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MONDAY, 17th NOVEMBER 2025

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## 1. Hydrogen Valley Innovation Clusters and National Green Hydrogen Mission

- **Prelims -** Hydrogen Valley Innovation Clusters and National Green Hydrogen Mission
- **Mains -** GS 3 - Environment

**Why in the news?**

- The Union Minister for Science and Technology announced that there are four Hydrogen Valley Innovation Clusters being developed in India.

**Hydrogen Valley Innovation Clusters (HVIC)**

- **What is it?:**
  - ➔ HVICs are geographical clusters designed to demonstrate the complete green hydrogen value-chain.
  - ➔ They are part of India's strategy under the National Green Hydrogen Mission (NGHM) to build a domestic ecosystem for green hydrogen and its derivatives.
- **Features:**
  - ➔ HVICs are part of the component ecosystem under the National Green Hydrogen Mission.
  - ➔ The Department of Science & Technology (DST) has identified HVICs as one of its clean-energy innovation tracks.
  - ➔ Four HVICs are being developed across India with a total investment of ₹ 485 crore.
- **Significance:**
  - ➔ Accelerate localisation: manufacturing of electrolyser units, pipelines, storage, refuelling infrastructure, etc.
  - ➔ Skill development, R&D and technology validation: e.g., curricula, incubation, think-tank, standards/regulation.
  - ➔ Decarbonisation of hard-to-abate sectors by providing a cluster-based hydrogen ecosystem (supports NGHM's goals).

**National Green Hydrogen Mission (NGHM)**

- **Nodal Ministry:** Launched by the Ministry of New & Renewable Energy (MNRE) in 2023.

- **<u>Mission Purpose:</u> To make India a global hub for production, usage and export of Green Hydrogen & its derivatives (Green Ammonia, Green Methanol).**
- **<u>Major Targets:</u>** Achieve by 2030-
  - ➔ 5 million tonnes/year Green Hydrogen production
  - ➔ 125 GW renewable energy capacity dedicated for GH2
  - ➔ Over ₹8 lakh crore expected investments
  - ➔ Import savings: > ₹1 lakh crore per year (on fossil fuels)
  - ➔ Employment: ~6 lakh jobs
- **<u>Key Components:</u>**
  - ➔ SIGHT Programme (Strategic Interventions for Green Hydrogen Transition): Incentivising Green Hydrogen production as well as Electrolyser manufacturing.
  - ➔ Pilot Projects: 3 thematic pilots- Steel, Mobility and Shipping.
  - ➔ R&D Programme for Green Hydrogen storage, transportation and safety codes.
  - ➔ Hydrogen Hubs: Development of Green Hydrogen Hubs in states with high renewables and industrial demand clusters.

## 2. Cryptocurrency

- **Prelims -** Cryptocurrency
- **Mains -** GS 3 - Economy

**Why in the news?**

- Iran has urged the BRICS countries to use cryptocurrencies to pay for trade amid tensions of sanctions on Iran.

**Cryptocurrency**

- **What is it?:** A cryptocurrency is a digital or virtual currency that uses cryptography for security.
- **Features:**
  - ➔ **Digital currency**: Exists only electronically, not as physical bills or coins.
  - ➔ **Decentralized**: Not controlled by any central authority like a government or bank.
  - ➔ **Secured by cryptography**: Uses encryption techniques to ensure secure transactions and prevent counterfeiting.
- **How it works:**
  - ➔ **Transactions**: Recorded on a shared public ledger called a blockchain. This ensures transparency and immutability (transactions can't be altered).
  - ➔ **Mining**: New units of cryptocurrency are created through a process called mining, which involves solving complex mathematical problems with computers.
  - ➔ **Wallets**: Users store their cryptocurrency in digital wallets. These wallets can be software-based or hardware devices.
- **Types:**
  - ➔ **Bitcoin (BTC)**: The first and most well-known cryptocurrency.
  - ➔ **Ethereum (ETH)**: A platform that allows for building decentralized applications (dApps).
  - ➔ **Tether (USDT)**: A stablecoin pegged to the value of the US dollar.
- **Benefits:**
  - ➔ **Fast and cheap transfers**: Can enable faster and cheaper international payments compared to traditional banking systems.
  - ➔ **Security**: Encryption makes it difficult to counterfeit or steal cryptocurrency.

- ➔ **Transparency**: Blockchain technology provides a transparent record of all transactions.

- **Challenges:**
  - ➔ **Volatility**: Prices of cryptocurrencies can fluctuate significantly.
  - ➔ **Security risks**: Crypto wallets can be vulnerable to hacking.
  - ➔ **Regulation**: The regulatory landscape for cryptocurrency is still evolving.

## 3. Electronics Development Fund (EDF)

- **Prelims** - Electronics Development Fund (EDF)
- **Mains** - GS 3 - Economy

**Why in the news?**

- Electronics Development Fund has supported 128 Indian start ups with an investment of 257.77 Crore rupees.

**Electronics Development Fund (EDF)**

- **What is it?:**
  - ➔ The Electronics Development Fund (EDF) is created by the Government of India as part of the Digital India Programme.
  - ➔ Its purpose is to provide Risk Capital funding to promote innovation, research, development and competitiveness in Electronics, ICT, Nano-electronics sectors.
- **Nodal Ministry:** Ministry of Electronics & Information Technology (MeitY).
- **Objectives:**
  - ➔ Support creation of a vibrant ecosystem of venture capital funds focused on:
    - ★ Electronics System Design & Manufacturing (ESDM)
    - ★ ICT & IT-based startups
    - ★ Nano-electronics innovation
  - ➔ Encourage indigenous product development to reduce import dependence.
  - ➔ Strengthen India's ability in IPR creation, high-tech R&D and innovation.
- **Nature of the Fund:**
  - ➔ EDF is structured as a Fund of Funds (FoF).
  - ➔ Government participates as a "Fund Manager" and "Anchor Investor" through Canbank Venture Capital Fund Ltd (CVCFL).
  - ➔ EDF does not invest directly in companies; instead, it invests in Daughter Funds (VC/Angel Funds).
- **Significance:**
  - ➔ India is one of the world's largest consumers of electronics; EDF helps build domestic capability.
  - ➔ Acts as a bridge between R&D and commercialisation.

- ➔ Encourages private venture capital participation in high-risk technology sectors.
- ➔ Facilitates creation of deep-tech electronics startups with global competitiveness.

- **Achievements:**
  - ➔ Multiple "Daughter Funds" have been approved under EDF.
  - ➔ Startups supported through EDF cover areas such as Semiconductor design, IoT devices, Medical electronics, Telecom equipment, Smart manufacturing etc.
  - ➔ EDF is highlighted as a key enabler for self-reliance in electronics manufacturing.

## 4. Siliguri Corridor

- **Prelims -** Siliguri Corridor
- **Mains -** GS 2 - International Relations

**Why in the news?**

- Indian Army sets up three new garrisons near the strategic Siliguri Corridor.

**Siliguri Corridor**

- **Other Name**: Chicken's Neck Corridor
- **Location**: West Bengal, India.
- **Width**: The corridor is about 20-22 km wide at its narrowest point.
- **Bordering Countries**: Nepal, Bangladesh and Bhutan.
- **Strategic Significance**
  - ➔ It is India's lifeline to the Northeast if any disruption here could cut off access to the entire region.
  - ➔ Close proximity to the India-China-Bhutan trijunction at Doklam- the site of the 2017 India-China standoff.
  - ➔ Vital for defense logistics and internal security.
  - ➔ It's a potential choke point in the event of conflict.

## 5. Hepatitis A and Universal Immunisation Programme

- **Prelims -** Hepatitis A and Universal Immunisation Programme
- **Mains -** GS 2 - Social Justice

**Why in the news?**

- Hepatitis A is becoming a mounting threat in India, which needs to be addressed via the Universal Immunisation Programme.

**Hepatitis A**

- **What is it?:** Hepatitis A is an acute viral infection caused by the Hepatitis A Virus (HAV).
- **Transmission:** Faeco-oral route (contaminated food, water, poor sanitation).
- **Symptoms:** Fever, jaundice, abdominal pain, nausea, fatigue.
- **Nature of Disease:** Usually self-limiting, but may cause acute liver failure in rare cases.
- **High-Risk Groups:**
  - ➔ Children in poor sanitation areas
  - ➔ People in overcrowded localities
  - ➔ Individuals consuming contaminated water
- **Prevention and Treatment Protocol:**
  - ➔ Hepatitis A vaccine is available in-
    - ★ Private immunisation
    - ★ State-specific programmes in some states
  - ➔ Hepatitis A vaccine is not included under the Universal Immunisation Programme
  - ➔ There is **no specific medication** available for treating Hepatitis A.

**Universal Immunisation Programme (UIP)**

- **Nodal Ministry:** Launched in 1985 by the Ministry of Health & Family Welfare (MoHFW).
- **Aim:** Provide free vaccination to all children and pregnant women against vaccine-preventable diseases (VPDs).
- **Objectives:**
  - ➔ Reduce morbidity and mortality from VPDs.

- ➔ Achieve universal coverage of immunisation.
- ➔ Ensure high-quality vaccines, cold-chain, surveillance & monitoring.
- ➔ Strengthen routine immunisation through Mission Indradhanush (PIB).

- **Coverage:** UIP covers 12 vaccine preventable diseases.
- **Key Components:**
  - ➔ **Routine Immunisation:** Regular vaccines delivered through sub-centres, PHCs, CHCs, Anganwadis, outreach sites.
  - ➔ **Mission Indradhanush:** Special drive to improve low-coverage districts.
  - ➔ **National Cold Chain System:** 28,000+ cold chain points, ice-lined refrigerators, cold boxes, temperature monitoring managed by MoHFW
  - ➔ **Universal Vaccine Logistics:** Electronic Vaccine Intelligence Network (eVIN) modernises stock & temperature monitoring
- **Achievements:**
  - ➔ India has been certified polio-free since 2014.
  - ➔ Major reduction in measles mortality.
  - ➔ Nationwide introduction of Pentavalent, RVV, PCV and MR vaccine (PIB).
  - ➔ Full immunisation coverage improved significantly under MI & IMI.

## 6. Senkaku Islands

- **Prelims -** Location of Senkaku Islands
- **Mains** - GS 2 - International Relations

**Why in the news?**

- Chinese Coast Guard ship formation passed through the waters of the Senkaku Islands triggered tension between both two countries.

**Senkaku Islands**

- **Location**
  - ➔ In the East China Sea
  - ➔ It is located north of the Yaeyama Islands in Japan's Okinawa Prefecture and northeast of the island of Taiwan.
- **Other Names**: They are also known as the Diaoyu Islands in mainland China, the Diaoyutai Islands in Taiwan, and the Pinnacle Islands by other observers.
- **Major Islands in the Group**: The islands comprise Uotsuri Island, Kuba Island, Taisho Island (also called Kumeakashima Island), Kitakojima Island, Minamikojima Island, Tobise Island, Okinokitaiwa Island, and Okinominamiiwa Island.
- **Largest Island**: Uotsuri Island.