Task Force for Coal-Based Hydrogen Production

Why in News

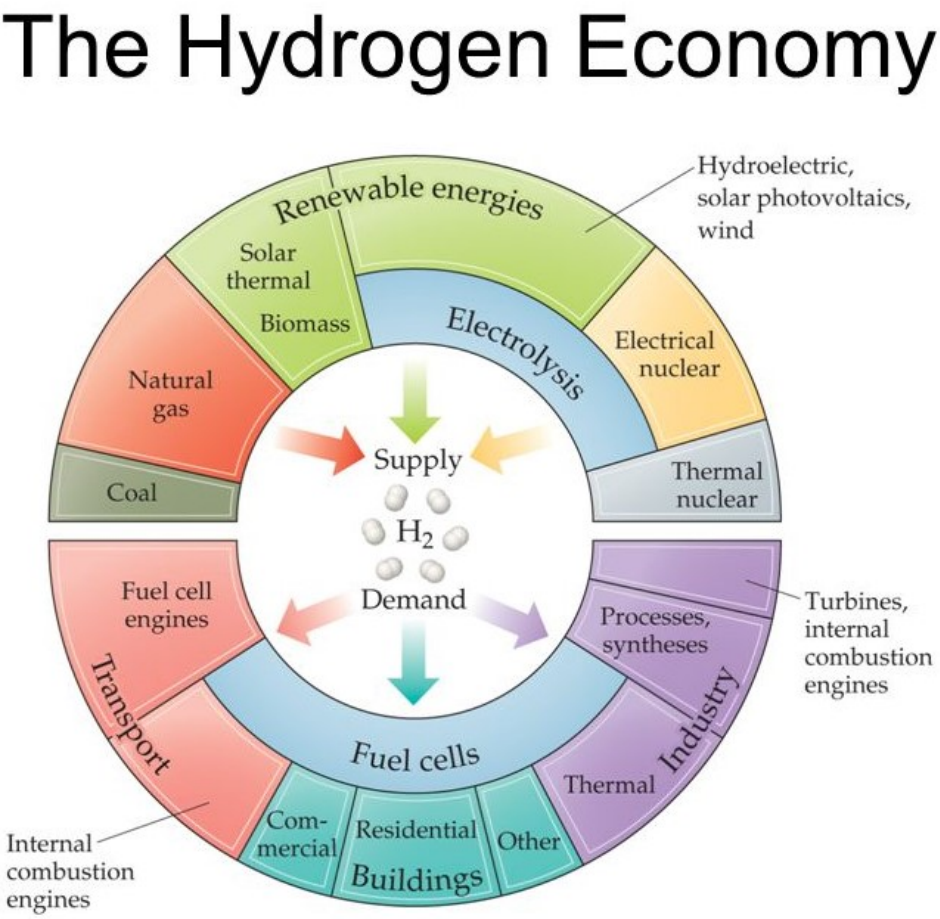
Recently, the Union Government constituted a **Task force and Expert committee** to prepare a road map for **coal-based hydrogen production (Black Hydrogen).**

- The Task Force is also responsible for **coordination** with the **Coal Gasification Mission** and **NITI Aayog**.

Key Points

- **Coal-Based Hydrogen Production:**
  - **About:**
    - Coal (one of the **Hydrocarbon Fuels**) is one of the important sources of hydrogen making apart from natural gas and renewable energy through **Electrolysis**.
  - **However**, Coal has not been encouraged in hydrogen production because of the fear of **Carbon Emission** while extracting hydrogen via coal.
    - Almost 100% of hydrogen produced in India is through natural gas (Grey Hydrogen).
  - **Benefit:**
    - Cost of hydrogen produced from coal can be **cheaper and less sensitive to imports.**
  - **Challenge:**
    - Production of hydrogen from coal will have challenges in terms of **high emissions** and **CCUS (Carbon capture, utilisation and storage)** will play an important role.
      - **Carbon monoxide and carbon dioxide** formed during the coal to hydrogen process have to be trapped and stored in an environmentally sustainable manner (CCS and CCUS).
- **Hydrogen Economy:**
  - It is an economy that **relies on hydrogen as the commercial fuel** that would deliver a substantial fraction of a nation's energy and services.
  - Hydrogen is **a zero-carbon fuel** and is considered **an alternative to fuel and a key source of clean energy.** It can be produced from **renewable sources of energy such as solar and wind.**
  - It is an **envisioned future** where **hydrogen is used as fuel for vehicles, energy storage and long-distance transport of energy.** The different pathways to use hydrogen economy includes hydrogen production, storage, transport and utilization.
    - In 1970, the term **'Hydrogen Economy'** was coined by **John Bockris**. He

mentioned that a hydrogen economy can replace the current hydrocarbon-based economy, leading to a cleaner environment.



- **Present Scenario:**
    - The **current global demand for hydrogen is 70 million metric tons**, most of which is being produced from fossil fuels- **76% from natural gas and 23% from coal** and remaining from the electrolysis of water-- consumes 6% of the global natural gas and 2% of the global coal.
        - This results in CO2 emissions of around 830Mt/year out of which only 130Mt/year is being captured and used in the fertilizer industry.
    - Currently, **much of the hydrogen produced is used for oil refining** (33%), **ammonia** (27%), **methanol production** (11%), **steel production** (3%) and others.
- **Related Initiatives:**
    - National Hydrogen Energy Mission**.**
    - Hydrogen Fuel Cell Based Vehicles**.**
    - Green Hydrogen Mobility project**.**

Source: PIB