Today's Prelims Topics

Supreme Court Directs ECI to Ensure EVM Data is Not Deleted During Verification

Context

The Supreme Court of India asked the Election Commission of India (ECI) to ensure that polling data is not deleted from Electronic Voting Machines (EVMs) while they are being verified.

About Supreme Court's Directions

- **No Erasing or Reloading of Data:** The court directed the ECI **not to erase or reload polling data** during verification.
- **Clarification on Verification Process**:
  - The **burnt memory/microcontroller** should be checked in the **presence of the requesting candidates**.
  - Engineers from the EVM manufacturers must **certify that no tampering** has occurred.
- **Reduction in Verification Cost**: The court observed that the **current cost of ₹40,000 per EVM verification is too high** and directed the ECI to **reduce the cost**.
- **Short Affidavit from ECI**: The court asked the **ECI to file a short affidavit** explaining its verification procedure.

Key Aspects of the EVM Verification Process

- **Candidates eligible for verification:** Only candidates who secured **2nd or 3rd place** in an election can apply.
- **Scope of verification**: **5% of EVMs per Assembly segment** can be checked.
- **Application Process**: Candidates must submit a **written request within seven days** of result declaration.
- **Responsible Authority**: The **District Election Officer**, in coordination with engineers, will oversee the verification.
- **Cost & Refund**: Candidates must **bear the cost** of verification, but they will be **refunded** if tampering is found.

Source:
- **The Hindu - Don't erase or reload EVM data**

Cocoa Shortage

Context
Insufficient rainfall in most cocoa-growing regions of Ivory Coast may delay the start of the mid-crop season from April to September, potentially causing a cocoa bean shortage.

About Cocoa
- **Cocoa (Theobroma cacao)** is a tropical tree whose seeds (cocoa beans) are used to produce **chocolate, cocoa butter, and cocoa powder**.
- It is native to **South America** but is now widely grown in Africa, Asia, and Central America.
- **Climate Requirement:**
  - It requires a **hot and humid climate**.
  - **Temperature**: 21°C to 32°C (ideal is around 25°C)
  - **Rainfall**: 1,500–2,500 mm per year, well-distributed
  - **Soil Type**: Deep, well-drained, and rich in organic matter
- **Shade and Wind Protection:**
  - Cocoa trees are **shade-loving** and require **partial shade** to prevent excessive transpiration.
  - Tall trees like **banana and coconut** are often planted alongside cocoa for shade.
- **Top Producers Worldwide:** (1) Côte d'Ivoire (2) Ghana (3) Indonesia
- **Top Producers India:** (1) Kerala (2) Karnataka (3) Tamil Nadu
  - **Kerala** and **Karnataka** are the top producers, together accounting for **more than 60%** of India's cocoa production.

UPSC PYQ

Q. Which of the following countries are well known as the two largest cocoa producers in the world? **(2024)**

(1) Algeria and Morocco
(2) Botswana and Namibia
(3) Cote d'Ivoire and Ghana
(4) Madagascar and Mozambique

Answer: C

Source:
- **The Hindu - Cocoa**

Supreme Court Disposes PIL on Mob Lynching and Cow Vigilantism

Context

The Supreme Court has disposed of a **Public Interest Litigation (PIL)** that sought action against incidents of **mob lynching and cow vigilantism**.

Key Observations by the Supreme Court

- SC observed that the matter had already been addressed in the 2018 case **Tehseen S. Poonawalla v. Union of India**.
- The court emphasized that **directions issued in the Tehseen Poonawalla case are binding** on all authorities under **Article 141** of the Constitution.
- SC stated that **monitoring incidents of lynching and vigilantism across states from Delhi would be impractical**.

Directions issued by SC in Tehseen S. Poonawalla Case (2018)

- **Preventive Measures**
    - All states were directed to **appoint a senior police officer as a nodal officer** in each district to **prevent mob lynching incidents**.
    - States are required to **identify areas where lynching and cow vigilantism were prevalent** and increase **police patrolling** in those regions.
    - The Supreme Court **instructed social media platforms to curb hate speech and fake news** that could incite mob violence.
- **Punitive Measures**
    - Fast-track courts to be set up in each district to **handle lynching cases with priority**.
    - The **guilty should be punished with strict penalties, including life imprisonment** for lynching-related crimes.
- **Compensation to Victims**
    - The Supreme Court directed states to **develop a compensation scheme for victims of mob violence**.
    - Compensation was to be determined **based on the severity of injury, loss of livelihood and medical expenses**.
- **Accountability of Government Officials**
    - Government officials to be held accountable for negligence in preventing lynching cases.
    - States to **take action against officials who failed to enforce law and order** in mob violence cases.
- **Legislative Measures**
    - The Supreme Court urged **Parliament to consider enacting a separate law against lynching** to strengthen legal provisions.
    - Following this, **some states like Rajasthan and Manipur enacted anti-lynching laws**, but a **national law is still pending**.

Source:
- **Indian Express- SC disposes of PIL**

International Potato Center (CIP) South Asia Regional Center in Agra

Context

The Chief Minister of Uttar Pradesh has urged the Union Agriculture Ministry to expedite the establishment of the International Potato Center – South Asia Regional Center (CIP-SARC) in Agra.

Importance of CIP-SARC for India and South Asia

- Agra is part of India's major 'potato belt', along with Uttar Pradesh, Bihar and West Bengal.
- A CIP center in India would benefit **Indian farmers and other South Asian countries** by:
  - Developing **new climate-resilient and disease-free potato varieties**.
  - Supporting **scientific research and global innovation** in potato farming.
  - Strengthening the **processing and export capabilities of Indian farmers**.
- **China established a similar center in 2017** in **Yanqing, Beijing**, which supports **East Asia and the Pacific region**.
- **India's Existing Potato and Tuber Research Centers:**
  - **ICAR-Central Potato Research Institute (ICAR-CPRI), Shimla** – Specializes in potato research.
  - **ICAR-Central Tuber Crops Research Institute (ICAR-CTCRI), Thiruvananthapuram** – Specializes in sweet potato research.

International Potato Center (CIP)

- CIP is a Peru-based research-for-development organization. It was founded in 1971 (HQ - Lima, Peru).
- **It focuses on:**
  - Potato and sweet potato research.
  - Andean roots and tubers (native to the Peruvian-Bolivian Andes in South America).
- The CIP-SARC in Agra will be the **second major international agricultural research center in India.**
- In 2017, the Agriculture Ministry supported the establishment of the **International Rice Research Institute-South Asia Regional Center (IRRI-SARC) in Varanasi.**

Potato Production

- **Top Potato Producing Countries:** (1) China (2) India (3) Russia.
  - China and India together account for **over one-third of global potato production.**
- **Top Potato Producing States in India:** (1) UP (2) West Bengal (3) Bihar.

Source:

- **Indian Express - Peru's potato research**

IIT Madras develops indigenous Shakti semiconductor chip

Context
India's first indigenous aerospace-grade semiconductor chip, 'Shakti', has been developed by IIT Madras and ISRO.
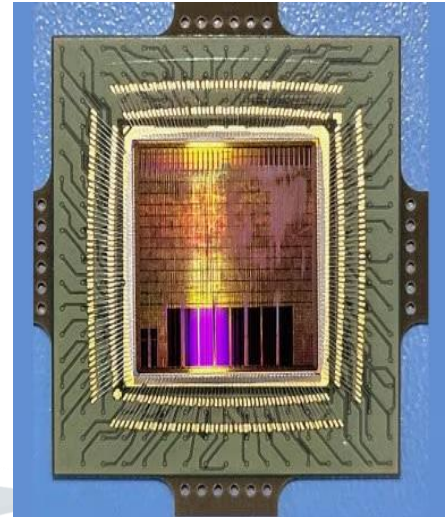
About SHAKTI Semi-Conductor Chips
- Shakti is an indigenous microprocessor based on the RISC-V open-source Instruction Set Architecture (ISA).
- It is designed for **high security, reliability and self-reliance in microprocessor technology**.
- **Developed by:** IIT Madras in collaboration with ISRO, supported by the Ministry of Electronics and Information Technology (MeitY) under the **Digital India RISC-V (DIRV) initiative.**

Key Features of the IRIS Chip
- **Designed for space missions:** Supports **ISRO's command and control systems** and other critical functions.
- **Fault-tolerant and highly reliable:** Can **withstand harsh space conditions**.
- **Custom-built modules:** Includes **WATCHDOG timers** and **advanced serial buses**.
- **Multiple boot modes:** Enables expansion for **future space missions**.
- **Hybrid memory extensions:** Allows flexibility in **storage and processing capabilities**.
- Fully made in India.

Source:
- **The Hindu - Shakti chip**

Environmental and Health Crisis in Kanpur Due to Tanneries

Context

Recently on orders of NGT UP Govt. conducted health checkups of people living in Kanpur & Fatehpur districts to assess health impacts of pollution caused by tanneries.

Health Impacts of Tanneries

- Tanneries are known for their use of toxic chemicals in the leather processing industry, leading to serious health hazards for workers and nearby residents.
- The medical tests revealed high levels of mercury and chromium in blood samples of residents, requiring urgent medical intervention.
- The primary pollutants include chromium, mercury, lead, arsenic, sulfur compounds and ammonia.

Pollutant	Health Impact
Hexavalent Chromium (Cr6+)	Causes **lung cancer, kidney and liver damage, skin ulcers, and respiratory diseases.**
Mercury	Leads to **neurological disorders, cognitive impairment, and kidney failure.**
Lead	Causes **brain damage, developmental disorders in children, and cardiovascular diseases.**
Arsenic	Increases risk of **skin, lung, and bladder cancers**, along with liver diseases

Environmental Impact of Tanneries

- **Water Pollution:**
    - Tanneries discharge **untreated effluents** containing **chromium, sulfides, and organic matter** into rivers and groundwater.
    - Example: **Kanpur's tannery waste pollutes the Ganga River**, making water **unsafe for drinking, agriculture, and aquatic life**.
- **Soil Contamination:**
    - **Chromium and arsenic** seep into agricultural fields, making soil **toxic and infertile**.
    - Contaminated crops pose **health risks to consumers**.
- **Air Pollution:** Tanneries release **hydrogen sulfide, ammonia and particulate matter** into the air, causing:
    - **Acid rain** (damaging crops and water bodies).
    - **Respiratory illnesses a**mong nearby populations

Source:
- **Indian Express - Kanpur Tanneries**

Corruption Perception Index 2024

Context

Transparency International released its annual **Corruption Perceptions Index (CPI) 2024**, which highlights the state of **public sector corruption worldwide.**

About Corruption Perception Index (CPI) - 2024
- The **global average score remains 43**, unchanged from **2023**.
- **More than two-thirds of countries** scored below 50, indicating **widespread corruption.**
- India ranked **96th out of 180 with a score of 38,** a decline of one point from the previous year.

How CPI Measures Corruption
- The CPI ranks **180 countries and territories** based on **perceived corruption in the public sector**.
- The score is calculated on a **scale of 0 to 100**:
  - **0** = Highly corrupt
  - **100** = Very clean
- Uses **13 data sources**, including reports from the **World Bank, World Economic Forum, and private risk consulting firms**.

- **Top 5 Least Corrupt Countries (Highest Scores):** (1) Denmark (2) Finland (3) Singapore (4) New Zealand.
- **Bottom 5 Most Corrupt Countries (Lowest Scores): (1) South Sudan** (2) Somalia (3) Venezuela (4) Syria.

Transparency International
- It is a **global non-governmental organization (NGO)** headquartered in **Berlin, Germany**. It was **founded in 1993.**
- It works to combat **corruption, promote transparency, and hold governments accountable**.
- The **Corruption Perceptions Index (CPI)** is its flagship report, released annually since **1995**.

Source:
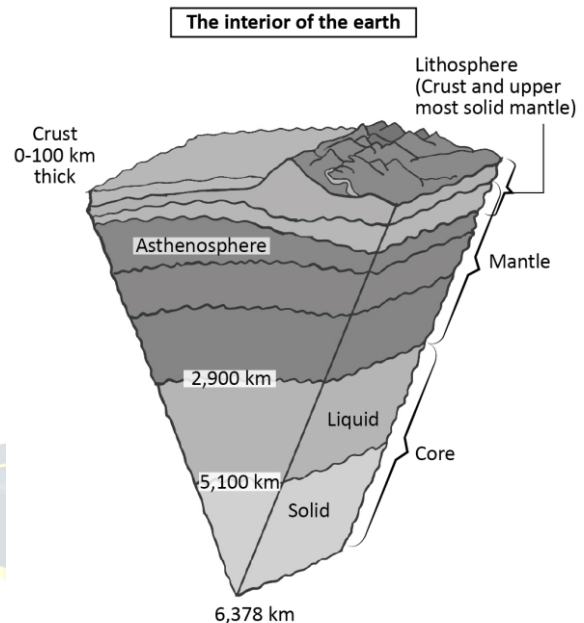- **Indian Express - Corruption Perception**

Earth's Inner Core May Be Changing Shape

Context
Recent scientific studies suggest that Earth's **inner core**, previously thought to be **solid and unchanging**, has **deformed significantly** over the past **20 years**.

Earth's Core: Structure and Functioning
- The Earth's core is located about 6,400 km beneath the surface and consists of two main layers:
  - **Inner Core** – A solid sphere made mostly of **iron and nickel**.
  - **Outer Core** – A layer of **molten (liquid) metal** that surrounds the inner core.
- **Role of the Core in Earth's Magnetic Field:**
  - The motion of the **liquid outer core** generates **Earth's magnetic field** through a process called the **geodynamo effect**.
  - This magnetic field acts as a **shield** against **harmful solar radiation**, preventing the **Earth's atmosphere** from being stripped away.
  - If Earth's magnetic field were to weaken or disappear, life would be exposed to **extreme solar radiation**, making the planet uninhabitable, similar to **Mars**, which lost its magnetic field billions of years ago.

The interior of the earth

Lithosphere (Crust and upper most solid mantle)
Crust 0-100 km thick
Asthenosphere
Mantle
2,900 km
Liquid
Core
5,100 km
Solid
6,378 km

Key findings of Study
- The inner core, usually thought to be **spherical**, has experienced **deformations of up to 100 meters in height** in some regions.
- These deformations were detected using **seismic wave analysis** from **earthquakes that occurred between 1991 and 2023**.
- The most significant changes occurred **around 2010**, when the inner core **slowed down temporarily** before catching up again with Earth's rotation.
- **How Scientists Measured the Changes ?**
  - Since **direct exploration** of the core is **impossible**, scientists rely on **seismic waves** generated by earthquakes.
  - When these waves pass through different layers of the Earth, they change speed and direction based on the **material composition** they encounter.
  - By analyzing **seismic wave patterns**, researchers can **infer the structure and motion** of the inner core.
- **Significance of finding:** Challenges previous assumptions that structural changes in inner core occur only over geological timescales.

Source:
- **Indian Express - Earth's Inner core**

AI Action Summit 2025 in Paris

Context
Fifty-eight countries have signed a statement on "Inclusive and Sustainable Artificial Intelligence" during the Paris AI Action Summit.

Key Highlights of the Summit
● The **AI Action Summit 2025** was co-chaired by **India and France**.
● **58 countries**, including **India, China, Brazil, France, Australia and the European Commission**, signed a joint statement on **"Inclusive and Sustainable Artificial Intelligence for People and the Planet."**
  ○ **U.S. and U.K. did not sign the joint statement.**
● The statement emphasizes AI accessibility, trust, safety, and development without market concentration.

Key Themes of the Summit
● **Public Interest AI –** Developing critical open AI infrastructure for social, economic, and environmental benefits.
● **Future of Work** – Promoting **socially responsible** AI through sustained social dialogue.
● **Innovation and Culture** – Building **sustainable AI ecosystems** benefiting economic sectors, including **creative and cultural industries.**
● **Trust in AI** – Establishing mechanisms to **ensure safety, security, and transparency in AI.**
● **Global AI Governance** – Developing an **inclusive and effective international AI governance framework.**

Launch of the Public Interest AI Platform
  ● **India, Kenya, Germany, Chile, Finland, Slovenia, France, Nigeria and Morocco** launched a **Public Interest AI Platform and Incubator.**
  ● The platform aims to **bridge the gap between public and private AI initiatives** and tackle **digital divides.**
  ● Key focus areas include technical assistance, capacity-building, data, transparency, auditing, computing, talent development and financing.

Source:
● **The Hindu - inclusive and sustainable AI**

Trump Pauses Foreign Corrupt Practices Act

Context
U.S. President Donald Trump signed an executive order suspending the Foreign Corrupt Practices Act of 1977.

Executive order on FCPA Suspension
- The order halts **new FCPA investigations** and requires the Attorney **General** to review the law and issue revised enforcement guidance.
- Trump justified the move by claiming that the **FCPA puts American businesses at a disadvantage** compared to foreign competitors.
- The **suspension could be extended beyond 180 days** depending on the review.
- The suspension may **benefit the Adani Group and its executives**, who are facing bribery-related charges in the **United States**.

About Foreign Corrupt Practices Act (FCPA)
- FCPA is an anti-corruption law enacted in 1977 to curb bribery and corruption involving U.S. individuals and entities in foreign countries.
- It is enforced by the **Department of Justice (DOJ) and the Securities and Exchange Commission (SEC).**

Key Features of the FCPA
- **Prohibition of Bribery:** Prohibits offering, paying, promising, or authorizing anything of value to foreign officials to gain or retain business or secure an improper advantage.
- **Scope of Application - Who is Covered?**
  - **U.S. Individuals and Companies:** Includes citizens, residents, and corporations operating in or from the U.S.
  - **Foreign Companies and Nationals:** If their activities have a connection to the U.S., such as using U.S. banking systems.
  - **Publicly Listed Companies:** All companies listed on U.S. stock exchanges are subject to the FCPA's accounting provisions.
- **Jurisdiction:** Applies to actions conducted anywhere in the world if they involve U.S. entities or their agents.

Source:
- **The Hindu - Trump pauses foreign bribery Act**

News in Shorts

Dabhol Breakwater Project and LNG Terminal

- The Dabhol Breakwater Project, originally part of an Enron-era initiative in the Arabian Sea, is set to be completed by March 2025 after being stalled since 2001.

About the Dabhol LNG Terminal

- **Location:** Dabhol, Ratnagiri district, Maharashtra.
- **Connectivity:** Close to the **Arabian Sea**, with access to **major gas pipelines** and **industrial hubs** in western India.
- **Significance:**
  - Provides **natural gas for power generation and industrial use**.
  - Enhances **energy security** by reducing dependence on coal and oil.
  - Serves as an **important link** in India's **LNG supply chain**.

What is an LNG Terminal?

- A **liquefied natural gas (LNG) terminal** is a **facility used to import, store, regasify and distribute LNG**.
- LNG is transported via **cryogenic tankers** in its **liquid state** to **reduce volume**. Once at the terminal, it is **regasified** and fed into pipelines for **domestic and industrial consumption**.
- **Major LNG Terminals in India:**
  - Dahej, Hazira & Mundra - Gujarat
  - Dabhol - Maharashtra
  - Kochi - Kerala
  - Ennore - Tamil Nadu

Source:
- **The Hindu - LNG imports**
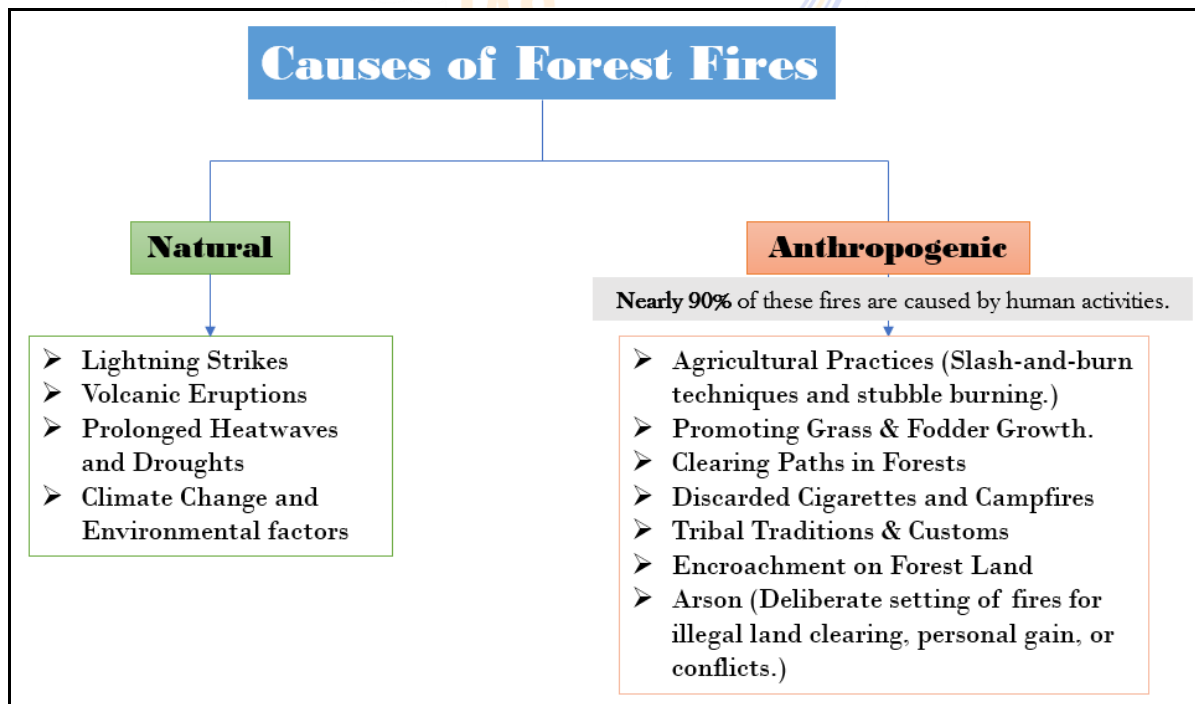
Detailed Coverage

Forest Fires

Context
Last month, as wildfires raged across Los Angeles, the need to address and prevent forest fires became a pressing concern once again.
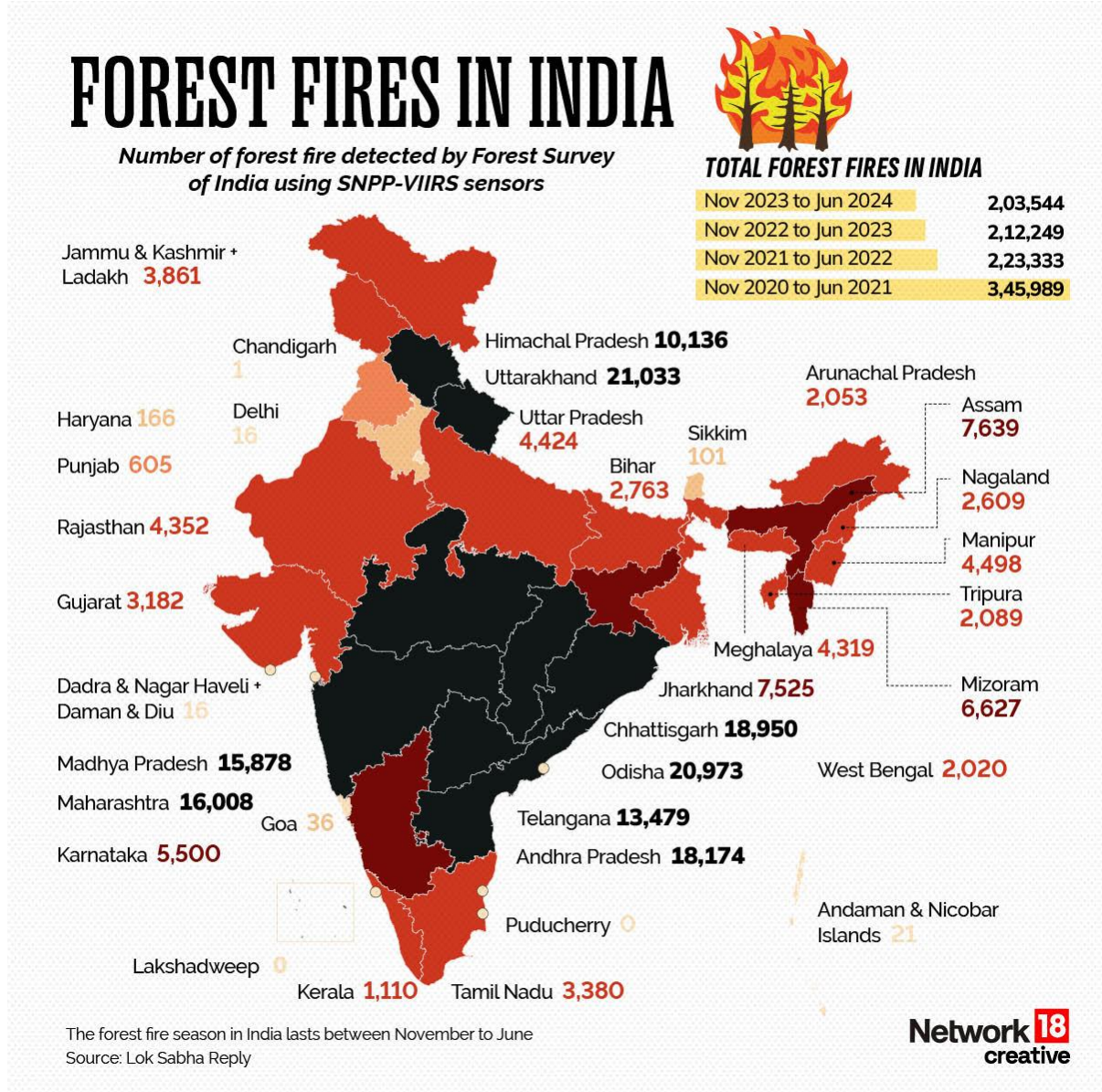
What Are Forest Fires?
Forest fires, also known as wildfires, are uncontrolled fires that spread rapidly through vegetation, causing natural, social, and economic damage.

Classification of Forest Fires
- **Surface Fires:** Spread along the forest floor, consuming dry leaves, twigs, and grasses.
  - Flames move across the surface litter, gradually engulfing the vegetation.
- **Underground Fires (Zombie Fires):** Low-intensity fires that burn beneath the surface, consuming organic matter.
  - Common in dense forests with thick organic layers above mineral soil.
  - Spread slowly and are difficult to detect and control.
  - Can burn for months, leading to soil degradation and loss of vegetation cover.
- **Canopy or Crown Fires:** Spread through the upper canopy of trees, often driven by strong winds and dry conditions.
  - Highly intense and challenging to control.
- **Controlled Deliberate Fires (Prescribed Burns):** Intentionally set by forest management agencies to reduce fuel loads and prevent large wildfires.
  - Used to maintain ecological balance and promote forest health.
  - Conducted under strict conditions to ensure safety and effectiveness.

Causes of Forest Fires

Natural
- Lightning Strikes
- Volcanic Eruptions
- Prolonged Heatwaves and Droughts
- Climate Change and Environmental factors

Anthropogenic
Nearly 90% of these fires are caused by human activities.
- Agricultural Practices (Slash-and-burn techniques and stubble burning.)
- Promoting Grass & Fodder Growth.
- Clearing Paths in Forests
- Discarded Cigarettes and Campfires
- Tribal Traditions & Customs
- Encroachment on Forest Land
- Arson (Deliberate setting of fires for illegal land clearing, personal gain, or conflicts.)

Forest Fires in India

FOREST FIRES IN INDIA

Number of forest fire detected by Forest Survey of India using SNPP-VIIRS sensors

TOTAL FOREST FIRES IN INDIA

Nov 2023 to Jun 2024	2,03,544
Nov 2022 to Jun 2023	2,12,249
Nov 2021 to Jun 2022	2,23,333
Nov 2020 to Jun 2021	3,45,989

Jammu & Kashmir + Ladakh **3,861**

Chandigarh 1

Himachal Pradesh **10,136**

Uttarakhand **21,033**

Arunachal Pradesh **2,053**

Assam **7,639**

Haryana 166

Delhi 16

Uttar Pradesh **4,424**

Sikkim 101

Nagaland **2,609**

Punjab **605**

Bihar **2,763**

Manipur **4,498**

Rajasthan **4,352**

Tripura **2,089**

Gujarat **3,182**

Meghalaya **4,319**

Mizoram **6,627**

Dadra & Nagar Haveli + Daman & Diu 16

Jharkhand **7,525**

Madhya Pradesh **15,878**

Chhattisgarh **18,950**

West Bengal **2,020**

Maharashtra **16,008**

Odisha **20,973**

Goa 36

Telangana **13,479**

Karnataka **5,500**

Andhra Pradesh **18,174**

Andaman & Nicobar Islands 21

Puducherry 0

Lakshadweep 0

Kerala **1,110**

Tamil Nadu **3,380**

The forest fire season in India lasts between November to June
Source: Lok Sabha Reply

Network 18 creative

- According to the Forest Survey of India, more than 36% of the country's forest cover is prone to fire.
- An analysis by the Council on Energy, Environment and Water states that there has been a 10-fold increase in forest fire incidences in the last two decades, whereas the total forest cover has increased by merely 1.12%.

Recent Incidents of Forest Fires in India		
Year	Location	Key Details
2023-2024	**Uttarakhand**	Over 1,313 large forest fires reported; intensified by high temperatures and dry conditions.

2023	Odisha	642 large fire incidents; Simlipal National Park was significantly affected.
2019	Bandipur National Park, Karnataka	Approximately 10,920 acres burned over five days, impacting park biodiversity.
2021	Simlipal National Park, Odisha	Fires burned for over two weeks, causing widespread environmental damage.

Government Initiatives for Forest Fire Prevention
- **National Action Plan on Forest Fires and the Forest Fire Prevention and Management Scheme (FFPMS):** Assists State governments in strengthening their forest fire prevention and management capabilities.
- **Van Agni App**: Provides real-time forest fire alerts.
- **Faster Adoption of Satellite-Based Monitoring**: The Indian Space Research Organisation (ISRO) provides early warning systems.
- **Community-Based Fire Management**: Encouraging local participation in fire prevention efforts.
- **Disaster Management Act, 2005:** Recognizes forest fires as disasters.

Steps to Enhance Forest Fire Management in India
- **Upgrading the Forest Fire Alert System:** Improve the system's ability to **distinguish between forest fires and other types of fires** for faster validation and response.
- **Advanced Predictive Modelling:** Use **climatic and geographic data** to identify high-risk areas for proactive measures.
- **Drone-Based Monitoring:** Deploy **drones with thermal imaging cameras** to monitor fire-prone zones, assess damage, and guide firefighting efforts.
  - Scale up pilot initiatives from **Tamil Nadu and Odisha** to a **national level**.
- **Integrated Data Analysis:** Combine data from **Forest Survey of India (FSI), India Meteorological Department (IMD), and Indian Space Research Organisation (ISRO)** for **better fire forecasting and management**.
- **Community-Based Fire Prevention:** Train and equip **local communities** to **collect and share real-time fire data** via **mobile apps, toll-free helplines, and SMS-based systems**.
  - Strengthen early warning systems for **faster local response**.
- **Women-Led Fire Prevention Initiatives:** Expand **self-help group activities**, such as **pine needle collection in Uttarakhand and Himachal Pradesh**, to **reduce fire hazards**.
- **Learning from Global Best Practices:** Adopt strategies from **Nepal's Community Forest User Groups** and **Indonesia's Fire-Free Village Program** to enhance **community-led forest fire management**.
- **Youth Engagement and Fire Prevention Training:** Mobilize **youth as 'forest fire scouts'** to promote **awareness, fire risk mapping, and controlled burns**.
- **Collaborative Approach for Long-Term Solutions:** Ensure **cooperation between policymakers, scientists, civil society groups, and communities** to address forest fires effectively.
  - Strengthen **policy interventions, budgeting, technology adoption, and capacity building** for sustainable forest fire management.

Source:
- **The Hindu: Addressing the growing threat of forest fires**