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National Green Hydrogen Mission

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Why is in news? How to become a green hydrogen superpower

India has set its sight on becoming **energy independent by 2047** and **achieving Net Zero by 2070**.

To achieve this target, increasing renewable energy use across all economic spheres is central to India's Energy Transition.

It is a program to **incentivise the commercial production of green hydrogen** and make India a net exporter of the fuel.

The Mission **will facilitate demand creation, production, utilization and export** of Green Hydrogen.

Green Hydrogen is considered a promising alternative for enabling this transition.

Hydrogen can be utilized for long-duration storage of renewable energy, replacement of fossil fuels in industry, clean transportation, and potentially also for decentralized power generation, aviation, and marine transport.

The nodal ministry for this mission is **Ministry of New and Renewable Energy**.

The National Green Hydrogen Mission was approved by the Union Cabinet on **4 January 2022**, with the intended **objectives** of:

i) Making India a leading producer and supplier of Green Hydrogen in the world

ii) Creation of export opportunities for Green Hydrogen and its derivatives

iii) Reduction in dependence on imported fossil fuels and feedstock

iv) Development of indigenous manufacturing capabilities

v) Attracting investment and business opportunities for the industry

vi) Creating opportunities for employment and economic development

vii) Supporting R&D projects

The **mission outcomes projected by 2030** are:

a) Development of green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum with an associated renewable energy capacity addition of about 125 GW in the country

b) Over Rs. Eight lakh crore in total investments

c) Creation of over Six lakh jobs

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d) Cumulative reduction in fossil fuel imports over Rs. One lakh crore

e) Abatement of nearly 50 MMT of annual greenhouse gas emissions

Types of hydrogen based on extraction method:

Depending on the nature of the method of its extraction, hydrogen is categorised into three categories, namely, **Grey, Blue and Green.**

Grey Hydrogen: It is produced via **coal or lignite gasification** (black or brown), or via a process called **steam methane reformation** (SMR) of natural gas or methane (grey). These tend to be mostly carbon-intensive processes.

Blue Hydrogen: It is produced via **natural gas or coal gasification** combined with **carbon capture storage (CCS) or carbon capture use (CCU) technologies** to reduce carbon emissions.

Green Hydrogen: It is produced using **electrolysis of water with electricity** generated by renewable energy. The carbon intensity ultimately depends on the carbon neutrality of the source of electricity (i.e., the more renewable energy there is in the electricity fuel mix, the "greener" the hydrogen produced).

Sub Schemes:

Strategic Interventions for Green Hydrogen Transition Programme (SIGHT): It will fund the **domestic manufacturing of electrolyzers** and produce green hydrogen.

Green Hydrogen Hubs: States and regions capable of supporting large scale production and/or utilization of hydrogen will be identified and developed as Green Hydrogen Hubs.

UNION CABINET APPROVES NATIONAL GREEN HYDROGEN MISSION

EXPECTED DELIVERABLES BY 2030

At least

5 MMT

GH₂ annual
production

60-100 GW
electrolyser capacity

125 GW

RE capacity for
GH₂ generation
and associated
transmission
network



Total outlay approved: ₹ 19,744 crore



Rs 1 lakh crore
import savings

50 MMT

CO₂ annual emissions averted



6 lakh
jobs



Rs 8 lakh crore
investment