Road to a Hydrogen Economy: RSTV - Big Picture

Anchor: – Vishal Dahiya

Participants:

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Introduction:

A viable energy system is a supporting pillar of strong economic growth but for sustainable growth, this energy needs to be environment friendly.

Context:

India is hosting a 2-day summit on green hydrogen initiatives involving the BRICS nations. This summit will provide a platform for all nations to share the best practices related to green hydrogen and discuss methods to scale their models.

The Union Minister of New and Renewable Energy, while addressing the Hydrogen Roundtable on "Hydrogen Economy: New Delhi Dialogue – 2021" said, "We are working on a pilot project on Blue Hydrogen, Hydrogen CNG (H-CNG) and Green Hydrogen. Through technological advancements, we are blending hydrogen with compressed natural gas for use as a transportation fuel as well as an industrial input to refineries. 50 buses in Delhi are plying on blended hydrogen in Compressed Natural Gas on a pilot basis. We plan to scale it up in the coming months across the major cities of India."

The Government of India announced the National Hydrogen Mission in the Union Budget 2021 for making a hydrogen roadmap for the country.

Background:

What is green hydrogen and how is it different from brown hydrogen?

We have around 6 million metric tonnes of hydrogen production every year but this hydrogen is produced by steam reforming of methane which produces a lot of carbon dioxide, a greenhouse gas. The hydrogen produced by this process is called brown hydrogen.

Green hydrogen, on the other hand, is produced by using renewable resources and by the electrolysis of water.

Benefits of Green Hydrogen and the proposed mission:

- Green Hydrogen has no carbon footprint.
- It can play a significant role in the decarbonizing of energy systems across the world.
- A green hydrogen economy could be used in transportation, power generation, and industries.
- It'll help in achieving the Paris targets of UNFCCC and is a promising step towards achieving the net-zero emissions target. This would also bring India closer to its target of 450GW of renewable energy by 2030.

- Such a step would give a boost to the self-reliant India or the AatmaNirbhar Bharat which forms the basis of making India a manufacturing hub that is well integrated with global supply chains.
- Its production is also aligned to other governmental initiatives like the promotion of compressed biogas under the Sustainable Alternative Towards Affordable Transportation (SATAT) scheme or promoting the gas-based economy or other initiatives on Waste-to-Energy.
- It will reduce dependence on the Middle East for fuel, thereby reducing our current account deficit.

Best practices:

South Korea is operating Hydrogen Fuel Cell production units under its **Hydrogen Economy Development and Safe Management of Hydrogen Act, 2020.**

Japan has come out with the **Basic Hydrogen Strategy** which aims to set up an international supply chain of hydrogen.

Challenges in unlocking the potential of Green Hydrogen:

- Production of green hydrogen is not viable, despite the lower costs of solar tariffs.
- The gas is highly explosive and improper storage may lead to industrial disasters.
- India's energy demand is increasing and therefore phasing out coal at this point would harm the industrial sector.

Way forward:

- Both demand and supply for green hydrogen need to be created.
- The roadmap provided by the draft National Green Hydrogen Mission needs to be followed. Stakeholder opinion should also be invited for a successful collaboration.
- Infrastructure needs to be created for safe storage, handling, and transportation of green hydrogen.
- Incentives and subsidies should be provided to this sector for producing technology like electrolyzer indigenously.
- We need to secure collaboration with countries like Japan that already possesses the technical know-how regarding hydrogen technology.

Conclusion:

A shift to green energy like green hydrogen is a step in the right direction and it would help in achieving the sustainable development goal 7 which states: "Ensure access to affordable, reliable, sustainable and modern energy for all."