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To The Point

by Dhananjay Gautam

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GS Paper 2 – Governance, Constitution, Polity, Social Justice

1 NITI Aayog Unveils Strategic Roadmap to Empower State Science & Technology Councils

Context: In a bid to invigorate India's decentralized scientific landscape, **NITI Aayog** has released a forward-looking **Roadmap for Strengthening State Science & Technology (S&T) Councils**. This initiative aims to catalyze innovation-led growth at the grassroots by addressing long-standing structural and operational gaps in state-level science governance.

Vision: Science for State-Centric Development

The roadmap envisions a robust, inclusive, and agile **S&T ecosystem** that not only promotes innovation but also aligns it with state-specific **socio-economic priorities**. It focuses on building strong institutional frameworks and enabling states to play a proactive role in India's evolving science and technology mission.

Key Objectives of the Roadmap:

- **Strengthen State-Level Innovation Ecosystems:** Foster state-driven scientific solutions for regional challenges, from agriculture to urban development.
- **Promote Multi-Stakeholder Collaboration:** Build seamless coordination between **state governments, academia, industry, ministries**, and **funding agencies**.
- **Drive Innovation & Knowledge Dissemination:** Support **patent facilitation**, **remote sensing applications**, **grassroots innovation**, **science popularisation**, and **human resource development**.

Major Challenges Hindering Progress:

The roadmap identifies critical roadblocks that have limited the effectiveness of State S&T Councils:

- **Weak Institutional Governance:** Infrequent meetings, leadership voids, and slow decision-making processes.
- **Insufficient Funding:** Overdependence on core grants and underutilization of central support schemes.
- **Human Resource Deficits:** Unfilled posts, limited career growth, and a shortage of skilled scientists and technical staff.
- **Limited Industry & Academia Linkages:** Inadequate partnerships that reduce the scalability and impact of research.
- **Administrative Rigidities:** Fragmented mandates, procedural delays, and outdated rules that hamper implementation.

Strategic Recommendations to Transform State S&T Councils

1. Structural and Institutional Reforms:

- Expand **Governing Councils** to include experts from **central institutions**, **industry**, **academia**, and **public sector undertakings (PSUs)**.
- Appoint a **full-time Executive Director** with strong scientific credentials to provide effective leadership.
- Create thematic **sub-units** for focused work on **patents**, **technology transfer**, **biodiversity**, and **science outreach**.

2. Financial Revamp:

- Encourage states to allocate **at least 0.5% of their GSDP** towards S&T development—an ambitious yet essential target aligned with global best practices.
- Transition to **project-based funding models**, except in the case of **Northeast states and Union Territories** which may continue with core grants.
- Promote **performance-linked incentives** and tap into **industry contributions** and **inter-ministerial funding pools**.

3. Strengthening Human Capital:

- Ensure a **70:30 ratio of scientific to administrative staff** to maintain research orientation.
- Regularize staff positions with **state funding** and well-defined **career progression pathways**.
- Encourage **secondment of university faculty**, engagement of **retired scientists**, and training programs to build long-term capacity.

4. State-Specific Prioritization:

- Undertake **S&T needs mapping** tailored to each state's geography, resources, and development goals.
- Foster **local R&D ecosystems** by funding state universities and research institutions.
- Introduce **state-level awards**, **fellowships**, and **internships** to recognize talent and promote young researchers.

5. Boosting Collaboration and Outreach:

- Establish strong partnerships with **national science agencies**, **industries**, and **academic institutions**.
- Organize annual **Science, Technology & Innovation (STI) conclaves** for inter-state knowledge sharing and showcasing local innovations.
- Upgrade **science cities**, **museums**, and **science centres** to improve public engagement with science.

Did You Know?

- Globally, countries like **South Korea** and **Israel** invest over **4% of their GDP** in R&D, while India remains below **1%**.
- States like **Kerala** and **Gujarat** have already pioneered successful S&T models with active councils and local innovations.
- India ranks **40th** on the **Global Innovation Index (2024)**, but has significant scope to improve through state-level interventions.

Conclusion: A Call to Scientific Federalism

This roadmap by NITI Aayog marks a crucial step toward **scientific federalism**, where states are empowered not just as implementers but as **innovators and leaders** of change. By bridging policy gaps, mobilizing funding, and investing in people and partnerships, India can harness the **transformative power of science** for inclusive, sustainable development across all states.

GS Paper 3 – Economic Development

2 Starlink Gets Final Regulatory Clearance to Launch in India: A New Era of Satellite Internet Begins

Context: In a significant development for global food security and scientific collaboration, the **International Maize and Wheat Improvement Center (CIMMYT)** has called upon **India** to extend financial support as it faces a critical funding shortfall. With major donors like **USAID withdrawing**, CIMMYT now seeks stronger backing from emerging economies like India that have long benefited from its agricultural breakthroughs.

The Context: A Global Research Giant in Crisis

CIMMYT, a global leader in **agricultural innovation**, is currently battling a serious **financial crisis** following the shutdown of **USAID operations**. In 2024 alone, USAID had provided around **$83 million**, accounting for nearly **40%** of CIMMYT's total budget of **$211 million**. The abrupt end of this support has created a massive vacuum, threatening to stall ongoing research that underpins food production systems in many parts of the world.

CIMMYT: A Pillar of Global Food Security

History & Evolution:

- **Established** in **1966**, headquartered in **Mexico**, CIMMYT emerged from a Rockefeller Foundation initiative in collaboration with the Mexican government in the **1940s and 1950s**.
- Spearheaded by **Dr. Norman Borlaug**, the "Father of the Green Revolution," it became a catalyst for **Asia's agricultural transformation**.

Notable Contributions:

- Development of **high-yielding wheat varieties** like **Lerma Rojo 64A**, **Sonora 64**, and **Mayo 64**.
- Partnership with Indian scientists to introduce path-breaking varieties such as **Kalyan Sona (1967)** and **Sonalika (1968)**—milestones in India's food self-sufficiency journey.
- In 1995, **PBW 343** became one of the most widely cultivated wheat varieties in India.

CIMMYT's Present-Day Impact:

- Its improved **maize and wheat varieties** are grown on **over 60 million hectares globally**.
- In **India**, **over 50% of wheat area** is covered by varieties released **post-2019**, developed jointly by CIMMYT and **ICAR**.
- Through the **Borlaug Institute for South Asia (BISA)**—established in **2011** in collaboration with ICAR—CIMMYT continues cutting-edge research in **climate resilience**, **heat tolerance**, **nutrient efficiency**, and **disease resistance**.

Why CIMMYT Matters to India's Future

1. **Strategic Food Security:**
   - In **2024**, India cultivated wheat on approximately **32 million hectares**.
   - Six of the **top 10 wheat varieties** in India, covering **15.3 million hectares**, trace their origins to **CIMMYT**.
   - Rising **March temperatures** in north India have started affecting wheat productivity. Studies show that every **1°C rise in night temperature** may reduce yields by **up to 6%**.

- CIMMYT's research on **heat-tolerant and climate-resilient varieties** is vital to protect India's food production.

2. **Strengthening Global Leadership:**
   - By increasing its support, **India can position itself as a key player in South-South Cooperation**, shaping **global agricultural R&D agendas**.
   - Supporting CIMMYT would also enhance India's credibility in global forums such as the **FAO**, **CGIAR**, and **G20 Agricultural Working Groups**.
   - It would reinforce India's soft power in **Africa**, **Southeast Asia**, and other developing regions where Indian agri-expertise is already valued.
3. **Human Capital Synergy:**
   - Around **10% of CIMMYT's global staff** are of Indian origin.
   - Indian scientists hold critical positions in CIMMYT's research teams, further strengthening scientific ties.

The Road Ahead: India's Role as a Global Research Partner

1. **Increase National Support:** India must **substantially raise its financial contributions** to CIMMYT to:
   - Sustain existing research platforms.
   - Influence governance and research priorities.
   - Ensure continuity of crucial R&D for **global food security**.
2. **Foster Public-Private Partnerships (PPPs):**
   - India can mobilize **CSR funds**, **seed companies**, and **agri-tech firms** to co-invest in collaborative research.
   - Synergies between government, private players, and global institutions like CIMMYT can create **innovative agri-solutions** for the 21st century.
3. **Launch a Global South Innovation Network:**
   - India can take the lead in establishing a **"Global South Agricultural Innovation Forum"** in partnership with CIMMYT.
   - This would facilitate **technology transfers**, **joint crop breeding programs**, and **capacity building** in Asia and Africa.

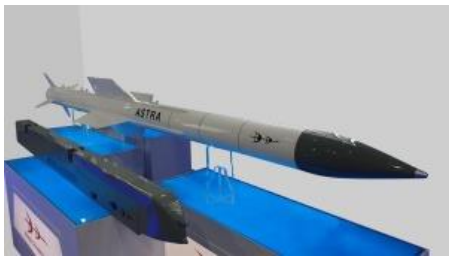
A Time to Give Back—and Lead Forward

India has reaped decades of benefits from CIMMYT's path-breaking research. At a time when global agricultural systems face the triple threat of **climate change**, **nutrition challenges**, and **yield stagnation**, the opportunity is ripe for India to **invest**, **lead**, and **transform**.

Supporting CIMMYT is not just about philanthropy—it's a strategic investment in India's food security, international reputation, and agricultural future.

GS Paper 3 – Science & Technology

3 India Successfully Tests Indigenous Astra Missile with Enhanced Capabilities



Context: In a major boost to India's air combat capabilities, the **Defence Research and Development Organisation (DRDO)** and the **Indian Air Force (IAF)** have successfully carried out the latest flight-tests of the **Astra Missile**, reaffirming its precision, reliability, and indigenous strength.

Astra: India's Homegrown Beyond Visual Range Air-to-Air Missile (BVRAAM)

The **Astra missile** is India's first **indigenously developed Beyond Visual Range Air-to-Air Missile (BVRAAM)**, designed to engage and destroy highly maneuverable enemy aircraft at long ranges. Developed by **DRDO**, Astra is a key component of India's strategy to achieve **self-reliance in advanced missile systems**.

Key Features and Advanced Technology:

- **Indigenous RF Seeker**: Astra is now equipped with a **cutting-edge Radio Frequency (RF) seeker** developed entirely within India. This seeker enables the missile to home in on targets with extreme accuracy.
- **Extended Range**: Capable of engaging targets **beyond 100 km**, Astra allows fighter jets to strike threats **well before they are detected visually**, giving a decisive edge in aerial combat.
- **Precision Navigation and Guidance**: The missile is integrated with **state-of-the-art navigation, mid-course guidance, and terminal homing systems**, ensuring high success rates in complex combat scenarios.
- **Integration with Su-30MKI**: Astra is deployed on India's frontline fighter aircraft, **Su-30MKI**, with future integration planned for other platforms like **Tejas** and **Rafale**.

Collaborative Development: A National Effort:

The Astra missile project is a shining example of **public-private partnership** in India's defence sector. More than **50 public and private sector industries**, including **Hindustan Aeronautics Limited (HAL)**, have played a vital role in the development and realization of the complete weapon system.

The successful tests also involved multiple **DRDO laboratories**, showcasing the synergy between R&D and industrial manufacturing.

Flawless Flight-Test Performance:

- Two successful **flight-tests** were conducted against **high-speed unmanned aerial targets** under different launch conditions and target profiles.
- In both cases, the missile **achieved direct hits**, demonstrating **pinpoint accuracy** and confirming the **performance of all subsystems**, especially the **indigenously developed RF seeker**.
- Test data was captured by advanced **Range Tracking instruments** deployed by the **Integrated Test Range (ITR), Chandipur**, validating the overall performance and mission success.

Strategic Significance and the Way Forward:

The successful test of the Astra missile underlines India's growing capabilities in the **strategic domain of air-to-air missile systems**. With its superior range, high accuracy, and indigenous design, Astra is poised to replace many foreign missile systems and reduce dependency on imports.

Did You Know?

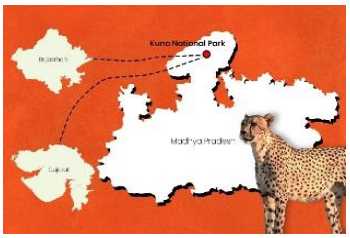
- Astra's name means **"weapon"** in Sanskrit, symbolizing its role as a force multiplier in the skies.
- Future variants of Astra, including **Astra Mk-II and Mk-III**, are under development, with ranges expected to exceed **150–300 km**.
- Astra is a key part of India's effort to build a **comprehensive aerial combat ecosystem** in line with the **Atmanirbhar Bharat** initiative.

Conclusion: A Leap Toward Self-Reliance in Missile Technology

With this successful test, India takes a **giant leap forward in its indigenous air combat capabilities**. The **Astra missile** not only strengthens the IAF's operational edge but also represents India's growing stature as a **global player in high-end defence technology**. As development continues, Astra is set to become a cornerstone of **India's aerial supremacy in the 21st century**.

GS Paper 1 – Geography

4 Kuno National Park: A Rising Sanctuary for Cheetahs in the Heart of India



Context: India's bold wildlife conservation initiative, **Project Cheetah**, continues to make significant strides, as seen in the recent release of captivating videos by the **Union Minister of Environment, Forest and Climate Change**, showcasing cheetahs gracefully adapting to the vibrant landscapes of **Kuno National Park**.

A Jewel of Madhya Pradesh's Wilderness:

Situated in the **Sheopur district** of **Madhya Pradesh**, **Kuno National Park** lies nestled near the **Vindhyan Hills**, offering a scenic blend of grasslands, woodlands, and riverine terrain. Spanning over **750 square kilometers**, the park derives its name from the **Kuno River**, a tributary of the **Chambal River**, which divides the park into two distinct ecological zones.

A Chosen Home for the Cheetah:

Selected under the **'Action Plan for Introduction of Cheetah in India'**, Kuno was chosen for its suitable terrain, prey base, and minimal human disturbance—ideal for reintroducing the world's fastest land animal, which went extinct in India in 1952.

Project Cheetah Milestones:

- **8 cheetahs** from **Namibia** were introduced in **September 2022**.
- **12 more cheetahs** arrived from **South Africa** in **February 2023**, bringing the total to **20**.
- The cheetahs are monitored with satellite collars and ground teams to ensure adaptation, health, and breeding success.

Rich Biodiversity: Flora & Fauna

Floral Wealth:

Kuno boasts a thriving **tropical dry deciduous forest ecosystem**, supporting more than **129 species of trees**. Prominent flora includes:

- **Anogeissus pendula (Kardhai)**
- **Senegalia catechu (Khair)**
- **Boswellia serrata (Salai)**

  These forests not only provide food and shelter to herbivores but also contribute to maintaining ecological balance in the region.

Faunal Diversity:

Kuno is home to a wide range of **carnivores and herbivores**, making it a perfect ecological fit for cheetahs. Its wildlife includes:

- **Indian leopard**, **sloth bear**, **jungle cat**, **dhole** (wild dog), **Indian wolf**
- **Striped hyena**, **Bengal fox**, **golden jackal**
- Over **120 species of birds**, enriching its avifaunal diversity

A Vision for the Future of Conservation

The successful reintroduction of cheetahs is part of India's broader conservation vision. If successful, **Kuno may also serve as a model for rewilding other extinct or endangered species** in the Indian subcontinent.

Did You Know?

- Cheetahs are the only large carnivores to have gone extinct in India, primarily due to overhunting and habitat loss.
- The African cheetahs brought to Kuno are a different subspecies but have been genetically proven to be suitable for adaptation to Indian landscapes.
- Kuno was once considered for relocating the **Asiatic lion** from Gir Forest, but the plan was delayed due to political and ecological concerns.

Conclusion: A New Chapter in India's Wildlife Legacy

Kuno National Park stands at the center of one of India's most ambitious wildlife projects. With every successful stride taken by the cheetahs across its grasslands, **Kuno reclaims its place in the global spotlight as a symbol of ecological restoration, biodiversity, and hope**. As India marks a historic return of the cheetah, Kuno's evolving success story could soon inspire rewilding projects around the world.

GS Paper 3 – Environment & Ecology

5 India Rolls Out First-Ever Incentive Scheme for Electric Trucks Under PM E-DRIVE Initiative

Context: In a **landmark move** to reduce emissions and promote sustainable logistics, the **Government of India has officially launched its first dedicated electric truck incentive scheme** under the newly unveiled **PM E-DRIVE (Electric-Drive for Rapid Innovation & Vehicle Electrification)** initiative. This marks a significant shift in India's electric mobility policy, especially for the **commercial and heavy-duty vehicle sector**, which had been previously overlooked under earlier programs like **FAME (Faster Adoption and Manufacturing of Electric Vehicles)**.

500 Crore Allocated for Electrifying India's Truck Fleet:

A total **outlay of 500 crore** has been sanctioned for this scheme to support the procurement of **5,600 electric trucks** across the country. In a focused effort to tackle urban pollution, **20% of this fund** is reserved for vehicles **registered in Delhi**, one of the world's most polluted cities.

Key Highlights of the Electric Truck Incentive Scheme:

- **Eligibility Criteria:**
  - Manufacturers must offer a **battery warranty of 5 years or 5 lakh kilometres**, whichever comes earlier.
  - The **motor and vehicle must carry a warranty** of **5 years or 2.5 lakh kilometres**.
  - **Mandatory scrapping of old diesel trucks** is required to avail the incentive, promoting fleet modernization and reduced emissions.
- **Implementation Period:**
  - The scheme will be **active from October 1, 2024, to March 31, 2026**.
  - It **subsumes the existing EMPS-2024 (Electric Mobility Promotion Scheme)**, making PM E-DRIVE the umbrella scheme for EV subsidies in India.

Extended Subsidy Structure for Other EV Categories:

The PM E-DRIVE scheme also **revamps the subsidy** structure for other categories of electric vehicles:

- **Electric Two-Wheelers:**
  - **Year 1:** 5,000 per kWh (maximum incentive 10,000).
  - **Year 2:** 2,500 per kWh (maximum incentive 5,000).
- **Electric Three-Wheelers:**
  - Standard e-rickshaws: 25,000 in Year 1, 12,500 in Year 2.
  - **L5 Category Cargo E-Three-Wheelers**: 50,000 in Year 1, 25,000 in Year 2.

Smart e-Voucher System for Hassle-Free Subsidies:

To ensure transparency and ease in claiming subsidies, the **Ministry of Heavy Industries is introducing an innovative e-voucher system**:

- **One vehicle per Aadhaar** card will be eligible.
- Upon purchase, an **e-voucher will be auto-generated and signed**.

- This **e-voucher is essential** for OEMs (**Original Equipment Manufacturers**) to claim **reimbursement**.

Charging Infrastructure Expansion to Tackle Range Anxiety:

Understanding the importance of charging availability, the scheme will **prioritize the development of Electric Vehicle Public Charging Stations (EVPCS)**:

- **Select cities** with high EV adoption will see rapid installation of chargers.
- **Highways** with heavy freight traffic will also be equipped to support electric truck journeys.

Additional Insights: India's Push Towards a Greener Transport Sector

- India's **road freight sector contributes nearly 40% of vehicular emissions**, despite trucks making up less than 5% of total vehicles.
- Transitioning even **10% of the truck fleet to electric** could save over **3 billion litres of diesel annually**.
- India aims to **electrify 30% of its vehicle fleet by 2030** under its **National Electric Mobility Mission Plan**.

Conclusion:

With the **first-ever focused incentive scheme for electric trucks**, India is sending a strong signal towards achieving **net-zero emissions** in the transport sector. The **PM E-DRIVE initiative** not only accelerates the shift towards clean mobility but also supports **Make in India**, **job creation**, and a **greener economy**.

GS Paper 3 – Biodiversity Conservation & Wildlife protection Schemes

6 Gharial and Sloth Bear Proposed for Inclusion in India's Prestigious Species Recovery Programme

Context: In a significant step towards conserving India's threatened species, the **Gharial** and the **Sloth Bear** have been **recommended for inclusion** under the **Species Recovery Programme** of the **Centrally Sponsored Scheme for Integrated Development of Wildlife Habitats (CSS-IDWH)**.

The proposal was made by the **Standing Committee of the National Board for Wildlife (SC-NBWL)**, a statutory body formed under the **Wildlife (Protection) Act, 1972**, which advises the Government of India on policies related to wildlife protection and conservation.

Gharial: The Critically Endangered River Guardian

- **Habitat**: The Gharial is a freshwater specialist found primarily in the **Chambal and Girwa rivers** (India) and the **Rapti-Narayani River** (Nepal), all part of the **Ganga river system**.
- **Conservation Status**:
  - **IUCN Red List**: *Critically Endangered*
  - **Wildlife (Protection) Act, 1972**: *Schedule I*
  - **CITES**: *Appendix I*
- **Distinctive Traits**:
  - The Gharial's **long, narrow snout** is the most elongated among all crocodilian species.
  - Males develop a unique bulbous structure at the snout's end, called a **"ghara"**, used to produce vocal sounds and bubbles for courtship.
  - Known as the **most aquatic of all crocodilians**, the Gharial is adapted for life in deep, fast-flowing rivers.

Did You Know?

Less than **250 adult Gharials** are estimated to survive in the wild today, making their recovery a high conservation priority.

Sloth Bear: India's Shy Insect-Eating Mammal

- **Habitat**: Found in **India, Sri Lanka, and Nepal**, this bear species inhabits **five biogeographic zones in India** – including the **Western Ghats**, **Deccan Plateau**, and **Gangetic Plains**.
- **Conservation Status**:
  - **IUCN Red List**: *Vulnerable*
  - **Wildlife (Protection) Act, 1972**: *Schedule I*
  - **CITES**: *Appendix I*
- **Notable Characteristics**:
  - Sloth bears have a **shaggy black coat**, **long curved claws**, and a distinct **snout adapted for insect feeding**.
  - Their diet is dominated by **termites and ants**, which they suck up with a loud vacuum-like sound.
  - Generally **solitary** and **nocturnal**, these bears play a vital ecological role by regulating insect populations.

Interesting Fact: Despite their slow gait and mild appearance, sloth bears can be aggressive if provoked and are responsible for more human-wildlife conflicts in India than tigers or leopards.

About the CSS-IDWH Scheme:

The **Centrally Sponsored Scheme for Integrated Development of Wildlife Habitats (CSS-IDWH)** is India's flagship conservation funding mechanism. It **provides financial and technical support** to State and Union Territory governments for activities aimed at **wildlife protection and habitat restoration**.

Key Components of CSS-IDWH:

1. **Support to Protected Areas** – National Parks, Wildlife Sanctuaries, Conservation and Community Reserves.
2. **Protection of Wildlife Outside Protected Areas** – Including **conflict mitigation** in human-dominated landscapes.
3. **Species Recovery Programmes** – For the **conservation of critically endangered species and their habitats**.

So far, **22 species** have been selected under this programme, including:

- **Snow Leopard**
- **Asiatic Lion**
- **Great Indian Bustard**
- **Hangul**
- **Malabar Civet**

Why This Matters:

Inclusion of the **Gharial and Sloth Bear** under the Species Recovery Programme will:

- Enable **dedicated funding** for scientific research, habitat protection, and breeding programs.
- Support **community engagement and conflict resolution** in sensitive areas.
- Enhance **collaborative conservation efforts** across states and transboundary regions (like Indo-Nepal river systems).

Looking Ahead:

With escalating threats from habitat loss, pollution, and human-wildlife conflict, the move to prioritise these species under a **national recovery plan** is both timely and crucial. It highlights India's ongoing commitment to preserving its **rich but imperilled biodiversity** for future generations.