UP’s 1st Green Hydrogen Plant

Why in News?

Uttar Pradesh Chief Minister Yogi Adityanath **inaugurated the state's first green hydrogen plant** and the **second of its kind in the country** at **Khanimpur village, Gorakhpur district.**

India's Green Hydrogen Milestones

- **Kandla Port in Gujarat** is the site of **India's first Make-in-India Green Hydrogen Plant,** advancing the country's Net-Zero goals.
- Jindal Stainless Limited in Hisar is **India's first off-grid green hydrogen plant** dedicated to the **stainless steel industry,** making it a global first for the sector.
- **Adani Group** commissioned **India's first off-grid 5 MW** green hydrogen pilot plant in **Kutch, Gujarat,** pioneering renewable-powered hydrogen production.

Key Points

- **About:** The plant, set up by **Torrent Gas and Torrent Power,** marks a significant milestone in **India's transition to clean energy.**
    - As part of a pilot project, the plant will blend up to **2% green hydrogen with natural gas** (CNG and PNG), which will be supplied to domestic households, CNG stations, and industries via the local gas grid.
- **Significance:** The project is the **largest** green hydrogen and natural gas blending initiative in the country's city gas distribution sector, expected to **cut carbon emissions** by 500 tonnes annually and establish Uttar Pradesh as a key hub for green hydrogen due to its abundant water resources.
- **Green Hydrogen Policy:** The **Uttar Pradesh Green Hydrogen Policy 2024** enables Ease of Doing Business by promoting investments and setting up of Green Hydrogen / **Green Ammonia** production facilities and Green Hydrogen-based product manufacturing units.
    - Uttar Pradesh envisions taking the production capacity of Green Hydrogen / Green Ammonia up to **1 million metric tonnes per year by 2028.**
    - The policy includes a **30% capital subsidy,** which can go up to 40% for the first four projects in the state.

Green Hydrogen

- Green hydrogen is produced by splitting water into **hydrogen (H_2) and oxygen (O_2)** through **electrolysis powered** by renewable energy sources like solar power, or via biomass gasification.
- Its uses include **fuel cell electric vehicles (FCEVs)**, industrial uses such as fertilizers and the refineries sector, and transportation sectors like road and rail.
- **Other Types of Hydrogen:**