Today's Prelims Topics

EC upgrades system to create Index Cards

Context

The Election Commission of India (ECI) launched a major technological upgrade to the Index Card system.

More in News

- The upgraded Index Card system now generates:
  - 35 statistical reports for Lok Sabha (Parliamentary) elections
  - 14 statistical reports for State Assembly elections

What is the Index Card?

- It is a **comprehensive, constituency-level data record created after each election.**
- It contains detailed information such as candidate details, vote counts, party performance, gender-based voting patterns, regional voting variations, and other key statistics.
- While not a legally mandated (statutory) document, it is crucial for supporting electoral research, academic studies, and fostering informed democratic discourse.

Source: TheHindu

Bauxite

Context

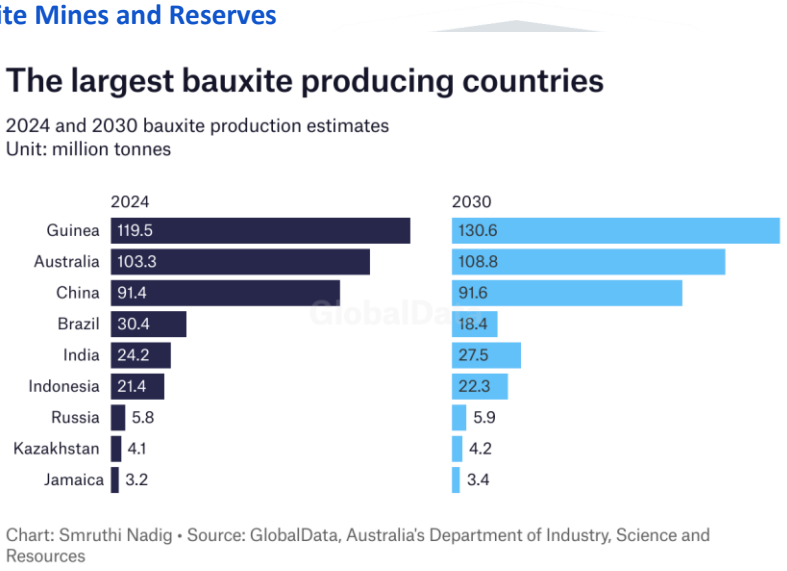
Medha Patkar and activists were stopped by Odisha Police while heading to Rayagada for a World Environment Day meeting on bauxite mining.

What is Bauxite?

- It is a **sedimentary rock** with a relatively **high aluminium content.**
- **Appearance**: Reddish-brown, gray, or yellow,
- **Mainly found in**: Tropical and subtropical regions
- **Usage**: Its ore is important for the production of aluminum metal.
    - Approximately 90% of the world's bauxite is processed to produce alumina (aluminum oxide).

- The **Bayer process** is a major method for **refining bauxite to obtain alumina.**
- **Alumina** is then refined into **pure aluminum** metal through the **Hall–Héroult electrolytic process**.

Major Bauxite Mines and Reserves



India:

- **Odisha** (including Rayagada, where bauxite mining controversies have occurred).
- Andhra Pradesh, Gujarat, and Jharkhand.

Global Reserves:

- **Guinea**: Leading the world in bauxite reserves and production.
- **Australia**: Second largest producer of bauxite.
- **China**: Heavily reliant on bauxite for its large aluminum industry
- **Brazil**: Significant bauxite reserves in the Amazon basin.

Source: The Hindu

Anti Dumping Duty

Context

India imposed a **30% Anti-Dumping Duty (ADD)** on **bare printed circuit boards (BPCBs)** to protect domestic PCB manufacturers.

About Anti Dumping Duty

- **Definition:** An **Anti-Dumping Duty (ADD)** is a protectionist tariff imposed by a country on imported goods that are priced below fair market value.
- **Purpose**: ADD is imposed to protect local businesses from unfair competition by adjusting prices to fair trade levels and rectify trade distortions caused by dumping.
- **WTO Permitted**: Anti-dumping measures are allowed under WTO regulations to ensure fair competition.
- **Impact**: While they protect local businesses, ADDs can result in higher prices for domestic consumers and may reduce international competition for domestic producers.
- **Administration in India:** Managed by the **Directorate General of Trade Remedies (DGTR)** under the Ministry of Commerce and Industry.
    - The **Department of Commerce** recommends the duty, and the **Ministry of Finance** levies it.

Source: The Hindu

Two more wetlands into Ramsar List

Context

India's Ramsar site tally has increased to **91 (highest in Asia)**, with the recent addition of two wetlands from **Rajasthan—Khichan and Menar**—receiving international recognition under the Ramsar Convention.

Khichan Wetland (Phalodi, Rajasthan):

- **Location:** Phalodi, Rajasthan
- **Significance:** Renowned for attracting thousands of migratory Demoiselle cranes (locally known as Kurja) each year, making it a prime spot for birdwatching enthusiasts.

Menar Wetland (Udaipur, Rajasthan):

- **Location:** Near Udaipur, Rajasthan
- **Significance:**
  - Known as the 'Bird Village.
  - It comprises two primary lakes—Brahma Talab and Dhand Talab—that serve as crucial habitats for migratory birds, including the Greater Flamingo, and peacocks.

Ramsar Site
Definition: Wetlands of international importance under the Ramsar Convention (1971, Iran, under UNESCO).
Purpose: Recognizes wetlands that provide essential ecosystem services, support biodiversity, and sustain local livelihoods.
India's Ramsar Sites
Ramsar Signatory: India joined on February 1, 1982.
First Sites: Chilika Lake (Odisha) and Keoladeo National Park (Rajasthan) in 1981.
Total Ramsar Sites (June 2025): 91 sites, covering ~13.59 lakh hectares.
Global Ranking: 1st in Asia, 3rd globally (after the UK - 175 and Mexico - 142).
Top States: Tamil Nadu (20), Uttar Pradesh (10), Rajasthan (4 after Menar & Khichan).
Eligibility Criteria (Any 1 required)
Supports rare/endangered species.
Hosts significant bird populations.
Critical life cycle habitat (e.g., breeding or migration).

Source: Indian Express

News in Short

Clouded Leopard, Bengal Slow Loris & Dehing Patkai National Park

News? Rare Footage Captures Clouded Leopard Preying on Bengal Slow Loris in **Dehing Patkai National Park** Assam.

Clouded Leopard (*Neofelis nebulosa*)

Physical Characteristics:

- Medium-sized wild cat
- Distinct coat pattern with cloud-like spots
- Exceptionally long canine teeth
- Nicknamed "modern-day sabre-tooth"
- Largest canines relative to body size among all cats

Habitat and Distribution:

- Found in dense forests across Southeast Asia
- Includes foothills of the Himalayas, Northeast India, Bhutan, Myanmar, Thailand, Malaysia, and parts of South China
- In India, found in Assam, Arunachal Pradesh, and Meghalaya

Behavior and Diet:

- Arboreal and nocturnal, skilled in tree navigation
- Diet includes small ungulates, primates, porcupines, pangolins, birds, and rodents
- Recent evidence from Dehing Patkai shows it preying on Bengal slow lorises
- Plays role as both predator and prey in the ecosystem.

Bengal Slow Loris (*Nycticebus bengalensis*)

- **Physical Characteristics**:
  - Small, nocturnal primate
  - Dense, woolly fur and large eyes for night vision
  - Distinctive round face
  - Possesses a toxic secretion from its brachial gland
  - Licks and applies toxin to fur for defense and possible communication
- **Habitat and Distribution**:
  - Resides in tropical and subtropical forests with dense canopies
  - Found in Northeast India, Bangladesh, Myanmar, Laos, Vietnam, and China
  - In India, located in Assam, Meghalaya, and Arunachal Pradesh
- **Behavior and Diet**:
  - Slow lorises are arboreal and primarily feed on plant exudates like sap and gum, but also consume insects and small vertebrates.
  - They are known for their deliberate movements and often occupy the same nocturnal niches as clouded leopards, making them susceptible to predation.

Dehing Patkai National Park

- **Location & Significance**:
  - Located in Assam's Dibrugarh and Tinsukia districts
  - Covers 231.65 sq km of tropical rainforest
  - Known as the "Amazon of the East" for its rich biodiversity
- **Biodiversity**:
  - **Home to eight wild cat species:** tiger, common leopard, clouded leopard, fishing cat, golden cat, marbled cat, jungle cat, and leopard cat
  - **Hosts various primates:** Western hoolock gibbon, Assamese macaque, Bengal slow loris

- **Conservation Importance**:
  - Predator-prey dynamics, like clouded leopards preying on **Bengal slow lorises,** maintain ecological balance
  - Protecting the park is crucial for the survival of these species

Source: IndiaMongabay

Editorial Summary

A Eurocentric reset, a gateway for India

Context

The renewed UK-EU agreement signals more than a regional development — it has deep implications for India's trade, diplomacy, and diaspora, demanding timely strategic responses.

Significance of UK and EU for India

- **Major Trade Partners:** The **European Union** is India's **second-largest export destination**, accounting for **$86 billion** in exports in **FY2024**.
    - The **United Kingdom** alone received **$12 billion** worth of Indian exports in the same fiscal year.
- **Pharmaceutical Sector Dependence**: India supplies **over 25%** of the **UK's generic drug requirements**, playing a vital role in the British healthcare system.
    - A unified U.K.-EU regulatory regime could streamline **drug approval processes**, reducing costs and boosting efficiency for Indian pharma companies.
- **Seafood and Agro Exports**: India's seafood exports touched **₹60,523.89 crore (~$7.38 billion)** in **FY2024**.
    - Alignment of food safety and fisheries policies between the UK and EU can help reduce **non-tariff barriers** and **custom delays** for Indian exporters.
- **Strategic and Defence Cooperation**: India's bilateral trade with **France** reached **$15.1 billion in 2024-25**.
    - India has signed key **defence and technology transfer agreements** with **France, Germany, and the UK**, which can be further deepened under a coordinated UK-EU defence policy.
- **Diaspora and Education Ties**: The UK issued over **1,10,000 student visas** to Indian nationals in **2024**, placing India among the top sources of international students.
    - A reset in UK-EU border policies could allow partial professional and academic mobility across both regions for Indian talent.
- **Multilateral Cooperation Platforms**: India maintains a **Strategic Partnership Roadmap to 2025** with the EU and a **Comprehensive Strategic Partnership** with the UK.
    - Greater UK-EU alignment could strengthen India's position at global forums like the **UN, G-20, and WTO**, enhancing India's voice on issues like **climate finance**, **digital public infrastructure**, and **reforms in global governance**.

Key Hurdles for India

- **Regulatory Complexity Post-Brexit:** Since Brexit, Indian exporters have faced the burden of complying with **two distinct regulatory regimes** — one for the UK and another for the EU.
    - This has been especially difficult for **pharmaceuticals, textiles, seafood**, and **agro-products**, where compliance requirements are highly technical and vary by region.
- **Stricter Unified Standards Could Hurt MSMEs**: A harmonised UK-EU food safety and product certification regime may lead to **more stringent sanitary and phytosanitary (SPS) standards**.
    - **E.g.** in 2024, the EU food safety authorities found cancer-causing chemicals found in 527 Indian food items and banned it in the market.
- **Export Ecosystem Limitations**: India still struggles with **logistics costs**, which are around **13–14% of GDP**, compared to **8–9% in developed economies**.
    - The new **EU Carbon Border Adjustment Mechanism (CBAM)** has also been a point of dispute.

- **Talent Mobility Constraints**: After Brexit, **Indian professionals** faced reduced access to EU job markets due to the UK no longer being a bridge to Europe.
    - While over **1,10,000 student visas** were granted by the UK in 2024, **professional migration** opportunities into the broader EU space have remained fragmented.
- **Trade Defence Measures and NTBs**: The EU frequently imposes **anti-dumping duties and technical barriers** on Indian goods.
    - **E.g.**, India has faced **anti-dumping investigations** in the EU on **steel, chemicals, and textiles** — sectors crucial to its export profile.
- **Uncertain Geopolitical Balancing**: The UK-EU strategic realignment may push India to **balance between transatlantic powers and its own strategic autonomy**.
    - India must ensure that its deeper engagement with France and Germany is not complicated by a **renewed EU foreign policy bloc** that expects tighter alignment on issues like **Russia**, **China**, and **human rights**.

Way Forward for India

- **Leverage Unified Regulatory Space**: Push for streamlined export approvals, especially for pharma, seafood, and textiles.
- **Support MSMEs**: Expand Production-Linked Incentive (PLI) and Remission of Duties and Taxes on Exported Products (RoDTEP) to enhance product quality and compliance readiness.
- **Deepen Strategic Ties**: Enhance trilateral initiatives with France-Germany-UK for defence and technology cooperation.
- **Negotiate Mobility Pacts**: Embed talent and migration agreements within UK-EU coordinated frameworks.
- **Upgrade Export Infrastructure**: Invest in logistics, digital compliance systems, and standards certification.
- **Amplify Global Role**: Use the U.K.-EU reset to build a cohesive Western support base for India's leadership in global governance, climate action, and digital equity.

Source: [The Hindu: A Eurocentric Reset, a gateway for India]

Should India amend its nuclear energy laws?

Context

- India aims to scale up its nuclear energy capacity from **8 GW to 100 GW by 2047** to meet clean energy goals.
- For this, it is considering amending its nuclear laws — the **Civil Liability for Nuclear Damage Act (CLNDA), 2010** and the **Atomic Energy Act (AEA), 1962** — to allow private and foreign companies to participate in building and operating nuclear power plants.

Legal Provisions

- **Civil Liability for Nuclear Damage Act, 2010 (CLNDA):** Holds the **operator solely liable** in case of a nuclear accident but also allows the operator to **seek recourse** against suppliers under certain conditions (Section 17(b)).
    - This has deterred foreign suppliers due to fear of litigation and financial risk.
- **Atomic Energy Act, 1962 (AEA):** Restricts nuclear energy activities (especially reactor construction and operation) to government entities or those authorised by the government.
    - **Private sector participation is currently barred** in nuclear power generation.

India's Nuclear Energy- Facts

Metric	Figure
Current installed nuclear capacity	8,180 MW
New capacity under development	~15,300 MW (21 reactors)
Target by 2031–32	22,480 MW
Long-term (by 2047) goal	100 GW
NTPC investment plan	$62 billion for 30 GW
Private investment target	$26 billion for 11 GW by 2040

Why Is There a Need to Change These Laws?

- **To Attract Foreign Investment & Technology**: India's nuclear expansion goals require large capital, advanced designs (like SMRs), and foreign expertise.
- **To Enable Private Participation**: Current framework allows only government-run companies like Nuclear Power Corporation of India (NPCIL) to build and operate reactors.
- **To Realise the 2008 U.S.-India Civil Nuclear Deal**: The full potential of the agreement remains unrealised due to India's stringent liability laws.

Arguments in Favour of Amendment

- **Foreign Suppliers Demand Legal Clarity**: Companies from the U.S., France, and Japan have **explicitly cited the liability law** as a reason for not entering India's market.

- **Legal Impediment to Domestic Supply Chains**:Indian suppliers have **refused to supply components** post-2010 due to fear of liability, affecting domestic capacity (e.g., Kovvada project).
- **SMRs Need Private and Foreign Innovation**: Newer, smaller modular reactors (SMRs) are **commercially attractive** and safer, but India needs external participation to develop them at scale.
- **International Norms (CSC)**:The **Convention on Supplementary Compensation (CSC)** channels liability to operators and ensures swift compensation — a model India could adopt more fully.

Arguments Against Amendment

- **Investment is not the Main Barrier**: Critics argue that **high capital costs and poor returns** are bigger deterrents than liability laws. E.g., **Westinghouse went bankrupt.**
- **Precedent of Limited Tech Transfer**: Past increases in FDI caps in the defence sector **did not lead to major technology inflows**; similar may happen in nuclear.
- **Dilution of Accountability**: Removing supplier liability **raises concerns of justice and public safety**, especially in the wake of past industrial disasters (e.g., Bhopal gas tragedy).
- **No Strong Foreign Interest Yet**: France, Russia, and even U.S. companies have shown **limited domestic nuclear growth**, raising doubts about their real investment intent in India.

Way Forward

- **Balanced Legal Reform**: Amend liability laws to **limit supplier liability** reasonably while keeping safeguards against wilful negligence.
- **Empower Independent Regulation**: Strengthen the **Atomic Energy Regulatory Board (AERB)** to ensure robust design approvals and public confidence.
- **Support Domestic Industry**: Build capacity through **public-private partnerships**, especially in SMRs and component manufacturing.
- **Strategic Tech Agreements**: Leverage diplomatic ties for **conditional technology transfers** while offering market access.
- **Develop Insurance Pools**: Create a robust **nuclear insurance mechanism** to ensure speedy compensation without overburdening operators or suppliers.

Source: **The Hindu: Should India amend its nuclear energy laws?**

Advancement in DefenceTechnologies: Future of Conflicts

Context

From **Operation Sindoor's surgical strikes** to **Spider's Web's strategic drone incursions**, the nature of warfare is evolving.

Advancements in Warfare Technology

- **Precision-Guided Munitions (PGMs):** Enabled targeted, surgical strikes (e.g., Operation Sindoor) with reduced troop deployment and civilian casualties.
- **Drones and Loitering Munitions:** Used extensively in Ukraine-Russia war and in Operation Spider's Web. Applications include surveillance, strikes, artillery spotting, and logistics.
- **First Person View (FPV) Drones:** Low-cost, highly accurate, and operator-guided for real-time engagement. They turn a 20–30 km battlefront into a high-risk zone.
- **AI and Robotics Integration:** AI-enhanced surveillance, battle management systems, and autonomous drones are becoming crucial force multipliers.
- **Counter-Drone Measures and Fortification:** Increased use of jammers, fibre-optic guided drones, and underground bunkers point to new defensive doctrines.

Arguments For Technological Warfare

- **Reduced Casualties:** Stand-off weapons and drones limit the need for mass troop deployments.
- **High Precision and Strategic Reach:** Deep-strike capability without escalation or territorial compromise.
- **Cost Efficiency:** Low-cost drones (e.g., FPVs) deliver strategic impact comparable to expensive traditional weapons.
- **Force Multiplier Effect:** Enhances the effectiveness of combined arms operations.

Arguments Against Over-Reliance on Technology

- **Loss of Ground Control:** Drones can strike but not hold territory or engage with civilian populations in conflict zones.
- **Vulnerability in Harsh Terrains:** In places like Siachen or Eastern Ladakh, drones often fail due to extreme weather.
- **Countermeasures Are Evolving:** Jamming, decoys, and dispersion reduce drone effectiveness.
- **Moral and Legal Ambiguities:** Autonomous weapons raise ethical questions about decision-making in lethal engagements.
- **Technological Dependence:** Heavy reliance may lead to paralysis in the face of system failures or cyberattacks.

Way Forward

- **Integrated Force Doctrine:** Combine traditional arms (infantry, armour) with technological assets for holistic operations.
- **Modernisation of Ground Forces:** Equip infantry with UAV support, secure comms, anti-drone tools, and battlefield management systems.
- **Training and Restructuring:** Embed drone operators at platoon level; emphasize small-unit tactics and adaptability.
- **Infrastructure and Indigenous Development:** Develop India's own drone and AI ecosystems under Make in India and iDEX schemes.
- **Ethical and Strategic Frameworks:** Formulate clear rules for autonomous weapons under international law.

Conclusion

From **Operation Sindoor's surgical strikes** to **Spider's Web's strategic drone incursions**, the nature of warfare is evolving — but not its essence. **Technological superiority must complement, not replace, the physical presence and human judgment of ground forces.** The future of conflict lies in convergence — where smart machines amplify the strategic capabilities of smart soldiers.

Source: Indian Express