



## **DAILY CURRENT AFFAIRS 14-03-2026**

### **Mapping Perspective**

1. Nauradehi Wildlife Sanctuary

### **Prelims Perspective**

2. Tephra
3. Fiscal Health Index

### **Mains Perspective**

4. Changing Nature of Global Trade
5. Small Modular Reactors

## Nauradehi Wildlife Sanctuary

Syllabus: GS-3: Protected Areas – Wild Life Sanctuaries.

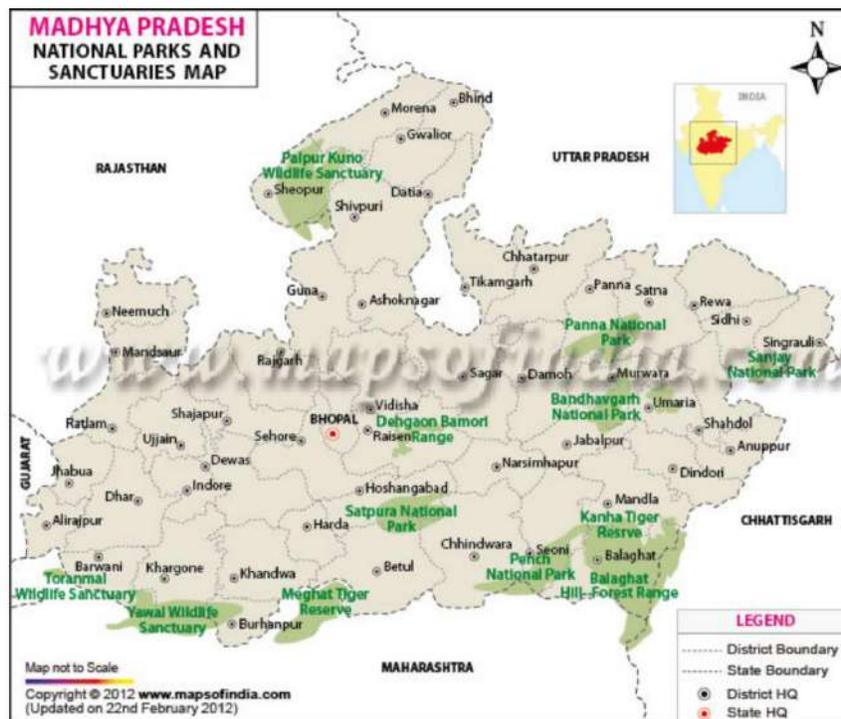
Context:

- **Cheetah Reintroduction Project in India** plans to **introduce cheetahs in Nauradehi Wildlife Sanctuary within the next two months.**
- The sanctuary is being developed as an **additional habitat for African cheetahs** to expand the population beyond **Kuno National Park**, the current primary site.

### About Nauradehi Wildlife Sanctuary

- Located in **Madhya Pradesh.**
- Spans **three districts:**
  - Sagar District
  - Damoh District
  - Narsinghpur District

**Area: 1187 sq km**, making it the **largest wildlife sanctuary in Madhya Pradesh.**



### Physiography

- Situated on a **plateau in the upper Vindhyan range** of the **Vindhya Range.**
- Functions as an **important ecological corridor** linking:

- Panna Tiger Reserve
- Satpura Tiger Reserve
- Bandhavgarh Tiger Reserve

### Biogeographic Classification

- Falls under the **Deccan Peninsula biogeographic zone** (as per Wildlife Institute of India classification).

### Drainage

- The sanctuary lies in **two major river basins**:
  - ~75% in the Yamuna River basin (part of the Ganges River system)
  - ~25% in the Narmada River basin

**Major Rivers inside the sanctuary:** Kopra River; Bamner River; Bearma River

These are **tributaries of the Ken River**.

### Vegetation

- Characterized by:
  - Tropical dry deciduous forests
  - Mixed deciduous forests
  - Open grasslands

**Dominant tree species:** Teak (dominant); Saja; Dhaora; Bhirra; Ber; Bel; Mahua; Tendu; Gunja; Amla

### Fauna

- **Mammals:** Indian wolf; Bengal tiger; Leopard; Sloth bear; Sambar; Nilgai; Chinkara
- **Birds:** Various resident and migratory bird species.

### Importance for Cheetah Reintroduction

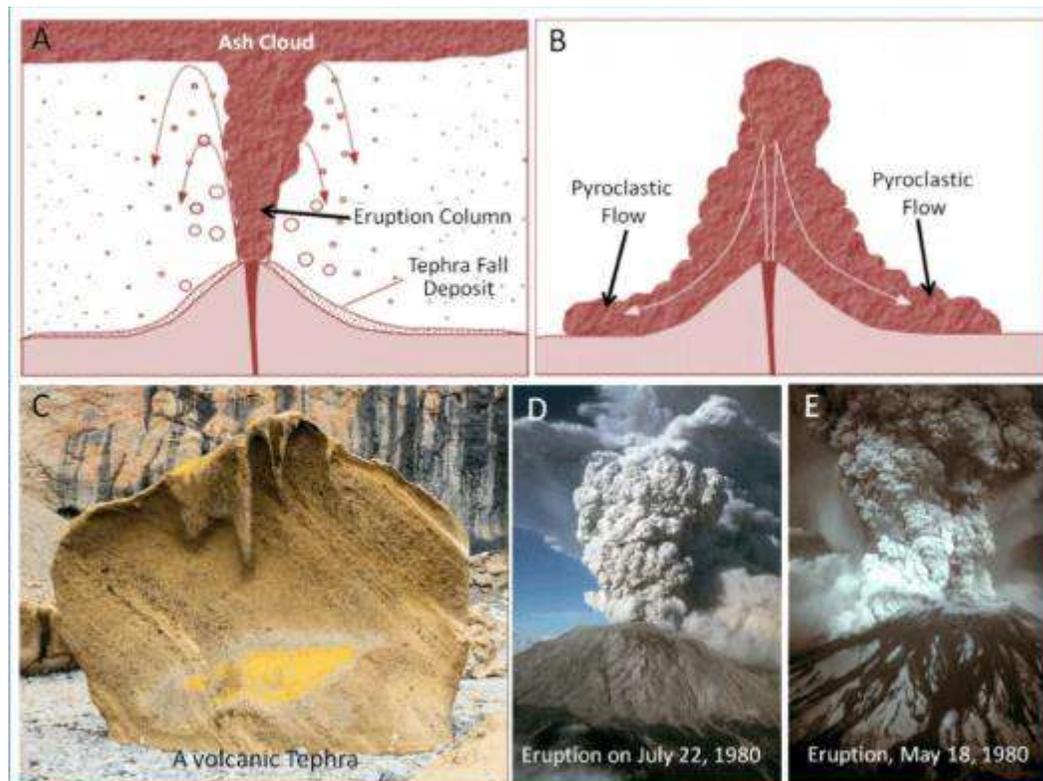
- Selected as a **potential second landscape** for cheetahs under the **Cheetah Reintroduction Project in India**.
- Key advantages:
  - Large contiguous habitat
  - Low human population density
  - Availability of grasslands and prey base
  - Connectivity with central Indian forests

## **Tephra**

**Syllabus: GS-1: Physical Geography – Volcanoes.**

**Context:**

- Kīlauea has been **erupting episodically since 23 December 2024**.
- The eruption is occurring within **Hawai'i Volcanoes National Park**.
- Lava flows remain **confined to the caldera**, but **tephra from lava fountains** may affect **downwind communities**.



5: Tephra fall and pyroclastic flow of explosive eruptions of igneous rocks.

### **What is Tephra?**

- **Tephra** is a volcanological term for **all solid material ejected from a volcano during an eruption**.
- It includes:
  - Volcanic ash
  - Lapilli
  - Volcanic bombs and blocks

- The particles are **expelled into the atmosphere** and then **settle around and downwind of the volcano**.

### Particle Size Pattern

- Largest fragments → fall near the volcano
- Smaller particles (ash) → carried long distances by wind

### Classification of Tephra by Size

Type	Size	Description
<b>Volcanic Ash</b>	< 2 mm	Fine particles that can travel thousands of km
<b>Lapilli</b>	2–64 mm	Pebble-sized fragments
<b>Volcanic Bombs / Blocks</b>	> 64 mm	Large chunks ejected during eruptions

### Hazards Associated with Tephra

#### Atmospheric Hazards

- **Volcanic lightning**
  - Ash particles become **electrically charged** during eruption.
  - Lightning can occur within eruption clouds.
- **Hazards to aviation**
  - Ash clouds can **damage aircraft engines and navigation systems**.

#### Ground Hazards

- **Infrastructure disruption**
  - Damages **electricity, TV, radio, and communication lines**
  - **Blocks drainage and sewage systems**
- **Transport disruption**
  - Ash **buries roads** and reduces **visibility**
- **Agricultural impact**
  - Kills crops
  - Damages machinery
- **Structural damage**
  - Heavy ash accumulation can **collapse rooftops**
- **Fire hazards**

- Hot fragments can **ignite fires**
- **Public health**
  - Causes **respiratory problems**
  - Produces **darkness and panic** by blocking sunlight

### Key Characteristics of Tephra

- Highly abrasive
- Electrically charged
- Can travel thousands of kilometers
- Weight increases when wet, increasing collapse risk.

## **Fiscal Health Index**

### Syllabus: Prelims Bits

#### Context:

- The NITI Aayog released the **second edition of the Fiscal Health Index (FHI) 2026** in **New Delhi**.
- The index evaluates the **fiscal performance of Indian states** and promotes **data-driven fiscal policymaking**.

### About Fiscal Health Index

- **Launched by:** NITI Aayog
- **Coverage:**
  - 18 major states
  - 10 North-Eastern and Himalayan states
- **Purpose**
  - Provide a **systematic framework to assess fiscal performance** of states.
  - Encourage **fiscal discipline and transparency**.
  - Support **evidence-based policy reforms** in state finances.

### Key Pillars of the Index

The Fiscal Health Index evaluates states across **five pillars**:

- **Quality of Expenditure**

- Focus on productive spending such as capital expenditure.
- **Revenue Mobilisation**
  - Ability of states to generate **own tax and non-tax revenues**.
- **Fiscal Prudence**
  - Control over **fiscal deficit and revenue deficit**.
- **Debt Index**
  - Level and structure of **state debt liabilities**.
- **Debt Sustainability**
  - States' ability to **service and manage debt in the long run**.

### Classification of States

The index categorizes states into **four tiers**:

Category	Characteristics
<b>Achievers</b>	Strong fiscal discipline, high own-tax revenue, low deficits, manageable debt
<b>Front Runners</b>	Sound finances but weaker performance in some indicators
<b>Performers</b>	Moderate performance with mixed fiscal indicators
<b>Aspirational</b>	High debt, persistent deficits, and weak revenue capacity

### Key Highlights – FHI 2026

**Achievers:** Odisha; Goa; Jharkhand

### States with Decline in Ranking

- **Karnataka** and **Telangana**: moved from **Front Runner** → **Performer**
- **Kerala** and **Tamil Nadu**: slipped to **Aspirational category**

### North-Eastern & Himalayan States Ranking

- Arunachal Pradesh (Top) > Uttarakhand > Tripura > Meghalaya > Assam > Mizoram

### Significance

- Helps **benchmark fiscal management across states**.
- Encourages **competitive federalism** in fiscal governance.
- Guides **policy reforms for sustainable public finances**.

## **Changing Nature of Global Trade**

### **Syllabus: GS-3: International Trade**

#### **Context:**

- The idea of “**doux commerce**” (**gentle commerce**) was articulated by the French philosopher **Montesquieu** in his work **The Spirit of the Laws**.
- It suggested that **economic interdependence through trade encourages peaceful relations among nations**.
- Institutions such as the **World Trade Organization (WTO)**, created during the globalization era, reflected this belief that **trade integration would reduce geopolitical conflict**.

#### **Concept of Doux Commerce**

The doctrine rests on the belief that **commerce moderates political behaviour and fosters cooperation**.

#### **Key Elements**

- **Trade promotes peace:** Nations engaged in mutually beneficial commerce avoid conflict to protect economic interests.
- **Economic interdependence:** Countries become stakeholders in each other’s prosperity.
- **Civilising influence of markets:** Commercial societies value stability, contracts, and rule-based interactions.
- **Institutionalisation of cooperation:** Multilateral frameworks such as the **World Trade Organization** regulate trade and resolve disputes peacefully.

#### **Example from the Globalisation Era**

- After the **Cold War**, global trade expanded rapidly under institutions like the **International Monetary Fund, World Bank, and World Trade Organization**, reflecting faith in economic integration as a stabilizing force.

#### **Why the Idea of Doux Commerce is Weakening**

##### **Interdependence as Strategic Vulnerability**

- Excessive reliance on foreign suppliers exposes countries to **supply chain disruptions during conflicts**.
- Example:
  - Semiconductor supply chains concentrated in **Taiwan** create global strategic risks.

- Energy dependence of **European Union** on Russian gas during the **Russia-Ukraine War** highlighted vulnerability.

### Weaponisation of Trade

- Economic tools are increasingly used for geopolitical leverage: Tariffs; Sanctions; Export controls; Technology restrictions
- Examples:
  - **United States** restricting advanced semiconductor exports to **China**.
  - Sanctions on **Russia** following the **Russia-Ukraine War**.

### Fragmentation of the Global Trade System

- Declining reliance on multilateral institutions like the **World Trade Organization**.
- Rise of **regional and bilateral trade agreements**, e.g.:
  - Regional Comprehensive Economic Partnership (RCEP)
  - Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).
- WTO dispute settlement mechanisms have weakened due to institutional deadlock.

### Shift in Supply Chain Strategy

Countries are redesigning supply chains to enhance security:

- **Friend-shoring**: relocating production to trusted geopolitical partners.
- **Near-shoring**: shifting supply chains closer to domestic markets.
- **Reshoring**: bringing manufacturing back home.

Examples:

- Semiconductor manufacturing incentives under the **CHIPS and Science Act**.
- Supply chain diversification initiatives by **European Union** and **India**.

### Implications for Global Governance

- Transition from **rules-based multilateralism** → **geopolitically driven economic blocs**.
- Increasing overlap between **national security and economic policy**.
- Risk of **trade fragmentation and reduced global efficiency**.

### Conclusion

- The weakening of **“doux commerce”** reflects a broader shift from **globalisation to geoeconomic competition**.

- While trade still promotes cooperation, **strategic considerations are increasingly overriding purely economic logic.**
- Revitalising institutions like the **World Trade Organization** and balancing **economic interdependence with strategic autonomy** will be crucial for sustaining a stable global order.

## **Small Modular Reactors**

**Syllabus: GS-3: Industry – Power Sector.**

**Context:**

India developing three different types of Small Modular Reactors (SMRs): Union Minister.

**What are SMRs?**

- **Small Modular Reactors (SMRs)** are **miniaturised nuclear reactors** designed to generate **up to 300 MWe per module**, roughly **one-third the capacity of conventional nuclear power reactors.**
- Defined by the International Atomic Energy Agency (IAEA) as **compact, factory-fabricated reactors** that can be transported and assembled at site.
- Designed for **modularity, enhanced safety, and flexible deployment.**

**SMR Models Being Developed in India**

India's SMR programme is led by the **Department of Atomic Energy (DAE)** with technology development by **Bhabha Atomic Research Centre (BARC)** and deployment support from **Nuclear Power Corporation of India Limited (NPCIL).**

**Bharat Small Modular Reactor (BSMR) – 200 MWe**

- **Developer:** BARC in collaboration with NPCIL
- **Technology:** Based on **Pressurised Water Reactor (PWR)** design
- **Fuel:** Slightly Enriched Uranium (SEU)
- **Location:** Proposed at **Tarapur Atomic Power Station, Maharashtra**
- **Purpose:** Reliable small-scale nuclear power generation

**SMR – 55 MWe**

- **Technology:** PWR-based design
- **Design:** **Block-type highly modular configuration**
- **Location:** Planned at **Tarapur Atomic Power Station**

- **Objective:** Demonstrate compact, scalable nuclear power generation.

### High Temperature Gas-Cooled Reactor (HTGR) – up to 5 MWth

- **Type:** High Temperature Gas-Cooled Reactor
- **Purpose:** Hydrogen production and industrial heat applications
- **Location:** BARC facility in **Visakhapatnam, Andhra Pradesh.**

### Bharat Small Reactors (BSRs)

- Unlike completely new SMR designs globally, **Bharat Small Reactors (BSRs)** are derived from India's proven **Pressurised Heavy Water Reactor (PHWR)** technology.
- Aim to **adapt existing nuclear expertise for small-scale deployment**, reducing technological risk.

### Significance of SMRs for India

#### 1. Modular Manufacturing

- Components **manufactured in factories and assembled on-site.**
- Reduces **construction time, cost overruns, and project delays.**

#### 2. Scalability

- Reactors can be **added incrementally** based on energy demand.
- Suitable for **remote regions and industrial clusters.**

#### 3. Enhanced Safety

- Incorporate **passive and inherent safety systems.**
- Can automatically shut down **without human intervention or external power.**

#### 4. Clean Energy Transition

- Provides **low-carbon baseload electricity**, helping India meet climate commitments.
- Supports energy demand from **AI data centres, industry, and urbanisation.**

### India's Nuclear Energy Push

#### Nuclear Energy Mission

- Announced in **Union Budget 2025–26.**
- Focus: **Research and development of SMRs.**
- Target: **At least five indigenously designed SMRs operational by 2033.**

#### Nuclear Power Target

- India aims for **100 GW nuclear power capacity by 2047** as part of long-term energy strategy.

### SHANTI Act, 2025

- Aims to **modernise and consolidate India's nuclear legal framework**.
- Intended to **facilitate private sector participation and faster deployment of nuclear projects**.

### Conclusion

Small Modular Reactors represent the **next phase of India's nuclear energy strategy**, combining **indigenous technology, modular construction, and enhanced safety**. Their deployment could play a crucial role in achieving **energy security, decarbonisation, and reliable baseload power** for India's growing economy.

### Know more

