

Green hydrogen mission

What is green hydrogen?

- Hydrogen is a key industrial fuel that has a variety of applications including the production of ammonia (a key fertilizer), steel, refineries, and electricity.
- However, all of the hydrogen manufactured now is the so-called 'black or brown' hydrogen produced from coal.
- Grey hydrogen is produced from natural gas while 'Blue' hydrogen is from fossil fuel sources where the ensuring carbon emitted is captured via carbon capture processes.
- Green hydrogen is when hydrogen is produced via electrolysis, the splitting of water into hydrogen and oxygen with electricity generated from renewable energy sources such as solar or wind.

What is the caveat?

- Green hydrogen currently accounts for less than 1% of global hydrogen production due to it being expensive to produce.
- A kilogram of black hydrogen costs \$0.9-1.5 to produce while grey hydrogen costs \$1.7-2.3 and blue hydrogen can cost anywhere from \$1.3-3.6.

- However, green hydrogen costs \$3.5-5.5 per kg.

What is the National Green Hydrogen Mission?

- The intent of the mission is to incentivize the commercial production of green hydrogen and make India a net exporter of fuel.
- The mission has laid out a target to develop a green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum.
- This is alongside adding renewable energy capacity of about 125 GW (gigawatt) in the country.
- This will entail the decarbonization of the industrial, mobility, and energy sectors; reducing dependence on imported fossil fuels and feedstock; developing indigenous manufacturing capabilities; creating employment opportunities; and developing new technologies such as efficient fuel cells.
- By 2030, the Centre hopes its investments will bring in investments worth ₹8 trillion and create over six lakh jobs.
- Moreover, about 50 MMT per annum of CO₂ emissions are expected to be averted by 2030.

- As per its Nationally Determined Contribution (NDC) to meeting the goals of the Paris Agreement, India has committed to reducing the emissions intensity of its GDP by 45% by 2030, from 2005 levels.

How will the mission support green hydrogen production?

- The Mission will “facilitate demand creation, production, utilization and export of Green Hydrogen
- There are two umbrella sub-missions under the programme.
- The first is the Strategic Interventions for Green Hydrogen Transition Programme (SIGHT), which electrolyses domestic manufacturing of electrolyzers and produces green hydrogen.
- The second is to support pilot projects in emerging end-use sectors and production pathways.
- Large-scaled regions capable utilization large-scale production and/or utilization of hydrogen will be identified and developed as Green Hydrogen Hubs.

What are the challenges ahead?

- Upgrading the manufacturing and skill levels of its small and medium manufacturing enterprises and developing a transmission network that can supply the hydrogen

produced from supply spots to industrial centers across the country.

- Green hydrogen development is still in the nascent stages globally and while India can take the lead in being a major producer, it doesn't have the necessary infrastructure yet to execute all these intermediary steps.
- It needs to develop supply chains in the form of pipelines, tankers, intermediate storage, and last-leg distribution networks as well as put in place an effective skill development programme to ensure that lakhs of workers can be suitably trained to adapt to a viable green hydrogen economy.

THE HINDU

Japan offering money to move out of Tokyo

Why does Japan want people to move out of the metropolitan area?

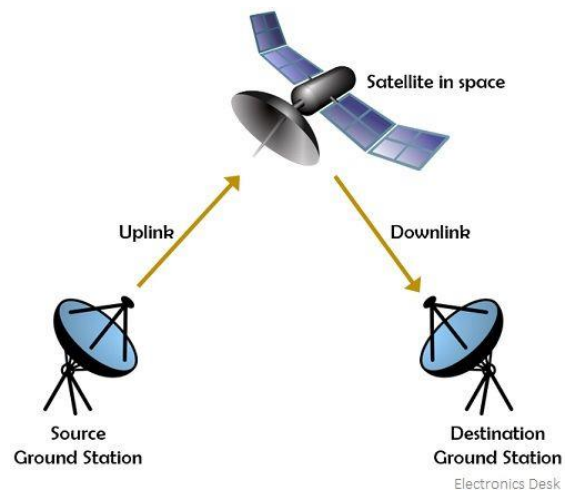
- The impact of emigration has been felt sharply in rural areas the most, where the number of local community members has decreased, leading to a shrinkage in local and small-scale economic opportunities.
- This sets off an adverse chain reaction, the policy document notes.
- Once people move out and local economies decline, it becomes

difficult to maintain essential life services in these areas, and the region loses its charm and functionality.

- Japan's two-pronged solutions to this problem includes achieving the goal of a vibrant local community and correcting the overconcentration in the Tokyo metropolitan area.
- Tokyo is also prone to earthquakes, and the overconcentration of the population and economy makes the nation vulnerable to loss.
- To strengthen its efforts of reducing overconcentration in Tokyo, the government plans to promote immigration and settlements in rural areas through policies like offering a lucrative sum of money.
- Other plans on the list include improving ties with local communities, creating a profitable economy, and promoting a work-life balance focused on peace of mind.

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India as Uplinking hub



- There have been two major developments in the television industry in India in the last two years.
- In 2021, the Cable Television Network Rules, 1994, were amended to include a statutory mechanism for redressal of grievances and complaints of viewers relating to content broadcast by television channels in accordance with the provisions of the Cable Television Networks (Regulation) Act, 1995.
- In 2022, the Union Cabinet approved the policy guidelines for the uplinking and downlinking of television channels from India.
- While an uplink refers to the link from a ground station up to a satellite, a downlink is a link from a satellite down to one or more ground stations or receivers.
- The amended Cable Television Network Rules bring in a strong institutional system for redressing

grievances and making broadcasters and their self-- regulating bodies accountable and responsible.

- The policy guidelines for uplinking and downlinking are aimed at making India the hub of uplinking as they allow Indian teleports to uplink foreign channels.
- In order to regulate this burgeoning cable network industry and to make registration of cable operators mandatory, the Cable Television Networks (Regulation) Act, of 1995 was brought in.
- But it was only in 2000 that the first license to set up a teleport an earth station facility from where TV signals can be uplinked to a geostationary satellite was granted.
- The satellite invasion began in the country in the early 1990s and the cable industry acted as a harbinger of the new media revolution.
- Some people in India joined hands with some Non-- Resident Indians in Hong Kong to launch the country's first private television channel, Zee TV, in October 1992. The NRIs took an idle Asia Sat satellite transponder on lease for five years to uplink programs.
- Broadcasting was obviously an expensive and cumbersome affair imagine airlifting video cassettes to foreign shores for uplinking before

the programmes beamed into Indian households through the cable network.

Setting up earth stations

- When Indian broadcasters were allowed to uplink from Indian soil, the facility was made available through the Videsh Sanchano Limited (VSNL)
- The Ministry of Information and Broadcasting (MIB), Government of India, notified the 'Guidelines for Uplinking from India' in July 2000 and private broadcasters got permission to set up their own earth stations and to uplink.
- The MIB issued uplinking and downlinking policy guidelines in 2011 for private satellite TV channels and teleports
- The Ministry published the draft policy guidelines on April 30, 2020 – The guidelines aim to create a conducive environment in line with the principle of ease of doing business on a sound regulatory framework.
- But more importantly, these are aimed at making India a teleport hub for other countries.

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India approach towards Nepal

- India can, however, take this development in its stride. It is used to dealing with political instability in Nepal, frequent changes of government, and even reputedly anti-India or pro-China leaders heading them.
- Its focus for many years has been on non-partisan support for inclusive economic development, interdependence, communication links, people- to -people contacts, and building on the compulsive logic of economic complementarities, especially in hydropower where Nepal has huge but largely unexplored potential.
- Public opinion in Nepal is now alert to the reality of Chinese intentions, the risks of falling into a debt trap, and the limitations in terms of Chinese capacities in comparison to India's.
- China's image itself has taken a huge beating because of the current COVID-19 tsunami.
- India, however, cannot be complacent. Traditional irritants such as the 1950 India-Nepal Treaty of Peace and Friendship.

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Phytorid Technology

- The Municipal Corporation of Tirupati (MCT) is set to take a giant leap in water treatment by putting in place what is claimed to be the country's largest liquid waste treatment plant to use phytorid technology.

Phytorid Technology

- Phytorid Technology is a recycling technology of wastewater to reduce the water scarcity in the earth presently and for the rest of the decades.
- This technology holds the sustainability of water for the next generations. People have to save water
- CSIR-NEERI produced an eco-friendly, economic, wetland technology called Phytorid Technology to make the water purified, decontaminated, and likely to be reused.
- This technology is applicable for both industrial wastewater and domestic wastewater sewage treatment.
- It is a unique technology based on the natural method of treatment of sewage using constructed wetlands that have been developed by the National Environmental Engineering Research Institution (NEERI).

- Process: Sedimentation Bacterial action Filtration Adsorption Precipitation Nutrient Uptake Vegetation system.

Advantages of Phytoid Technology

- It is a space-saving technology
- It is a decentralized technology
- It can provide habitats for many organisms
- Removes BOD (70-80%)
- Removes COD (60-75%)
- Total suspended solids removal (75-95%)
- Disadvantages of Phytoid Technology
- As it is a natural process, non-biodegradable wastes cannot be decomposed by it.
- It can spread cholera, malaria, and dengue
- It can create an odour problem.

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