



KAMARAJ IAS ACADEMY
Only IAS Academy by Grandson of "Perunthalsivam Kamarajar"

Green Hydrogen

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Why is in news? 'Green Hydrogen Pilots in India' Conference to be held in the run-up to G20 Summit

In the run-up to the 18th G20 Summit, a day-long conference on "Green Hydrogen Pilots in India" is being held in New Delhi, on 5th September, 2023.

The conference will showcase various Green Hydrogen Pilots being implemented by both public and private sector companies of India.

The conference will also present pioneering innovative pilots and progress in green hydrogen technology.

Green Hydrogen:

It is a **colourless, odourless, tasteless, non-toxic** and highly combustible gaseous substance.

Hydrogen is the **lightest, simplest and most abundant** member of the family of chemical elements in the universe.

Future hydrogen: The colour — green — prefixed to it makes hydrogen the **"fuel of the future"**.

The 'green' depends on **how the electricity is generated to obtain the hydrogen**, which does not emit greenhouse gas when burned.

Production: Green hydrogen is produced **through electrolysis using renewable sources of energy** such as solar, wind or hydel power.

India's Green Hydrogen production:

India has just begun to generate green hydrogen with the objective of raising non-fossil energy capacity to 500 gigawatts by 2030.

Recently, India's first 99.99% pure green hydrogen pilot plant was set up in eastern Assam's Duliajan, at the petroleum exploration major's Jorhat pump station.

It was in keeping with the goal of making the country ready for the pilot-scale production of hydrogen and its use in various applications

Research and development efforts are ongoing for a reduction in the cost of production, storage and the transportation of hydrogen.

Powered by a 500 KW solar plant, the green hydrogen unit has an installed capacity to produce 10 kg of hydrogen per day and scale it up to 30 kg per day.

A specialised blender has also been installed for blending green hydrogen produced from the unit with the natural gas supplied by the Assam Gas Corporation Limited and supplying the blended gas to the Jorhat area for domestic and industrial use.

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OIL has engaged experts from the Indian Institute of Technology-Guwahati to assess the impact of the blended gas on the existing facility.

Other types of Hydrogen: Hydrogen can be 'grey' and 'blue' too

Five shades of hydrogen

Green

Electricity from renewable sources is used to electrolyse water H_2O and separate the hydrogen H_2 and oxygen O

Blue

Produced using natural gas via "steam reformation"; most of the greenhouse gas emissions are captured and stored

Turquoise

Produced using natural gas via "pyrolysis" by separating methane into hydrogen H_2 and solid carbon dioxide CO_2

Grey

Produced using natural gas via "steam reformation" but without carbon capture and storage