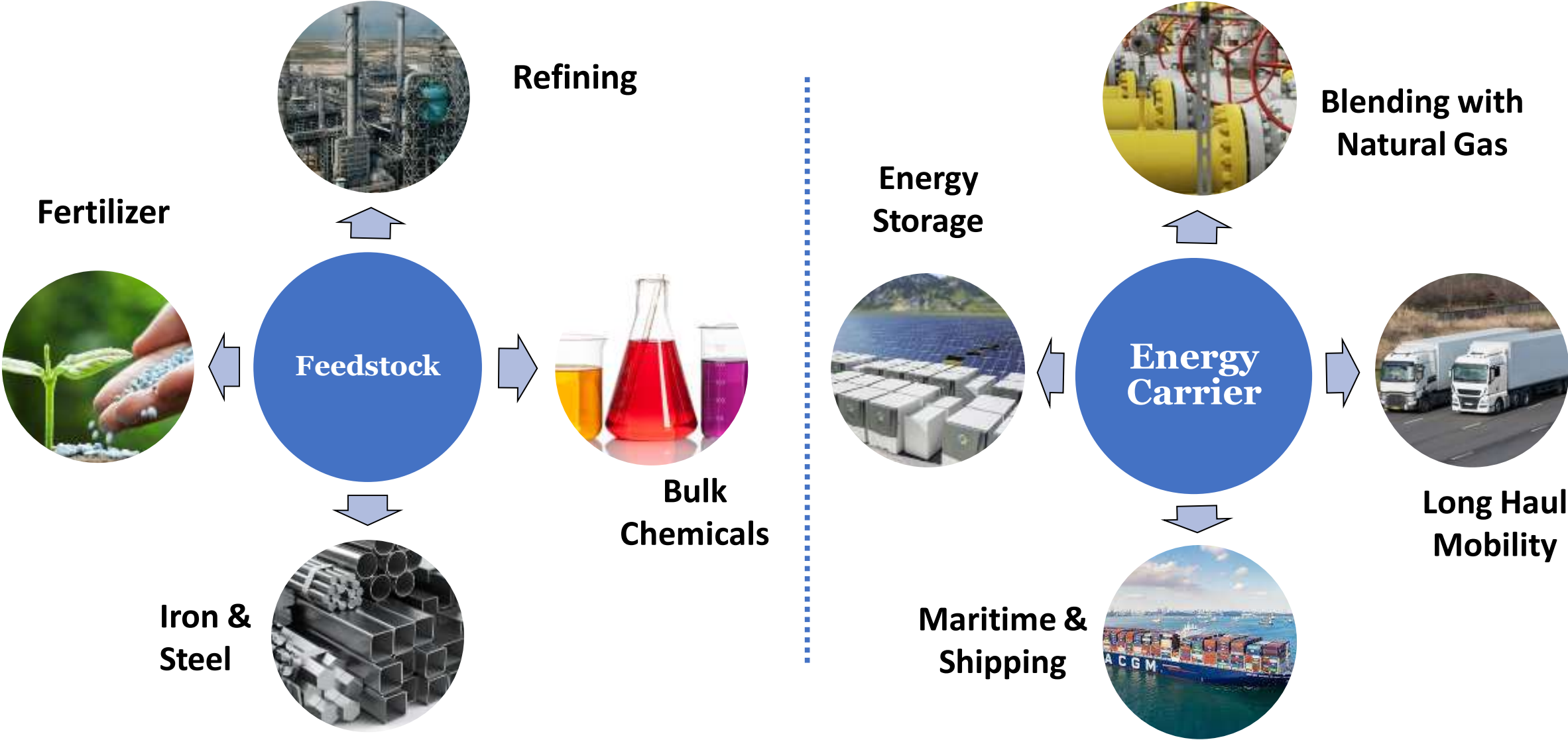
2047

- Energy Independence

2070

- Net Zero

Green Hydrogen: Focus Areas for India



Green Hydrogen can replace fossil fuels in all of the above

Need for a Green Hydrogen Mission

- ❑ Target significant share of global trade in Green Hydrogen & derivatives
- ❑ Enhance India's energy security
- ❑ Decarbonization of major industrial sectors
- ❑ Investments in manufacturing and projects
- ❑ Employment generation across value chain
- ❑ Boost to advanced technology development
- ❑ Contribute towards India's Net Zero Target by 2070

National Green Hydrogen Mission

Demand Creation

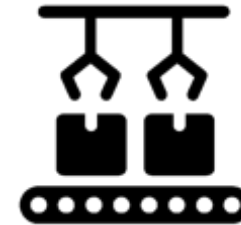


**Export Markets
Capturing
Global Demand**



**Substituting Imports &
Domestic Demand
Fossil Fuels, Fertilizers,
and Multiple Sectors**

Incentivising Supply



**Strategic Interventions
for GH2 Transition**

Direct Financial Incentives for:

- Electrolyser Manufacturing**
- Green Hydrogen Production**

National Green Hydrogen Mission

Key Enablers



Resources

Renewable energy -
banking & storage,
transmission, finance,
land, water



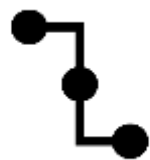
R&D

Result oriented, time-
bound, including
through PPP,
grand challenges



Ease of doing business

Simpler procedures,
taxation, SEZ,
commercial issues,
single window



Infrastructure & Supply Chain

Ports, Re-fueling,
Hydrogen Hubs, pipelines



Regulations & Standards

Testing facilities,
standards, regulations,
safety & certification



Skill Development, Public awareness

Coordinated skilling
programme,
online portal

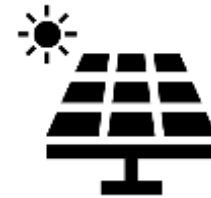
Expected Outcomes by 2030



At least
5 MMT GH₂
annual Production



60-100 GW
Electrolyser
capacity



125 GW RE
Capacity for
GH₂ Generation



600,000
Jobs



USD 100
billion
Investment



50 MMT
Emissions
Averted

Strategic Interventions for Green Hydrogen Transition (SIGHT)

SIGHT Scheme Guidelines Issued on 28 June 2023

Total SIGHT Outlay under the Mission (till 2029-30): ₹17,490 crore

Electrolyser Manufacturing

- Create Manufacturing Ecosystem
- Incentive for electrolyser production, in terms of Rs./kW
- Proposed for initial 5 years, taper down annually

Green Hydrogen Production

- Bridge Viability Gap, scale up production
- Incentive on Green H₂ production, in terms of Rs/kg
- Proposed for 3 years, taper down annually

Pilot Projects under the Mission



Green Steel production

- Blending Green Hydrogen in steel production processes



Road Mobility

- Deployment of buses and trucks, in a phased manner



Shipping

- Ships fueled by GH₂/derivatives
- Green Ammonia bunkers and refueling facilities



Others

- GH production (including biomass), H₂ storage, Energy storage

Other Components

Hydrogen Hubs

- Discussions with industry, states, ports
- Envisaged Outlay: ₹ 200 crore for two hubs
- Selection criteria and scheme guidelines to be developed

Skill Development

- Ministry of Skill Development and Entrepreneurship has constituted a committee to identify skilling requirements and design interventions
- Discussions ongoing with national and international agencies to design skilling programmes

Public Awareness & Outreach

- NGHM portal developed, under review
- Single Window Clearance mechanism being developed in coordination with NSWP
- International Conference on Green Hydrogen
- Calendar of events for 2023-24 developed

Mission Governance Framework

- *Chaired by Cabinet Secretary*
- *Provide Guidance and Strategic direction*

Empowered Group

National Green Hydrogen Mission

Advisory Group

Mission Secretariat

- *Anchored in MNRE*
- *Programme management*
- *Assist EG and AG*

- *Chaired by PSA*
- *Technical advice to EG*

Green Hydrogen cells in Line Ministries

Major Actions Since Launch of Mission

Governance Framework established

Scheme Guidelines for **SIGHT programme** issued

Framework of **Standards and Regulations** proposed

Definition of Green Hydrogen proposed

Policy actions for reduction of RE cost initiated by **MNRE, MoP and State Governments**

Draft model **guidelines for procurement of Green Ammonia** formulated

Draft **R&D Roadmap** developed

Projects announced across the value chain



Green Hydrogen Production

- 48 projects totaling to Green H2 production capacity over 3.5 MMT per annum announced
- Greenko to export 250,000 Tons/annum Green Ammonia to Uniper
- Avaada Group secured USD 1 billion funding from Brookfield for Green Hydrogen

Electrolyser Manufacturing

- 19 announcements, 1 plant in operation, 2 under construction

Pilot Projects

- Reliance & Ashok Leyland - Hydrogen IC Engine powered truck
- Gujarat Gas & NTPC commissioned green hydrogen blending project
- Tata Steel has commenced experiments on blending hydrogen in Blast Furnace

Initiatives by States

Illustrative

Draft Green H2 Policy

- 100% exemptions from duties, land taxes and conversion charges etc.
- Reimbursements for acquiring advanced tech
- Investment and capital subsidies

Draft Green Hydrogen Policy

- Land tax & stamp duty Exemptions
- SGST, Cross Subsidy Surcharge & Distribution Charges Reimbursements
- Subsidy for green urea produced in the state

Aatmanirbhar Gujarat Scheme for large industries

- Interest subsidy, SGST & EPF reimbursements
- Electricity duty exemption

Industrial Policy

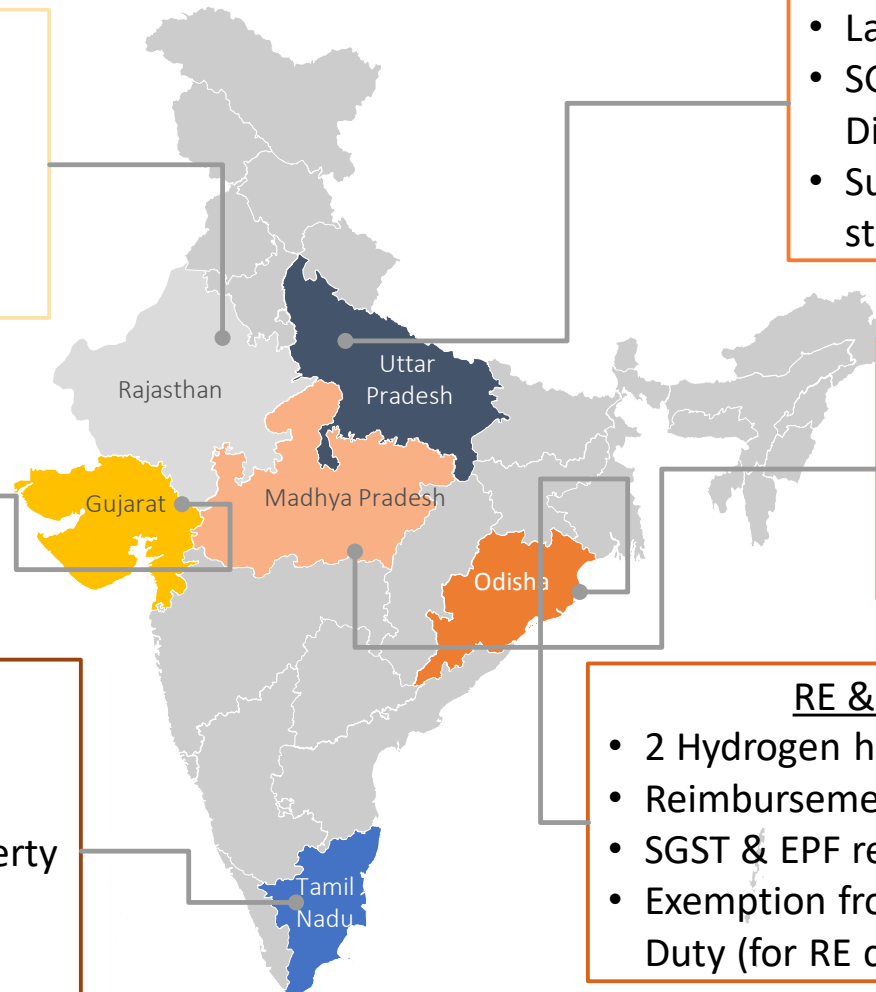
- Capital subsidies for sunrise sector
- Subsidy on certification charges
- Reimbursement for intellectual property created by the project
- Electricity tax exemption and green industry incentives

Renewable Energy Policy

- Electrolyser mfg. with investment greater than Rs 50 Crores eligible for special incentives embarked for the RE equipment manufacturing sector

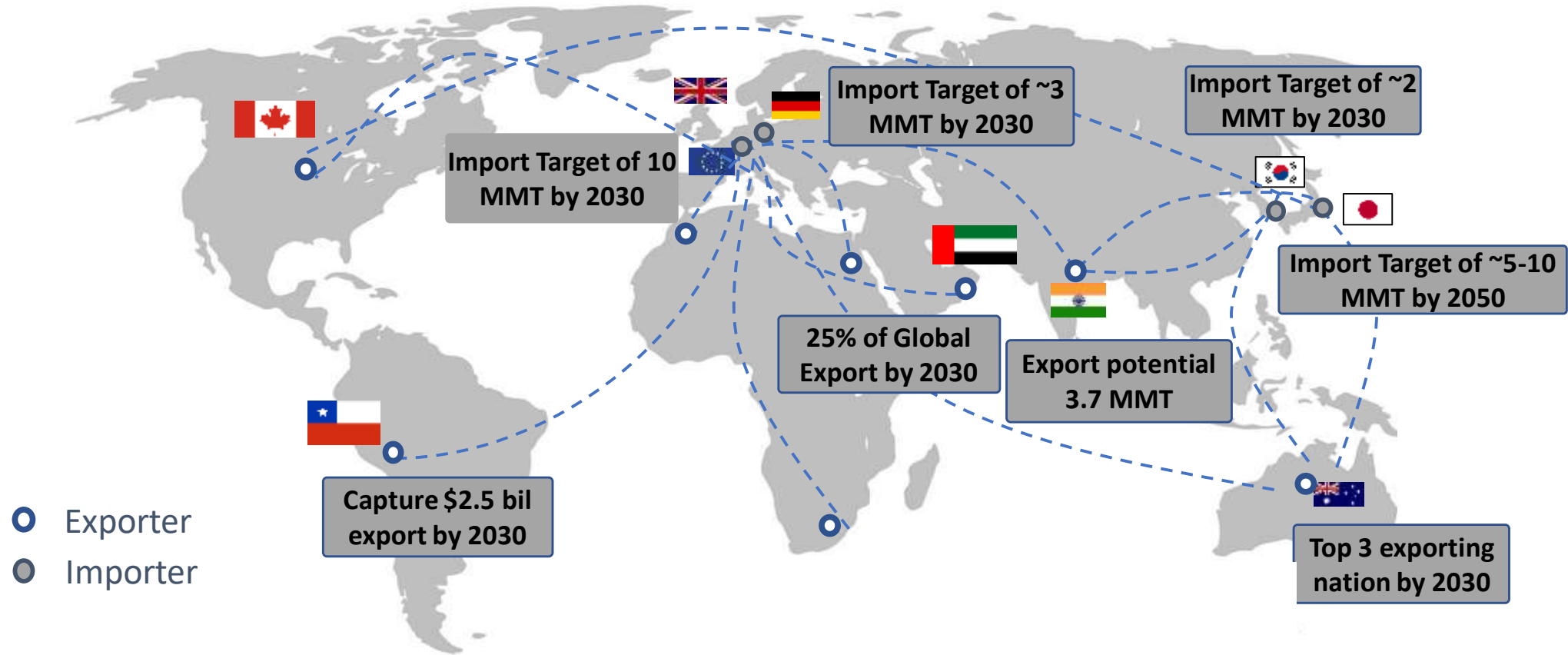
RE & Industrial Policy

- 2 Hydrogen hubs
- Reimbursement for power purchased
- SGST & EPF reimbursements
- Exemption from Stamp & Electricity Duty (for RE consumed for Green H2)



Hydrogen Trade Opportunities

Over 210 Million Tonne of Hydrogen Demand by 2030, about half of it from Green sources (IEA)



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Hydrogen likely to be traded in form of derivatives (Green Ammonia, Green Methanol etc.)

Thank You