

Indo-German Green Hydrogen Task Force

Kick-Off meeting

Ministry of New and Renewable Energy

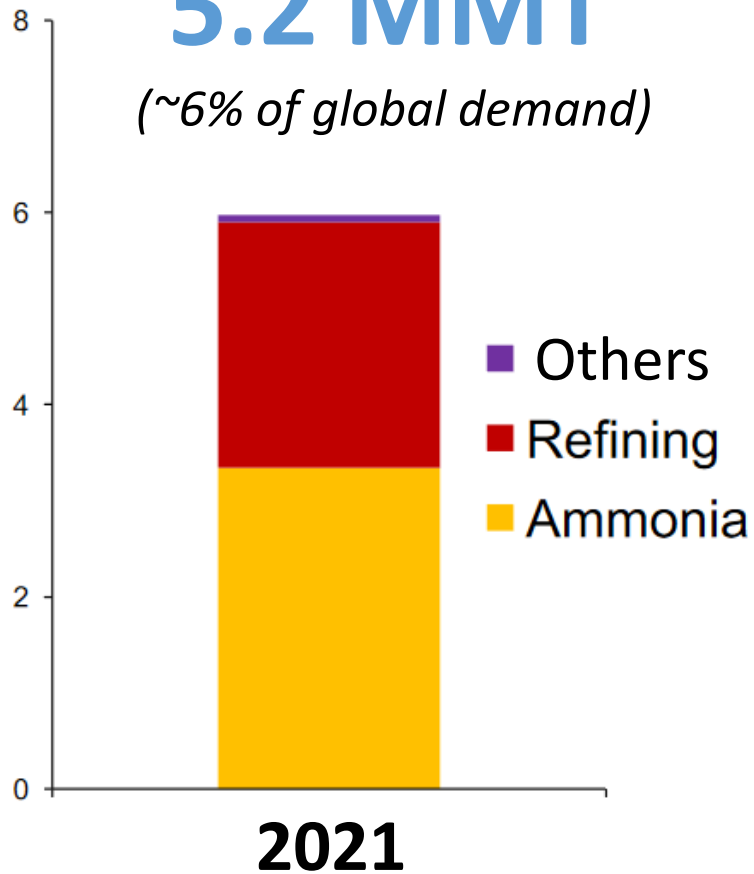
20 September 2022

Hydrogen Consumption in India

Current Hydrogen Production

5.2 MMT

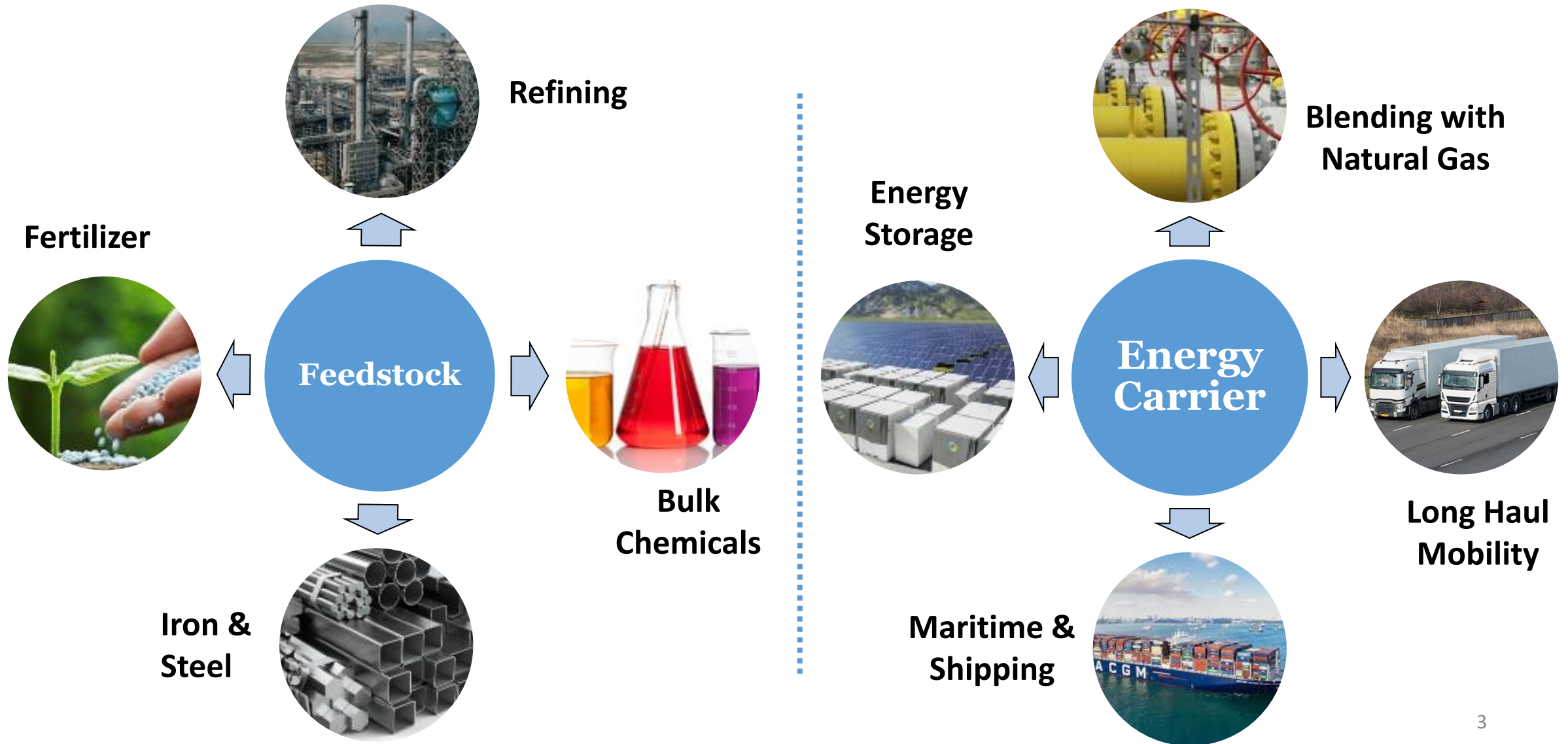
(~6% of global demand)



- ❑ Over 5.2 MMT Grey Hydrogen is consumed annually in India
- ❑ 3.2 MMT in fertilizers, 2.0 MMT in petroleum refining



Key Sectors in Focus



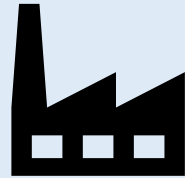
National Green Hydrogen Mission

Demand Creation



GH₂ Targets

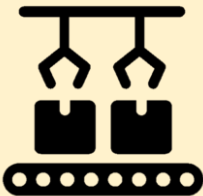
Fertilizers, Refineries & City Gas



Projects

Commercial scale Pilot Projects

Supply

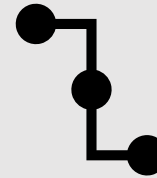


Strategic Interventions for GH₂ Transition

Direct Financial incentives for:

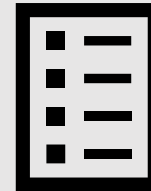
- Electrolyser manufacturing
- Green Hydrogen Production

Key Enablers



Infrastructure & Supply Chain

Ports, Re-fueling, Hydrogen Hubs, Supply Chain



Regulations & Standards

Testing facilities, standards, regulations, safety & certification



R&D

PPP, grand challenges, result oriented, time-bound

Initiatives – Policies & Project

Transmission and Open Access provisions extended to Green hydrogen

Framework of Regulations & Standards - Working Group involving industry/institutions

Model Bidding Guidelines for procurement of Green Hydrogen

Long term roadmap for Research and Innovation

PSUs and Private investors have initiated pilot projects for Green Hydrogen

Cooperation Initiatives: Germany, EU, Japan, US, UAE, Australia and multilateral institutions

Other On-going Efforts

Department of Science & Technology

Supporting advanced basic R&D

Two networked platforms for technology development and dissemination

Advanced Hydrogen and Fuel Cell Programme launched in June 2021

Ministry of Petroleum and Natural Gas

H-CNG fuelled city transport buses in Delhi

Pilots for Green H₂ for refineries

H₂ blending in city gas networks

Ministry of Road Transport and Highways

Notified standards on safety of hydrogen fuel cell vehicles.

Notified Hydrogen-CNG (HCNG) as an automotive fuel

Strengthening regulatory framework for hydrogen fuelled vehicles

Department of Heavy Industries

Faster Adoption and Manufacturing of Electric Vehicles (FAME-II) Scheme – Financial incentives to EVs

BHEL, a Public Sector Entity under DHI undertakes fuel cell development

Momentum in India

IOC, L&T, ReNew announce joint venture for India green hydrogen business

Indian Oil Floats Tender to Develop Green Hydrogen Generation Projects

India and US launch a hydrogen task force in clean energy push

PM Modi lays foundation stone of NTPC's Green Hydrogen Mobility Project in Leh

India Signs LoI with Australia for Solar & Hydrogen

Adani, Ballard Power to explore investment in hydrogen fuel cell

ONGC inks MoU with Greenko to manufacture green hydrogen

Acme to invest ₹52,474 cr for green hydrogen plant

Electrolyzer firm Ohmium to lift India output fourfold

RIL unit partners with Denmark's Stiesdal, towards its '1-1-1' green-hydrogen goal

Adani, Total in \$50 billion green hydrogen pact

Major Projects

500 MW PEM electrolyser manufacturing facility in Bengaluru: Ohmium

800 kW Electrolyser at Hazira: Larsen & Toubro

Green Hydrogen for Mathura and Panipat Refineries: Indian Oil

5 TPD green ammonia plant commissioned in Bikaner: ACME

Pilot project for blending hydrogen in natural gas pipelines in Indore: GAIL

100 kW AEM Electrolyser in Assam: Oil India Limited

Alkaline Electrolyser Gigafactories under development: John Cockerill, Greenko

Green Hydrogen Mobility project being developed in Leh: NTPC



Electrolyzer Manufacturing: Ohmium



Green Ammonia Plant: ACME

Indo-German Task Force: Agreed Focus Areas

Promoting investment in production, transport, and consumption of green hydrogen and its derivatives

Joint R&D projects and R&D partnerships

Private sector **networks and partnerships**

Sharing knowledge and experiences in **regulation, standards, and safety**

Development of **certification schemes for Green Hydrogen**

Sharing experiences in **Green Hydrogen policies**

Exploring opportunities for **manufacture of electrolysers** and other components

Supply chains to support bulk trade of hydrogen and/or its derivative products

Exploring **opportunities for advance purchase commitments**

Strengthening institutions and capacity development

Thank You