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TELANGANA STATE NEWS SUMMARY TOPICS

NEWS IN SHORT

TELANGANA STATE NEWS SUMMARY

Hyderabad Lab Powers Pralay Missile Trials

Source: Deccan Chronicle

Relevance: GS Paper III – Defence & Security | Science and Technology | Indigenisation

Important Keywords

- **Prelims:**
  Pralay Missile, Quasi-ballistic Missile, Solid-propellant, DRDO, Research Centre Imarat (RCI), Integrated Test Range (ITR), Bharat Dynamics Limited (BDL), Bharat Electronics Limited (BEL)
- **Mains:**
  Defence Indigenisation, Missile Deterrence, Military Modernisation, Strategic Readiness, Public–Private Collaboration in Defence, Aatmanirbhar Bharat in Defence

Why in News?

Two indigenously developed **Pralay missiles** were successfully test-fired in a salvo mode from the Odisha coast on December 31, 2025, during user evaluation trials, with **Hyderabad-based Research Centre Imarat (RCI)** playing a central role in their development.

Background

Pralay is part of India's growing portfolio of conventional missile systems aimed at strengthening tactical strike capability. The tests were conducted by the **Defence Research and Development Organisation (DRDO)** as part of final validation before induction into the armed forces.

Role of Hyderabad-based RCI

Research Centre Imarat (RCI), Hyderabad, served as the lead design and development laboratory for the Pralay missile. The centre coordinated system integration, guidance, navigation, and overall mission architecture, in collaboration with multiple DRDO laboratories across the country.

Key Features of the Pralay Missile

- Solid-propellant, quasi-ballistic missile
- Advanced guidance and navigation systems

for high precision
- Capability to carry different types of conventional warheads
- Designed to engage a wide range of tactical targets
- Salvo launch capability enhances battlefield effectiveness

Trial Details and Validation

The missiles were launched in quick succession from the same launcher at the **Integrated Test Range (ITR), Chandipur**. Both followed the intended trajectory and met all mission objectives. Performance was confirmed through tracking sensors, telemetry data, and onboard ship-based monitoring near the impact area.

Institutional and Industry Collaboration

The system was developed through coordinated efforts of several DRDO laboratories and integrated by **Bharat Dynamics Limited (BDL)** and **Bharat Electronics Limited (BEL)**, with support from Indian industry partners. Senior officials from the Indian Army and Air Force witnessed the trials, reflecting joint user involvement.

Strategic Significance

The successful salvo trials demonstrate the **reliability, readiness, and operational maturity** of the Pralay missile system. It strengthens India's conventional deterrence capability and supports the transition towards an indigenously developed, technology-driven defence posture.

Way Forward

- Accelerated induction into the armed forces
- Integration with existing command and control systems
- Continued focus on indigenous missile technologies
- Expansion of industry participation under Aatmanirbhar Bharat

Conclusion

The successful Pralay missile trials underscore Hyderabad's critical role in India's defence ecosystem and highlight the growing strength of indigenous missile development. With proven accuracy and readiness, Pralay marks a significant step in enhancing India's conventional strike capability and defence self-reliance.

Prehistoric Rock Paintings Discovered Near Bhadrachalam

Source: Deccan Chronicle

Relevance: **TGPSC GROUP I Paper–II: History, Culture and Geography**

Important Keywords

Prelims

- Mesolithic Period, Neolithic Period, Rock Art, Red Ochre Paintings, Bhadradri Kothagudem, Bhadrachalam, Early Humans, Hunting-Gathering Communities

Mains

- Prehistoric Art, Cultural Expression of Early Humans, Human Evolution in India, Archaeological Heritage, Forest-Based Civilisations, Conservation of Rock Art

Why in News?

A **new prehistoric rock art site** has been discovered near **Palwancha**, close to **Bhadrachalam** in Telangana's **Bhadradri Kothagudem district**, revealing red ochre paintings believed to date back

to the **Mesolithic or early Neolithic period**.

Location and Discovery

- The site is located near **Aksaraloddi**, between **Jagannadhapuram** and **Annapureddypalli** villages in **Mulakalapalli mandal**
- Situated about **two kilometres from Nallamudi**, deep inside a forested region
- Discovered during a **field exploration by researcher Kondaveeti Gopi**, assisted by **Shiva of Nallamudi**
- The researcher has earlier identified several **megalithic and prehistoric sites** in the region

Nature of the Rock Art

- Paintings executed using **red ochre pigment** on natural rock surfaces
- Depictions include:
  - Animals
  - Hunting scenes
  - Human figures
- Such themes suggest representation of **subsistence activities**, social life, and ritual practices of early humans

Chronological Significance

- Based on stylistic features and themes, the paintings are attributed to:
  - **Mesolithic period (10,000–5,000 BCE)**
  - Possibly extending into the **early Neolithic phase**
- Indicates a transition from **hunter-gatherer lifestyle** towards early settled patterns

Cultural and Archaeological Importance

- Reflects **symbolic expression** and cognitive development of early humans
- Paintings likely served as:
  - Records of daily life
  - Expressions of belief systems and rituals
  - Means of communication across generations
- Strengthens evidence of **prehistoric human habitation** in the Godavari forest belt

Ecological Context

- Discovery of **wood fossils** in the same area points to:
  - Rich prehistoric ecology
  - Close interaction between humans and forest ecosystems
- Highlights the region as an important **palaeo-environmental and archaeological landscape**

Conclusion

The discovery of prehistoric rock paintings near Bhadrachalam adds significant value to India's understanding of **Mesolithic and early Neolithic cultures**. These artworks not only reflect the **cultural and cognitive world of early humans** but also underline Telangana's importance in India's prehistoric landscape. Systematic conservation and research are essential to preserve this fragile heritage for future generations.

Telangana to Get Energy Efficiency Boost under ADEETIE Scheme

Source: The Hindu / The Hans India

Relevance:

- **GS Paper II – Government Policies & Interventions**
- **GS Paper III – Energy, Climate Change, Sustainable Development, MSMEs**

Important Keywords

Prelims

- ADEETIE Scheme, Bureau of Energy Efficiency (BEE), MSMEs, Energy Efficiency, MTOE, CO_2 Emissions, Mission LiFE, Green Energy Corridors, Medak District

Mains

- Energy Governance, Climate Action, Sustainable Industrial Growth, MSME Competitiveness, Behavioural Change for Sustainability, India's Energy Transition, Cooperative Federalism in Climate Policy

Why in News?

The Union Minister for Energy, Housing and Urban Development has announced enhanced support for energy efficiency initiatives across states, with **Telangana selected as a focus state under the ADEETIE scheme**, particularly for deploying global energy technologies in the **pharmaceutical industry in Medak district**.

ADEETIE Scheme: Objectives and Design

The ADEETIE scheme aims to:

- Reduce **energy consumption by 30–50% in MSMEs**
- Improve the **power-to-product ratio** of industries
- Promote **global best energy-efficient technologies**
- Support development of **green energy corridors**
- Enhance industrial competitiveness while lowering emissions

All states have been covered under the scheme, with **five states, including Telangana**, selected for sector-specific interventions.

Telangana's Role under ADEETIE

- **Medak district** has been selected to promote **global energy efficiency technologies in the pharma sector**
- The initiative supports Telangana's strong pharmaceutical manufacturing base
- BEE has also assisted Telangana in setting up **Energy Clubs** to inculcate energy conservation habits among students
- The state has been recognised for leadership in sustainability initiatives

National Energy Efficiency Achievements

According to the Bureau of Energy Efficiency:

- **53.60 million tonnes of oil equivalent (MTOE)** energy savings achieved in **2023–24**
- **321 billion units of electricity** saved
- **₹2 lakh crore** annual monetary savings
- **321 million tonnes of CO_2 emissions** reduced

These gains significantly advance India's clean energy transition and climate commitments.

Mission LiFE and People-led Climate Action

The Union Minister emphasised that climate action requires **mass public participation**. Under **Mission LiFE (Lifestyle for Environment)**, citizens are encouraged to adopt:

- LED lighting
- Public transport, cycling, and carpooling
- EVs and CNG vehicles
- Rooftop solar energy
- Water conservation and waste reduction

Mission LiFE is positioned as a grassroots movement to complement technological and policy interventions.

Significance for Telangana and India

- Enhances **MSME productivity and cost efficiency**
- Strengthens India's commitment to **climate mitigation**
- Positions Telangana as a **model state in industrial energy efficiency**
- Supports **Viksit Bharat 2047** through sustainable growth
- Reinforces cooperative federalism in climate and energy governance

Challenges

- Scaling adoption of advanced technologies among small MSMEs
- Ensuring behavioural change beyond pilot districts
- Need for skilled manpower and awareness
- Financing and initial transition costs for industries

Way Forward

- Faster rollout of ADEETIE projects in identified districts
- Integration of energy efficiency with **renewable energy deployment**
- Expansion of Energy Clubs and community awareness programmes
- Organising **State, National and Global Mission LiFE Summits**
- Strengthening monitoring and outcome-based evaluation

Conclusion

The ADEETIE scheme marks a decisive step in aligning **industrial growth with sustainability goals**. Telangana's inclusion, particularly in the pharma sector, highlights its strategic importance in India's clean energy transition. By combining technology deployment, behavioural change through Mission LiFE, and cooperative governance, India is steadily advancing towards a low-carbon, energy-efficient future.

25 Heritage Sites Eye Global Funding in Telangana

Source: Deccan Chronicle

Relevance: **Paper-II: History, Culture and Geography**

Important Keywords

Prelims

- Heritage Conservation, World Monuments Fund (WMF), Protected Monuments, Kakatiya Architecture, Rashtrakuta Period, Menhirs, Urban Heritage, Monument Restoration

Mains

- Cultural Heritage Management, Public–Private Participation in Heritage, Urban Renewal, Sustainable Tourism, Global Cultural Funding, Community-led Conservation

Why in News?

Around **25 heritage monuments across Telangana** are set to be showcased at the **60th World Monuments Fund (WMF) Conference**, to be held in Hyderabad on **January 16, 2026**, with the objective of attracting **international funding for restoration, beautification, and long-term maintenance**.

Background

Telangana possesses a rich and layered heritage reflecting **Kakatiya, Rashtrakuta, medieval**

Deccan, and colonial-era influences. However, many monuments suffer from **structural decay, urban pressure, and inadequate maintenance funding**. To address this, the State government has initiated a global outreach under the theme **"Own Your Monument, Adopt Your Monument."**

Monuments Identified for Global Funding

The Heritage Department plans to highlight **11 protected monuments**, including:

- Taramati Baradari
- Akanna Sarai, Maheshwaram
- Ghanpur Group of Temples (Kakatiya era), Warangal
- Medak Fort (Rashtrakuta period)
- Mudumal Menhirs
- Pachala Someshwara Temple
- Panagal Museum, Nalgonda

In **Hyderabad**, urban heritage structures identified include the **Old MCH office, Katora Houz, City College, Puranapul Bridge, Koti Women's College blocks, Osmania University Arts College, and the ENT Hospital**.

Institutional Preparation and Strategy

Officials from the **Heritage Department, GHMC, and HMDA** are preparing **detailed restoration proposals and cost estimates** to present before international stakeholders at the WMF conference. Emphasis is being placed not only on restoration but also on **regular maintenance funding**.

Significance for Telangana

- Revives **historical identity and cultural pride**
- Boosts **heritage tourism and local economy**
- Encourages **global collaboration** in conservation
- Integrates heritage into **urban renewal planning**

Challenges in Heritage Conservation

- Fragmented institutional responsibility
- Encroachments and urbanisation pressures
- Limited technical expertise and sustained funding
- Balancing tourism with conservation ethics

Way Forward

- Institutionalise **public–private and community partnerships**
- Ensure **post-restoration maintenance mechanisms**
- Integrate heritage planning with **smart city and tourism policies**
- Promote local stewardship through **"Adopt a Monument" models**

Conclusion

Telangana's move to showcase **25 heritage sites at a global forum** reflects a strategic shift from isolated conservation efforts to **internationally supported, sustainable heritage management**. If effectively implemented, this initiative can safeguard the State's cultural legacy while transforming heritage into a driver of inclusive development.

Drones for Paddy Plantation: A Technological Response to Labour Crunch in Telangana

Source: **Telangana Today**

Relevance:

(TGPSC) – Agriculture, Science & Technology, Farm Mechanisation

Important Keywords

Prelims

- Agricultural Drones, Paddy Plantation, Direct Seeding, Krishi Vigyan Kendra (KVK), Precision Agriculture, Labour Shortage, PJTSAU, Farm Mechanisation

Mains

- Agri-technology, Labour Crisis in Agriculture, Smart Farming, Cost Reduction, Time Efficiency, Technology Adoption by Small Farmers, Sustainable Agriculture

Why in News?

To address **acute labour shortages and rising cultivation costs**, Telangana has launched **pilot projects using drones for paddy plantation** in select districts. Scientists claim that drone-based sowing can significantly **reduce time, labour dependence, and costs without affecting crop yields**.

Background: Labour Shortage in Agriculture

Labour scarcity has emerged as a **structural challenge in Indian agriculture**, driven by:

- Rural–urban migration
- Rising wage rates
- Declining interest in farm labour

Paddy cultivation, which is labour-intensive—especially during transplantation—has been particularly affected.

Drone Technology in Indian Agriculture

Drones are already used for:

- Spraying fertilisers and pesticides
- Crop health monitoring
- Precision input application

The current initiative marks a **new phase**, extending drone usage to **direct crop establishment**.

Drone-Based Paddy Plantation: Pilot in Telangana

The pilot project is being implemented by:

- **Professor Jayashankar Telangana State Agriculture University (PJTSAU)**
- In collaboration with **Marut Drones**
- Through **Krishi Vigyan Kendras (KVKs)**

Pilot Districts

Karimnagar, Adilabad, Kothagudem, Nalgonda

- **Adilabad KVK** is the nodal agency
- Trials conducted in **Huzurabad mandal villages**

How Drone Plantation Works

- Drones are fitted with:
  - Seed storage box
  - 3–5 seed-dispensing pipes
- Seeds are **directly dropped in rows** over prepared paddy fields
- **No nursery or seedling preparation** is required

Efficiency

- **1 acre covered in 15–20 minutes**
- Conventional method requires **12–14 labourers**

Advantages of Drone Paddy Sowing

- Significant reduction in labour requirement
- Faster coverage of large land areas
- Lower cultivation costs
- Uniform seed distribution
- Suitable for addressing peak-season labour shortages

Impact on Yield and Productivity

According to agricultural scientists:

- **No yield loss observed**
- Drone-sown paddy produces yields comparable to manual transplantation
- Maintains crop uniformity and plant density

Role of Institutions

- **KVKs**: Field-level implementation and farmer outreach
- **PJTSAU**: Scientific validation and extension support
- **Private sector**: Drone technology and operational expertise

This reflects a **public–private–academic collaboration model**.

Challenges and Limitations

- Initial cost of drone services
- Need for trained operators
- Adoption barriers among small and marginal farmers
- Dependence on field preparation quality

Way Forward

- Scaling up successful pilots across districts
- Subsidies or custom hiring centres for drones
- Training farmers and rural youth as drone operators
- Integrating drones with broader **precision farming initiatives**

Conclusion

Drone-based paddy plantation represents a **transformational shift in agricultural practices** in Telangana. By combining **technology, institutional support, and farmer-centric innovation**, the initiative addresses labour shortages while preserving productivity. If scaled sustainably, drone sowing can become a key pillar of **future-ready, efficient, and resilient agriculture**.

Telangana to Host Kite, Sweet, Balloon Festivals and Drone Show for Sankranti

Source: Deccan Chronicle

Relevance: TGPSC – Telangana Culture, Tourism Initiatives, Safety Regulations

Important Keywords

Prelims Keywords

- Sankranti Festival, International Kite Festival, Nylon Manja Ban, Telangana Tourism Development Corporation (TGTDC), Secunderabad Parade Grounds, Hot Air Balloon Festival, Drone Show, Gachibowli Stadium

Mains Keywords

- Cultural Tourism, Festival Economy, Public Safety Regulation, Crowd Management, Women Empowerment, Technology-driven Events, Sustainable Tourism, Urban Event Governance

Why in News?

Telangana is organising a series of large-scale cultural and tourism events for Sankranti, including

the **International Kite Festival, Sweet Festival, Hot Air Balloon Festival and a Drone Show**, while enforcing a **strict ban on nylon manja** to ensure public safety during mass gatherings.

Multi-Event Sankranti Celebrations in Telangana

The Telangana Tourism Development Corporation (TGTDC), in 2coordination with the Tourism and Culture Department, is hosting multiple festivals across Hyderabad to celebrate Sankranti as a **cultural, tourism and economic event** rather than merely a traditional festival.

These celebrations aim to attract domestic and international visitors while showcasing Telangana's cultural heritage.

International Kite Festival: Global Participation and Attractions

- **Venue:** Secunderabad Parade Grounds
- **Dates:** January 13 to 15
- **Participation:**
  - **40 international kite flyers from 19 countries**, including Indonesia, Australia, Canada, Sri Lanka, Japan, France, Italy, Switzerland, Russia, Algeria and Thailand
  - **55 national participants from 15 Indian States**
- **Special attraction:** Hanuman-themed kites
- **Kite flying height:** Up to **25 feet**
- **Additional features:**
  - Night kite-flying displays
  - Cultural performances highlighting Telangana's traditional art forms
  - Around **100 handloom and handicraft stalls**
  - **60 food courts** offering regional cuisines

Strict Ban on Nylon Manja

TGTDC has issued a **strict advisory banning nylon manja** during kite flying due to serious safety risks.

- Nylon thread can cause **fatal injuries**, especially to infants, children and elderly persons
- Enforcement measures include:
  - Checks at entry points of the festival venue
  - Allowing **only cotton thread**
- The ban will be **strictly enforced at Secunderabad Parade Grounds**, where lakhs of visitors are expected

Sweet Festival: Culinary Diversity and Women Empowerment

- Organised in collaboration with **Culture Language Indian Connections (CLIC)**
- Showcases **over 1,200 varieties of homemade sweets**
- Participants include people from different Indian States and foreign countries settled in Hyderabad
- **New additions:** Sindhi and Nagaland cuisines
- **Women participants provided free stalls**
- **Entire earnings retained by women**, promoting economic empowerment

Hot Air Balloon Festival

- **Dates:** January 16 to 18
- **Participation:** 15 international hot air balloons operated by European teams
- **Events:**
  - Morning balloon rides on the outskirts of Hyderabad
  - Evening **Night Glow Balloon shows** at the Parade Grounds

Drone Show and Use of Advanced Technology

- **Venue:** Gachibowli Stadium
- **Dates:** January 16 and 17
- **Key features:**
  - Advanced drones with multi-colour LED lights
  - Synchronized aerial formations
  - FPV (First-Person View) video feeds
- The show represents the integration of **technology with cultural celebrations**

Tourism Promotion and Urban Management Measures

- Tourism Minister stated that tourism is a **key driver of economic and social development**
- The government is leveraging **beautified urban lakes** such as:
  - Bathukamma Kunta
  - Thammidi Kunta
  - Bumruk Dawla
  - Nalla Cheruvu

  for kite-flying activities
- To manage crowds and traffic:
  - Coordination with **Uber and Rapido**
  - Discounted rides
  - Dedicated pick-up and drop-off points

Conclusion

Telangana's Sankranti celebrations demonstrate a **comprehensive approach to cultural tourism**, combining tradition, global participation, women empowerment, safety regulation and modern technology. The strict ban on nylon manja, promotion of local livelihoods, and use of drone technology reflect a **progressive model of festival governance** that balances public safety with economic and cultural objectives.

Student-Built CubeSat on PSLV-C62: A Landmark in India's Space-STEM Ecosystem

Source: Deccan Chronicle

Relevance

- **GS Paper III – Space Technology, Indigenisation of Technology, Scientific Innovation**
- **GS Paper II – Education, Skill Development, Public–Private Collaboration**
- **State PSC (TGPSC / APPSC) – ISRO Missions, CubeSat Technology, STEM Education**

Important Keywords

Prelims

- CubeSat, PSLV-C62, Student Satellite, Low Earth Orbit (LEO), Telemetry, ISRO, Sriharikota, Private Space Start-ups

Mains

- Democratisation of Space Technology, Experiential STEM Education, Public–Private Collaboration in Space Sector, Innovation Ecosystem, Human Capital Development

Why in News?

A group of school students from Hyderabad has designed and built a **flight-ready CubeSat payload** that is scheduled to be launched aboard **Indian Space Research Organisation's PSLV-C62** on **January 12** from **Sriharikota**.The project marks a rare instance of adolescents completing an **end-to-end aerospace engineering cycle**.

A group of school students from the city has designed and built a flight-ready CubeSat payload that is set to be launched aboard PSLV-C62 of the Indian Space Research Organisation (Isro) on January 12 from Sriharikota, marking a rare instance of adolescents completing an end-to-end aerospace engineering cycle. (Photo: X)

Background of the Project

- The mission payload is named **Project SBB-1 (Satellite Blue Blocks-1)**
- Built by **17 students aged 12–15 years** from Blue Blocks Montessori School, Tellapur
- Development period: **five months**
- CubeSat size: **10 cm × 10 cm (1U CubeSat standard)**

Technical Features of the Student-Built CubeSat

The CubeSat has been designed to function in **Low Earth Orbit (~450 km)** and includes:

- **Magnetometer**
- **Accelerometer**
- **Gyroscope**
- Environmental sensors for **temperature, humidity and pressure**
- Custom-written firmware for **real-time telemetry**
- Focus on studying **thermal behaviour in space vacuum**

This demonstrates hands-on exposure to **space-grade electronics, sensor integration and debugging**.

Role of Private Space Start-ups

- Technical mentorship was provided by **TakeMe2 Space**, a Hyderabad-based aerospace start-up
- Adult intervention was deliberately kept **minimal**
- Students worked **from first principles**, not pre-assembled kits

This reflects the growing role of **private players in India's space education ecosystem**.

Institutional and Administrative Process

- The **launch manifest** for the CubeSat was formally signed on **January 6**
- Payload integration was cleared after administrative and technical checks
- The satellite was accepted for integration with **PSLV-C62**

This highlights ISRO's openness to **non-traditional payloads**, including educational satellites.

Educational and Skill Development Significance

The project showcases:

- Experiential learning beyond textbook-based STEM education
- Early exposure to **systems engineering, coding, electronics and mission planning**
- Proof that **age is not a barrier** to advanced technological competence

It aligns with India's goals of creating **future-ready scientific human capital**.

National and Global Significance

- Attracts **international attention** in education and innovation circles

- Project methodology invited for presentation at the **Nobel Peace Centre, Oslo**
- Student team selected to present a technical review at the **AMI Conference, Mexico**

This enhances India's **soft power in science and education diplomacy**.

Link with India's Space Sector Reforms

The initiative complements:

- Opening up of the space sector to **private and academic participation**
- Promotion of **IN-SPACe-enabled innovation**
- Growth of **NewSpace India** and downstream space applications

Challenges

- Ensuring safety and reliability of student-built payloads
- Limited access to advanced testing facilities
- Scaling such initiatives beyond elite institutions

Way Forward

- Institutionalise **student satellite programmes** with ISRO support
- Integrate CubeSat development into **school and undergraduate curricula**
- Encourage start-up–school–ISRO collaboration models
- Provide shared access to testing and simulation facilities

Conclusion

The launch of a **student-built CubeSat on PSLV-C62** marks a transformative moment in India's space journey. It reflects the **democratisation of space technology**, the strength of India's innovation ecosystem, and the potential of **experiential STEM education** to produce globally competitive scientific talent at a young age.

Ancient Palm-Leaf Manuscripts Guide Revamp of Medaram Temple, Telangana

Source: Deccan Chronicle

Relevance: (TGPSC) – Medaram Jathara, Tribal Culture, Telangana Heritage

Important Keywords

Prelims

- Medaram Jathara, Sammakka–Saralamma, Koya Tribe, Palm-Leaf Manuscripts, Gottu-Gotra System, Mulugu, Adivasi Heritage

Mains

- Indigenous Knowledge Systems, Tribal Cosmology, Nature-Based Worship, Cultural Sustainability, Living Heritage, State-Led Heritage Conservation

Why in News?

A. Revanth Reddy is inaugurating a landmark modernisation project of the **Sammakka–Saralamma Temple** at Medaram in Tadvai mandal of Mulugu on January 19. The ₹251-crore project is unique for being redesigned using **thousand-year-old palm-leaf manuscripts**, blending Adivasi history with contemporary architectural techniques.

Background of the Temple and the Project

- Medaram is the site of the **Sammakka–**

Saralamma Jathara, often described as the *Telangana Kumbh Mela*

- It is one of the largest tribal congregations in the world
- The temple complex has been reimagined as a **permanent stone structure** to preserve Adivasi traditions for centuries
- The project integrates history, spirituality and sustainability

Key Features of the Temple Revamp

- The redesign is guided by **ancient palm-leaf manuscripts discovered in mountain caves**, which chronicle early Koya kingdoms, clan systems and sacred spatial layouts.
- The project cost **₹251 crore** and is designed to last for **at least 1,000 years**, using durable stone structures instead of temporary installations.
- The architectural layout follows the **Gottu–Gotra system**, a nature-based social structure dividing the Koya community into **three to seven Gottus**, each associated with a specific **animal or tree**, reflecting ecological balance.
- A **40-foot entrance arch** features the **one-horned antelope**, sacred to the **Bandani clan (fifth Gottu)**, flanked by bison horns and peacock-feather motifs symbolising Adivasi identity.
- Pillars depict a sacred procession of clan

totems:
    - **Rhinoceros** (fourth Gottu)
    - **Bull** (third Gottu)
    - **Elephant** (sixth Gottu)
    - **Lion**, representing the **Siddaboina clan**, which traditionally carries the goddess from Chilakalagutta
- A carving of the **Thootha Kommu (tribal horn)** symbolises the divine sound announcing the arrival of the goddesses.
- Over **7,000 stone carvings** and **eight grand arches** transform the complex into a **living museum of Adivasi culture**.
- Eight massive pillars around the sacred platforms depict:
    - **340 carvings** of Sammakka's Siddaboina clan lineage
    - **341 carvings** representing Saralamma's third Gottu lineage
- Symbols of **Pagididda Raju and Govinda Raju** are carved on a **turtle-shaped base**, symbolising the foundation of the world and the four guardians of the Koya kingdom.
- A **five-metre open space** has been deliberately left for **Putta (anthill) worship** of **Nagulamma**, Sammakka's sister, honouring her traditional snake-form representation.

Associated Sacred Sites & Deities

- The platform of **Jampanna**, Sammakka's son, on the banks of **Jampanna Vagu**, has been modernised.
- New platforms for **Muyanna** and **Vanam Pothuraju** (forest guardian deity) have been constructed following tribal spiritual and scientific guidelines.
- **Polimera Devatalu** (village border gods) have been established to complete the spiritual protection of the Medaram landscape.

Significance

- **Cultural & Civilisational Recognition:** Formal acknowledgement of Adivasi history, manuscripts and cosmology as part of India's living heritage.
- **Nature-Centric Spirituality:** Reinforces worship based on forests, animals, land and ecology rather than idol-centric traditions.
- **Tribal Dignity & Inclusion:** Moves beyond symbolism to permanent architectural representation of indigenous identity.
- **Heritage Conservation Model:** Demonstrates how modern development can be guided by traditional knowledge systems.

Governance and Institutional Role

- Panchayat Raj Minister **Seethakka**, from the Koya community, played a key facilitative role
- Tribal elders and subject experts were consulted throughout the project
- The State formally recognises Medaram Jathara as a **Nature Festival**, not merely a fair
- The initiative reflects **inclusive governance** respecting indigenous belief systems

Way Forward

- Document and digitise tribal manuscripts and oral histories
- Replicate similar models for other indigenous sacred sites
- Integrate tribal heritage conservation with sustainable tourism policies
- Strengthen legal protection for indigenous

cultural landscapes

Conclusion

The Medaram temple revamp represents a rare synthesis of **ancient tribal wisdom and modern state capacity**. By grounding architecture in palm-leaf manuscripts and ecological philosophy, Telangana has set a national benchmark in **heritage governance**, ensuring that Adivasi identity is preserved not as folklore, but as a living, breathing civilisation.

₹5 Crore for Restoration of Four Buddhist Sites in Telangana

Source: Deccan Chronicle

Relevance: TGPSC GR I Paper II – History, Culture and Geography

Important Keywords

Prelims

- Buddhist Sites in Telangana, Dhulikatta, Nelakondapally, Phanigiri, Gajula Banda, Vihara, Stupa, Mahastupa, Chaityagriha, Heritage Conservation, Yadadri Thermal Power Corporation, Telangana Heritage Department

Mains

- Buddhist Heritage Conservation, Archaeological Site Restoration, Cultural Heritage Preservation, Public Awareness of Heritage, Heritage-led Tourism Development

Why in News?

The Telangana Heritage Department has initiated **conservation and restoration works** at four Buddhist heritage sites under the **first phase of a ₹5-crore project** funded by the **Yadadri Thermal Power Corporation**. The initiative aims to protect deteriorating structures, improve facilities, create awareness and attract more visitors.

The sites selected are Dhulikatta in Peddapalli district, Nelakondapally in Khammam district, and Phanigiri and Gajula Banda in Suryapet district.— Internet

Buddhist Sites Selected for Restoration

- **Dhulikatta** – Peddapalli district
- **Nelakondapally** – Khammam district
- **Phanigiri** – Suryapet district
- **Gajula Banda** – Suryapet district

Site-wise Conservation Works

Dhulikatta (Peddapalli district)

- Conservation of the **Vihara complex**
- Restoration of the **Stupa**
- Protection of other associated structures

In need of attention: Buddhist stupa at Dhulikatta village in Peddapalli district remains neglected.

Nelakondapally (Khammam district)

- Conservation of the **Mahastupa**
- Restoration of **Viharas**
- Development of **basic amenities and signages**

Phanigiri (Suryapet district)

- Conservation of the **Mahastupa**
- Restoration of **Chaityagriha**
- Conservation of the **Vihara complex and congregation hall**
- Provision of **basic facilities**

Gajula Banda (Suryapet district)

- **Clearing of premises**
- **Exposure of Buddhist structures**
- Conservation of the **Mahastupa and Viharas**

Buddhism

Founder and Early Life

- **Gautama Buddha** was the founder of Buddhism.
- He belonged to the **Shakya tribe**; his father was the tribal chief.
- Born in **567 BCE** near **Lumbini**, close to **Kapilavastu**.
- Raised in luxury to prevent him from becoming a saint.

Buddha's Teachings

- **Root cause of suffering**: **Desire (Trishna)**.
- Liberation possible by controlling and eliminating desire.

Eightfold Path

Right View, Right Resolution, Right Speech, Right Action, Right Livelihood. Right Effort, Right Mindfulness, Right Meditation

- Emphasized **moral life, discipline, and moderation**.
- Preached in **Pali and Prakrit** (languages of common people).

Organization of Buddhism

- Monks lived in **Sanghas** (monastic orders).
- **Viharas** served as monasteries and centers of learning.
- State patronage led to institutions like **Nalanda**.
- Buddhism spread to **Asia and beyond**

Key Events

- **Renunciation**: After seeing old age, disease, death
- **Enlightenment**: **Bodh Gaya**
- **First Sermon**: **Sarnath**
- **Mahaparinirvana**: **Kushinagara** (80 yrs)

Important Buddhist Sites

- **Sarnath** – First sermon, Dhamekh Stupa
- **Sanchi** – Great Stupa, Ashokan pillar
- **Amaravati** – 2nd century BCE stupa
- **Bharhut** – Early stupa reliefs
- **Nagarjunakonda** – Buddhist center (3rd CE)
- **Ajanta** – Buddhist caves & paintings

Funding and Implementing Agency

- Project cost: **₹5 crore**
- Funding agency: **Yadadri Thermal Power Corporation**
- Implementing department: **Telangana Heritage Department**

Purpose of the Restoration

- Structures had been **deteriorating over time**
- Conservation efforts aim to:
  - **Protect Buddhist heritage structures**
  - **Create public awareness**
  - **Attract more visitors**

Conclusion

The restoration of four Buddhist sites under the ₹5-crore project reflects focused efforts toward **heritage conservation in Telangana**. By preserving key Buddhist structures and improving basic amenities, the initiative seeks to safeguard archaeological heritage while enhancing visitor awareness and engagement.

Bharat Future City Gets a Major UAE Push

Source: Deccan Chronicle

Relevance: Paper IV – Economy and Development State economic vision (Telangana Rising 2047; $3 trillion economy target)

Important Keywords

Prelims

- Bharat Future City, World Economic Forum 2026, Davos, Telangana Rising 2047, Net-Zero Greenfield Smart City, Joint Task Force, United Arab Emirates, Abdulla bin Touq Al Marri, Marubeni, Sembcorp, Reliance Group Vantara

Mains

- Global City Development, Net-Zero Urban Planning, International Collaboration, Sustainable Smart Cities, Urban–Industrial Hubs, State-led Economic Vision, Rural–Agriculture Partnerships, Foreign Investment in Infrastructure

Why in News?

On the sidelines of the **World Economic Forum (WEF) 2026** summit at Davos, **A. Revanth Reddy** held discussions with **Abdulla bin Touq Al Marri**, during which the **United Arab Emirates** expressed its interest in collaborating with the Telangana government on the **Bharat Future City** project. The talks resulted in a broad understanding on developing the project as a top global city.

On the sidelines of the World Economic Forum 2026 summit in Davos, the Chief Minister discussed the mega project with UAE's minister of economy and tourism Abdulla bin Touq Al Marri and reached a broad understanding on the development of the future city. (Image: X)

Discussions at World Economic Forum 2026

The cash-rich **United Arab Emirates** has shown keen interest in partnering with Telangana to develop the Bharat Future City, a flagship project envisioned by the Chief Minister. The discussions took place during the WEF 2026 summit in Davos, where both sides explored avenues for cooperation and speedy implementation of the project.

Proposal for Joint Task Force

During the interaction, **Abdulla bin Touq Al Marri**, known for his role in the UAE's economic diversification and modernisation efforts, suggested the formation of a **joint task force** comprising officials from both the Telangana government and the UAE. The objective of this task force would be to **expedite the implementation** of the Bharat Future City project.

Telangana Rising 2047 Vision

Chief Minister **A. Revanth Reddy** presented the **Telangana Rising 2047** vision, outlining a future-defining roadmap to transform Telangana into a **$3 trillion economy by 2047**. The Bharat Future City project was highlighted as a key component of this long-term development strategy.

Key Features of Bharat Future City

- Envisioned as **India's first Net-Zero Greenfield Smart City**
- Spread over **30,000 acres**
- Planned as a **multi-sectoral, sustainable urban–industrial hub**
- Dedicated spaces for:
  - **Artificial Intelligence**
  - **Education**
  - **Healthcare**
  - **Industries**
  - **Residential and entertainment zones**

Global Partnerships and Ongoing Collaborations

The Chief Minister informed the UAE delegation that **global companies such as Marubeni and Sembcorp** are already on board for the project. He also noted that a **recent MoU with Reliance Group's Vantara** has been signed to establish a **new zoo** in the Bharat Future City.

Proposed Sectoral Cooperation

The UAE minister expressed interest in forging a **strategic partnership between the UAE food cluster and Telangana**, with a focus on strengthening the **rural and agriculture-based economy**.

Participants in the Meeting

The discussions were attended by:

- **D. Sridhar Babu**, IT and Industries Minister
- **Ponguleti Srinivas Reddy**, Revenue Minister
- Senior officials from the Telangana government

Conclusion

The UAE's expression of interest and the proposal to set up a joint task force mark a significant development for the Bharat Future City project. The discussions at WEF 2026 reflect growing international engagement with Telangana's development agenda and reinforce the strategic importance of Bharat Future City within the **Telangana Rising 2047** vision.

Telangana Unveils Next-Gen Life Sciences Policy 2026–30 at Davos

Source: THE HINDU

Relevance

GS Paper II – Government Policies, Governance, International Forums

GS Paper III – Science & Technology, Biotechnology, Industrial Policy, Innovation Ecosystem

Important Keywords

Prelims

- Life Sciences Policy, World Economic Forum (WEF), Genome Valley, Green Pharma City, TG-iPASS, Cell and Gene Therapy, Precision Fermentation, Medical Devices Park, Biomanufacturing

Mains

- Life Sciences Ecosystem, Innovation-led Growth, Global Value Chains, Advanced Therapeutics, Biomanufacturing, R&D Reforms, Skill Development, Public Policy for Innovation

Why in News?

The Telangana Government unveiled the **Next-Gen Life Sciences Policy 2026–30** at the annual meeting of the **World Economic Forum** in Davos. The policy was launched by **A. Revanth Reddy** in the presence of **D. Sridhar Babu**, **Ponguleti Srinivas Reddy**, senior officials and global stakeholders. The policy outlines Telangana's ambition to attract **$25 billion in investments** and generate **five lakh high-quality jobs** by 2030.

Background and Rationale of the Policy

The new policy is intended to serve as a **guiding framework** for Telangana's next phase of growth in the life sciences sector. It marks a strategic shift from a **scale-driven manufacturing model** to a **value-led, innovation-powered growth approach**, aligning the State with global trends in advanced healthcare, therapeutics and bio-manufacturing.

Vision and Targets of the Policy

The core ambition of the Next-Gen Life Sciences Policy 2026–30 is to position Telangana as a **globally integrated life sciences hub** across discovery, development and deployment. The State aims to:

- Rank among the **top five life sciences clusters globally by 2030**
- Attract **$25 billion (₹2 lakh crore) in investments**
- Create **five lakh high-quality jobs**
- Achieve deeper integration into **global life sciences value chains**

Industries and IT Minister **D. Sridhar Babu** noted that Telangana had already attracted **₹73,000 crore in investments over the last two years**, and the new policy significantly raises the State's growth ambition for the coming five years.

Stress on Cross-Border Collaboration

Chief Minister **A. Revanth Reddy** emphasised that the global unveiling of the policy at Davos reflects Telangana's belief that future growth in life sciences will be driven by:

- Cross-border collaboration
- Global capital flows
- Shared innovation agendas

He stated that Telangana is building one of the world's **most trusted and transformational biosciences ecosystems**, with the objective of driving global health impact from the State.

From Supply-Chain Hub to Global Originator

According to the Minister's office, the policy

represents a **deliberate scale-up** in ambition. Telangana seeks to transition from being indispensable to global supply chains to becoming a **global originator of advanced therapies and technology platforms**, especially in areas shaping the future of healthcare and sustainable bio-manufacturing.

Focus on Frontier Science and Advanced Manufacturing

A key pillar of the policy is its focus on **frontier science and next-generation manufacturing platforms**, including:

- Cell and gene therapies
- Peptides
- Precision fermentation
- Other next-generation therapeutic modalities

The policy also aims to strengthen the broader ecosystem covering **clinical research, pharma services, diagnostics, medical electronics and digital health**, positioning Telangana as a preferred global life sciences destination.

Institutional Reforms and R&D Recognition

Special Chief Secretary **Sanjay Kumar** highlighted that the policy is not merely a framework but a **reform-oriented instrument**. A major reform includes:

- Recognition of **R&D units as full-fledged industrial enterprises**, enabling equal access to incentives
- Promotion of breakthrough technologies such as **AI, digital health and next-generation therapeutics**
- Strong emphasis on nurturing skilled talent and high-value scientific activity

This reform reinforces Telangana's commitment to innovation-driven growth.

$100 Million Life Sciences Innovation Fund

Telangana Lifesciences CEO **Shakthi M. Nagappan** announced the creation of a **dedicated Life Sciences Innovation Fund**:

- Initial corpus: **₹100 crore ($12 million)**
- Scalable up to: **₹1,000 crore ($100–111 million)**

The fund is intended to catalyse **early- and growth-stage innovation**, with a particular focus on **deep-tech ventures and biotherapeutics**. Another major proposal is the establishment of the **Telangana School of Life Sciences**, envisioned as a university of global excellence for research, education and future-ready talent development.

Infrastructure Backbone of the Policy

Policy implementation will be supported by **globally benchmarked infrastructure**, including:

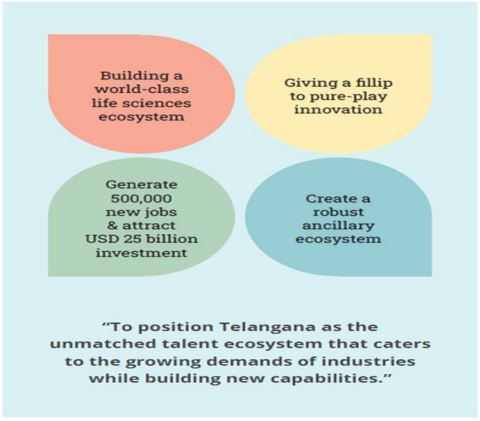
- **Green Pharma City**
- **Ten Pharma Villages**, each spanning **1,000–3,000 acres** along the ORR to promote decentralised and inclusive industrial growth
- Expansion of **Genome Valley**
- Further strengthening of the **Medical Devices Park**
- Setting up of a **Bio-Innovation and Bio-Manufacturing Cluster** with the Government of India

Key Provisions of the Next-Gen Life Sciences Policy 2026–30

- Creation of world-class infrastructure across the full life sciences value chain
- Faster clinical trial approvals and disease-specific clinical registries
- **TG-iPASS** as a single-window system with time-bound and deemed approvals

- Permission for **24×7 operations** in designated life sciences parks, subject to safety norms
- Establishment of a dedicated **Life Sciences Innovation Fund**, scalable to ₹1,000 crore

④ Telangana Life Sciences Mission



Conclusion

The global launch of Telangana's Next-Gen Life Sciences Policy 2026–30 at Davos marks a decisive step in the State's evolution from a manufacturing powerhouse to an **innovation-led global life sciences hub**. With ambitious investment targets, strong institutional reforms, focus on frontier technologies, and globally benchmarked infrastructure, the policy aims to firmly embed Telangana in the future of global healthcare, advanced therapeutics and sustainable bio-manufacturing.

Telangana Signs Big Deals in Davos: Building a Future-Ready Economy under Telangana Rising 2047

Source: Deccan Chronicle

Relevance: TGPSC GR I Paper–IV: Economy and Development

Important Keywords

Prelims

- World Economic Forum (WEF), MoU, Telangana Rising 2047, Bharat Future City, Global Capability Centre (GCC), Small Modular Reactor (SMR), Green Manufacturing

Mains

- Industrial Ecosystems, Foreign Investment, AI & Semiconductors, Clean Energy Transition, Smart Cities, Net-Zero Development, Cooperative Federalism

Why in News?

Telangana achieved a major milestone at the **World Economic Forum 2026** by signing multiple Memoranda of Understanding (MoUs) and securing **investment commitments worth nearly ₹30,000 crore**. These agreements reinforce Telangana's emergence as a globally competitive investment destination.

Context: Telangana's Global Investment Strategy

The Davos outcomes are aligned with the **Telangana Rising 2047** vision, which aims to transform the State into a **$3-trillion economy by**

2047. They follow the **Telangana Rising Global Summit (December 2025)** held at **Bharat Future City**, where investment commitments of **₹5.75 lakh crore** were secured, signalling sustained global confidence in Telangana's governance and growth model.

Scale of Investments at WEF 2026

- Total commitments at Davos: **~₹30,000 crore**
- Sectoral spread: Manufacturing, AI, semiconductors, clean energy, aerospace, FMCG, startups and urban infrastructure
- Nature of investments: Long-term, high-impact partnerships rather than short-term transactions

Manufacturing and Industrial Expansion

A major MoU was signed with **Rashmi Group** involving an investment of **₹12,500 crore** to establish a steel production unit in Telangana.

Key implications:

- Employment generation: **~12,000 direct and indirect jobs**
- Strengthening of the State's manufacturing ecosystem
- Adoption of:
  - Green manufacturing practices
  - Energy-efficient steelmaking
  - Circular economy and waste heat recovery
- Alignment with Telangana's **net-zero aspirations**

AI, Semiconductors and Digital Innovation

Telangana signed an MoU with **Blaize**, a California-based firm specialising in energy-efficient AI hardware and full-stack software.

Focus areas:

- Electronics and semiconductors
- Artificial intelligence and next-generation computing
- Expansion of Blaize's **R&D and engineering centre in Hyderabad**

This partnership supports Telangana's ambition to become a **global hub for AI innovation and advanced hardware development**.

Startup Ecosystem and Global Market Integration

An MoU with **Dubai Multi Commodities Centre** aims to promote:

- Startup development
- Cross-market exposure
- Global mentorship and investment access

This strengthens Hyderabad's position as a **global startup hub** and enhances international integration of Telangana's innovation ecosystem.

Clean Energy and Sustainability Initiatives

Slovakia-based **NUkler Products** submitted an **Expression of Interest** for a **Small Modular Reactor (SMR)**-based clean energy project.

- Capacity: **Up to 300 MW**
- Estimated investment: **₹6,000 crore**
- Strategic significance:
  - Advanced nuclear clean energy
  - Long-term support to Telangana's **net-zero transition**

Aerospace, FMCG and GCC Investments

- **Sargad (USA)**
  - Investment: **Up to ₹1,000 crore** over 3–5 years
  - Focus: Advanced manufacturing and **aviation MRO facility**
  - Linked to upcoming airports in

Warangal and Adilabad

- **AB InBev**
  - Expansion of existing Telangana facility
  - Strengthens industrial base and revenue generation
- **Unilever**
  - Exploring a **Global Capability Centre (GCC)** in Hyderabad
  - Alignment with renewable energy, water stewardship and circular economy
- **L'Oréal**
  - Decision to establish the **world's first beauty-tech GCC** in Hyderabad
  - Expected inauguration: **November 2026**
  - Diversifies Telangana's GCC ecosystem into high-end technology domains

Urban Transformation and Bharat Future City

Telangana and the **United Arab Emirates** agreed to collaborate on developing **Bharat Future City** as a top global city.

Key features:

- Large-scale urban infrastructure development
- Smart city planning and sustainability
- Food security and rural-urban integration
- Proposed joint task force for faster implementation

Bharat Future City is envisioned as **India's first net-zero greenfield smart city**, spread over **30,000 acres**.

Strategic Significance for Telangana

- Demonstrates a **multi-sectoral growth strategy**
- Balances:
  - Industrial expansion
  - Digital innovation
  - Sustainability
  - Human capital development
- Positions Telangana as a **long-term strategic partner** for global enterprises

Conclusion

The MoUs and investment commitments secured at Davos 2026 underline Telangana's transformation into a **future-ready, globally integrated economy**. By aligning manufacturing, AI, clean energy and urban development with sustainability and innovation, Telangana has reinforced the credibility and global resonance of its **Telangana Rising 2047** vision, marking a decisive step toward long-term, inclusive economic growth.

New Zealand's Māori Tribe Performs Haka at Medaram Jatara, Telangana

Source: Deccan Chronicle

Relevance: History & Culture of Telangana

Important Keywords

Prelims

- Haka, Māori Tribe, Medaram Jatara, Sammakka–Saralamma, Indigenous Communities, Cultural Exchange Programme, Tribal Festival, Tadvai Mandal, Warangal, Bangaram (Jaggery), Adivasi Traditions

Mains

- Indigenous Cultural Solidarity, Tribal Identity, People-to-People Diplomacy, Cultural Soft Power, Indigenous Knowledge Systems, Ancestral Worship, Nature-Centred Worldview, Cross-

Cultural Exchange, Cultural Continuity, Global Indigenous Connections

Why in News?

In a rare moment of cross-continental cultural exchange, a delegation from **New Zealand's indigenous Māori community** visited Telangana and performed the **Haka** at the **Sammakka–Saralamma temple** during the famed **Medaram Jatara**. The event symbolised cultural solidarity between indigenous communities of the Pacific and the Deccan plateau.

The Event at Medaram

The Māori delegation performed the Haka at **Medaram**, located in **Tadvai mandal**, in the presence of thousands of devotees and visitors attending the Sammakka–Saralamma Jatara. The powerful performance immediately drew attention for its intensity, symbolism, and emotional resonance.

Traditionally, the Haka is a **ceremonial challenge or war dance**, characterised by:

- Powerful facial expressions
- Strong, rhythmic body movements
- Vocal chants meant to inspire courage, unity, and collective strength

At Medaram, the performance resonated strongly with the spirit of the Jatara, which itself is rooted in tribal traditions, collective memory, and ancestral worship.

Cultural Exchange Programme

The visit was organised as part of a **Telangana–New Zealand cultural exchange programme**, reflecting growing efforts to promote people-to-people ties and indigenous cultural dialogue beyond formal diplomatic channels.

Telangana's Panchayat Raj Minister **Danasari 'Seethakka' Anasuya**, who invited the Māori delegation, actively participated in the event and joined the artists during the Haka performance.

Shared Indigenous Worldview

Speaking on the occasion, the Minister highlighted the **common roots and shared values** of indigenous communities across continents. She noted that:

- Borders and languages do not divide tribal societies
- Indigenous communities, whether in Telangana or New Zealand, share a deep bond with:
  - Nature
  - Forest ecosystems
  - Ancestral traditions and collective memory

Her remarks underscored the idea that indigenous cultures across the world are connected by similar worldviews, ecological ethics, and community-oriented traditions.

Darshan and Cultural Immersion

Following the performance, the Minister accompanied the Māori delegation for a **formal darshan** at the Sammakka–Saralamma altars. During this interaction, she explained:

- The legend of **Goddesses Sammakka and Saralamma**
- The spiritual and cultural significance of the **biennial Medaram Jatara**, regarded as one of the largest tribal gatherings in the world

The visitors were also honoured with the traditional offering of **Bangaram (jaggery)**, a ritual symbolising respect, hospitality, and cultural acceptance.

Significance of the Moment

The exchange marked a rare and meaningful interaction between two indigenous traditions separated by geography but united by shared cultural ethos. The Māori Haka at Medaram became a powerful symbol of:

- Indigenous solidarity
- Cultural continuity
- Respect for ancestral traditions

It highlighted how traditional practices can serve as bridges between societies, fostering mutual understanding beyond modern political and geographical boundaries.

Conclusion

The performance of the Haka by New Zealand's Māori tribe at the Sammakka–Saralamma Jatara was more than a cultural spectacle—it was a reaffirmation of shared indigenous identity across continents. By bringing together the traditions of the Pacific and the Deccan, the event showcased the enduring relevance of tribal cultures and their capacity to connect humanity through ritual, nature, and collective memory.

Telangana Heading Towards an Ageing State: Rising Elderly Population and Fiscal Challenges

SOURCE: THE HINDU

Relevance: **Paper–IV: Economy and Development Telangana economy: Fiscal pressure due to ageing population**

Important Keywords

Prelims

- Ageing State, Demographic Transition, Old-Age Dependency Ratio, Working-Age Population, Social Sector Expenditure

Mains

- Population Ageing, Fiscal Pressure, Shrinking Tax Base, Pension and Healthcare Reforms, Labour Force Participation

Why in News?

A recent study by the **Reserve Bank of India (RBI)** indicates that **Telangana** is steadily moving towards the category of **ageing States**, with the proportion of people aged **60 years and above** expected to approach **15% by 2031** and cross **17% by 2036**. This demographic transition has significant implications for public finance, labour markets, and social sector planning.

What Is an 'Ageing State'?

An **ageing State** is defined as one where **15% or more of the total population is aged 60 years and above**. Such States typically face:

- Higher healthcare and pension expenditure
- Rising dependency ratios
- Slower growth in the working-age population

Rising Elderly Population in Telangana

Since the formation of the State, Telangana has witnessed a **steady rise in the share of elderly population**.

Share of Population Aged 60 Years and Above

Year	Percentage
2016	10.1%
2026	12.5%
2031	14.5% (projected)
2036	17.1% (projected)

According to the RBI's *State Finances – A Study of Budgets 2025–26*, Telangana is currently in an **intermediate demographic stage**, but is likely to join States such as **Tamil Nadu** and **Kerala**, which are already classified as ageing States, by the mid-2030s.

Shrinking Working-Age Tax Base

Population ageing places **unprecedented pressure on public resources**:

- The **working-age population (15–59 years)** grows more slowly
- The **tax base shrinks**, affecting revenue mobilisation
- Government expenditure rises due to pensions, healthcare, and social security

The RBI study highlights that while **youthful States** enjoy a demographic dividend and stronger revenue prospects, the **window of opportunity narrows** for ageing and intermediate States like Telangana.

Rising Dependency Ratio

Ageing is accompanied by a rising **old-age dependency ratio**, defined as the number of people aged 60+ per 100 working-age persons.

Old-Age Dependency Ratio in Telangana

Year	Dependency Ratio
2016	15.2%
2026	18.4%
2031	21.5% (estimated)
2036	25.7% (estimated)

A higher dependency ratio implies:

- Increased demand for healthcare and welfare services
- Greater fiscal stress on State budgets
- Reduced per capita availability of productive labour

Fiscal and Governance Challenges Ahead

The RBI underscores that divergent age structures across States create **differential fiscal pressures**. For Telangana, the challenge lies in managing:

- Rising committed expenditure on social sectors
- Lower growth in tax revenues
- The need to maintain economic dynamism despite a slowing labour supply

What Can States Like Telangana Do?

For **intermediate States**, the RBI suggests a **forward-looking policy approach**, including:

- **Balancing growth-enhancing investments** with gradual expansion of healthcare and social security systems
- **Encouraging higher labour force participation**, particularly among:
  - Women
  - Older workers
- **Productivity-oriented reforms**, such as:
  - Technology adoption
  - Innovation
  - Industrial diversification

These measures can help offset the economic slowdown associated with demographic ageing and ease long-term fiscal pressures.

Conclusion

Telangana's demographic transition signals a shift from a relatively youthful profile towards an **ageing society** over the next decade. While this transition brings fiscal and governance challenges, early policy preparation—focused on productivity, labour participation, and social sector readiness—can help the State manage ageing without compromising growth. The coming years will be crucial in determining how effectively Telangana navigates this demographic turning point.

AIG Launches India's First H. pylori Breath Test

Source: Deccan Chronicle

Important Keywords

Prelims

- Helicobacter pylori (H. pylori), Urea Breath Test, PYtest, Non-invasive Diagnostic Test, Gastritis, Peptic Ulcer Disease, Gastric Cancer, MALT Lymphoma, Sensitivity, Specificity

Mains

- Preventive Healthcare, Non-Invasive Diagnostics, Gastrointestinal Diseases in India, Early Disease Detection, Antibiotic Resistance in H. pylori, Evidence-Based Medicine, Patient-Centric Healthcare, Public Health Innovation, Clinical Validation, Translational Medical Research

Why in News?

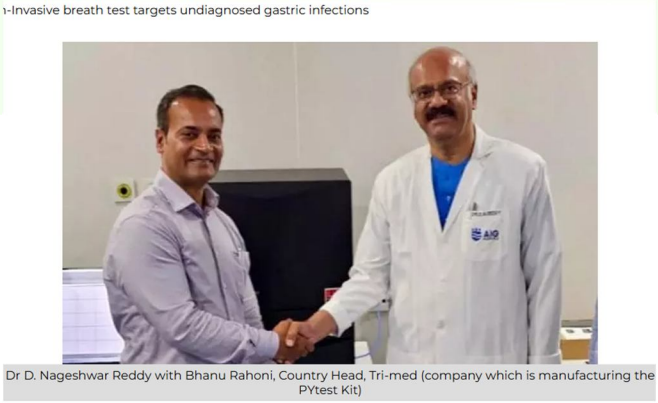
AIG Hospitals has launched **PYtest**, **India's first clinically validated non-invasive breath test** for detecting *Helicobacter pylori* infection. The test marks a major advance in gastrointestinal diagnostics by enabling early, accurate, and patient-friendly detection of a highly prevalent but often underdiagnosed gastric infection.

What is Helicobacter pylori and Why It Matters?

Helicobacter pylori (H. pylori) is among the **most common bacterial infections in India** and is strongly associated with:

- Chronic gastritis
- Peptic ulcer disease

- Gastric cancer
- MALT lymphoma



Dr D. Nageshwar Reddy with Bhanu Rahoni, Country Head, Tri-med (company which is manufacturing the PYtest Kit)

Despite its high prevalence, diagnosis in India has largely depended on **invasive procedures** such as endoscopy and biopsy-based tests, resulting in delayed or missed detection in many patients.

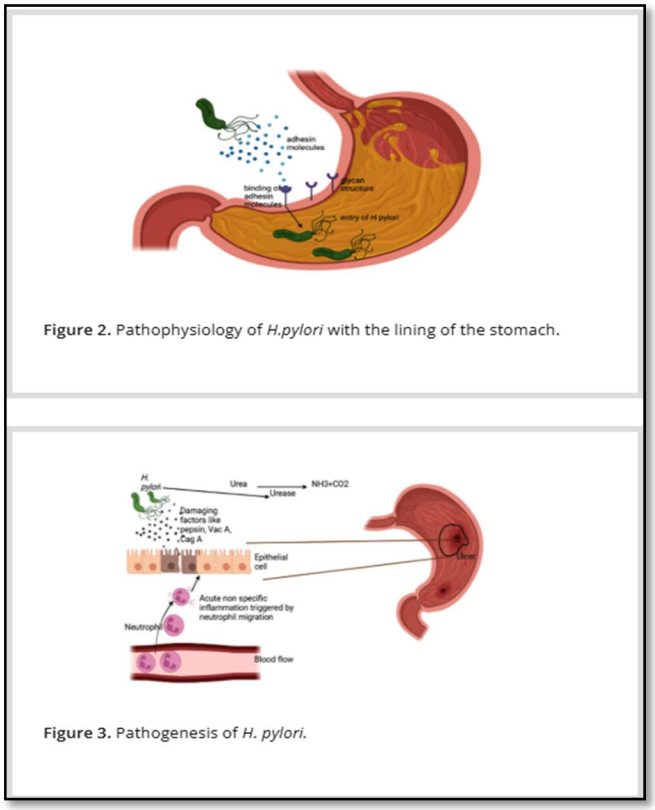


Figure 2. Pathophysiology of *H.pylori* with the lining of the stomach.

Figure 3. Pathogenesis of *H. pylori*.

What is PYtest?

PYtest is a **urea breath test** developed by Nobel Laureate **Barry Marshall**, who co-discovered *H. pylori* and its role in gastric diseases.

Key Features of PYtest

- **Non-invasive** (no endoscopy or anaesthesia)
- Provides **results within minutes**
- Confirms **presence of infection** and assesses **bacterial activity level**
- Cost: **₹4,500**

The test is particularly useful for patients experiencing:

- Persistent acidity
- Bloating
- Abdominal pain
- Constipation
- Frequent indigestion and related gastric symptoms

Clinical Validation and Accuracy

PYtest has been **clinically validated in Indian patients** through a **Phase-3 study**, demonstrating:

- **Sensitivity:** 93.8%
- **Specificity:** 97.8%
- **Safety:** No serious adverse events reported

These results confirm the test's **high accuracy, safety, and suitability** for the Indian population.

How PYtest Improves on Conventional Methods

Traditional diagnostic approaches for H. pylori include:

- Endoscopy
- Biopsy-based rapid urease tests

These methods are:

- Invasive
- Anxiety-inducing for patients
- Time-consuming

PYtest overcomes these limitations by offering a **quick, painless, and patient-friendly alternative**, encouraging early diagnosis and preventive care.

Expert Views

- Speaking at the launch, **Dr D. Nageshwar Reddy**, Chairman of AIG Hospitals, described PYtest as a **milestone in gastrointestinal healthcare** in India. He emphasised that removing the fear associated with invasive procedures would significantly improve early detection and prevention of serious gastric diseases.
- **Dr Rakesh Kalapala**, Senior Consultant Gastroenterologist and in-charge of the GI Motility Centre, highlighted that Indian trials demonstrated not only diagnostic accuracy but also **patient comfort and efficiency**, calling PYtest a **transformative, evidence-based diagnostic tool**.

Research Collaboration and Institutional Strengthening

The launch of PYtest is part of a **strategic collaboration** between **Prof. Barry Marshall** and **AIG Hospitals** to advance H. pylori research in India.

As part of this initiative:

- A **Prof. Barry Marshall H. pylori Research Centre** has been established at AIG
- Focus areas include:
  - Bacterial pathogenesis
  - Antibiotic resistance patterns
  - Development of India-specific diagnostic tools

A dedicated clinical team of gastroenterologists has been constituted to implement PYtest across AIG Hospitals' **Gachibowli** and **Banjara Hills** branches.

Public Health Significance

Given the **high burden of undiagnosed gastric infections** in India, PYtest has the potential to:

- Improve early detection
- Reduce complications such as ulcers and gastric cancer
- Enable evidence-based treatment decisions
- Lower dependence on invasive diagnostic procedures

Conclusion

The introduction of PYtest by AIG Hospitals represents a **significant leap in India's gastrointestinal diagnostics landscape**. By combining scientific innovation, clinical validation, and patient comfort, the test offers a practical solution to a widespread public health challenge. PYtest not only strengthens India's diagnostic capabilities but also reinforces the shift towards **preventive, non-invasive, and patient-centric healthcare**.

Telangana Plays a Key Role in India's Economic Growth: Economic Survey 2025–26

Source: Deccan Chronicle

Relevance: TGPSC GR I Paper-IV: Economy and Development

Important Keywords

Prelims:

- Manufacturing Employment, Services Sector, Inflation Moderation, Cultivated Area Expansion, Irrigation Coverage, Bhu Bharati Portal, Digital Land Governance, Secure Land Titles, Public Distribution System (PDS), GPS Vehicle Tracking, Aadhaar Seeding, ePoS, WE-Hub, Labour Reforms

Mains:

- State-Led Economic Growth, Cooperative Federalism, Manufacturing–Services Balance, Land Governance Reforms, Digital Public Infrastructure, Inflation Control and Macroeconomic Stability, Agricultural Resilience, Climate Stress in Agriculture, Welfare Delivery Reforms, Services-Led Growth Model, Women's Economic Empowerment, Ease of Doing Business, Regulatory Simplification

Why in News?

The **Economic Survey 2025–26** has highlighted **Telangana** as a major contributor to India's economic momentum, citing its strong performance in **manufacturing, services, agriculture, welfare delivery, land governance, and regulatory reforms**.

Manufacturing and Industrial Employment

The Survey notes that Telangana is among **seven States accounting for nearly 60% of India's total manufacturing employment**, with the State contributing **around 5%** on its own. This reflects:

- Expansion of industrial clusters,
- Improved ease of doing business,
- Growing investor confidence supported by regulatory simplification.

Land Governance and Institutional Reforms

Telangana has gained **national recognition for land governance reforms**, particularly through the **Bhu Bharati integrated digital land platform**, which connects:

- Revenue,
- Stamps, and
- Registration departments.

This system enhances **transparency, secure land titles, and dispute reduction**, enabling land to function as productive capital. The Survey recognises this model as a best practice for modern land administration, directly supporting investment and infrastructure development.

Macroeconomic Stability and Inflation Control

A major macroeconomic highlight is the **sharp moderation in inflation**, which declined from **8.61% to just 0.20% in 2025–26**. This has:

- Provided substantial relief to consumers,
- Strengthened household purchasing power,
- Improved business sentiment by lowering input cost pressures,
- Enhanced overall economic stability in the State.

Agricultural Expansion and Irrigation

The Survey acknowledges Telangana's **transformational growth in agriculture**, particularly through irrigation-led expansion:

- Cultivated area increased from **1.31 crore acres (2014)** to **2.2 crore acres by FY23**.
- Improved irrigation coverage has strengthened **crop security** and enabled **multiple cropping**.

While yields in rice remain below the national average due to **climatic stresses** such as heat waves, unseasonal rains, and dry spells, the Survey highlights Telangana's strong potential for improvement through:

- Climate-resilient seed varieties,
- Better crop planning,
- Alignment with agro-climatic conditions.

Irrigation expansion is identified as a critical enabler for future productivity gains.

Welfare Delivery and Public Distribution System

Telangana stands out as one of the **six States** to have fully implemented **GPS-based vehicle location tracking** for foodgrain transportation under the Public Distribution System (PDS). These complements:

- Aadhaar seeding,
- ePoS-enabled fair price shops,
- End-to-end digital transactions.

These reforms have significantly **reduced leakages**, improved subsidy targeting, and strengthened transparency in welfare delivery.

Services-Led Growth and Urban Economy

Alongside **Karnataka, Maharashtra, and Tamil Nadu**, Telangana accounts for a substantial share of India's **services output**, driven by:

- Information Technology,
- Financial services,
- Professional and knowledge-based services.

This services-led growth has supported:

- Employment generation,
- Urban development,
- Economic diversification, positioning Telangana as a major hub in India's modern services economy.

Women's Economic Empowerment

The Survey highlights **WE-Hub**, Telangana's flagship initiative for women entrepreneurs. WE-Hub:

- Connects women-led enterprises with start-up ecosystems,
- Facilitates access to investors and institutional support,
- Operates through a public–private partnership model.

This initiative has been recognised as an innovative approach to expanding women's participation in **high-value economic activities**.

Labour and Regulatory Reforms

On the regulatory front, Telangana has been acknowledged for:

- Progressive **labour reforms**, including removal of restrictions on women working in a wider range of industries,
- Streamlining **fire safety regulations** through accredited third-party mechanisms.

These measures have reduced compliance burdens while maintaining safety standards, further improving the business environment.

Conclusion

The Economic Survey 2025–26 underscores Telangana's emergence as a **multi-dimensional growth engine** within India's federal economy. Its success lies in combining **industrial employment**, **services-led growth**, **irrigation-driven agriculture**, and **technology-enabled governance**. By strengthening macroeconomic stability, promoting inclusive welfare delivery, and advancing institutional reforms, Telangana has positioned itself as a critical contributor to India's long-term growth and development trajectory.

NEWS IN SHORT

Mount Bur Ni Telong

Indonesian authorities have **raised the alert level** for **Mount Bur Ni Telong** following a **surge in volcanic activity**, marked by frequent seismic events, raising concerns of a possible eruption.

- The volcano is located in **Bener Meriah Regency, Aceh Province (Indonesia)**.
- Monitoring agencies have recorded **multiple shallow and deep volcanic earthquakes**, indicating rising magma movement.
- **Evacuation of nearby residents** has begun as a precautionary measure.
- Authorities have warned people to stay away from **fumaroles and solfataras** due to the risk of **toxic gas emissions**, especially during bad weather.
- The alert comes amid **recent floods and landslides** in the region, increasing disaster vulnerability.

About Mount Bur Ni Telong

- **Type:** Stratovolcano
- **Height:** 2,624 metres
- **Location:** Western Aceh, Sumatra Island, Indonesia
- **Geological setting:** Part of the **Pacific Ring of Fire**, a highly seismically active zone
- **Volcanic behaviour:** Characterised by explosive eruptions, seismic swarms, and gas emissions

Launch of Land Stack & Glossary of Revenue Terms (GoRT)

Dr. Chandra Sekhar Pemmasani, Minister of State for Rural Development and Communications, launched **'Land Stack'** and released the **'Glossary of Revenue Terms (GoRT)'** on **31 December 2025** in **New Delhi**, marking a major push towards **transparent, digital, and citizen-centric land governance** under the **Digital India Land Records Modernisation Programme (DILRMP)**.

- **Land Stack** launched on a **pilot basis** in **UT Chandigarh and Tamil Nadu**.
- Initiatives aim to improve **Ease of Living**, transparency, and trust in land administration.
- Aligns India's traditional land record systems with **modern digital governance**.

About Land Stack

- **Nature:** Integrated, **GIS-based digital platform** for land and property data
- **Modelled on:** Global best practices (e.g., Singapore, UK, Finland)

- **Purpose:** Overcomes fragmented land information spread across departments by offering **single-window access** to citizens and government agencies.

Key Benefits:

- Enables **informed decision-making** for citizens
- Enhances **convenience, transparency, and trust**
- Reduces risk of purchasing **unauthorised or non-compliant properties**
- Improves **inter-departmental coordination**
- Supports **data-driven governance** in land administration
- Represents a major **e-Governance reform** under DILRMP

About Glossary of Revenue Terms (GoRT)

India's land administration uses varied terminology shaped by historical systems—**Todar Mal's reforms** and British-era settlements like **Ryotwari** and **Mahalwari**—leading to inconsistencies across States.

- **Prepared by:** Department of Land Resources (DoLR)
- **In collaboration with:** Centre of Excellence in Land Administration and Management (CoE-LAM), **YASHADA, Pune**

Key Highlights:

- Explains land revenue terms in **Vernacular languages, Hindi, English, and Roman scripts**
- Aims to **harmonise terminology** nationally **without replacing State-specific terms**
- Makes land data **comparable and interoperable** across India
- Serves as an **authoritative reference** for:
  - Revenue officials
  - Policymakers
  - Judicial authorities
  - Citizens

BSNL Launches Voice over WiFi (VoWiFi) Nationwide

Bharat Sanchar Nigam Limited (BSNL) has announced the **nationwide rollout of Voice over WiFi (VoWiFi)** across **all telecom circles** (1 January 2026), improving call quality in low-signal areas.

- Enables **voice calls and SMS over Wi-Fi** using the **existing mobile number** and phone dialer.
- **IMS-based** service with **seamless handover** between Wi-Fi and mobile networks.
- Works in **homes, offices, basements, rural and remote areas** with stable Wi-Fi (incl. **BSNL Bharat Fiber**).
- **Free of cost**; helps **reduce network congestion**.
- Supported on **most modern smartphones** (enable *Wi-Fi Calling*).

About Voice over WiFi (VoWiFi)

- **What it is:** Technology that allows voice calls over **Wi-Fi networks**, bypassing cellular signals.
- **Also called: Wi-Fi Calling**.
- **How it works:** Uses **VoIP** to transmit voice as digital packets over the internet; built into the phone OS—no third-party apps needed.
- **Benefits:** Clear connectivity in weak-signal zones; reliable, cost-free calling with existing number.

Cellulitis

Cellulitis is a **common bacterial skin infection**, mainly caused by **Streptococcus** and **Staphylococcus** bacteria, which enter the body through **broken skin or wounds**.

- Affects **subcutaneous tissues** beneath the skin

- Commonly involves **legs, feet, and toes** (may also affect face, arms, hands)
- **Not contagious**, but can spread if untreated
- Higher risk in people with **skin injuries, diabetes, weak immunity, poor hygiene**

Symptoms

- Redness or **skin discoloration**, warmth
- **Swelling, tenderness, pain**
- Fever, chills, fatigue
- Blisters, skin dimpling, fluid-filled lesions
- Severe cases may spread to **lymph nodes and bloodstream**

Treatment

- **Oral antibiotics** in most cases
- **Hospitalisation & IV antibiotics** for severe infections
- Completing the **full antibiotic course is essential**

Prevention

- Maintain **good skin hygiene**
- Clean and cover small wounds promptly
- Keep skin dry; trim nails regularly
- Wear clean clothes; wash hands frequently

World's Rarest 'Galaxy Frogs' Presumed Dead

A recent study has reported that **seven individuals of the rare galaxy frog** have **vanished and are presumed dead** due to disturbances caused by **photo tourism** in the **Western Ghats (Kerala)**.

- The frogs disappeared after **multiple photographers repeatedly disturbed their microhabitat**.
- Activities included **overturning logs, handling frogs with bare hands, and prolonged camera flash exposure**.
- Such disturbances likely affected **feeding, respiration, and breeding success**.

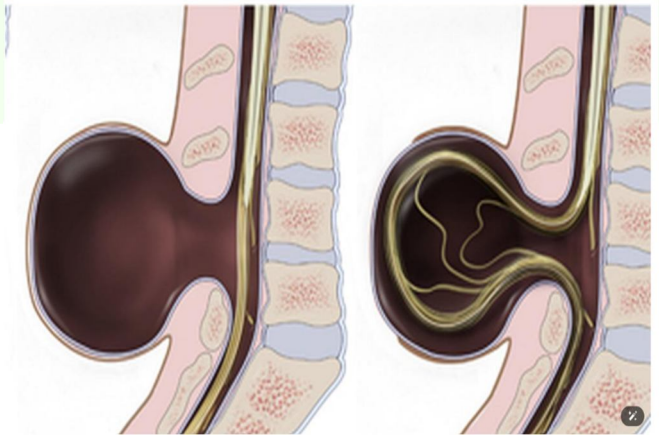
About Galaxy Frog (Melanobatrachus indicus)

- **Endemic to:** Western Ghats, Kerala
- **Habitat:** Under rotten logs in moist forest patches
- **Size:** ~2–3.5 cm
- **IUCN status: Vulnerable**
- Communicates **without vocal calls**; relies on body patterns

Spina Bifida

While several countries have launched **systematic awareness programmes** to prevent Spina Bifida through **folic acid supplementation**, **India has yet**

to implement such large-scale preventive initiatives.



About Spina Bifida

- Spina Bifida is a **congenital defect of the spinal cord** that can lead to **severe paralysis in childhood**.
- It occurs when the **spine and spinal cord fail to develop completely** during the early embryonic stage.
- The disorder develops **in early pregnancy** and varies widely in severity, from mild to disabling forms.
- **Causes:** Not definitively known; believed to arise from a mix of **genetic, nutritional (folate deficiency), and environmental factors**.

Types of Spina Bifida

- **Myelomeningocele:**
  - The **most severe form**, where part of the spinal cord and nerves protrude through an opening in the spine.
- **Meningocele:**
  - A **less common form** in which the protective membranes of the spinal cord bulge out in a fluid-filled sac.
- **Spina Bifida Occulta:**
  - The **mildest form**, involving incomplete formation of one or more vertebrae, often with minimal or no visible symptoms.

Symptoms

- Bowel and bladder dysfunction
- Back pain
- Weakness or paralysis of the legs
- Reduced or absent sensation in the lower limbs

Prevention and Management

- **Prevention:** Most cases can be prevented by **adequate folic acid intake during the early weeks of pregnancy**, especially before conception.
- **Treatment:** There is **no permanent cure**, but **medical and surgical interventions** can help manage symptoms and improve quality of life.

Salal Hydroelectric Project

The **Union Minister of Power and Housing & Urban Affairs** has directed **sediment flushing at the Salal Hydroelectric Project** in **Jammu and Kashmir** to optimise water use, amid the **Indus Waters Treaty being kept in abeyance** between India and Pakistan.

About the Salal Hydroelectric Project

- A **690 MW run-of-the-river hydropower project** built on the **Chenab River** in **Reasi district**, Jammu and Kashmir.

- Conceptualised in **pre-Independence India**; detailed planning began in the **1960s**.
- **Construction started:** 1970
- **Commercial operation:** 1987
- **Developer & owner:** National Hydroelectric Power Corporation (NHPC).
- **Significance:** First hydropower project constructed by India in Kashmir under the **Indus Waters Treaty framework**.
- **Dam height:** ~130 metres (≈1627 feet above mean sea level).

Power Sharing

- **12.5% of generated power** allocated to **Jammu and Kashmir**.
- Remaining power supplied to the **Northern Grid**, benefiting **Punjab, Haryana, Delhi, Himachal Pradesh, Rajasthan, and Uttar Pradesh**.
- J&K can also **purchase additional power at normal tariffs**.

Melghat Tiger Reserve

The **Bombay Natural History Society (BNHS)** has **released 15 critically endangered Indian vultures** at **Melghat Tiger Reserve, Maharashtra**, to aid species recovery.

About Melghat Tiger Reserve

- **Location:** Maharashtra; on the **Gavilgarh Hills**, a southern offshoot of the **Satpura Range**
- **Status: First tiger reserve in Maharashtra**
- **Meaning of name:** 'Melghat'—confluence of valleys/ghats
- **Vegetation: Tropical dry deciduous forests**, teak-dominated
- **Rivers:** Catchment for **Khandu, Khapra, Sipna, Gadga, Dolar** (tributaries of the **Tapti River**)
- **Boundaries:** Tapti River and Gawilgadh ridge
- **Tribes: Korku** (largest), Gawli, Gond
- **Fauna:** Tiger, leopard, sloth bear, gaur, sambar, nilgai, dhole, hyena
- **Special note:** Stronghold of the **critically endangered forest owlet**

SHINE Scheme Launched

At the **79th Foundation Day of the Bureau of Indian Standards (BIS)**, Union Ministers launched the **SHINE Scheme** in **New Delhi**.

About SHINE Scheme

- **Full form:** *Standards Help Inform & Nurture Empowered Women (SHINE)*
- A **new initiative of BIS** aimed at placing **women at the centre of India's quality ecosystem**.
- Focuses on empowering women through:
  - **Structured training programmes**
  - Partnerships with **NGOs and Self-Help Groups (SHGs)**
  - **Locally delivered, practical awareness initiatives**
- Promotes awareness on **standards, safety, and quality** at the **household and community level**.
- Seeks to **protect families and strengthen livelihoods** through informed choices.

Key Facts about Bureau of Indian Standards (BIS)

- **National Standards Body of India**, established under the **BIS Act, 2016**
- Successor to the **Indian Standards Institution (ISI), 1947**
- Responsible for **standardisation, quality certification, and marking of goods**
- Represents India at **ISO** and **IEC**

- **Nodal Ministry:** Ministry of Consumer Affairs, Food and Public Distribution
- **Headquarters:** New Delhi

Biomaterials

As countries transition to **low-carbon and circular manufacturing**, **biomaterials** are emerging as a critical alternative to fossil-based plastics and textiles, with significant relevance for India's sustainability and industrial strategy.

What are Biomaterials?

- Materials **derived wholly or partly from biological sources** or produced using **biological processes**.
- Used across **packaging, textiles, construction, and healthcare**.

Types:

- **Drop-in biomaterials:** Chemically identical to fossil-based materials; compatible with existing systems (e.g., bio-PET).
- **Drop-out biomaterials:** Chemically different; need new processing/end-of-life systems (e.g., PLA).
- **Novel biomaterials:** Offer new properties like **self-healing, bioactivity, advanced composites**.

Why Biomaterials Matter for India

- Reduce dependence on **fossil-based imports** for plastics and chemicals.
- Create **new income streams for farmers** using crops and agricultural residues.
- Support **climate goals, single-use plastic bans, and waste reduction**.
- Improve India's **export competitiveness** as global demand shifts to green products.

India's Current Position

- India's **bioplastics market ~USD 500 million (2024)**, with strong growth prospects.
- Major investments like **PLA plants** and innovations by startups converting **waste into biomaterials**.
- However, India still depends on **foreign technologies** in parts of the value chain.

Wangchhu Hydroelectric Project

The **Adani Group** has commenced work on the **570 MW Wangchhu Hydroelectric Project** in **Bhutan**, strengthening India–Bhutan energy cooperation.

About Wangchhu Hydroelectric Project

- **Type:** 570 MW **run-of-the-river** hydropower project
- **River: Wangchu River** (called **Raidāk River** in India), a tributary of the **Brahmaputra**
- **Location: Chukha District, Bhutan**
- **Developer: Wangchhu Hydroelectric Power Limited (WHPL)**
  - JV between **Adani Power Ltd (49%)** and **Druk Green Power Corporation Ltd (51%)**
- **Investment:** ~₹6,000 crore
- **Model: BOOT** (Build–Own–Operate–Transfer)
- **Configuration:** 4 turbines × 142.5 MW
- **Annual generation:** ~2,478.93 GWh
- **Function: Peaking plant** to manage seasonal hydropower variability

Power Use:

- Meets **Bhutan's winter electricity demand**
- **Surplus summer power exported to India**

Long Range Anti-Ship Missile (LRAShM)

India's **indigenous LRAShM** will be showcased at the **Republic Day Parade (26 January)**, underscoring the country's advancing **maritime strike and hypersonic capabilities**.

About LRAShM

- Developed by the **Defence Research and Development Organisation (DRDO)**.
- A **hypersonic glide missile** using a **Hypersonic Glide Vehicle (HGV)**—unlike ballistic missiles, it follows **unpredictable, manoeuvrable flight paths** after boost-phase launch.
- Designed primarily for **anti-ship roles**; a **land-attack variant** may follow.
- Reportedly **outperforms comparable systems** in range and technology.

Key Features

- **Range: > 1,500 km**
- **Speed: ~ Mach 10** (10× speed of sound)
- **Time-to-target: ~ 7–8 minutes**
- **Guidance: RF seeker** effective at hypersonic speeds for **moving targets** (warships).
- **Launch platforms: Land-based and naval**.
- **Payloads: Conventional or nuclear**.
- **Design: Delta-wing HGV** with **heat-resistant materials** to withstand extreme temperatures.

Weimar Triangle

India's External Affairs Minister recently took part in **India's first-ever engagement with the Weimar Triangle**, alongside counterparts from **France and Poland** and representatives from **Germany**, marking a new step in India's outreach to European political groupings.

About the Weimar Triangle

- A **regional political grouping** comprising **France, Germany, and Poland**.
- **Established:** 29 August 1991 at **Weimar, Germany**, through a joint declaration by the three Foreign Ministers.

Core Objectives:

- Involve **France in German–Polish reconciliation**, drawing on the Franco-German experience.
- Strengthen **political dialogue and cooperation** among the three countries.
- Support **Poland's integration into NATO and the European Union**.

Key Features

- Regular meetings at multiple levels, including **heads of government and foreign ministers**.
- Played a role in **Poland's accession to NATO (1999)** and the **EU (2004)**.
- Lacks a formal institutional structure but remains a **significant political coordination forum**.
- Extends beyond diplomacy to **civil society initiatives** such as youth exchanges, academic cooperation, and business networks.

M-STrIPES at Anamalai Tiger Reserve

Forest staff conducting the **tiger and wildlife census** at **Anamalai Tiger Reserve** will use the **M-STrIPES** app to enhance monitoring and protection.

About M-STrIPES

- **Full form:** *Monitoring System for Tigers: Intensive Protection and Ecological Status*

- Launched in **2010** by the **National Tiger Conservation Authority (NTCA)** with the **Wildlife Institute of India**.
- A **software-based system** for patrolling, monitoring, and management of Protected Areas.
- **Components:**
  - Central analytical engine (desktop + online tools)
  - **Android mobile app** for field data with **real-time GPS**
- Uses **GPS, GPRS, remote sensing, GIS, and statistical tools**.
- Forest guards patrol their **beats** (smallest forest admin unit) and log tracks and observations digitally.

About Anamalai Tiger Reserve

- **Location:** Anamalai Hills, **Tamil Nadu**; south of the **Palakkad Gap** (Western Ghats).
- **Altitude:** ~1,400 m
- **Neighbouring areas:** Parambikulam TR, Chinnar WLS, Eravikulam NP
- **Habitats:** Evergreen to dry deciduous forests, shola, grasslands, marshes
- **Fauna:** Tiger, Asiatic elephant, leopard, sambar, spotted deer, jungle cat
- **Communities:** Kadar, Muduvar, Malasar, Malai Malasar, Eravalar, Pulayar

Aralam Declared Kerala's First Butterfly Sanctuary

The **Kerala government** has renamed **Aralam Wildlife Sanctuary** as **Aralam Butterfly Sanctuary**, making it the **first butterfly sanctuary in the State**.

- Notified via **SRO No. 1407/2025** under **Section 18(1) of the Wildlife (Protection) Act, 1972**.
- Decision based on recommendations of the **State Board for Wildlife**, citing exceptional butterfly diversity.
- Amends the original **1984 notification** that declared the area a wildlife sanctuary.

About Aralam Butterfly Sanctuary

- **Location:** Kannur district, Kerala
- **Area:** ~55 sq km of **evergreen and semi-evergreen forests**
- **Ecological features:** Large-scale **butterfly migration** and **mud-puddling** sites
- **Fauna:** Habitat of the **Schedule I Slender Loris**

- **Boundaries:** Brahmagiri WLS (Karnataka), Kottiyoor WLS, North Wayanad forest division
- **River: Cheenkanni River** flows through the sanctuary

Biodiversity Highlights

- **266 butterfly species** recorded here out of **327 species in Kerala**.
- Mass migrations observed, including:
  - **~12,000 Common Albatross** butterflies in five minutes
  - Over **8 lakh Albatross butterflies** recorded on **11 January 2025**
- Other species include **Malabar Rose, Buddha Mayuri, Rosy, Thalir Neeli, Okila**, and **Spotted Butterfly**.

Kathputli Folk Art

In **Jaipur**, nearly **250 families** continue to preserve **Kathputli**, one of **Rajasthan's oldest folk art traditions**.

About Kathputli

- A **traditional string puppet theatre** of Rajasthan.
- Derived from **kath (wood)** and **putli (doll)**.
- Puppets are made of **wood, cloth, cotton, thread, and metal wire**.
- **Legless figures** draped in long skirts; controlled using **2–5 strings** tied to the puppeteer's fingers.

Key Features

- **Distinctive faces:** Large eyes, oval faces, prominent lips, arched eyebrows.
- **Costumes:** Bright colours inspired by **royal courts and desert culture**.
- **Themes:** Stories of **Rajput kings, warriors, folk heroes**, and moral tales.
- **Music:** Accompanied by **dholak and harmonium**.
- Performances blend **humour, satire, music**, and social commentary.

Bhadrakali Temple Inscription Highlights Somnath's Legacy

An ancient **Bhadrakali Temple inscription** at **Prabhas Patan** sheds light on the **timeless legacy of the Somnath Temple** and the role of **Solanki rulers**, especially **Kumarapala**, in its revival.

Key Highlights of the Inscription

- **Dated:** 1169 CE (Valabhi Samvat 850 / Vikram Samvat 1255)
- **Type:** Eulogistic inscription of **Param Pashupata Acharya Bhavabrihaspati**, spiritual preceptor of **Maharajadhiraj Kumarapala**
- **Location:** Embedded in the **Bhadrakali Temple** wall near Prabhas Patan Museum
- **Protection:** Under the **State Department of Archaeology**

What the Inscription Records

- Construction of **Somnath Mahadev in all four Yugas**:
  - **Satya Yuga:** Gold temple by **Chandra (Soma)**
  - **Treta Yuga:** Silver temple by **Ravana**
  - **Dvapara Yuga:** Wooden temple by **Shri Krishna**
  - **Kali Yuga:** Stone temple by **Bhimdev Solanki**
- **Fifth reconstruction** of Somnath by **Kumarapala (1169 CE)** on earlier remains.

Historical Significance

- Under the **Solanki dynasty**, Prabhas Patan emerged as a hub of **religion, architecture, and literature**.
- **Siddharaj Jaysinh's justice** and **Kumarapala's devotion** marked **Gujarat's Golden Age**.
- The inscription reflects **Sanatan cultural continuity**, valor, and resilience despite invasions.

Bargi Dam Issued Show-Cause Notice

The **National Dam Safety Authority (NDSA)** has issued a **show-cause notice** to the **Narmada Valley Development Authority** over **safety concerns at the Bargi Dam** in **Madhya Pradesh**.

About Bargi Dam

- **Type:** Major **multi-purpose dam** (irrigation, water supply, hydropower)
- **River: Narmada River**
- **Project:** Part of the **Narmada Valley Development Project**
- **Timeline:** Construction began **1974**; completed **1990**
- **Significance:** Among the **first completed dams** on the Narmada
- **Safety Status:** Classified **Safety Category III** ("minor deficiencies") in pre- and post-monsoon inspections

About National Dam Safety Authority (NDSA)

- **Established under: Dam Safety Act, 2021**
- **Mandate:** Regulation, oversight, and inspection of dams
- **Structure:** Chairperson + five members (Policy & Research, Technical, Regulation, Disaster & Resilience, Admin & Finance)
- **Headquarters: New Delhi**
- **Functions:**
  - Implement policies of the **National Committee on Dam Safety**
  - Resolve disputes involving **State Dam Safety Organisations (SDSOs)**
  - Frame inspection/investigation regulations
  - Accredit agencies for dam design, construction, and alterations

NPS Swasthya Pension Scheme (NSPS)

The **Pension Fund Regulatory and Development Authority (PFRDA)** has introduced the **NPS Swasthya Pension Scheme (NSPS)** on a **pilot basis** to test the integration of healthcare support within the pension system.

About NPS Swasthya Pension Scheme (NSPS)

- NSPS is a **new initiative of PFRDA** launched as a **Proof of Concept (PoC)** under its **Regulatory Sandbox Framework**.
- The scheme seeks to **combine health-related financial protection with retirement savings** under the existing **National Pension System (NPS)**.
- It is designed to provide financial assistance for both **out-patient and in-p atient medical expenses**.
- The scheme operates as a **sector-specific contributory pension scheme** under the **Multiple Scheme Framework (MSF)** of NPS.
- Participation is **voluntary** and open to **all Indian citizens**.
- Pension Funds will roll out the scheme **only after obtaining approval from PFRDA**.
- Being a pilot project, the number of subscribers will be **restricted during the PoC phase**.

- To enable smooth implementation, **certain provisions of the PFRDA (Exits and Withdrawals under NPS) Regulations, 2015** have been relaxed.
- Pension Funds may partner with **FinTech companies and Health Service Administrators** for operational support.

Key Features of NSPS

Eligibility & Contributions

- All Indian citizens can enroll, provided they have a **Common Scheme Account under NPS**.
- Subscribers may contribute **any amount**, as per existing NPS rules for the non-government sector.
- Subscribers **above 40 years of age** (excluding government employees) can transfer **up to 30% of their NPS contributions** to the Swasthya Pension Scheme.

Withdrawals for Medical Purposes

- **Partial withdrawals up to 25%** of the subscriber's own contribution are allowed for medical expenses.
- There is **no cap on the number of withdrawals**, provided the **minimum accumulated corpus is ₹50,000**.
- In case of **critical inpatient treatment**, where expenses exceed **70% of the available corpus**, subscribers may withdraw **up to 100% of the corpus prematurely** to meet medical costs.

Claim Settlement & Safeguards

- Withdrawn amounts will be paid **directly to hospitals, Health Benefit Administrators (HBA), or Third-Party Administrators (TPA)** based on valid medical claims.
- Any **unused surplus** after settling medical bills will be **credited back to the subscriber's Common Scheme Account**.

Tehri Lake

Two paragliders were recently rescued by the **State Disaster Response Force (SDRF)** after falling into **Tehri Lake** during the **Acro Festival & SIV Championship Tehri 2026**.

About Tehri Lake

- **Artificial reservoir** formed by the **Tehri Dam** in **Tehri Garhwal, Uttarakhand**
- Created by **diverting the Bhagirathi River** during dam construction
- Located at an elevation of **~1,700 m** above sea level
- **Depth:** ~262 m | **Length:** ~42 km
- Supports **hydropower generation, drinking water supply, and irrigation**
- Surrounded by the **Himalayan ranges**, making it a major tourism site

Key Facts about Tehri Dam

- **Multipurpose dam** on the **Bhagirathi River** (source stream of the Ganga)
- **Height:** 260 m → *Tallest dam in India; among the tallest in the world*
- **Completed:** 2006
- **Type:** Earth and rock-fill dam
- **Installed capacity:**
  - 1,000 MW hydropower
  - 1,000 MW pumped storage
- **Managed by:** THDC India Limited (subsidiary of NTPC Limited)

Pechora Missile System

Bengaluru-based **Alpha Design Technologies Limited (ADTL)** has successfully completed a major **indigenous upgrade of the Indian Air Force's (IAF) Pechora surface-to-air missile system**, aligning with the government's push to modernise legacy defence platforms under *Atmanirbhar Bharat*.

About Pechora Missile System

- **Official name:** S-125 Neva/Pechora
- **Origin:** Soviet Union
- **Type:** Medium-range **Surface-to-Air Missile (SAM)** system
- **Role:** Interception of **low- to medium-altitude aerial targets**
- Part of **India's air defence network since the 1970s.**

Key Features

- Consists of **radar-guided missile launchers** and a **fire control unit**
- Uses the **V-600 missile** for interception
- Employs **4R90 Yatagan radar** with five parabolic antennas for detection and tracking
- Highly effective against **low-flying aircraft, drones, and cruise missiles**
- Can function **independently or within an integrated air defence network**
- Designed to operate effectively even under **heavy electronic jamming**

Technical Specifications

- **Range:** 30–35.4 km (up to 35.4 km in upgraded versions)
- **Engagement altitude:** 20 m to 20–25 km
- **Radar detection range:** ~100 km
- **Target capability:** Can engage **two targets simultaneously**
- **Speed handling:** Up to 900 m/s
- **Kill probability:** ~92%

PAIMANA Portal

The **Ministry of Statistics and Programme Implementation (MoSPI)** has operationalised the **PAIMANA Portal** for **mandatory monitoring of Central Sector Infrastructure Projects costing ₹150 crore and above**.

About PAIMANA Portal

- **Full form:** *Project Assessment, Infrastructure Monitoring & Analytics for Nation-building (PAIMANA)*
- **Nodal Ministry:** MoSPI
- A **flagship digital initiative** for systematic monitoring of large infrastructure projects
- Acts as a **centralised national repository** of infrastructure project data
- Enables **web-based analytics, improved data accuracy, and operational efficiency**
- Integrated with **DPIIT's Integrated Project Monitoring Portal (IPMP / IIG-PMG)** through APIs

Key Features

- **Centralised Project Monitoring:**
  - Single-window platform for ministries, departments, and agencies to upload and track projects
- **Real-time Dashboards:**

- Sector-wise, state-wise, and timeline-based monitoring with drill-down features
- **Advanced Analytics:**
  - Role-based access, interactive dashboards, reporting & query modules
  - Helps identify **data gaps, delays, and bottlenecks**
- **Coverage:**
  - Mandatory for **Central Sector Infrastructure Projects ≥ ₹150 crore**

Kyasanur Forest Disease (KFD)

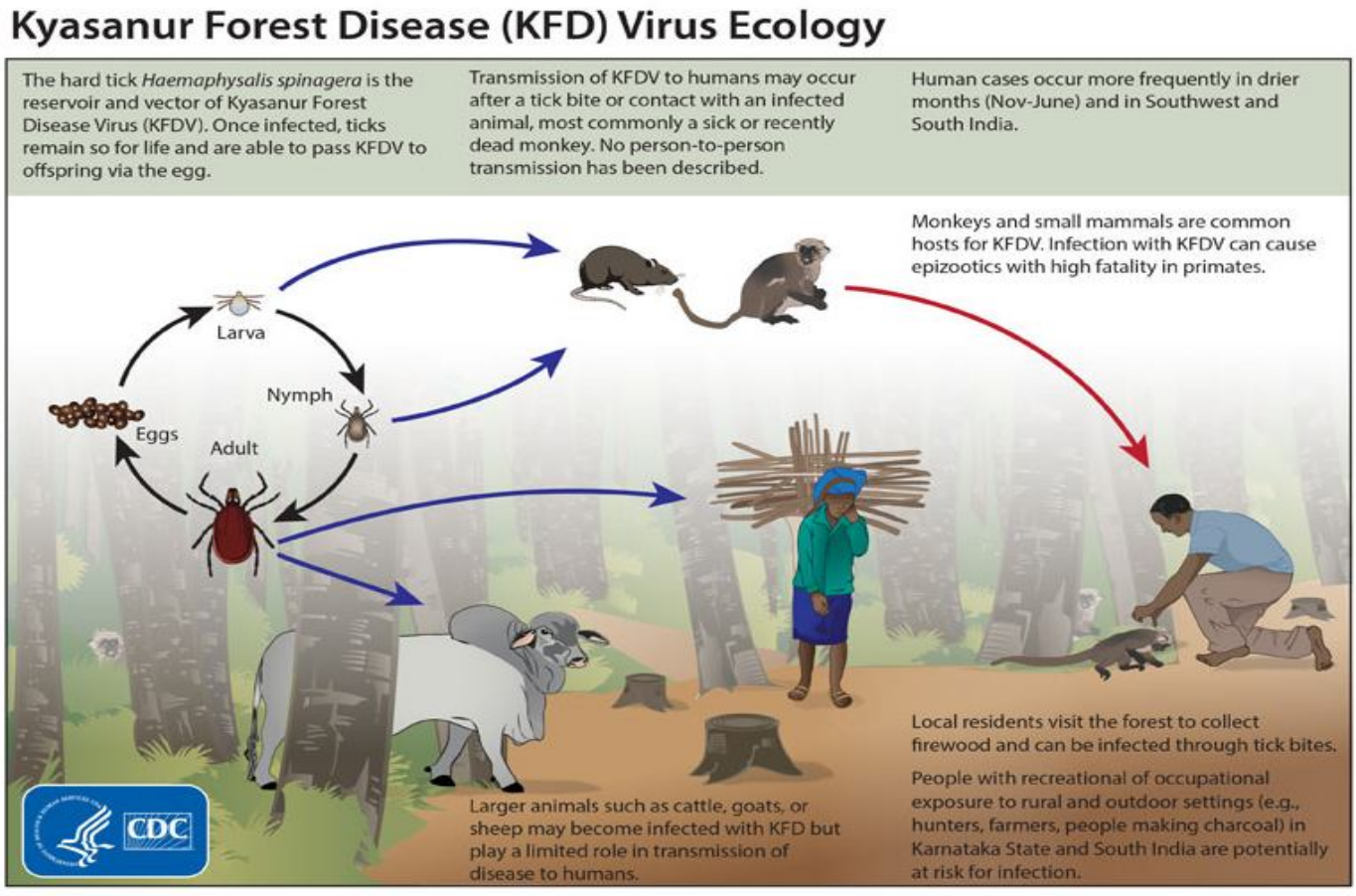
A 29-year-old man in Karnataka recently died after contracting **Kyasanur Forest Disease (KFD)**, also known as **monkey fever**, highlighting renewed concerns about this often-neglected tick-borne disease.

About Kyasanur Forest Disease (KFD)

- **Tick-borne viral haemorrhagic disease** endemic to **southern India**
- First identified in **1957 in Kyasanur Forest, Karnataka**
- Caused by **KFD virus** (family *Flaviviridae*, genus *Flavivirus*)
- Belongs to the **tick-borne encephalitis (TBE) complex**
- Called **monkey fever** due to frequent monkey deaths linked with outbreaks

Transmission

- Spread by **hard ticks (Hemaphysalis spinigera)**
- Humans infected through:
  - **Tick bites**



- Contact with infected animals, especially **sick or dead monkeys**
- **No human-to-human transmission**
- **Seasonality:**
  - Begins: October–November
  - Peaks: January–April
  - Declines: May–June

Symptoms

- Sudden high fever, extreme weakness, nausea, vomiting, diarrhea
- May progress to **neurological and haemorrhagic complications**
- **Fatality rate:** 5–10%

Treatment

- **No specific antiviral cure** available
- Only **supportive treatment**: fluids, oxygen, BP management, and treatment of secondary infections
- Early medical care significantly improves recovery

Vaccine

- **KFD vaccine available**
- Recommended for people in **endemic regions of India**

Solar Cycles

A research team from **IIT Kanpur** has developed a **new method to predict solar cycles**, improving the understanding of solar activity and its Earth impacts.

About Solar Cycles

- A **solar cycle** is an approximately **11-year periodic variation in solar activity**
- Driven by changes in the **Sun's magnetic field**
- Marked by the **number and intensity of sunspots** on the solar surface
- Every ~11 years, the Sun's **magnetic poles flip** (north ↔ south)
- It takes another 11 years to flip back → forming a **22-year magnetic cycle (Hale cycle)**
- Solar activity is tracked mainly through **sunspot counts**

Stages of a Solar Cycle

- **Solar Minimum:**
  - Beginning/end of a cycle
  - Very few or no sunspots
- **Solar Maximum:**
  - Mid-point of the cycle
  - Peak sunspot activity, solar flares, and coronal mass ejections (CMEs)
- After maximum, activity declines back to **solar minimum**, starting a new cycle

Impacts on Earth

- Influences **space weather** and satellite operations
- Affects **radio communication, GPS, and power grids**
- Alters **cosmic ray flux, ozone distribution, and upper atmospheric conditions**
- May have **indirect climatic effects** through variations in solar radiation

JALAJ Livelihood Centres

The Union Minister of Jal Shakti inaugurated **25 JALAJ Livelihood Centres** to strengthen river conservation through community-based livelihoods.

About JALAJ

- Joint initiative of **Namami Gange Mission** and **Wildlife Institute of India (WII)**
- Integrates **river conservation with sustainable livelihoods** in the Ganga basin
- Based on **circular economy model**
- Trains local communities in eco-friendly livelihood practices

Key Features

- Promotes **community ownership**, with special focus on **women's participation**
- Establishes **symbiotic relationship between rivers and people**
- Centres reflect **local culture and indigenous communities**
- Act as hubs for:
  - Conservation education
  - Livelihood training
  - Sale of eco-products
- **Target:** 75 centres

Phosphorus

Excess **phosphorus accumulation in US farmlands** is causing severe **water pollution and eutrophication**.

About Phosphorus

- Chemical element (Group 15), **symbol: P, atomic number: 15**
- Highly reactive non-metal
- Main forms:
  - **White phosphorus** (toxic, flammable)
  - **Red phosphorus** (non-toxic, stable)

Uses

- **Fertilisers (largest use)** – ammonium phosphate
- Matches, flares, incendiaries
- Steel production
- Detergents (being phased out due to pollution)
- Special glass & chinaware

Biological Role

- Essential for **bones, teeth, ATP, DNA, RNA, phospholipids**
- Key nutrient for **energy storage and cell repair**

Environmental Concern

- Excess phosphates cause **algal blooms & oxygen depletion**

Deuteron

A study by the **ALICE collaboration at CERN (LHC)** explained how deuterons survive extreme particle collisions.

About Deuteron

- Nucleus of **heavy hydrogen (^{2}H or D)**
- Contains **1 proton + 1 neutron**
- Found in natural water and gas giants

Properties

- Mass ≈ 2× proton
- Charge: +1
- Spin: 1
- Magnetic moment: 0.8574 nuclear magnetons

Applications

- Heavy water (nuclear reactors)
- Fusion fuel (deuterium)
- Tritium production

Scabies

The **WHO** highlighted scabies as one of the most common skin diseases in developing countries.

About Scabies

- Contagious **parasitic skin disease**
- Caused by **Sarcoptes scabiei mite**
- Common in **hot, tropical regions**

Transmission

- Direct skin-to-skin contact
- Shared clothing & bedding
- Spreads rapidly in crowded settings

Symptoms & Treatment

- Severe itching (worse at night), rash
- Treated with **topical creams & oral drugs**

WHO Status

- Classified as a **Neglected Tropical Disease (NTD)**

Sea of Japan (East Sea)

North Korea fired a ballistic missile towards the **Sea of Japan**.

About

- Marginal sea of the **western Pacific Ocean**
- Bounded by **Japan, Russia, North Korea, South Korea**
- Also called **East Sea**

Connections

- East China Sea → Tsushima & Korea Straits
- Okhotsk Sea → La Perouse & Tatar Straits
- Pacific Ocean → Tsugaru Strait
- Inland Sea of Japan → Kanmon Strait

Key Features

- Deepest point: **Dohoku Seamount (underwater volcano)**
- Warm waters → mild Japanese climate
- Almost **no tides** (like Mediterranean Sea)
- High oxygen → **high marine productivity**

Major Ports

- **Russia:** Vladivostok, Nakhodka
- **North Korea:** Chongjin, Wonsan
- **Japan:** Niigata, Maizuru