

Today's Prelims Topics

Keeladi excavation

Context

The Culture Ministry has stated that the Keeladi excavation report is not yet technically well-supported and requires further scientific studies for validation.

Keeladi Excavation

- **Location:** Keeladi is a village in Sivaganga district, Tamil Nadu, located along the Vaigai River.
- **Excavation History:** Excavations began in 2015, initially carried out by the Archaeological Survey of India (ASI), and later taken over by the Tamil Nadu State Department of Archaeology after an administrative dispute.
- **Artefacts Unearthed:** Over 18,000 artefacts have been discovered, including:
 - Pottery and inscribed potsherds
 - Gold ornaments and copper items
 - Semi-precious stones (like agate and carnelian)
 - Shell and ivory bangles
 - Glass beads, spindle whorls, terracotta seals, and weaving tools
- **Pottery and Inscriptions:** More than 120 potsherds bear **Tamil Brahmi inscriptions**, indicating the early presence of literacy and the use of script in the region.
- **Urban Characteristics:** Evidence suggests Keeladi was a well-organized urban settlement with industrial activities like:
 - Pottery making
 - Weaving and dyeing
 - Bead-making
- **Trade and Lifestyle:**
 - Presence of luxury items like beads suggests trade networks.
 - Discovery of dice and hopscotch pieces reflects recreational activities.
- **Chronological Significance:** The site pushes back the Sangam Age to around **800 BCE**, revealing an advanced and early Tamil civilization.
- **Cultural Links:** Certain **symbols** found at Keeladi **resemble** those of the **Indus Valley Civilization**, though a chronological gap of about 1,000 years exists.

Source: [TheHindu](https://www.thehindu.com)

What are the most commonly used cancer drugs?

Context

- A major investigation revealed that commonly used **cancer drugs failed quality tests** before being shipped to over 100 countries, raising concerns about their safety and effectiveness.
 - Despite targeting cancer cells, these drugs can cause **severe side effects** such as kidney damage, immune suppression, and heart risks.

Commonly Used Cancer Drugs and Their Effects

- **Cisplatin**
 - **Type:** Platinum-based drug
 - **Use:** Testicular, ovarian, bladder, and lung cancers
 - **Action:** Binds to cancer cell DNA, stopping cell growth
 - **Side Effects:** Kidney damage, hearing loss, immune suppression
- **Oxaliplatin**
 - **Type:** Platinum-based drug
 - **Use:** Colorectal cancer (especially post-surgery)
 - **Action:** Damages DNA of cancer cells
 - **Side Effects:** Similar to cisplatin
- **Cyclophosphamide**
 - **Type:** Chemotherapy drug
 - **Use:** Breast cancer, leukemia, sarcoma, lymphoma
 - **Action:** Disrupts DNA of cancer cells, reduces white blood cells
 - **Side Effects:** Immune suppression, bladder inflammation
- **Doxorubicin**
 - **Type:** Antibiotic-derived chemotherapy drug (nicknamed "red devil")
 - **Use:** Breast cancer, leukemia, lymphoma, sarcoma
 - **Action:** Interferes with DNA replication
 - **Side Effects:** Heart damage, hair loss, skin issues, infection risk
- **Methotrexate**
 - **Type:** Chemotherapy and immunosuppressant
 - **Use:** Leukemia, lymphoma, and certain tumors
 - **Action:** Blocks DNA synthesis to stop cancer cell growth
 - **Side Effects:** Cell damage (mitigated with leucovorin)
- **Leucovorin**
 - **Type:** Folinic acid (vitamin B9 form)
 - **Use:** Supportive drug with methotrexate
 - **Action:** Protects healthy cells from methotrexate toxicity
 - **Note:** Not technically a chemotherapy drug

Source: [TheHindu](https://www.thehindu.com)

Centre approves South Asia unit of International Potato Centre at Agra

Context

The Union Cabinet has recently approved a proposal by the Department of Agriculture & Farmers Welfare to set up the **South Asia Regional Centre (CSARC)** of the **International Potato Centre (CIP)** in **Agra, Uttar Pradesh**.

About International Potato Centre (CIP)

- **Established:** In **1971** as a research-for-development organization.
- **Focus Areas:**
 - Potato
 - Sweetpotato
 - Andean roots and tubers
- **Mission:**
 - Provide **science-based solutions** to improve access to **affordable, nutritious food**
 - Promote **sustainable businesses** and **employment growth**
 - Enhance **climate resilience** of root and tuber agri-food systems
- **Global Association:**
 - CIP is a part of **CGIAR**, a global research partnership for a food-secure future.
 - CGIAR focuses on transforming **food, land, and water systems** amid the climate crisis.
 - Research is conducted by **13 CGIAR Centers/Alliances** in collaboration with national and international partners.
- **Headquarters:**
 - Located in **Lima, Peru**
 - CIP has research operations in **over 20 countries** across **Africa, Asia, and Latin America**

Potato Production in India

- **Global Rank:** India is the **2nd largest producer and consumer** of potatoes.
- **Major Potato-Growing States:**
 - **Uttar Pradesh**
 - **West Bengal**
 - **Bihar**
 - **Gujarat**
 - **Madhya Pradesh**
 - **Punjab**
- **Existing Research Institutions in India:**
 - **ICAR-CPRI** (Central Potato Research Institute), Shimla – works on potato research
 - **ICAR-CTCRI** (Central Tuber Crops Research Institute), Thiruvananthapuram – focuses on sweetpotato research

Source: [IndianExpress](#)

Salkhan Fossil Park

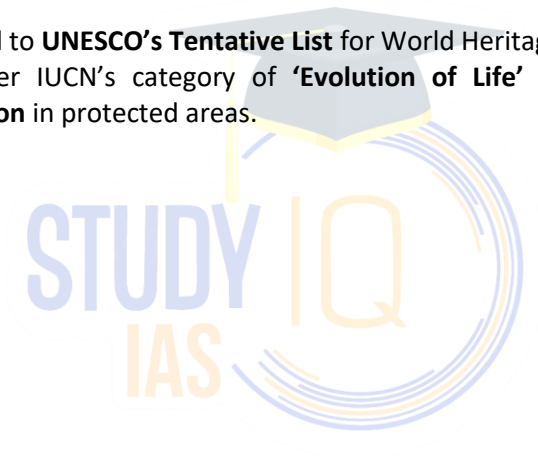
Context

Salkhan Fossil Park has been included in **UNESCO's Tentative List** for World Heritage Sites.

About Salkhan Fossil Park (Sonbhadra Fossils Park)

- **Location:** Situated in **Uttar Pradesh**, within the **Kaimoor Wildlife Sanctuary** and the **Vindhyan mountain range**.
- **Geological Significance:**
 - Contains **fossils dating back 1.4 billion years**, making it one of the **oldest and best-preserved fossil sites** globally.
 - Features an exceptional collection of **stromatolites**, ancient structures formed by cyanobacteria (blue-green algae).
- **Scientific Importance:**
 - Home to **Mesoproterozoic-era stromatolites**, considered **living relics** of early Earth.
 - **Older than** globally known fossil sites like **Shark Bay (Australia)** and **Yellowstone (USA)**.
 - Provides evidence of the **Great Oxidation Event**, a key milestone in Earth's biological evolution.
- **Environmental Insight:**
 - Displays a wide **diversity of stromatolite forms** (domal to columnar), indicating ancient environmental shifts such as changes in **water depth, wave action, and sedimentation**.
- **Global Recognition:**
 - Recently added to **UNESCO's Tentative List** for World Heritage Sites.
 - Identified under IUCN's category of **'Evolution of Life'** in its **2020 Guidelines for Geoconservation** in protected areas.

Source: [TOI](#)



AI-Powered Advanced Traffic Management System

Context

India has launched its **first AI-powered traffic management system** on Delhi's Dwarka Expressway and NH-48 to monitor traffic, detect violations, and improve road safety using AI cameras and real-time alerts.

AI-Powered Traffic Management System

- **Launched Location:** Dwarka Expressway and part of **National Highway 48 (NH-48)** in Delhi.
- **Implemented By:** **National Highways Authority of India (NHAI)** under its **Digital Highways** initiative.
- **Technology Used:** **Artificial Intelligence-powered Advanced Traffic Management System (ATMS)**.
- **Components of the System:**
 - **110 high-resolution PTZ cameras** for real-time surveillance.
 - **AI-based Automatic Incident Detection (AID)** system.
 - **Automated Enforcement System** for detecting rule violations.
 - **Variable Message Sign Boards (VMS)** to provide real-time information to commuters.
 - **Speed Detection Radars** and **Automatic Number Plate Recognition (ANPR)** cameras.
 - **Central Command and Control Centre** for traffic data analysis and decision-making.
- **Key Functions:**
 - Real-time monitoring of traffic flow and congestion.
 - Automatic detection of accidents, stopped vehicles, wrong-way driving, and traffic rule violations.
 - Immediate alerts to authorities for rapid response.
 - Automated challans (penalty notices) for violators.
- **Goals and Impact:**
 - Enhance **road safety** and **traffic efficiency**.
 - Reduce **manual enforcement** and **human error**.
 - Support the development of **smart, digital highways** across India.
- **Broader Vision:**
 - Part of NHAI's goal to equip **over 5,000 km of National Highways** with digital infrastructure and AI-enabled traffic systems.

Source: [AnalyticsInDiamag](#)

Tansen

Context

Recently, the Madhya Pradesh High Court dismissed a plea requesting permission to conduct religious and cultural activities at the tomb of Hazrat Sheikh Muhammad Ghaus, which also houses the grave of music legend Tansen in Gwalior.

About Tansen

- **Who was Tansen?**
 - A legendary **Indian classical musician, composer, and vocalist**.
 - Also a skilled **instrumentalist**, known for popularizing and refining the **plucked rabab**, a Central Asian instrument.
- **Early Patronage:**
 - Initially served **Daulat Khan**, son of Sher Shah Suri.
 - Later became the **court singer of King Ramchandra of Bandhavgarh**.
- **Mughal Association:**
 - Invited to the **court of Emperor Akbar** and became one of his **Navaratnas** (nine jewels).
 - Akbar honored him with the title "**Mian**", meaning a learned or respected man.
- **Musical Legacy:**
 - Credited with creating or popularizing several **ragas**, including:
 - **Miyan ki Malhar**
 - **Miyan ki Todi**
 - **Darbari Kanada**
 - Renowned for his **Dhrupad compositions**, a form of classical vocal music.



Source: [IndianExpress](https://www.indianexpress.com)

News in Short

India Mediation Campaign

News? A pan-India mediation campaign titled '**Mediation for the Nation**' will be launched.

90-Day Pan-India Mediation Campaign

- **Duration:** July 1, 2025 - September 30, 2025.
- **Purpose:** Aimed at **resolving pending court cases** through mediation — from **taluka-level courts to High Courts** — as a faster and amicable alternative to litigation.
- **Organisers:**
 - **National Legal Services Authority (NALSA)**
 - **Mediation and Conciliation Project Committee (MCPC)** of the Supreme Court
- **Accessibility:**
 - Proceedings can be conducted **offline, online, or in hybrid mode**
 - Designed to reach **every corner of the country**

Source: [TheHindu](#)

Mendrachi Vancharai System

News? An IIT Bombay researcher has found that colonial-era land reforms led to the disappearance of Maharashtra's Mendrachi Vancharai System.

About the System

- The system enabled **nomadic shepherds** (primarily Dhangars and other pastoral communities) to graze their flocks across vast stretches of uncultivated land, forests, and common property resources.
- **Pastures were not confined to village boundaries**, but were defined by natural features like riverbanks, forming extensive "grazing corridors" across districts.
- Shepherds **paid fees or taxes** (makta) to local authorities for the right to access and use these pastures.
- The system was **formal and institutional**, recorded in administrative documents (like Peshwa diaries) and recognized by regional rulers.
- Access to pastures was based on **negotiated agreements** rather than rigid administrative rules.
- **Mobility was legal and legitimate**; shepherds moved seasonally without violating any law, as long as dues were paid.

What Happened Under British Rule?

- British colonial land reforms (notably the Survey and Settlement Act, 1865) **abolished these corridors** and replaced them with fixed, village-based grazing lands.
- The result: **Criminalisation of nomadic movement** and the decline of communal pasture management.
- Pastoralists' customary rights were eroded, impacting their traditional livelihoods and the governance of common lands.

Source: [The Hindu](#)

Editorial Summary

Fathoming America's plan to manage AI proliferation

Context

- The announcement by the United States of the rescission of its Framework for AI Diffusion, has been viewed as a good thing.
 - However, recent developments suggest that controls on AI are likely to persist, albeit in different forms.

U.S. Approach to AI Export Controls

- **Export Controls on Hardware:** Placed restrictions on the export of advanced AI chips— like Nvidia's A100, H100, etc. — especially to China, Russia, and certain other countries.
 - Controlled both physical hardware (GPUs, TPUs) and, increasingly, AI model weights and software.
- **AI Diffusion Framework (2024):** Proposed treating AI as a dual-use (civilian + military) technology, like nuclear tech.
 - Implemented embargoes for adversaries, preferential treatment for allies, and restrictions for others.
 - Sought to centralize and standardize export control procedures, making them more predictable but more sweeping.
- **Technical & Legislative Innovations:** Exploring on-chip features: Hardware-embedded tracking and restrictions (e.g., location tracking, usage monitoring).
 - New laws to mandate built-in controls for AI chips to prevent illicit diversion.

Consequences of U.S. AI Export Controls

- **International Backlash:** Allies felt constrained and distrusted, motivating them to pursue their own AI and semiconductor strategies.
 - Perception of U.S. willingness to “dictate” technology policy globally.
- **Stimulus for Alternatives:** Adversaries (especially China) accelerated their push for domestic chip and AI model innovation.
 - **Example:** China's DeepSeek R1 rivaled top U.S. models using less compute, bypassing hardware restrictions.
- **Innovation Shifts:** Global research pivoted toward developing efficient AI models with lower compute needs to evade U.S. controls.
 - Export controls became less effective as technology adapted.
- **Fragmentation:** Fragmentation of the global AI ecosystem as more countries sought “technological sovereignty.”
 - Reduced collaboration and interoperability between AI researchers worldwide.
- **Privacy and Trust Concerns:** On-chip surveillance features led to concerns about privacy, misuse, and loss of user autonomy.
 - Increased suspicion towards U.S.-origin technology.

Implications of U.S. AI Export Controls

- **Geopolitical Realignment:** Allies hedged their bets, reducing reliance on U.S. tech and exploring new partnerships (e.g., EU, India).
 - Drove global push for independent AI and chip ecosystems.
- **Erosion of U.S. Tech Leadership:** Attempts to “fence in” AI may accelerate innovation elsewhere.
 - U.S. risks losing its influence in global AI standards and research networks.

- **Security vs. Openness Dilemma:** Tight controls intended for security can undermine open scientific collaboration, slowing collective progress.
 - Risk of overregulation outweighing security gains.
- **Legal and Ethical Risks:** Surveillance and tracking measures may conflict with local privacy laws and ethical norms in other countries.
 - Legal challenges and resistance from both adversaries and allies.
- **India and Middle Powers:** Countries like India, not treated as “trusted allies,” risk exclusion from cutting-edge AI.
 - Pushes such countries to pursue self-reliance and alternative sources of technology.

Source: [The Hindu](#)

The truth about poverty in India

Context

Recent reports, including the World Bank’s “Poverty and Equity Brief” (April 2025) and subsequent updates, have claimed substantial progress: the proportion of Indians living in abject poverty has drastically reduced, yet questions about what these numbers mean—and how we define poverty—remain deeply contested.

World Bank Data on Poverty in India

- **Recent World Bank Findings (2025):**
 - India’s extreme poverty rate fell to 5.75% in 2022-23, down from 27% in 2011-12.
 - In absolute terms, about 171 million people moved out of extreme poverty in the last decade.
 - The latest poverty line adopted is \$3 a day (PPP basis), translating to Rs 62/day in India (using a PPP conversion rate of 20.6).
 - In the past, the World Bank also revised historical poverty rates downward; for example, the 1977-78 poverty rate, earlier estimated at 64%, is now put at 47%.

Why is Defining Poverty Essential?

- **Policy Targeting:** Identifies who needs welfare and to what extent.
- **Resource Allocation:** Determines how government funds and subsidies are distributed.
- **Evaluation of Policy Impact:** Allows assessment of whether interventions (e.g., PDS, MNREGA) are effective.
- **Social Justice:** Helps recognize and address deprivation among marginalized groups.
- **International Reporting:** Necessary for tracking progress towards SDGs and global commitments.

Why Does India Use World Bank Poverty Estimates?

- **Outdated Domestic Poverty Line:** India’s last official poverty line was set in 2011-12, based on the Tendulkar Committee’s recommendations. Since then, no new official methodology has been adopted, leading to a vacuum in domestic measurement.
- **Shift in Data Collection:** Gaps and changes in data collection methods (e.g., household surveys, consumption data) have made it harder to estimate poverty consistently at the national level.
- **International Comparability:** World Bank estimates allow for global comparison and alignment with international development goals.
- **Alternative Indices:** India has developed the NITI Aayog Multidimensional Poverty Index (MPI), but it measures deprivations beyond income (e.g., health, education) and is fundamentally different from traditional income/consumption poverty lines.

Issues Associated with Defining Poverty

- **Contextual Variation:** Poverty is a context-sensitive concept; what counts as poverty in one time/place may not in another.
- **Currency & PPP Confusion:** Many misunderstand the poverty line conversion (using market exchange instead of PPP).
- **Arbitrariness of Cut-offs:** Small changes in the poverty line can lead to large swings in reported poverty rates.
- **Data Limitations:** Lack of timely, robust household consumption data skews estimates.
- **Multiplicity of Estimates:** Depending on the line and method, poverty rates can range from as low as 2% to as high as 82% in India.
- **Political and Social Implications:** Underestimation or overestimation of poverty affects policy priorities, resource allocation, and social welfare schemes.

Major Committees on Poverty Estimation in India

Committee/Panel	Year	Key Recommendations	Poverty Line (Urban/Rural)
Alagh Committee	1979	First official poverty line	Consumption-based
Lakdawala Committee	1993	Update methodology, price level	Consumption-based
Tendulkar Committee	2009	Shift to mixed reference period, new basket	Rs 29/22 (urban/rural, 2009)
Rangarajan Committee	2014	Raised thresholds, included broader needs	Rs 47/33 (urban/rural, 2014)

What Can Be Done?

- **Update and Standardize Methodology:** Establish a new, transparent poverty line reflecting current consumption patterns and needs.
- **Improve Data Quality:** Resume and enhance regular, comprehensive household consumption surveys.
- **Adopt Multidimensional Indices:** Combine income-based lines with multidimensional approaches (like MPI) for a holistic picture.
- **Contextualization:** Set poverty thresholds that reflect regional cost-of-living differences within India.
- **Regular Revision:** Institutionalize periodic revision of poverty lines to reflect changing economic realities.
- **Communication and Literacy:** Clearly explain the meaning and implications of poverty lines to avoid public confusion.

Source: [Indian Express](#)