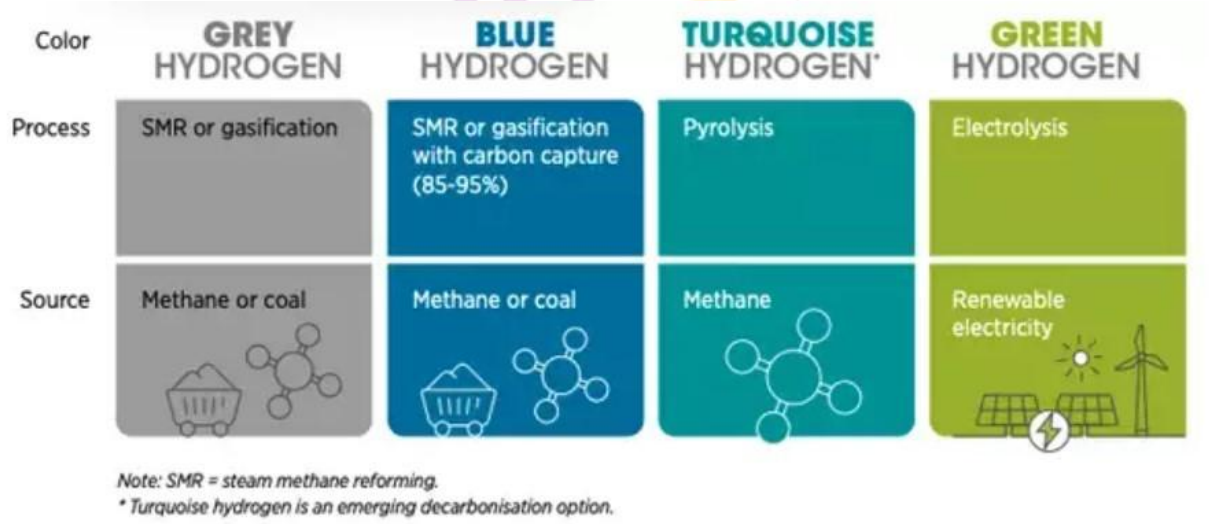
NATIONAL GREEN HYDROGEN MISSION

The Union Cabinet on 4th January 2023 approved the National Green Hydrogen Mission. The initial outlay for the mission is Rs.19,744 crore, comprising an outlay of Rs.17,490 crore for the Strategic Interventions for Green Hydrogen Transition (SIGHT) programme, Rs.1,466 crore for several pilot projects, Rs.400 crore for Research and Development(R&D), and Rs. 388 crores for remaining components of the mission. The Ministry of New and Renewable Energy (MNRE) has been assigned the task of formulating the scheme guidelines for the implementation of the project. It should be noted that the National Hydrogen Mission was initiated on 15th August 2021.

GREEN HYDROGEN

Green hydrogen is a type of Hydrogen that is produced through the electrolysis of water using renewable energy sources like solar or wind energy. It is a clean source and has the potential to reduce carbon emissions.

Figure: Types of Hydrogen



Source: The Times of India

AIM AND SIGNIFICANCE OF THE MISSION

- The mission intends to facilitate the production of hydrogen from renewable energy.

- Hydrogen is an important industrial fuel that has multiple uses ranging from producing ammonia, making steel and cement, to powering fuel cells. However, the least expensive way to manufacture Hydrogen is through fossil fuels like coal and natural gas.
- Global warming and climate change concerns have gradually highlighted the use of alternative fuels like solar and wind energy for producing hydrogen.
- The mission aims to create an enabling environment for developing the infrastructure to produce and transport green hydrogen for various industrial applications.
- Under the ambit of the Strategic Interventions for Green Hydrogen Transition Programme (SIGHT) programme, two distinct financial incentive mechanisms will be facilitated
    - Targeting domestic manufacturing of electrolysers
    - Production of Green Hydrogen
- Areas capable of supporting large-scale production and/or utilization of Green Hydrogen will be identified and developed as Green Hydrogen Hubs.
- A robust green hydrogen policy framework would be established to sustain and promote Green Hydrogen Ecosystem.
- Moreover, a public-private partnership framework for R&D (Strategic Hydrogen Innovation Partnership – SHIP) will be supported.
- A coordinated skill development programme will also be established under the proposed mission.

EXPECTED OUTCOMES OF THE MISSION

The National Green Hydrogen Mission(NGHM) aims to achieve the following targets by 2030:

- Development of green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum with related renewable energy capacity addition of nearly 125 GW in India.
- Total investments of more than Eight lakh crore
- Employment generation for around Six lakh people
- Overall fossil fuel import reduction by approximately Rs. One lakh crore
- Abatement of nearly 50 MMT of annual greenhouse gas emissions

BENEFITS OF NGHM

- The mission will create export opportunities for Green Hydrogen and its derivatives.
- It will decarbonize the industrial, transport, and energy sectors.
- It would reduce the dependence on imported fossil fuels and feedstock.
- It would strengthen indigenous manufacturing capabilities.
- Create multiple employment opportunities.
- It will also develop cutting-edge technologies.
- It will attract global investors and help India achieve its renewable energy targets.

ASSOCIATED CHALLENGES

- Producing Hydrogen from renewable sources is relatively expensive when compared to generating hydrogen from fossil fuels. Because of its high cost of production from renewable sources, it accounts for less than 1% of global hydrogen production.
- There are doubts about achieving the target of the high-technology manufacturing hub, as despite various supporting policies India has not managed to become a net exporter of solar cells, semiconductors, or wind power components.
- The fundamental manufacturing base in India is persistently weak. It also lacks the ability to appropriately absorb and utilize global capital.

WAY AHEAD

- India should strengthen small manufacturing and allied enterprises' infrastructure, as they are the mainstay of the green economy.
- All concerned ministries, departments, institutions, and agencies of the Central and State Governments should coordinate to make the mission a success.

IMPORTANT FACTS

- India's first 99.99% pure green hydrogen plant was commissioned by Oil India Limited (OIL) in eastern Assam's Jorhat in April 2022. It has an installed capacity of 10kg per day.
- On 3rd January 2023, National Thermal Power Corporation Ltd commissioned India's first green hydrogen blending project with Gujarat Gas Limited (GGL) in Surat.