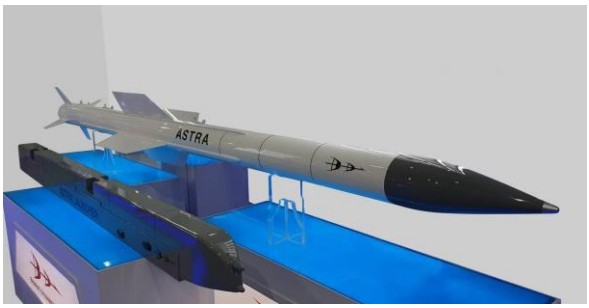
Today's Prelims Topics

Astra BVR Missile

Context

Defence Research and Development Organisation (DRDO), in collaboration with the Indian Air Force (IAF), successfully carried out a flight test of the **Astra missile.**

About Astra Missile



- It is an **indigenously developed Beyond Visual Range Air-to-Air Missile (BVRAAM)**.
- It is designed to engage and destroy highly maneuverable aerial targets.
- **Key Features:**
    - Equipped with an **indigenously developed Radio Frequency (RF) seeker**, integrated on the **Su-30 Mk-I** fighter aircraft.
    - Has an operational range of **over 100 km**.
    - Incorporates a **state-of-the-art guidance and navigation system**.
    - Developed through collaboration between various **DRDO labs and over 50 public and private sector industries**, including **Hindustan Aeronautics Limited (HAL)**.

Source: IndianExpress

Maratha Military Landscapes'

Context

'Maratha Military Landscapes of India' were added to the UNESCO World Heritage List, making it the **44th site in India** to receive this prestigious recognition.

About Maratha Military Landscapes of India

- The **Maratha Military Landscapes**, spanning from the **17th to 19th centuries CE**, showcase the **military strategy and architectural brilliance** of the Maratha Empire.
- The network comprises **12 forts** located across **Maharashtra and Tamil Nadu**.
- **Fort Types Based on Terrain:**
    - **Hill Forts:** Salher, Shivneri, Lohgad, Raigad, Rajgad, Gingee (It is in Tamil Nadu).
    - **Hill-Forest Fort:** Pratapgad (surrounded by dense forests)
    - **Hill-Plateau Fort:** Panhala (situated on a plateaued hill)
    - **Coastal Fort:** Vijaydurg (located along the shoreline)
    - **Island Forts:** Khanderi, Suvarnadurg, Sindhudurg (surrounded by sea)

Source: TheHindu

Sanchar Mitra Scheme

Context

The Department of Telecommunications (DoT), Government of India, has launched the **Sanchar Mitra Scheme** across the country to empower youth by appointing them as **Digital Ambassadors**.

About Sanchar Mitra Scheme

- The scheme focuses on **student volunteers**, known as **Sanchar Mitras**, who are empowered to spread awareness about key telecom-related issues among the public.
- It aims to promote **digital safety**, **cyber fraud prevention**, **EMF radiation awareness**, **responsible mobile usage**, and **digital literacy**.

Key Features and Objectives

- **Public awareness** will be enhanced through structured grassroots campaigns conducted by Sanchar Mitras.
- The scheme also aims to **expose students to advanced telecom technologies** such as **5G, 6G, Artificial Intelligence**, and **Cyber Security**.
- Sanchar Mitras will gain hands-on experience through **training, project participation**, and **real-world engagement** in telecom initiatives.

Implementation & Training

- **Participating institutions** will be selected in coordination with **local DoT field units**.
- Students from academic backgrounds such as **telecom, electronics, computer science**, and **cyber security** will be nominated.
- Training will be provided by experts from the **National Communications Academy–Technology (NCA-T)** and the **DoT Media Wing**.

Roles and Responsibilities

- Sanchar Mitras will conduct **awareness drives**, **collaborate with NGOs**, and **engage with communities** to encourage informed and responsible digital behavior.
- They will act as **digital ambassadors at the grassroots level**.

Incentives and Opportunities

- Participants will be **evaluated periodically** based on **innovation, consistency**, and **impact** of outreach.
- **Outstanding performers** may receive:
    - **Internship opportunities**
    - Involvement in **national telecom projects**
    - Participation in events like **India Mobile Congress**
    - Engagements with **ITU standards** and **policy discussions**

Source: PIB

How TN Initiative Help to Bring Down TB Deaths

Context

Tamil Nadu has successfully lowered TB-related deaths through the **TN-KET (TB Death-Free Initiative)** by employing a simple triage tool and implementing a differentiated care approach.

What is TN-KET?

- **TN-KET** (*Kasanoi Erappila Thittam*) is a **state-level initiative** launched by **Tamil Nadu in 2022** to reduce **tuberculosis (TB) mortality**.
- It focuses on **early identification** and **differentiated care** for patients with **severe TB**.
- **Key Features:**
    - **Paper-Based Triage Tool**: Uses 5 quick clinical indicators—**BMI, oxygen level, respiratory rate, leg swelling**, and **ability to stand**—to identify "severely ill" TB patients.
    - **Fast-Track Admissions**: Ensures that **98% of severe cases are admitted within 7 days** of identification.
    - **Severe TB Web App**: A digital tool that estimates **mortality risk** and guides urgent medical decisions.
    - **Simplified Process**: Requires **no laboratory tests** and reduces assessment time by **6–7 days** compared to older 16-parameter tools.
    - **Differentiated Care Model**: Provides **tailored treatment plans** based on factors like **age, BMI, disease severity**, and **existing comorbidities**.
- **Significance and Impact:**
    - **20% Reduction in Early TB Deaths**: Achieved within just **6 months** of implementation.
    - **Scalable Model**: Offers a **replicable approach** for other **high TB-burden states**, aligning with the goals of India's **National TB Elimination Programme (NTEP)**.
    - **Data-Driven Approach**: Utilizes **real-time triage data** to enable **targeted interventions** and efficient resource allocation.

Source: IndianExpress

Rhino

Context

Genetic analysis of **2,573 rhino horn samples** has been initiated in Assam to study DNA profiles as part of the **RhoDIS India programme**, aiding conservation and tracking efforts.

About the Species: Indian Rhinoceros (Rhinoceros unicornis)

- **Common Name:** Greater One-Horned Rhinoceros
- **Scientific Name:** *Rhinoceros unicornis*
- **Conservation Status:** *Vulnerable* (IUCN Red List)
- **Population:** Around 3,700 globally, with the majority in **India and Nepal**
- **Habitat:** Primarily found in the **floodplains of the Brahmaputra, Ganges, and their tributaries**, especially in **Assam's Kaziranga National Park**
- **Key Features:**
    - Has a **single black horn** made of keratin (same as human nails).
    - Primarily **herbivorous**, feeding on grasses, fruits, leaves, and aquatic plants.
- **Threats:**
    - **Poaching** for horns (used in traditional medicine and as status symbols).
    - **Habitat loss** due to agriculture, encroachment, and flooding.
    - **Human-wildlife conflict** and **limited genetic diversity** due to isolated populations.
- **Conservation Efforts in India:**
    - Protected under Schedule I of the Wildlife Protection Act, 1972.
    - Conservation programs like Project Rhino and Indian Rhino Vision 2020.
    - Ongoing genetic studies (like RhoDIS India) to track DNA profiles for anti-poaching and conservation planning.
    - Regular census and translocation efforts in national parks such as Kaziranga, Manas, Pobitora, Orang, and others.

Source: TheHindu

News in Shorts

Operation Fire Trail: In a major crackdown on smuggling, the **Directorate of Revenue Intelligence (DRI)** seized **banned Chinese firecrackers worth ₹35 crore** during **"Operation Fire Trail"** conducted across various Indian ports.

To protect the Red River and **Yangtze Sturgeon**, China destroys 300 dams, shuts down hydropower stations.

- Native to the **Yangtze River** basin in China
- Declared **extinct in the wild** by the International Union for Conservation of Nature (IUCN) in 2022.
- Large **freshwater fish**, can reach lengths over 2 meters; has a **long snout and bony scutes.**

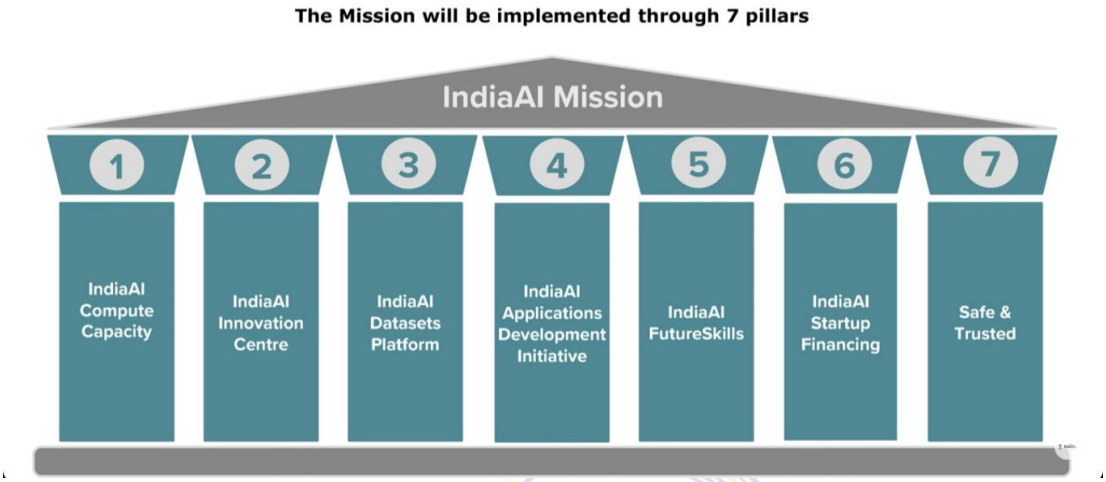
Editorial Summary

India's AI Mission Without a Mandate

Context

India aspires to global AI leadership but lacks a comprehensive national strategy, risking lagging behind US, China, and EU advances.

About India's AI Mission



- **Launched: 7 March 2024** with a budget of over **₹10,300 crore** (~US $1.2 billion) for 2024–29.
- **Purpose & Aim:** Propel India to global leadership in AI and democratize AI benefits across all strata.
    - Foster **technological self-reliance**, **ethical and responsible AI**, and broaden access to AI.
- **Significance:**
    - **Global Leadership**: Positions India as a serious player in the global AI race, championing inclusive, frugal, and multilingual AI solutions.
    - **Digital Sovereignty**: Reduces dependence on foreign AI infrastructure and models, promotes "Make AI in India, for India."
    - **Inclusivity & Equity**: Prioritizes applications serving all sections of society, including rural, academic, and underserved communities.
    - **Ethical and Safe AI**: Investment in safety frameworks and standards aims to build public trust and responsible AI adoption.
    - **Ecosystem Building**: Encourages collaborations among government, startups, research institutions, and international players.
- **Achievements:**
    - **AIRAWAT AI Supercomputer**: Established one of the world's top AI supercomputers to boost research and innovation.
    - **Global AI Skill Leadership**: According to Stanford AI Index 2024, India ranks **#1** globally in AI skill penetration (score: 2.8) and talent concentration has grown by **263%** since 2016.
    - **Bhashini Platform**: Developed multilingual AI tools supporting 22 Indian languages for digital inclusion.
    - **Centers of Excellence**: Launched dedicated AI research centers in healthcare, agriculture, and smart citie

Global Partnerships & Forums

- Global Partnership on Artificial Intelligence (GPAI)
- Global IndiaAI Summit
- United States–India Initiative on Critical and Emerging Technology (iCET)
- AI Action Summit (Paris, Feb 2025)
- India–France AI Summit (La French Tech India, 2025)

Issues Associated with India's AI Mission

- **Mission without a Mandate:** India's AI Mission operates as a bureaucrat-led division within a Section 8 company under the Ministry of Electronics and Information Technology, lacking a Cabinet-endorsed national strategy.
- **Governance Gap:** India faces structural deficits impeding its AI ecosystem that incremental approaches cannot overcome.
- **Shallow R&D Base:** Universities underrepresented in global AI rankings →Loss of top-tier AI talent to global hubs.
    - Limited pipeline of AI-specialized PhDs.
    - Weak collaboration between academia and industry.
- **Private Sector Orientation:** IT industry remains oriented toward services.
    - Modest research investments relative to international companies.
    - Engagement with AI largely in deployment, downstream of frontier innovation.
    - Lacks AI-first national champions and deep-tech industrial ecosystem.
    - Venture capital funding skewed towards consumer tech, not foundational research.
- **Democratic Deficit (Lack of Parliamentary Involvement):** Parliament has remained extraneous to shaping national AI governance.
    - Less than 1% of questions in Parliament are on AI.
    - No dedicated institutional mechanism for oversight.
    - Important debates (strategic autonomy, public data use, energy demands, national security) have received short shrift.
    - Undermines India's international credibility.

Way Forward

- **Cabinet-endorsed National AI Strategy:** Must be presented to Parliament.
    - Sets out a vision, an actionable roadmap, and mechanisms for democratic accountability.
- **Empowered Coordinating Authority:**Establish an empowered coordinating authority with a whole-of-government mandate.
- **Strategic Alignment:** Align R&D, industrial policy, and security strategy.
- **Frameworks for Engagement and Oversight:** Create frameworks for public engagement and parliamentary oversight.
- **National Strategic Priority:** AI governance must be treated as a national strategic priority, grounded in democratic consensus.

Source: Indian Express

Maharashtra's 'urban Maoism' Bill

Context

The Maharashtra Legislative Assembly passed by a voice vote the stringent Special Public Security Bill, 2024 that seeks to tackle "unlawful activities of left-wing extremist organisations".

What is Urban Maoism?

- It refers to the influence and activities of left-wing extremist (Naxal/Maoist) groups in urban areas, focusing on **ideological spread, recruitment, logistics, and support for rural armed cadres**.
- **Modus Operandi:** Involves creating front organizations, mobilizing students, intellectuals, and civil society, generating propaganda, and providing urban safe havens ("urban dens") for underground cadres.
- **Objective:** To extend Naxal influence beyond rural strongholds, exploit urban grievances, and destabilize state structures through subversive activities.

Key Provisions in the Special Public Security Bill, 2024

- **Definition of Unlawful Activity:**
  - Interfering with public order or law administration
  - Overawing public servants by criminal force
  - Acts of violence, vandalism, or generating public fear
  - Disrupting communications (road, rail, air, water)
  - Encouraging or practising disobedience to law
- **Powers to Declare Organisations Unlawful:** Government can declare organizations "unlawful"
  - Confirmation required by an Advisory Board (three HC judges/qualified persons)
- **Penal Provisions:** Punishments: 2–7 years' imprisonment and fines for membership, raising funds, managing, or assisting unlawful organisations, or committing "unlawful activity"
- **Nature of Offences:** Cognizable and non-bailable (arrest without warrant possible)
- **Forfeiture of Property:** District Magistrate/Police Commissioner can seize/evict properties used for unlawful activities, with 15 days' notice—even before conviction
  - Special provision for women/children to vacate
- **Appeal Mechanism:** Affected party can appeal forfeiture to High Court within 30 days

Issues Associated with the Bill

- **Overbroad and Vague Definitions:** Terms like "practising disobedience" and "disrupting communication" can criminalize legitimate protests, strikes, or dissent.
- **Potential for Misuse:** Wide discretionary powers to police and administration, risking targeting of activists, journalists, or political opponents.
- **Weak Procedural Safeguards:** Property can be seized *before* conviction, violating presumption of innocence; reversal of burden of proof on accused.
- **Comparison with Central Laws:** UAPA and PMLA have higher thresholds for what constitutes "terror" or "proceeds of crime" and quasi-judicial checks; this Bill covers a wider net with weaker checks.
- **Impact on Civil Liberties:** Risk of stifling free speech, assembly, and lawful dissent; possibility of infringing on constitutional rights (Articles 19 & 21).
- **Judicial Review Limited:** While appeal is possible, initial property loss or arrest can occur before judicial scrutiny, causing hardship.

Source: Indian Express

A Roadmap For Strengthening State S&T Councils' Report by NITI Aayog

Context

Recently a report titled "A Roadmap For Strengthening State S&T Councils" was released by Niti Aayog.

What are State Science & Technology Councils (SSTCs)?

- They are **autonomous bodies** established by Indian states and Union Territories to promote, coordinate, and implement science, technology, and innovation (STI) policies at the state level.
- **Genesis:** Initiated in **1971** under the leadership of **Bharat Ratna C. Subramaniam**.
- **Support:** Supported mainly by the **Department of Science and Technology (DST)**, Government of India, **under the State Science and Technology Programme (SSTP)**, along with variable support from respective state governments.
- **Comprises of:**
    - **Governing Council:** The top decision-making body that sets policies and strategic direction for the State S&T Council.
    - **Executive Committee:** The operational body that implements the Council's policies and oversees day-to-day functioning.
- **Key Functions:**
    - Facilitate grassroots innovations in sectors like agriculture, renewable energy, disaster management, and biotechnology.
    - Develop and promote science-based solutions for local resource management and environmental issues.
    - Enhance scientific awareness and attitudes among all sections of society.
    - Foster scientific research, technology adoption, and capacity building within the state.

Challenges Associated with State S&T Councils

- **Weak Governance Structure & Delays:** Irregular meetings and absence of scientific leadership delay decisions, causing slow, fragmented policy execution and missed opportunities.
- **Inadequate Financial Resources:** Heavy reliance on central grants, delayed disbursals, and underutilization of funds limit councils' capacity and expansion.
- **Skilled Manpower Shortage:** Vacant scientific positions and lack of training reduce research output and limit the scale and quality of council activities.
- **Poor Institutional Linkages:** Weak collaboration with central and global institutions prevents knowledge exchange and the practical application of research.
- **Lack of Industry Engagement:** Minimal industry connections and no tech-transfer centers hinder commercialization and resource mobilization.
- **Regulatory & Administrative Bottlenecks:** Bureaucratic rules, no standard framework, and unclear roles slow down expenditure and effective functioning.

Recommendation by Niti Aayog to Strengthen SSTCs

- **Structural Reforms in Governance:**
    - **Governing Council:** Expand to include state, central, industry, and academic experts for diverse perspectives; meet at least once a year for informed, strategic decisions.
    - **Executive Committee:** Led by a full-time scientific director; include external S&T experts and government officers; ensure performance-driven, accountable leadership.
- **Financial Support and Resources:** Ensure adequate state funding (target: 0.5% GSDP); shift DST support to project-based grants; expand funding sources; foster industry and university linkages; introduce performance-based grants.

- **Human Resources:** Maintain 70:30 scientific to non-scientific staff; fill all core positions; offer career progression; hire for projects; second faculty and retired experts for expertise and collaboration.
- **State-Focused Role & Sub-Structures:** Identify state-specific S&T needs; establish cells for patents, technology transfer, incubation, etc.; build databases; lead SSR/CSR efforts; connect with similar structures statewide.
- **Redefining Programs and Activities:** Prioritize state-relevant R&D; institute annual awards, fellowships, and travel grants; organize state STI conclaves; expand science popularization; standardize science centers; map resources; promote collaborations.
- **Collaboration and Linkages:** Forge ties with central agencies, industries, PSUs, R&D institutions, and universities to pool resources, enhance knowledge, and accelerate coordinated STI growth in the state.

Abbreviations
- **SSR:** Scientific Social Responsibility
- **CSR:** Corporate Social Responsibility
- **STI:** Science, Technology, and Innovation

Source: A-Roadmap-for-Strengthening-State-ST-Council.pdf