Hydrogen Strategies and Polices

Overview of National Green Hydrogen Mission

6TH JULY 2023

नवीन एवं
नवीकरणीय ऊर्जा मंत्रालय
MINISTRY OF
NEW AND
RENEWABLE ENERGY

सत्यमेव जयते

India's Energy & Emission Targets

2030

- 500 GW Non-Fossil Capacity
- 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

National Green Hydrogen Mission

Demand Creation

Incentivising Supply

Export Markets

Capturing Global Demand

Substituting Imports & Domestic Demand

Fossil Fuels, Fertilizers, and Multiple Sectors

Strategic Interventions for GH2 Transition

Direct Financial Incentives for:

- Electrolyser Manufacturing
- Green Hydrogen Production

National Green Hydrogen Mission

Key Enablers

Resources	R&D	Ease of doing business	Infrastructure & Supply Chain	Regulations & Standards	Skill Development, Public awareness
Renewable energy - banking & storage, transmission, finance, land, water	Result oriented, time-bound, including through PPP, grand challenges	Simpler procedures, taxation, SEZ, commercial issues, single window	Ports, Re-fueling, Hydrogen Hubs, pipelines	Testing facilities, standards, regulations, safety & certification	Coordinated skilling programme, online portal

Green Hydrogen Standard for India

"Green Hydrogen" shall mean Hydrogen Produced using Renewable Energy, including, but not limited to, production through:

a. Electrolysis

b. Conversion of biomass.

Renewable Energy also includes such electricity generated from renewable sources which is stored in an energy storage system or banked with the grid in accordance with applicable regulations.

Expected Deliverables by 2030

At least 5 MMT GH_2 annual Production

60-100 GW Electrolyser capacity

125 GW RE Capacity for GH_2 Generation & associated Transmission network

50 MMT CO_2 Annual Emissions Averted

600,000 Jobs

USD 100 Billion Investment

Pilot Projects in Emerging Sectors

Shipping

Retrofit 2 ships to run on Green Hydrogen/derived fuels by 2027

Development of Supply Chain, port infrastructure, Green Ammonia bunkers and re-fueling facilities

Transport

Phased deployment of hydrogen fuelled buses & trucks

Cost of hydrogen fuelled vehicles and associated infrastructure

Green Steel

Support for lending/ injection of Green Hydrogen in 2 steel plants

Strategic Interventions for Green Hydrogen Transition (SIGHT)

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

Electrolyser Manufacturing

- Incentive for electrolyser production, in terms of Rs./kW
- Proposed for initial 5 years, starting at Rs 4440/kW, taper down annually
- Proposed Outlay: ₹4,440 cr

Selection on the basis of LVA and Performance Multiplier (based on Energy Efficiency)

Green Hydrogen Production

- Incentive on Green H2 production, in terms of Rs/kg
- Proposed for 3 years, starting at cap of Rs 50/kg, taper down annually
- Proposed Outlay: ₹13,050 cr

Selection on basis of Quoted Incentive rate

Working groups in place for setting up Regulations, Codes and Standards

Working Group for development of Regulations, Codes and Standards
Chaired by Secretary, MNRE; Members: MoPNG, MoRTH, DPIIT, ARAI, FICCI, CII, SIAM

Mapping Existing RCS

Sub-Group-I

Production and use

Convener: CII

Members: BIS, Electrolyser Manufacturers, Green H2 producers

Gap Analysis

Sub-Group-II

Storage and Transportation

Convener: FICCI

Members: DPIIT/PESO, BIS, GAIL, Gas handling and supply industry

Recommendations for action

Sub-Group-III

Mobility applications

Convener: SIAM

Members: MoRTH,PESO, ARAI, BIS, IOCL, NTPC, Automobile Industry

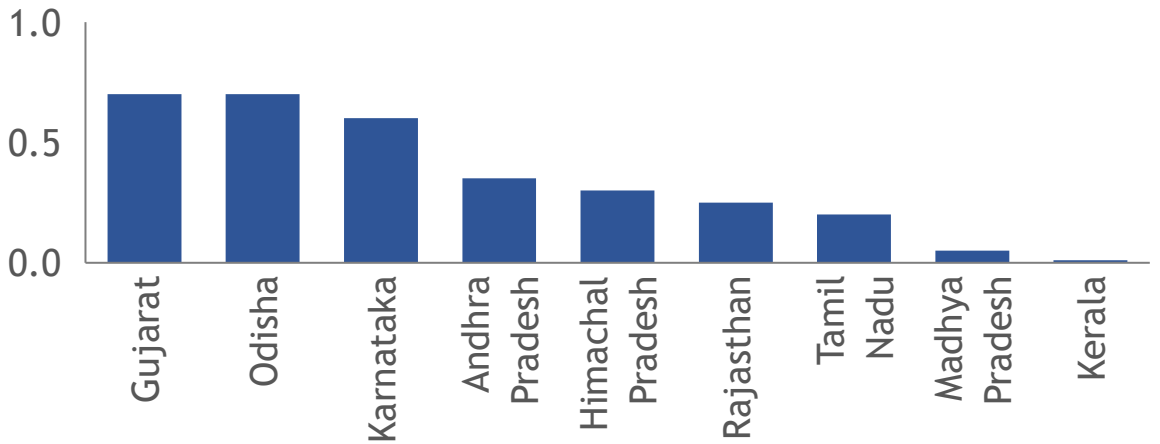
19 projects announced for Electrolyser manufacturing

Green H2 & Ammonia

Total No. of Projects	49

Total H2 Capacity	3.5 MMT

Project Capacity (MMTPA of GH2)



Electrolyser Manufacturing

- 19 Projects announced
- Ohmium has a 500 MW operational capacity in Bengaluru
- John Cockeril-Greenko constructing a 1 GW plant in Tamil Nadu
- H2E Power constructing a 1 GW plant in Maharashtra
- Reliance, Adani, BHEL, L&T, GAIL have announced

Major Actions since January 2023

- Governance Framework: Empowered Group, Advisory Group and Mission Secretariat notified.
- Scheme guidelines for SIGHT programme issued.
- Framework of Standards and Regulations proposed.
- Definition of Green Hydrogen proposed.
- Draft model guidelines for procurement of Green Ammonia formulated.
- Policy actions for reduction of RE cost including initiated by MNRE, MoP and State Governments, including inter-alia-
  - Green Open Access Rules notified on 6th June 2022, provide following provisions regarding Hydrogen:
    - All applications for open access to be granted within fifteen days.
    - Cross subsidy surcharge and additional surcharge exempted for production of green hydrogen and green ammonia.
    - Banking shall be permitted on a monthly basis
  - Waiver of ISTS charges for RE to be utilized for Green Hydrogen/Green Ammonia projects.

Actions Initiated by States

Uttar Pradesh

Draft Green Hydrogen Policy

- 100% exemption from payment of land tax, land use conversion charges, stamp duty,
- 50% exemption from industrial water consumption charges.
- 30% one-time grant support for technology acquisition subject to a max ₹ 5 crores
- 100% reimbursement of SGST, cross-subsidy surcharge, distribution charges
- 50% exemption from wheeling charges, intra-state transmission charges
- Additional subsidy of INR 3500 per tonne for green urea produced in the state beyond the 10 percent blending share in total production

Gujarat

Aatmanirbhar Gujarat Scheme for Industries

- Interest subsidy @ 7% for 8-10 years (cap 1% of investment)
- 80-100% Net SGST reimbursement for 10 yrs (cap 8% of investment)
- EPF reimbursement – 10 years for new employees
- Electricity duty exemption

Actions Initiated by States

Madhya Pradesh

Renewable Energy Policy

- For electrolyser manufacturing, with investments:
- Greater than or equal to Rs. 50 crores will be eligible for special incentives embarked for the RE equipment manufacturing sector under the industrial promotion policy.

Tamil Nadu

Industrial Policy

- Special incentives for sunrise sectors
- Additional capital subsidy of up to 7.5% of EFA for sunrise sector projects opting flexible capital subsidy.
- 10% and 50% concessional rates for land allotment
- 100% stamp duty exemption
- Up to Rs. 1 crore subsidy on national and international certification charges.
- Up to Rs. 1 crore reimbursement for intellectual property created by the project.
- Interest Subvention up to f 5% as a rebate in the interest rate for financing the project for 6 years
- Electricity tax exemption for 5 years and green industry incentives of up to Rs. 1 cr.
- SGST refund on capital goods.

Actions Initiated by States

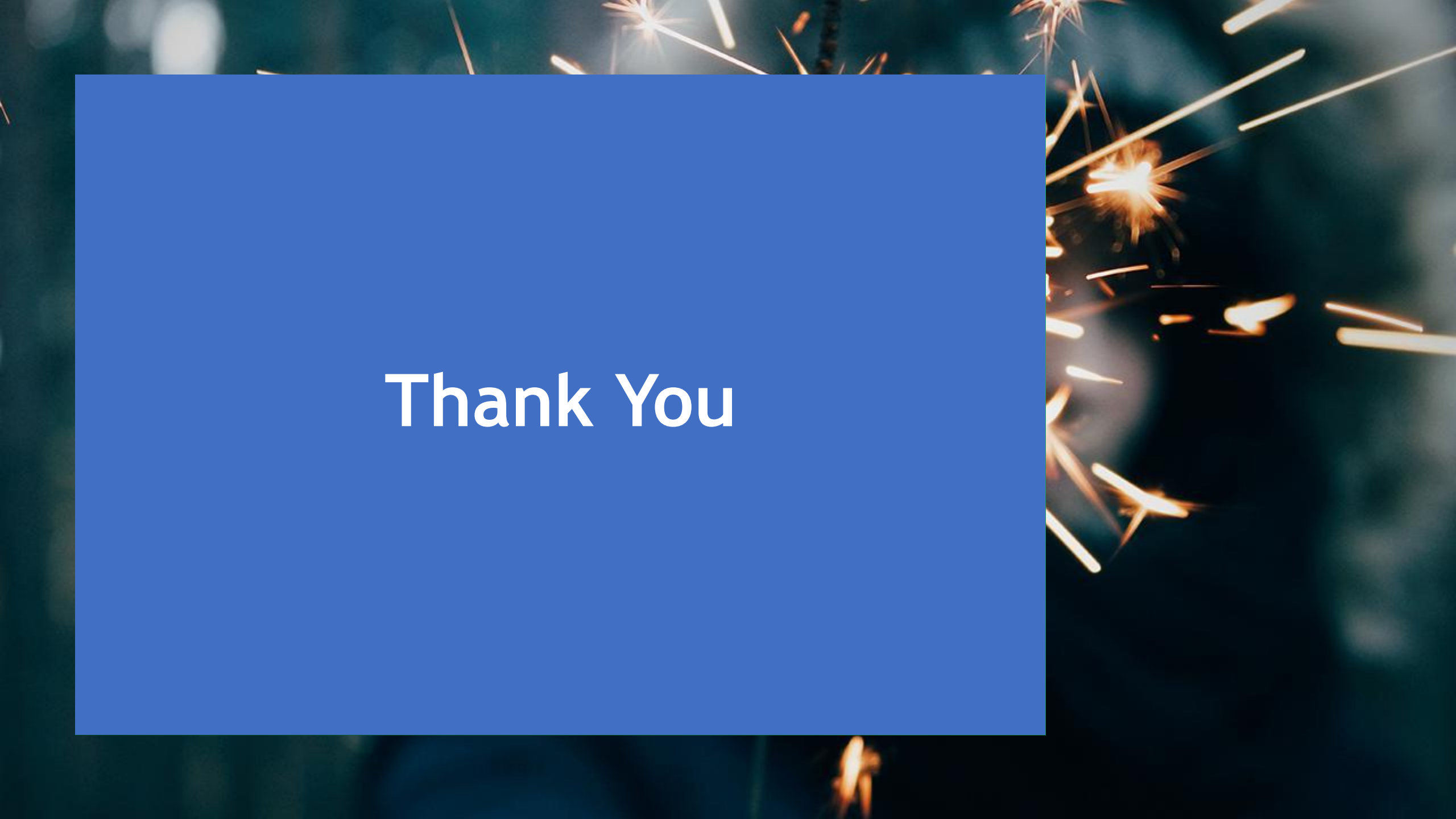
Odisha

Industrial Policy Resolution

- Reimbursement of INR 3.00 per unit for power purchased & consumed from local DISCOMs for 20 years
- Renewable energy consumed for manufacturing of green hydrogen & green ammonia
- Cross subsidy surcharge, additional surcharges & state transmission charges will be exempted for 20 years
- 100% exemption from payment of Electricity Duty for 20 years from the date of commercial production.
- 100% exemption from Stamp Duty.
- Reimbursement of 100% of net SGST paid, overall limited to 200% of the cost of plant & machinery.
- Reimbursement of 100% of the employer's contribution towards ESI & EPF Scheme for a period of 7 years

Challenges

- Reduction in costs
- Demand creation
- Global harmonisation of standards and regulations
- Skilling
- Low cost finance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