

OCTOBER  
2025



Comprehensive Coverage of  
**CURRENT  
AFFAIRS**

ENTIRE CONTENT OF

**SEPT. 2025**



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## Exercise Bright Star 2025

### About the Exercise

- **Type:** Multilateral Tri-Service Exercise (Army, Navy, Air Force).
- **Host:** Egypt (with the US as co-organizer).
- **First Held:** 1980.
- **Frequency:** Biennial.
- **Significance:** Among the largest tri-service multilateral exercises in the Middle East–North Africa (MENA) region.

### India's Participation (2025 Edition)

- **Participants:** Over 700 Indian Armed Forces personnel including Headquarters Integrated Defence Staff.
- **Activities Involved:**
  - **Live Firing** by Army, Navy, Air Force → demonstration of India's operational capabilities.
  - **Command Post Exercise** → enhances joint planning, decision-making, coordination.
  - **Short Training Exercises** → focus on modern warfare scenarios.
  - **Subject Matter Expert (SME) Interactions** → exchange of knowledge on contemporary military operations.

### Strategic Importance

- **Enhances Jointness:** Strengthens coordination among India's three services.
- **Interoperability:** Improves operational compatibility with friendly foreign militaries.
- **Diplomatic Significance:** Showcases India's commitment to regional peace, stability, and security.
- **Geopolitical Angle:**
  - Deepens India's defence cooperation with Egypt and the US.
  - Expands India's footprint in the West Asia & North Africa (WANA) region, important for energy security, diaspora, and trade routes.

### Previous Edition (2023)

- India participated along with multiple nations.
- Highlighted India's growing role in multinational defence collaborations.

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## Mira Variable Stars & Hubble Constant – IUCAA Study (2025)

### Context

- A team led by Prof. Anupam Bhardwaj (IUCAA, Pune), with Nobel laureate Adam Riess as co-author, achieved a highly precise measurement of the Hubble constant ( $H_0$ ) using Mira variable stars.
- Published in the Astrophysical Journal (2025).

### Key Highlights of the Study

- **Data Used:**

- 40 oxygen-rich Mira variable stars from 18 stellar clusters in the Milky Way.
- Distances calibrated using ESA's Gaia Mission (13,000–55,000 light years).

### Method:

- Established absolute period–luminosity relationship for Mira variables.
  - Provided independent calibration for Type Ia Supernovae (very bright and used as “standard candles” to measure distances to faraway galaxies)

### Result:

- Achieved 3.7% precision in determining Hubble constant.

### ❖ Importance of Mira Variables

- **Mira (Omicron Ceti):** First known variable star (17th century).
- **Characteristics:**
  - Cool red giants (surface ~3000 K).
  - Periodic expansion/contraction → brightness variation (100–1000 days).
  - Exhibit a reliable period–luminosity relation, usable as standard candles, to measure distances to faraway galaxies.
- **Standard Candle Concept:** Objects of known luminosity used to measure astronomical distances → vital for building the extragalactic distance ladder.

### Hubble Constant ( $H_0$ )

- **Concept:** Describes the current rate of expansion of the universe, expressed in km/s/Mpc.
- **Origin:** First formulated by Edwin Hubble (1929), who observed that galaxies farther away recede faster from us.
- **Measurement Technique:** Based on the redshift of light—a shift toward the red end of the spectrum as galaxies move away, proving the universe is expanding.
- **Significance:** Critical for estimating the age and size of the universe.

### Future Outlook

- **Current limitation:** only 2 galaxies with supernovae + known Miras.
- Rubin Observatory (Vera C. Rubin, Chile) expected to discover many more Mira variables in distant galaxies → will further refine cosmic expansion studies.

### Definition:

Mira variables are a class of pulsating red giant stars that change their brightness over time in a regular and predictable cycle.

### Key Features

- **Prototype:** Named after Mira (Omicron Ceti), discovered in the 17th century as the first known variable star.
- **Star Type:** Late-stage red giant stars (cool, expanded stars near the end of their life cycle).

- **Surface Temperature:** Around 3,000 K (about half of the Sun's surface temperature).
- **Brightness Variation:**
  - Periodic expansion and contraction of their outer layers cause changes in luminosity.
  - Brightness can vary by a factor of up to 1,000 times.
- **Pulsation Period:** Typically ranges from 100 to 1,000 days.

### Scientific Importance

- **Period-Luminosity Relationship:**
  - The time a Mira star takes to complete one cycle of brightening and dimming is directly related to its true luminosity (absolute brightness).
- **Standard Candles:** Because of this relationship, Mira variables can be used to measure cosmic distances—just like Cepheid variables, a type of pulsating star whose brightness changes in a regular cycle due to expansion and contraction of their outer layers
- **Advantage over Cepheids:**
  - **Less sensitive to metallicity (chemical composition)** → more reliable in varied stellar environments.

### Why Called "Mira"?

- Mira means "the Wonderful" in Latin.
- Named so because of its remarkable brightness changes, which amazed astronomers.

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## Nanotechnology-Based Biosensor for Parkinson's Disease (INST, Mohali - 2025)

### Context

- Scientists at the Institute of Nano Science and Technology (INST), Mohali have created a nanotechnology-driven biosensor to enable early diagnosis of Parkinson's Disease (PD).

### Nanotechnology-Based Biosensor

- **Mechanism:**
  - Uses gold nanoclusters (AuNCs) coated with amino acids.
  - These nanoclusters can selectively bind to  $\alpha$ -synuclein protein.
  - Normally harmless,  $\alpha$ -synuclein may misfold into toxic clumps (amyloids), damaging brain cells.
- **Significance:**
  - Differentiates between healthy vs toxic forms of  $\alpha$ -synuclein.
  - Detects PD before clinical symptoms appear.
  - **Advantages:** low-cost, label-free, point-of-care testing.
  - **Potential extension:** Could also be applied to Alzheimer's disease and other protein misfolding disorders.

### Parkinson's Disease (PD)

- **Nature:** Progressive neurodegenerative disorder.
- **Key Symptoms:**
  - **Motor:** Tremors, stiffness, impaired posture, slow movement.
  - **Non-motor:** Cognitive decline, mood disturbances, sleep problems.
- **Cause:**
  - Degeneration of dopamine-producing neurons in the midbrain.
  - Influenced by both genetic mutations and environmental triggers (pesticides, pollution).
- **Epidemiology:**
  - Affects 8.5 million people globally (2019).
  - **India:** ~0.58 million cases (10% of global burden).
  - **Projections:** India's cases may rise by 168% (to 2.8 million) by 2050; global cases could reach 25.2 million.
- **Treatment & Management:**
  - **No permanent cure.**
  - Current strategies:
    - Medications (e.g., Levodopa + Carbidopa).
    - Surgical interventions.
    - Rehabilitation therapies for symptom control.

### Recent Initiative in India

- **National Parkinson Network (NPN):**
  - Established in 2024 by the Movement Disorder Society of India (MDSI).
  - **Aim:** Collaborative research, improved diagnosis, and patient care.

### National Sports Day – 29th August

- **About:** National Sports Day is observed annually on 29th August to honour the birth anniversary of hockey legend Major Dhyan Chand, widely regarded as one of the greatest players in the history of the game. It was officially designated as a national observance in 2012.
- On this day in 2019, the Fit India Movement was launched, aiming to promote health and fitness among citizens.
- **Theme 2025:** Celebrations will be held under the Fit India Mission with the theme "Ek Ghanta, Khel ke Maidan Main", urging people to dedicate at least one hour daily to physical activity.

### National Sports Awards (Presented annually on 29th August by the President of India)

- **Major Dhyan Chand Khel Ratna Award:**
  - India's highest sporting honour.

- Instituted in 1991–92 as the Rajiv Gandhi Khel Ratna Award, renamed in 2021 to honour Dhyan Chand.
- **Arjuna Award:** Second-highest sports award, recognising outstanding performance over four years.
- **Dronacharya Award:** Highest recognition for coaches in India.
- **Rashtriya Khel Protsahan Puruskar:** For institutions or organisations that have significantly contributed to sports promotion over the past three years.

### **Major Dhyan Chand (1905–1979)**

- Revered as the “Hockey Wizard”, he played a key role in India’s domination of field hockey.
- Even after his retirement, India continued its supremacy, securing Olympic gold medals in 1948, 1952, 1956, and 1964, and a silver medal in 1960.
- He retired from the Army in 1956 as a Major and was awarded the Padma Bhushan the same year.

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## **25th SCO Summit – 2025 (Tianjin, China)**

### **Key Outcomes of the Summit**

- **Counter-Terrorism:** The Tianjin Declaration unequivocally condemned terrorism, including the **Pahalgam attack**, called for ending cross-border terrorist movement, and opposed the use of extremist groups for mercenary purposes.
- **Membership & Partnerships:** Laos admitted as a partner state, expanding SCO’s total strength to 27 (10 full members + 17 partner/observer states).
- **Global Governance:** Launch of the Global Governance Initiative (GGI) to uphold sovereign equality, multilateralism, and a fairer world order. The initiative echoes India’s G20 vision of “One Earth, One Family, One Future.”
- **Economic & Development Cooperation:** Agreement to stabilize global trade, promote investment, and accelerate the proposal of an SCO Development Bank.
- **Social & Cultural Cooperation:** Reaffirmation of people-to-people connectivity, endorsement of the UNGA resolution against glorification of Nazism, racism, and xenophobia.
- **Geopolitical Issues:** Condemnation of military actions in Gaza and Iran, while stressing the need for inclusive governance in Afghanistan for long-term peace.
- **Opposition to Unilateral Sanctions:** Rejected unilateral coercive measures and economic sanctions that bypass UN and WTO frameworks.

### **About the SCO (Shanghai Cooperation Organisation)**

- **Founded:** 2001 in Shanghai by China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan.
- **Current Members (10):** China, Russia, India, Pakistan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Iran, Belarus (joined 2024).
- **Headquarters:** Beijing, China.
- **Official Languages:** Russian and Chinese.

- **Mandate:** Regional security, counter-terrorism, economic integration, and cultural cooperation.
- **Notable Institutions:**
  - **SCO Secretariat** (Beijing).
  - **RATS (Regional Anti-Terrorist Structure)** (Tashkent).
  - **SCO Business Council & Interbank Consortium** (economic cooperation).

### Role of SCO in Global Multilateralism

- **Expanding Geopolitical Reach:**
  - SCO has grown beyond its Central Asian roots, now representing ~42% of global population and 23% of world GDP.
  - With members like India, China, Russia, and partnerships with countries including Turkey (a NATO member), SCO balances traditional Western-led blocs.
- **Security & Counter-Terrorism:**
  - The Regional Anti-Terrorist Structure (RATS) in Tashkent coordinates against terrorism, separatism, and extremism.
  - SCO's Afghanistan Contact Group provides a platform for security dialogue in the post-NATO vacuum.
- **Connectivity & Trade:**
  - Promotes corridors such as the International North-South Transport Corridor (INSTC) and Chabahar Port initiatives.
  - SCO's Business Council and Interbank Consortium support multilateral trade and investments.
- **Civilisational & Cultural Cooperation:**
  - India leverages SCO to showcase initiatives on start-ups, digital inclusion, traditional medicine, and Buddhist heritage.
  - SCO fosters people-to-people contact across Eurasia.
- **Reforming Global Institutions:**
  - SCO members push for UN reforms and inclusive global governance, challenging post-WWII power structures.
  - Advocates a multipolar order based on sovereign equality.

### Challenges Limiting SCO's Effectiveness

- **Weak Security Mechanisms:** RATS remains largely symbolic; terrorist safe havens in Pakistan undermine credibility.
- **Power Asymmetry:** Central Asian states often complain of over-dominance by China and Russia, diluting the principle of equality.

- **Economic Ineffectiveness:** SCO trade agreements lack implementation; intra-regional trade lags behind ASEAN levels.
- **Institutional Deficits:** Proposed bodies like the SCO Development Bank remain on paper, making SCO look more like SAARC (summit-centric, weak execution).

### India's Concerns within SCO

- **China's Dominance & BRI Push:** SCO is increasingly shaped by China's agenda, especially its **Belt and Road Initiative (BRI)**, which India rejects due to the China–Pakistan Economic Corridor (CPEC) crossing PoK.
- **Connectivity Exclusion:** Most SCO states back BRI, leaving India outside major connectivity frameworks.
- **Pakistan Factor:** China and Pakistan often block India's proposals to designate Pakistan-based terror groups.
- **Anti-West Image:** With SCO perceived as a China–Russia–Iran-led bloc, India faces a dilemma given its close ties with US, EU, Quad, and G7 partners.

### India's Way Forward in SCO

- **Strategic Multialignment:** Continue engagement in both SCO/BRICS and Western-led forums (Quad, G20) to preserve strategic autonomy.
- **Selective Engagement:** Support areas like counter-terrorism, culture, digital economy, while keeping sovereignty-sensitive issues (e.g., BRI) off the table.
- **Leverage Russia Partnership:** Use India–Russia ties to balance China within SCO and revive platforms like RIC (Russia–India–China) for dialogue.
- **Border Management with China:** Maintain LAC readiness while continuing disengagement talks (Depsang, Demchok).
- **Voice of the Global South:** Use SCO as a stage to amplify Global South perspectives, aligning with India's leadership role in G20 and BRICS+.

**In essence**, the SCO is emerging as a Eurasian counterweight to Western alliances, but its effectiveness is hindered by weak institutional mechanisms and internal contradictions. For India, SCO is both a challenge (due to China–Pakistan axis) and an opportunity (to project Global South leadership and balance China through multialignment).

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## Adi Vaani – India's First AI-Powered Translator for Tribal Languages

### About the Initiative

- The Union Ministry of Tribal Affairs launched the Beta version of Adi Vaani, India's first AI-enabled speech and text translation platform for tribal languages.
- **Purpose:** To strengthen communication, digital empowerment, and last-mile delivery of services in tribal districts under the Adi Karmayogi framework.

- Developed by a national consortium led by IIT Delhi, with contributions from BITS Pilani, IIIT Hyderabad, IIIT Nava Raipur, and State Tribal Research Institutes (TRIs) of Jharkhand, Odisha, Madhya Pradesh, Chhattisgarh, and Meghalaya.
- Currently supports Santali, Bhili, Mundari, and Gondi; Kui and Garo are under development.

### **Key Features**

- **AI Translation:** Real-time text and speech translation between Hindi, English, and six tribal languages (based on NLLB and IndicTrans2 models, adapted for low-resource languages).
- **Language Preservation:** Digitization of folklore, oral traditions, and cultural heritage.
- **Education & Healthcare Access:** Subtitled advisories, school learning modules, and health information in native languages.
- **Community Empowerment:** Facilitates tribal entrepreneurship, governance services, and interactive learning for students and youth.
- **Frugal Innovation:** Developed at nearly one-tenth the cost of commercial translation platforms with authentic data from TRIs.

### **Broader Significance**

- **Cultural Identity:** Helps protect and revive endangered tribal languages, preventing erosion of heritage.
- **Digital Inclusion:** Ensures tribal communities can access education, healthcare, and government schemes in their mother tongues.
- **Research & Knowledge Sharing:** Serves as a resource for linguists, anthropologists, and policymakers.
- **Alignment with National Missions:** Supports Digital India, Ek Bharat Shreshtha Bharat, PM JANMAN, Adi Karmayogi Abhiyan, and Janjatiya Gram Utkarsh Abhiyan.
- **Towards Viksit Bharat 2047:** Expected to empower 20 lakh tribal volunteers and leaders to act as change agents for inclusive development.

### **BHASHINI & Adi Vaani**

- **BHASHINI (National Language Translation Mission):** Uses AI & NLP to make digital platforms accessible in 22+ Indian languages; integrated with e-Governance portals (e-Shram, e-Gram Swaraj, CPGRAMS, UGC, AICTE).
- **Adi Vaani:** Extends the same vision to Adivasi/low-resource languages, making India a global pioneer in AI-led linguistic preservation.

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## **CEREBO: Indigenous Device for Traumatic Brain Injury Detection**

- **About:**  
India has developed CEREBO, a portable, hand-held diagnostic tool designed to detect **Traumatic Brain Injuries (TBIs)**, especially in rural and emergency healthcare settings. It has been developed by the Indian Council of Medical Research (ICMR).

- **Key Features:**
  - **Technology:** Uses near-infrared spectroscopy integrated with machine learning to identify intracranial bleeding and edema.
  - **Rapid Diagnosis:** Generates results in less than a minute, crucial for emergency situations.
  - **Non-Invasive & Safe:** Radiation-free; suitable for infants, pregnant women, and repeated testing.
  - **User-Friendly:** Provides color-coded results for easy interpretation by healthcare staff.
  - **Portability:** Can be deployed in ambulances, rural clinics, trauma centers, and disaster-hit zones with limited access to CT/MRI facilities.
  - **Cost-Effective:** Serves as an affordable alternative to CT scans in resource-constrained areas.
  - **Limitation:** Complements but does not replace CT/MRI, particularly for deep-tissue evaluation.
- **Traumatic Brain Injury (TBI):**
  - Caused by external force leading to brain dysfunction.
  - **Mild TBIs:** Temporary effects on thinking, movement, or behavior.
  - **Severe TBIs:** Can cause long-term disability or even death.
- **Significance:**
  - Strengthens emergency and rural healthcare delivery.
  - Reduces dependence on costly imaging technologies.
  - Boosts India's efforts toward affordable indigenous medical innovations.

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## ISRO & SCL Develop Indigenous 32-bit Microprocessors

### About VIKRAM3201 & KALPANA3201

- **Developers:** Jointly developed by ISRO's Vikram Sarabhai Space Centre (VSSC) and Semiconductor Laboratory (SCL), Chandigarh.
- **VIKRAM3201:**
  - India's first fully indigenous 32-bit launch vehicle grade microprocessor.
  - Advanced version of VIKRAM1601 (16-bit), in use since 2009.
  - Fabricated at 180 nm CMOS fab of SCL, Chandigarh.
  - Can operate in extreme conditions (-55°C to +125°C).
  - Features a custom Instruction Set Architecture, supports Ada programming language, and enables floating-point computations.
  - Successfully validated in space during PSLV-C60 (SpaDeX/POEM-4 module).
  - Enables self-reliance in navigation, guidance, and control systems for launch vehicles.
- **KALPANA3201:**
  - A 32-bit SPARC V8 RISC microprocessor based on IEEE 1754 ISA.

- Compatible with open-source toolsets.
- Tested successfully with flight software.
- ❖ Think of a microprocessor as the brain of a rocket. With this chip, India doesn't need to rely on imported processors for navigation, guidance, and control of rockets

**Unlike VIKRAM3201 (which is custom-made for rockets), KALPANA3201 follows an international standard design (SPARC V8 → used worldwide in aerospace and critical systems).**

❖ **What does it do?**

It can run the software that controls a rocket's functions - like when to ignite engines, how to adjust direction, or how to operate payload systems.

**What are open-source software tools?**

- **Software tools** = programs used to write, test, and run code for chips or computers.
- **Open-source** = means the code of these tools is freely available to everyone, not owned by a private company.

So, open-source software tools are free programming and testing platforms that anyone can use, modify, and improve.

• **Supporting Indigenous Ecosystem:**

- In-house tools such as Ada compiler, linker, simulator, and IDE have been developed.
- C language compiler under development for wider applications.
- Additional indigenously developed chips like Reconfigurable Data Acquisition System (RDAS)- A system that collects and monitors data (like temperature, pressure, vibration, etc.) from sensors in a rocket. Reconfigurable-It can be changed or adjusted depending on the mission's needs - and Relay Driver ICs, and Low Drop-out Regulators were also handed over to ISRO.

**Ada Compiler**

- Ada is a programming language used in aerospace and defense (very reliable, less prone to errors).
- A compiler is like a translator.
- It converts the program written in Ada (human-readable instructions) into machine code that the microprocessor (chip) can actually understand and execute.
- **Example:** You write "Turn rocket left by 2 degrees" in Ada → the compiler turns this into binary instructions (0s and 1s) for the chip.

**Linker**

- When software is written, it is often broken into small modules or pieces.
- The linker is like a puzzle maker - it joins all these pieces of code together into one complete program.
- **Example:** One code module controls the rocket engine, another handles navigation → the linker combines them into one final program for the chip.

**Simulator**

- A simulator is like a flight rehearsal on a computer.

- It pretends to be the microprocessor, so scientists can test the code in a safe environment before running it on the actual rocket hardware.

**Example:** Instead of directly putting new software into PSLV and risking failure, they first test it in the simulator to see how it behaves.

### IDE (Integrated Development Environment)

- An IDE is like a toolbox + workspace for programmers.
- It combines everything (compiler, linker, simulator, debugging tools) in one easy interface.
- Makes coding faster, debugging easier, and testing smoother.
- Example: Like how Microsoft Word gives you typing, editing, spell check, formatting in one place → an IDE gives programmers everything they need to write rocket software in one place.

### Why this matters for ISRO?

- Earlier, India often depended on foreign compilers and simulators for chips. Now, ISRO has developed its own Ada compiler, linker, simulator, and IDE in-house.
- No foreign restrictions.
- Fully secure (no risk of “backdoor” code from other countries).
- Cheaper and customizable.

### In short:

- **Ada compiler** = translator of rocket code.
- **Linker** = combines pieces of code.
- **Simulator** = practice ground to test software.
- **IDE** = complete coding workspace.

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## Semicon India 2025

- **Theme:** “Building the Next Semiconductor Powerhouse”.
- **Objective:** Position India as a global hub in semiconductor manufacturing, design, and packaging.
- **Implemented by:** India Semiconductor Mission (ISM) under Ministry of Electronics and IT (MeitY).
- **Focus Areas:**
  - Semiconductor fabrication and packaging.
  - Indigenous chip design and innovation.
  - Skill development and R&D commercialization.
  - International collaborations to strengthen India’s role in the global semiconductor supply chain.
- **Milestone:** First production lots of VIKRAM3201 & KALPANA3201 were officially handed over to ISRO leadership in New Delhi.

### What is a Semiconductor?

- A semiconductor is a material whose conductivity lies between that of a conductor (like copper) and an insulator (like glass).

- Silicon is the most widely used semiconductor.
- Conductivity can be altered through doping (adding impurities), making it the backbone of microchips, processors, and electronic devices.
- **Applications:** Computers, smartphones, defense systems, satellites, and medical devices.
- **Significance for India:** Reduces import dependency, enhances technological sovereignty, and supports initiatives like Digital India, Atmanirbhar Bharat, and space missions.

### Significance for India

- Strengthens indigenous semiconductor capability and reduces reliance on foreign suppliers.
- Boosts India's space program by ensuring self-reliant, high-reliability processors for avionics.
- Aligns with India's ambition to emerge as a semiconductor manufacturing hub.
- Supports national security and strategic autonomy in critical technologies.

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## IgM and the New Discovery

### About IgM

- Immunoglobulin M (IgM) is the first antibody produced when an infection begins.
- It is pentameric in structure (made of 5 antibody units joined together).
- Functions:
  - Neutralization of toxins.
  - Activation of the complement system (part of innate immunity).
  - Agglutination (clumping of microbes).
- **Limitation:** Due to its large size, IgM has relatively low penetration into tissues compared to smaller antibodies.

### New Finding

- Traditionally, antibodies are thought to kill pathogens or mark them for destruction.
- Recent research shows that IgM works differently:
  - It does not directly kill bacteria.
  - Instead, it neutralizes toxins released by bacteria by mechanically stiffening them.
- **Mechanism:**
  - A protein called Protein L (from the bacterium *Fingoldia magna*) normally disrupts the immune system.
  - Using advanced tools like single-molecule force spectroscopy, scientists observed that when IgM binds to Protein L, it makes the toxin much harder to break apart.
  - Because IgM is large and has multiple binding sites, it can hold several parts of the toxin together at once, acting like a mechanical brace.
  - The protective effect increases with higher concentrations of IgM.

### What's happening?

- **Protein L is a bacterial "troublemaker"**
- Some bacteria, like *Fingoldia magna*, release Protein L, which mess with our immune system and help the bacteria survive.
- **IgM acts like a protective shield**
- IgM is a big antibody, kind of like a multi-armed guard.

- When IgM attaches to Protein L, it locks it in place.
- Protein L is like a wobbly object that can spread its damage easily.
- IgM, because of its large size and multiple binding arms, grabs several parts of the toxin at once.
- This makes the toxin stiff and hard to break apart - it cannot do much harm.
- **More IgM = stronger protection**
- The effect depends on how much IgM is present.
- More IgM molecules = more “guards” holding the toxin → better neutralization.

**Significance**

- This discovery changes the way we look at antibodies:
  - They are not only chemical binders but also mechanical stabilizers of toxins.
- It opens the path for developing IgM-based therapies, which could work alongside antibiotics.
- Particularly important in the fight against antibiotic-resistant bacteria, where conventional drugs fail.

**Antibody vs. Antigen**

Feature	Antigen	Antibody (Immunoglobulin)
<b>Definition</b>	A foreign substance (e.g., bacteria, virus, toxin, pollen) that triggers an immune response.	A protein molecule produced by B-lymphocytes or plasma cells in response to an antigen.
<b>Nature</b>	Can be protein, carbohydrate, lipid, or nucleic acid.	Always a glycoprotein.
<b>Role</b>	Stimulates the immune system by being recognized as “non-self.”	Recognizes and neutralizes the antigen.
<b>Specificity</b>	One antigen can have multiple sites (epitopes) that different antibodies can target.	Each antibody is highly specific to a particular antigen (like lock and key).
<b>Examples</b>	Bacterial toxins, viral coat proteins, pollen allergens.	IgM, IgG, IgA, IgE, IgD.

In short:

- **Antigen** = the invader/trigger.
- **Antibody** = the defender/response.

So, this study highlights how IgM defends us not by killing bacteria but by neutralizing their weapons (toxins) in a new way, offering hope for novel therapies against resistant infections.

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## WHO Releases World Mental Health Reports 2024

The World Health Organization (WHO) has released two major reports: World Mental Health Today and Mental Health Atlas 2024, highlighting the growing global burden of mental health conditions and the urgent need for effective interventions.

### Key Global Findings

#### 1. Burden of Mental Disorders:

- Approximately 1 in 7 people globally (13.6%) currently live with a mental disorder.
- The prevalence has increased faster than global population growth from 2011–2021.

#### 2. Most Common Disorders:

- Anxiety and depression together account for over two-thirds of cases.
- Anxiety disorders typically start in childhood or adolescence, while depression peaks between 50–69 years.

#### 3. Demographic Trends:

- Young adults (20–29 years) have seen the highest rise in mental disorders (1.8%) since 2011.
- **Males:** higher prevalence of ADHD, autism spectrum disorders, and intellectual disabilities.
- **Females:** higher prevalence of anxiety, depressive, and eating disorders.

#### 4. Suicide:

- 1 in 100 deaths globally is due to suicide, making it the leading cause of death among young people.
- At current rates, global suicide mortality is projected to decline by only 12% by 2030, far short of the UN SDG target of a one-third reduction.

### Mental Health Scenario in India

#### 1. Prevalence:

- **National Mental Health Survey (NMHS, 2015–16):** 10.6% of adults have mental disorders.
- Urban prevalence (13.5%) is higher than rural (6.9%).

#### 2. Treatment Gap:

- 70–92% of patients do not receive proper treatment due to stigma, lack of awareness, and shortage of trained professionals.
- India has only 0.75 psychiatrists per 100,000 population (WHO recommends 3 per 100,000).

#### 3. Infrastructure & Legal Framework:

- **National Mental Health Programme (NMHP, 1982):** Integrates mental health into general healthcare.
- **Ayushman Bharat:** PHCs and Sub-Health Centres upgraded for mental health services.
- **NIMHANS Act (2012):** Declares NIMHANS as an Institute of National Importance.
- **RPwD Act (2016):** Recognizes mental illness as a disability and strengthens legal protections.
- **Mental Healthcare Act (2017):** Guarantees the right to mental healthcare, decriminalizes suicide, and protects patient dignity.
- **National Health Policy (2017):** Focuses on integrating mental health into primary care and strengthening human resources.

- **National Suicide Prevention Strategy (2022):** Targets a 10% reduction in suicide by 2030, focusing on early intervention, crisis support, and high-risk groups.

#### 4. Digital Initiatives:

- **iGOT-Diksha (2020):** Trains healthcare workers in mental health care.
- **Tele-MANAS (2022):** Provides free 24/7 mental health support in 20 Indian languages, especially targeting rural areas.

#### Significance for India

- **Policy Priority:** Mental health is a critical component of public health and human rights.
- **Digital and Community Solutions:** Leveraging technology and local initiatives can bridge the treatment gap.
- **Global Alignment:** Addresses SDGs, especially target 3.4 (reducing premature mortality due to mental health conditions and suicide).

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## National Institutional Ranking Framework (NIRF) India Rankings 2025

The Ministry of Education released the National Institutional Ranking Framework (NIRF) India Rankings 2025, reaffirming the Indian Institute of Technology (IIT) Madras as the top institution in the Overall category for the seventh consecutive year.

#### Top Performers in NIRF 2025

##### Overall Category

1. **Indian Institute of Technology Madras** – 87.31
2. **Indian Institute of Science, Bengaluru** – 85.05
3. **Indian Institute of Technology Delhi** – 83.61

##### Engineering

1. **Indian Institute of Technology Madras** – 87.31
2. **Indian Institute of Technology Delhi** – 83.61
3. **Indian Institute of Technology Bombay** – 83.12

##### Universities

1. **Indian Institute of Science, Bengaluru** – 85.05
2. **Jawaharlal Nehru University, Delhi** – 82.40
3. **Banaras Hindu University, Varanasi** – 80.12

##### Colleges

1. **Hindu College, Delhi University** – 84.01
2. **Miranda House, Delhi University** – 83.20
3. **Hans Raj College, Delhi University** – 81.50

##### Management

1. **Indian Institute of Management Ahmedabad** – 90.12

2. **Indian Institute of Management Bangalore** – 89.45

3. **Indian Institute of Management Calcutta** – 88.78

**Note:** For a comprehensive list of rankings across all categories, please refer to the official NIRF website: NIRF India Rankings 2025.

**NIRF Ranking Criteria**

NIRF evaluates institutions based on five key parameters:

1. **Teaching, Learning & Resources (TLR)** – 30%
2. **Research & Professional Practices (RPC)** – 30%
3. **Graduation Outcomes (GO)** – 20%
4. **Outreach & Inclusivity (OI)** – 10%
5. **Perception (PERCEPTION)** – 10%

Each parameter is assigned a weightage reflecting its importance in assessing the institution's overall performance.

**Introduction of Sustainable Development Goals (SDG) Category**

For the first time, NIRF 2025 introduced a Sustainable Development Goals (SDG) category to assess institutions' contributions to environmental sustainability and responsible practices. This addition underscores the government's commitment to promoting "green" practices in higher education.

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**Sample Registration System (SRS) Statistical Report 2023**

The Sample Registration System (SRS) Statistical Report 2023, published by the Office of the Registrar General & Census Commissioner, India, provides comprehensive data on fertility and mortality indicators at national and sub-national levels. This report is a crucial resource for policymakers, researchers, and civil services aspirants, offering insights into demographic trends across India.

**Key Findings from SRS Statistical Report 2023**

Parameter	Definition	2023 India Data
<b>Total Fertility Rate (TFR)</b>	Average number of children a woman is expected to have during her reproductive years (15–49 years).	<b>1.9</b> (below replacement level 2.1)
<b>Crude Birth Rate (CBR)</b>	Number of live births occurring during the year per 1,000 population.	<b>18.4 per 1,000 population</b>
<b>Crude Death Rate (CDR)</b>	Number of deaths occurring during the year per 1,000 population.	<b>6.4 per 1,000 population</b>
<b>Infant Mortality Rate (IMR)</b>	Number of deaths of infants under 1 year of age per 1,000 live births.	<b>25 per 1,000 live births</b>
<b>Sex Ratio at Birth (SRB)</b>	Number of female births per 1,000 male births.	<b>917 girls per 1,000 boys</b>

### State-wise Highlights (Toppers & Bottoms)

- **Highest TFR:** Bihar – 2.8
- **Lowest TFR:** Delhi – 1.2
- **Highest SRB:** Chhattisgarh – 974 girls per 1,000 boys
- **Lowest SRB:** Uttarakhand – 868 girls per 1,000 boys

### About the Sample Registration System (SRS)

- The SRS is a large-scale demographic survey conducted by the Office of the Registrar General & Census Commissioner, India under the Ministry of Home Affairs (MHA).
- **Established:** 1970 (in collaboration with the United Nations Population Fund – UNFPA).
- **Purpose:** To provide reliable annual estimates of vital statistics, including birth rates, death rates, fertility, and other demographic indicators, at both national and sub-national levels.
- **Method:** Continuous demographic survey based on a dual-record system – sample surveys combined with civil registration records.
- The SRS provides reliable annual estimates, serving as a vital tool for monitoring demographic changes and informing policy decisions.

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## NHRC National Conference on Transgender Rights

- **Theme:** Revamping Spaces, Reclaiming Voices
- **Venue:** Stein Auditorium, India Habitat Centre, New Delhi
- **Chief Guest:** Justice Shri V. Ramasubramanian, Chairperson, NHRC
- **Organised by:** National Human Rights Commission (NHRC), India

### Objectives:

- Address systemic discrimination and promote meaningful inclusion of transgender persons.
- Review the implementation of the Transgender Persons (Protection of Rights) Act, 2019, and the SMILE Scheme.
- Recommend policy reforms to strengthen institutional care, reduce stigma, and enhance access to education, healthcare, and employment.
- Ensure greater accountability and sensitisation within law enforcement agencies.

### Participants:

- Government officials, judicial and legal experts, policymakers, civil society organisations, community leaders, academics, law enforcement agencies, and media representatives.

### Legal & Constitutional Framework Upholding Transgender Rights

#### 1. Transgender Persons (Protection of Rights) Act, 2019

- **Definition:** A transgender person is someone whose gender identity does not match the gender assigned at birth.
- **Key Provisions:**
  - **Non-Discrimination Clause:** Prohibits exclusion or unfair treatment in education, employment, healthcare, housing, and access to public services.

- **Self-Identification:** Recognises the right to self-perceived gender identity, allowing individuals to obtain identity certificates from the District Magistrate without the requirement of medical or psychological assessments.
- **Healthcare Access:** Mandates provision of gender-affirming medical care, HIV surveillance, and inclusion in public health insurance schemes.
- **Statutory Institutional Mechanism:** Establishes the National Council for Transgender Persons (NCTP) to advise the central government on welfare policies, monitor implementation, and coordinate inter-ministerial efforts.

## 2. NALSA v. Union of India (2014)

- **Outcome:** Recognised transgender persons as the "third gender" under Articles 14, 15, 19, and 21 of the Constitution, affirming that gender identity is integral to dignity, equality, and personal autonomy.

## 3. Karnataka High Court in Ms. X vs State of Karnataka (2024)

- **Ruling:** Upheld the right of transgender persons to change name and gender on birth certificates, as permitted under the Transgender Persons (Protection of Rights) Act, 2019, and its Rules, 2020.

## 4. Election Commission Directive (2009)

- **Provision:** Introduced an "others" option in voter registration forms, allowing transgender individuals to avoid male or female classification.

## Key Challenges Faced by Transgender Persons in India

- **Marginalisation:** Historical invisibility continues to impact social and economic inclusion, despite progressive laws and judgments.
- **Healthcare Access:** Transgender persons face stigma, bullying, and rejection, leading to poor mental health. A NALSA survey found 27% were denied healthcare due to gender identity.
- **High Cost of Gender-Affirming Treatments:** Treatments cost Rs 2–5 lakh and are often not covered in insurance. Ayushman Bharat TG Plus provides medical coverage but its awareness and accessibility remain limited.
- **Educational Disparities:** The literacy rate among transgender persons stands at 56.1% (2011 Census), significantly lower than the national average of 74%, highlighting the lack of a gender-sensitive curriculum.
- **Economic Exclusion:** Transgenders face employment bias, workplace hostility, and lack of gender-neutral facilities, limiting economic opportunities. 92% experience economic exclusion (NHRC 2018) and 48% are unemployed (ILO 2022).
- **Financial Services Access:** Despite a 2024 RBI circular allowing transgender and queer persons to open joint bank accounts and nominate partners, access to financial services remains limited due to institutional gaps and low awareness.
- **Law Enforcement and Social Protection Gaps:** Garima Greh shelters face issues like inadequate funding, poor awareness, and limited state coverage. Challenges in ID issuance, complex certification processes, and issues like police harassment and family rejection continue to hinder self-identification and timely support.

## Key Measures for Transgender Welfare in India

- **SMILE Scheme & Garima Greh:** Provides rehabilitation, skill development, healthcare, and livelihood support for transgender persons.

- **Ayushman Bharat TG Plus:** Offers health insurance coverage for gender-affirming treatments and healthcare needs.
- **National Portal for Transgender Persons:** Facilitates access to schemes, services, and grievance redressal.
- **Inclusion in Disability Pension Scheme:** Transgender individuals are included under the disability pension scheme with a specific “transgender” option.
- **Prison Reforms:** The Ministry of Home Affairs (2022) directed prisons to ensure privacy and dignity for third-gender inmates.
- **State-Level Initiatives:** Maharashtra has set up transgender cells in colleges, while Kerala provides university reservations and hostel facilities for transgender students.

## Way Forward -

### 1. Legal Framework

- Fully implement the Transgender Persons (Protection of Rights) Act, 2019 by setting up grievance redressal cells, a central digital portal for applications, conducting audits, and training police, health, and education officials on transgender rights and gender sensitivity.

### 2. Economic Empowerment

- Promote gender-inclusive policies, diversity hiring, financial schemes, and entrepreneurship support, scaling successful corporate models like Tata Steel’s diversity program. A World Bank report (2021) estimates that integrating transgender persons into the workforce could boost India’s GDP by 1.7%.

### 3. Access to Social Services

- Schools and colleges should implement inclusive policies, provide teacher training, prevent bullying and discrimination, expand counselling services, ensure gender-neutral washrooms, and promote peer and teacher support for transgender students.
- Ensure insurance coverage for gender-affirming treatments, establish dedicated clinics, expand mental health services, and provide sensitivity training for providers.

### 4. Awareness Campaign

- Conduct gender sensitisation programs, encourage diverse media representation, support cultural events like the Koovagam Festival, and promote campaigns like “I Am Also Human” to reduce stigma. Koovagam Festival is an annual traditional festival celebrated by the transgender community in Koovagam village, Tamil Nadu. It is deeply rooted in Tamil culture and the legend of Lord Aravan from the Mahabharata.

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## SMILE Scheme (Support for Marginalized Individuals for Livelihood and Empowerment)

- **Implemented by:** Ministry of Social Justice & Empowerment
- **Objective:** Provide comprehensive support to vulnerable populations, including transgender persons, for rehabilitation, skill development, healthcare, and livelihood opportunities.

### Components:

1. **Garima Greh:** Temporary shelters for adult transgender persons in need.
2. **Rehabilitation & Livelihood Support:** Skill training, entrepreneurship support, and assistance for social reintegration.
3. **Healthcare & Counselling:** Physical and mental health support, including gender-affirming care.

### Garima Greh

- **Purpose:** Provide safe housing and holistic care for destitute transgender adults.
- **Features:**
  - Temporary rehabilitation for up to 1 year.
  - Safe shelter with essential amenities.
  - Access to healthcare, counselling, skill development, and livelihood opportunities.
  - Support reintegration into society with dignity and independence.
- **Coverage:** Initially piloted with 12 shelters across 9 states/UTs, now integrated into SMILE.

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## Centenary Celebrations of Self-Respect Movement (1925)

### Self-Respect Movement (1925) -

**Founder:** E.V. Ramasamy (Periyar)

**Year Launched:** 1925 in Tamil Nadu

**Also Known As:** Dravida Iyakkam

**Publication:** Kudi Arasu (Tamil weekly)

**Influences:** Jyotirao Phule, B.R. Ambedkar, Vaikom Satyagraha

### Core Objectives

The movement aimed to:

- **Eradicate the caste system** and Brahminical dominance.
- **Promote rationalism**, individual dignity, and scientific thinking.
- **Advocate for gender equality**, including women's rights to education, property, and participation in public life.
- **Encourage self-respect marriages** and inter-caste unions.
- **Reject religious orthodoxy**, superstition, and priestly rituals.

**These objectives were articulated in two key pamphlets:**

- **Namathu Kurikkol**- focused on promoting self-respect, rational thinking, and the rejection of caste-based hierarchies.
- **Tiravitak Kalaka Lateiyam**- Addressed the social evils prevalent in society, especially the oppressive caste structures and Brahminical dominance, advocating social reform and equality.

**Key Features**

- **Self-Respect Marriages:** Introduced simple, priest-less ceremonies legally recognized in Tamil Nadu in 1967.
- **Women's Leadership:** Prominent figures like Annai Meenambal and Veeramal led the movement, advocating for women's rights and social reforms.
- **Social Reforms:** Opposed the Devadasi system, caste discrimination, and restrictions on widow remarriage.
- **Rationalist Ideology:** Emphasized scientific thinking and rejected blind faith and superstition.

**Historical Context**

Periyar, disillusioned with the Indian National Congress's focus on political freedom while neglecting social reforms, founded the Self-Respect Movement to address caste-based inequalities. The movement gained momentum through the publication of Kudi Arasu, which disseminated its ideals and reached a wide audience. Kudi Arasu was a Tamil weekly magazine launched by E.V. Ramasamy (Periyar) in 1925 as the mouthpiece of the Self-Respect Movement.

**Legacy and Impact**

- **Dravidian Politics:** Laid the ideological foundation for Dravidian political parties like the DMK and AIADMK.
- **Social Awakening:** Fostered a sense of pride and self-worth among marginalized communities in Tamil Nadu.
- **Legal Reforms:** Influenced the legalization of self-respect marriages and other social reforms in the state.
- **Centenary Celebrations:** In 2025, the centenary was commemorated with discussions on its enduring relevance in combating caste-based discrimination and promoting social justice.

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## **National Maritime Heritage Complex (NMHC) at Lothal, Gujarat**

**Overview:**

The National Maritime Heritage Complex (NMHC) is an ambitious cultural and tourism project being developed in Lothal, Gujarat, to showcase India's rich maritime heritage spanning over 4,500 years. Situated at the site of the world's earliest known dockyard from the Harappan civilization, NMHC aims to establish the largest maritime heritage complex globally. The project is being developed under the Sagarmala Programme by the Ministry of Ports, Shipping and Waterways (MoPSW).

**Key Features:**

- **Lighthouse Museum:** The complex will house the world's tallest lighthouse museum, funded by the Directorate General of Lighthouses and Lightships (DGLL).
- **Coastal State Pavilions:** Dedicated sections representing the maritime heritage of various coastal states of India.
- **Maritime-Themed Eco-Resort:** A resort designed to provide an immersive experience of India's maritime culture.
- **Interactive Exhibits:** The complex will feature state-of-the-art exhibits that blend education and entertainment, utilizing the latest technology to immerse visitors in India's maritime history.

**Development and Funding:**

- **Under Sagarmala Programme:** The project is being developed by MoPSW to promote port-led development and enhance the maritime sector's contribution to the economy.
- **Estimated Cost:** The total estimated cost for NMHC is ₹4,500 crore.
- **Funding Sources:** The project is being funded through a combination of public and private investments, including contributions from major ports and corporate social responsibility (CSR) initiatives.

**Lothal:**

- **Archaeological Significance:** Lothal is one of the prominent cities of the ancient Harappan civilization, dating back to 2600 BCE. Excavations have revealed the oldest known man-made **dockyard**, highlighting its importance as a maritime center in ancient times.

**Significance:**

- **Cultural and Educational Impact:** NMHC aims to preserve and promote India's maritime history, serving as an educational hub for visitors and researchers.
- **Tourism and Employment:** The complex is expected to boost tourism in Gujarat and generate over 22,000 jobs, contributing to the local economy.

**Birmania Rock Phosphate Mine Proposal in  
Great Indian Bustard Habitat (2025)**

**Context:**

- The Union Environment Ministry's Expert Appraisal Committee (EAC) has given Terms of Reference (ToR) for conducting an Environment Impact Assessment (EIA) study for the Birmania Rock Phosphate mine in Jaisalmer, Rajasthan.
- The proposed mining area falls within the potential Great Indian Bustard (GIB) conservation zone.
- **EAC Directions:**
  - Engage a national institute of repute to assess the presence of GIB.
  - Submit an action plan for conservation and management.
  - Conduct blasting studies for impact on local fauna.

- Comply with Supreme Court orders regarding GIB habitat.

## Great Indian Bustard (GIB)

### About

- One of the heaviest flying birds in the world (height ~1 m, weight 15–18 kg).
- Mainly found in Rajasthan's Thar Desert, with small populations in Gujarat, Maharashtra, Karnataka, and Andhra Pradesh.
- **One among four bustard species in India:**
  - Great Indian Bustard
  - Lesser Florican
  - Bengal Florican
  - Macqueen's Bustard
- **Omnivorous**, vulnerable to power line collisions due to narrow frontal vision.



### Ecological Significance

- **Keystone species** and flagship grassland species.
- Indicator of grassland ecosystem health → reflects biodiversity pulse.
- **Keystone** → maintains ecological balance.
- **Flagship** → symbol for conservation.
- **Indicator** → health-check for grassland ecosystems.

### Protection Status

- **Wildlife Protection Act, 1972:** Schedule I
- **IUCN:** Critically Endangered
- **CITES:** Appendix I
- **State bird of Rajasthan**

### Major Threats

- **Habitat loss:** Mining, industry, wind turbines, renewable energy projects.
- **Power line collisions:** ~18 GIB deaths/year (WII 2020 study).
- **Pollution:** Pesticide-contaminated feed.
- **Hunting/poaching:** For meat and feathers.
- **Slow reproduction:** Nesting and foraging disrupted by grazing, recreation, and tourism.

### Conservation Efforts

- **National Bustard Recovery Plan (2013)** → evolved into Bustard Recovery Project (2016–2033).
- Led by Wildlife Institute of India, funded by CAMPA. Compensatory Afforestation Fund Management and Planning Authority, a body established under the Compensatory Afforestation Fund (CAF) Act, 2016, to manage funds collected from user agencies for diverting forest land to non-forest uses, ensuring compensatory afforestation activities and ecosystem services are promoted and

managed. The purpose of CAMPA is to facilitate and oversee afforestation and regeneration to offset forest land loss for development projects.

- **Focus:** Conservation breeding, ex-situ population, applied research, and awareness.
- **Population (2024):** ~140 GIBs; <1,000 Lesser Floricans.
- **Supreme Court role:** Ordered undergrounding of power lines in priority GIB habitats; formed a 7-member committee to balance conservation with renewable energy expansion.

## Phosphate Rock

### About

- Rock containing high phosphorus content, crucial for phosphate fertilizers.
- Provides essential nutrients for plant growth.

### Formation

- **Sedimentary origin** - accumulation of organic matter on ocean floors over millions of years.

### Mining

- Extracted by surface mining (open-pit, dragline, excavator).

### Global Distribution

- Major reserves: Africa, North America, Kazakhstan, Middle East.
- **Morocco** - largest deposits & leading global producer.

### India

- **Major producers** : Rajasthan & Madhya Pradesh.
- **Import dependence** : ~90% of India's phosphate rock needs are imported.

### Uses

- **Phosphate fertilizers** (primary use in agriculture).
- **Animal feed supplements** (calcium phosphate).
- **Industrial chemicals** from pure phosphorus.

## Environment Impact Assessment (EIA)

### About

- **Definition:** A process used to identify, predict, and evaluate the environmental, social, and economic impacts of a proposed project before it is given approval.
- **Objective:** To ensure that developmental projects are environmentally sustainable and minimize adverse effects.

### Legal/Policy Framework in India

- **First introduced:** 1976-77 (by Dept. of Science & Technology, for river valley projects).
- **Formalized under:** Environment (Protection) Act, 1986.
- **Current Regulation:** EIA Notification, 2006 issued under the EPA, 1986.
- **Implementing Agency:** Union Ministry of Environment, Forest and Climate Change (MoEFCC).

### EIA Process in India

1. **Screening:** Determines if a project requires EIA.
2. **Scoping:** Preparation of Terms of Reference (ToR), defining what should be studied.
3. **Impact Assessment & Baseline Data Collection:** Studies on air, water, soil, biodiversity, etc.
4. **Public Consultation:** Hearings to gather views of affected communities.
5. **Appraisal:** Expert Appraisal Committee (EAC) or State-level committee examines EIA report.
6. **Decision:** Grant, reject, or modify clearance.
7. **Monitoring & Compliance:** Ensuring adherence to conditions.

### Significance

- Balances development needs with environmental protection.
- Ensures participatory decision-making through public hearings.
- Helps meet sustainable development and international obligations (e.g., Rio Declaration, 1992).

### Challenges

- Often treated as a formality rather than a rigorous process.
- Delays and corruption in clearances.
- Weak enforcement of post-clearance monitoring.
- Conflict of interest as consultants are hired by project proponents.

### Recent Issues

- **EIA Draft Notification 2020:** Proposed changes like reduced public consultation and post-facto clearances → faced criticism for diluting environmental safeguards.
- **Supreme Court directions:** Emphasized need for strict compliance and no ex-post facto approvals for polluting industries.

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### ZAPAD 2025

- The Indian Armed Forces contingent comprising 65 personnel has departed for Russia to take part in ZAPAD 2025.
- **Composition:**
  - **57 personnel** from the Indian Army
  - **7 personnel** from the Indian Air Force
  - **1 person** from the Indian Navy
- The Army component is led by a battalion of the Kumaon Regiment, along with troops from other arms and services.
- The exercise is scheduled to be conducted at the Mulino Training Ground, Nizhniy, Russia.

### Objectives of ZAPAD 2025 - What the MoD Statement Specifies

- “The multilateral Exercise ZAPAD 2025 is aimed at enhancing military cooperation, improving interoperability, providing a platform for participating armies to exchange tactics, techniques and procedures in the domains of conventional warfare and counter-terrorism operations.”

- “The exercise will focus on joint company-level operations in open and plain terrain, undertake missions ranging from joint planning, tactical drills, and special arms skills, valuable opportunity to hone joint operational capabilities, integrate emerging technologies, operate in a multinational combat environment.”

**Additional Context & Relevance**

- ZAPAD (“West” in Russian) is a series of joint exercises originally between Russia and Belarus; India joining reflects its defence diplomacy and approach of strategic autonomy.
- Since other nations including some NATO members are participating as observers, it shows the multilateral nature of the drill.

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## SIC’s Major Initiatives: SPREE-2025 & Amnesty Scheme 2025

**1. SPREE-2025 (Scheme for Promotion of Registration of Employers & Employees)**

- **Approved By:** ESIC during its 196th meeting in Shimla, under the chairmanship of the Union Minister for Labour & Employment.
- **Objective:** Expand social security coverage under the ESI Act by encouraging unregistered employers and employees (including contractual/temporary workers) to register voluntarily, without fear of retrospective liabilities.

**Key Features / Criteria:**

Feature	Details
<b>Portals for Registration</b>	Employers can register via ESIC portal, Shram Suvidha portal, or Ministry of Corporate Affairs portal.
<b>Date of Validity</b>	Registration will be valid from the date declared by the employer.
<b>Retrospective Demands / Inspections</b>	No demands for past contributions, no past period benefits, no inspections or record demands for pre-registration period.
<b>Enrolment Scope</b>	Includes temporary, contractual workers, and employers not previously registered under ESI.
<b>Voluntary Compliance Emphasis</b>	Scheme designed to remove fear of penalties, and legal/criminal action for past non-compliance for the unregistered period.

**2. Amnesty Scheme 2025**

- **Effective Period:** 1 October 2025 to 30 September 2026.
- **Objective:** Reduce backlog of legal disputes related to the ESI Act (coverage, contributions, liabilities), promote ease of compliance, and reduce litigation.

**Key Features / Criteria:**

Feature	Details
<b>Settlement of Assessments</b>	Ad-hoc assessments can be settled by paying actual contributions + interest; no damages will be levied.
<b>Withdrawal of Cases</b>	Cases where dues already paid may be withdrawn subject to paying 10% of disputed damages.
<b>Delayed Records / Returns</b>	Cases due to non-submission of records/returns but later complied with are also considered.
<b>Jurisdiction</b>	Regional Directors / Sub-Regional Officers empowered to process case withdrawals during the Scheme period.
<b>Special Conditions</b>	Certain conditions regarding closed units, units that have been non-functional, and records availability; for instance, if records aren't available, alternate records may be accepted; minimum payment thresholds apply.

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## Indian Navy's First Training Squadron Deployment to La Réunion & Mauritius

**Context**

- Ships of the Indian Navy's First Training Squadron (1TS) – INS Tir, ICGS Sarathi, and INS Shardul – made concurrent port calls (different ships of the First Training Squadron (1TS) visited two separate ports at the same time) at La Réunion (France) and Port Louis (Mauritius) (Sept 2025) as part of their Long Range Training Deployment.
- Objective:** Strengthen naval diplomacy, regional cooperation, and the vision of MAHASAGAR in the Indian Ocean Region (IOR).

**Key Highlights**

**At La Réunion (France):**

- PASSEX (Passage Exercise)** with French Navy ship FS Nivose.
- Professional exchanges: cross-training visits, joint diving, yoga sessions, sports fixtures.

**At Port Louis (Mauritius):**

- INS Shardul conducted joint EEZ surveillance with Mauritius Coast Guard (MCGS Victory) and Dornier aircraft.
- Professional training: diving, firefighting, damage control, shipboard familiarisation.

**About the Ships**

- INS Tir:** First dedicated Indian Navy cadet training ship, based at Kochi.
- ICGS Sarathi:** Offshore Patrol Vessel built by Goa Shipyard Ltd., enhancing Coast Guard ops.
- INS Shardul:** Amphibious warfare vessel, active in training, surveillance & Humanitarian Assistance and Disaster Relief (HADR) missions.

### Strategic Significance

- Enhances interoperability with French Navy and Mauritius Coast Guard.
- Strengthens India–France and India–Mauritius defence partnerships.
- Promotes regional stability, maritime security, and capacity building in IOR.
- Supports India’s MAHASAGAR vision — fostering maritime cooperation and connectivity.

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## National Conference on Adi Karmayogi Abhiyan with Project Officers of Integrated Tribal Development Agencies (ITDAs) to Chart Future of Tribal Development

The Ministry of Tribal Affairs organized the National Conference on Adi Karmayogi Abhiyan with Project Officers of Integrated Tribal Development Agencies (ITDAs) at Bharat Mandapam, New Delhi.

The two-day national platform brought together ITDA Project Officers, State Tribal Secretaries, and Commissioners from more than 20 States to collectively chart the roadmap for India’s tribal development initiatives in 2025–26 and beyond.

### Adi Karmayogi Abhiyan

#### About

- **Launched by:** Ministry of Tribal Affairs (MoTA), 2025.
- **Nature:** World’s largest tribal grassroots leadership programme.
- **Vision:** To empower tribal communities, strengthen responsive governance, and build local leadership aligned with Viksit Bharat @2047.
- **Guiding Principles:** Sewa (Service), Sankalp (Resolve), Samarpan (Dedication) under Sabka Saath, Sabka Vikas, Sabka Prayas, Sabka Vishwas.
- **Part of:** Janjatiya Gaurav Varsh- To commemorate the contributions of tribal freedom fighters and to honour tribal heritage, culture, and values and recognising tribal struggles in India’s freedom movement and promoting tribal pride. Announced by Government of India in November 2021.

#### Objectives

- Promote responsive, people-centric governance at village and community levels.
- Conduct Governance Lab Workshops / Process Labs for capacity building of state, district, and block-level master trainers.
- Co-create Tribal Village Vision 2030 for 1 lakh tribal villages (action plans + investment strategies).
- Build a network of 20 lakh change leaders across 550 districts and 30 States/UTs.

#### Key Components

##### 1. Adi Sewa Kendra

- In all tribal-dominated villages.
- Officers + community members dedicate time as Adi Sewa Samay for issue resolution and youth mentoring.

##### 2. Governance Lab Workshops

- Multi-departmental structured process labs (state → village).

- Co-creation of solutions for tribal development.
- 3. **Tribal Village Action Plan (Vision 2030)** – It involves joint planning by tribal communities and government officers at village level, to map out development goals, investment strategies, and action plans for 1 lakh tribal-dominated villages by 2030
- 4. **Saturation of Govt Schemes** in tribal regions.

#### Volunteer Roles

- **Adi Sahyogi:** Teachers, doctors, professionals (mentors & mobilizers).
- **Adi Saathi:** SHGs, NRLM members, youth, tribal elders, local leaders (outreach & implementation).
- **Community Leadership Training:** Governance, problem-solving, and social mobilization training for youth & women.

#### Outreach & Coverage

- **Coverage:** 1 lakh tribal villages.
- **Mobilization:** 20 lakh change leaders in 550 districts & 30 States/UTs.
- **Builds on flagship schemes:**
  - Dharti Aaba Janjatiya Gram Utkarsh Abhiyan (convergence mission).
  - Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN) (focus on PVTGs).
  - National Sickle Cell Anaemia Elimination Mission.

#### Related Initiatives

- **Adi Sanskriti Platform** launched:
  - **Adi Vishwavidyalaya** (Digital Tribal Art Academy – 45 courses).
  - **Adi Sampada** (socio-cultural repository – 5,000 curated documents).
  - **Adi Haat** (online tribal marketplace linked to TRIFED).
- **Integrated Tribal Development Agencies (ITDAs):**
  - Set up in the 1970s–80s for targeted delivery of schemes to Scheduled Tribes.

#### Tribal Initiatives-

##### 1. Dharti Aaba Janjatiya Gram Utkarsh Abhiyan (DAGA)

#### About

- **Type:** Convergence-driven mission under Ministry of Tribal Affairs.
- **Objective:** Ensure holistic development of tribal villages by converging multiple government schemes.
- **Scope:** Tribal-dominated villages across the country.

#### Key Features

- Integrates essential services, schemes, and infrastructure delivery (health, education, water, sanitation, livelihoods).
- Promotes coordinated planning and implementation across central and state departments.
- Supports grassroots development, aligning with the Tribal Village Vision 2030.

## 2. Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN)

### About

- **Focus:** Particularly Vulnerable Tribal Groups (PVTGs).
- **Objective:** Ensure basic rights and socio-economic development for PVTGs.

### Key Features

- Covers housing, health, education, water, electrification, and livelihoods.
- Mission-mode implementation in PVTG habitations.
- Supports tribal inclusion and bridges gaps in social and economic indicators.

## 3. National Sickle Cell Anaemia Elimination Mission

### About

- **Objective:** Early detection, prevention, and treatment of **sickle cell anaemia** prevalent in tribal areas.
- **Scope:** Tribal and other vulnerable populations in India.

### Key Features

- Screening and diagnosis through health infrastructure.
- Provision of treatment and counseling, genetic counseling, and awareness campaigns.
- Aligns with broader goals of health equity and tribal health improvement.

These three initiatives collectively support inclusive development, health, and socio-economic empowerment of tribal communities under the Adi Karmayogi Abhiyan framework.

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## Isobutanol-Diesel Blending Trials in India

### Context

In a strategic shift from previous ethanol-diesel blending attempts, India is now exploring the blending of isobutanol with diesel. This initiative aims to enhance energy security, support agricultural incomes, and align with the National Biofuel Policy (2018) objectives of reducing fossil fuel dependence and promoting sustainable energy sources.

### Key Developments

- **Ethanol-Diesel Blending Challenges:** Earlier trials blending ethanol with diesel faced technical issues, including poor compatibility with diesel engine combustion systems, leading to corrosion and performance inefficiencies.
- **Isobutanol as an Alternative:** Isobutanol, a four-carbon alcohol derived from ethanol, is now being tested as a potential diesel additive. It offers –
  - higher energy density and
  - lower water absorption compared to ethanol,
  - potentially reducing engine corrosion risks.
- **Current Trials:** The Automotive Research Association of India (ARAI) is conducting trials with 10% isobutanol-diesel blends to assess engine compatibility, fuel efficiency, and emission performance.

- **Flex-Fuel Options:** Explorations are underway for flex-fuel systems combining isobutanol with Compressed Natural Gas (CNG) for agricultural machinery and tractors, aiming to provide cleaner fuel alternatives in the farm sector.
  - **Flex-fuel (flexible-fuel)** vehicles are designed to run on more than one type of fuel, usually a combination of petrol/diesel and biofuel (like ethanol, methanol, or isobutanol). The engine automatically adjusts to the fuel mixture.

### Strategic Importance

- **Energy Security:** Reducing reliance on imported fossil fuels by incorporating domestically produced biofuels.
- **Agricultural Support:** Creating stable markets for crops like maize and sugarcane, enhancing farmer incomes.
- **Environmental Benefits:** Contributing to cleaner emissions and supporting India's commitment to sustainable energy practices.

### Isobutanol

- **Chemical Nature:** A four-carbon alcohol with the formula  $C_4H_{10}O$ , flammable, colorless, and liquid at room temperature.
- **Production:**
  - **Petrochemical route:** From petroleum derivatives.
  - **Biochemical route:** Fermentation of biomass (like sugarcane, corn, or agricultural residues).
- **Key Properties (vs Ethanol):**
  - **Higher energy density:** Closer to diesel → better fuel efficiency.
  - **Lower hygroscopicity:** Absorbs less water → reduces engine/pipeline corrosion.
  - **Compatible with engines:** Can be blended with diesel or used in flex-fuel systems.
- **Applications:**
  - Standalone fuel and in CNG-isobutanol flex-fuel systems for tractors/agri-machinery.
  - Industrial solvent in paints, coatings, and chemicals.

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### National Biofuel Policy, 2018 (India)

- **Objective:**
  - Promote biofuels to reduce fossil fuel dependence, support farmers, mitigate environmental pollution, and enhance energy security.
  - Encourage use of second-generation (2G) and non-food feedstock to avoid conflict with food security.
- **Key Features:**
  - **Target:**
    - Achieve **20% ethanol blending in petrol by 2030**.
    - Promote biodiesel (B5, B10 blends) and advanced biofuels.
  - **Feedstock Flexibility:**
    - Food-based (1G) crops: sugarcane, maize, etc.
    - Non-food (2G) crops: crop residues, forestry residues, non-edible oils.

- **Ethanol Production:**
  - Encourages molasses, sugarcane juice, starch-based feedstock.
  - Incentivizes cellulosic ethanol (2G) using crop residues and forestry biomass.
- **Biodiesel Production:**
  - From non-edible oils (e.g., jatropha, pongamia, neem).
- **Advanced Biofuels:**
  - Algae-based fuels, bio-CNG, and bio-methanol promoted.
- **Flex-Fuel Vehicles & Infrastructure:**
  - Supports development of flex-fuel vehicles capable of running on ethanol or methanol blends.
  - Encourages creation of bio-refineries and storage/distribution infrastructure.
- **Government Support:**
  - Financial incentives, viability gap funding, and soft loans for biofuel projects.
  - Ensures procurement price support for ethanol by OMCs (Oil Marketing Companies).
- ❖ **Expected Benefits:**
  - **Energy Security:** Reduces crude oil imports.
  - **Environmental:** Lowers GHG emissions and air pollution.
  - **Agriculture:** Provides additional revenue for farmers through crop residues.
  - **Rural Employment:** Promotes rural entrepreneurship in biofuel production.
- ❖ **Implementation Agencies:**
  - **Ministry of Petroleum and Natural Gas (MoPNG)** – policy nodal agency.
  - **Ministry of New and Renewable Energy (MNRE)** – technology support.

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## Samudra Pradakshina: First Ever Tri-Service All-Women Circumnavigation Sailing Expedition

- **Flag-Off:**
  - **Date:** 11 September 2025
  - **Flagged off by:** Raksha Mantri Shri Rajnath Singh (virtually from South Block)
  - **Venue:** Gateway of India, Mumbai
- **Objective & Significance:**
  - Promote Nari Shakti and gender empowerment in the armed forces.
  - Demonstrate jointness and interoperability among the three Services: Army, Navy, Air Force.
  - Symbolizes Aatmanirbhar Bharat, India's defence innovation, and military diplomacy.
  - Aligns with Viksit Bharat vision and India's strategic maritime footprint.
- **Crew & Training:**
  - **10 women officers:** Expedition Leader Lt Col Anuja Varudkar, Deputy Leader Sqn Ldr Shraddha P Raju, plus 8 other officers from Army, Navy, and Air Force.

- **Training period:** 3 years, progressively increasing from small offshore expeditions to IASV Triveni (Class A yacht).
- **Previous experience:** Mumbai → Seychelles → Mumbai expedition in 2025 as preparatory voyage.
- **Vessel:**
  - **IASV Triveni**, 50-foot indigenously-built yacht (Puducherry).
  - Embodiment of Aatmanirbhar Bharat in defence technology.
- **Route & Duration:**
  - **Duration:** 9 months (Sep 2025 – May 2026)
  - **Distance:** ~26,000 nautical miles
  - **Route highlights:** Eastern circumnavigation covering all major oceans, crossing the Equator twice, rounding the three great Capes – Leeuwin(Australia), Horn(Chile, South America), Good Hope(South Africa).
  - **Port Calls:** Fremantle (Australia), Lyttelton (New Zealand), Port Stanley (Canada), Cape Town (South Africa).
- **Challenges:**
  - Southern Ocean & Drake Passage: Massive swells, freezing winds, unpredictable storms.
  - **Operations under World Sailing Speed Record Council norms:** sail-only propulsion, all longitudes crossed, >21,600 nautical miles.
  - Crew works in watch systems: sailing, navigation, maintenance, cooking, coping with sleep deprivation.
- **Scientific & Diplomatic Activities:**
  - **Research collaboration with National Institute of Oceanography:** micro-plastics, ocean life documentation, marine health awareness.
  - Port calls serve as defence diplomacy, showcasing India's culture, values, and naval capabilities.
- **Background / Context:**
  - **First global solo circumnavigation:** Sir Robin Knox-Johnston (1969, UK)
  - **First Indian solo circumnavigation:** Captain Dilip Donda (2009–10)
  - **First non-stop Indian circumnavigation:** Commander Abhilash Tomy (2012–13)
  - **Previous Indian Navy women-led circumnavigation:** Navika Sagar Parikrama (INSV Tarini, 2017–18 & 2024–25)
- **Strategic Relevance:**
  - Strengthens maritime diplomacy and global projection of India's armed forces.
  - Promotes women empowerment in high-risk defence and maritime operations.
  - Enhances joint training, endurance, and operational capabilities in extreme ocean conditions.

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## Manki-Munda System and Ho Tribe

### Context:

- ❖ Recently, some Scheduled Castes (SCs) and Other Backward Classes (OBCs) communities in West Singhbhum raised concerns about the Munda's authority, especially regarding:
  - **Restrictions on Livelihoods:** Mundas allegedly limiting the Gope community's ability to pursue livelihoods beyond traditional roles.
  - **Absenteeism:** Some Mundas were reportedly absent from their villages, causing delays in official processes.

In response, the Deputy Commissioner (DC) issued a nine-point directive aimed at enhancing transparency in the Manki-Munda system. However, this move led to protests from the Ho community, who felt their traditional system was being undermined.

### Manki-Munda System

- **Traditional governance system** of the Ho tribe in Jharkhand's Kolhan region, existing before British colonization.
- **Munda:** Village head, resolves socio-political disputes at the village level; hereditary.
- **Manki:** Oversees a group of villages (8–15); escalates unresolved disputes.
- The system had no sovereign authority, no revenue or tax role, purely self-governing.

### Impact of British Rule

- **East India Company** introduced taxes post-1764 (Treaty of Allahabad, Permanent Settlement Act 1793), pressuring local zamindars.
- **Adivasi revolts: Ho Revolt (1821–22), Kol Revolt (1831–32).**

**Captain Thomas Wilkinson & Manki-Munda System-** Codification (1833–37): Captain Thomas Wilkinson, Political Agent in Kolhan, formalized the traditional Manki-Munda system through 31 rules (Wilkinson's Rules), recognizing Mundas and Mankis while integrating them into the British administration.

### Key Outcomes:

- Maintained tribal autonomy in internal governance.
- Facilitated influx of non-tribal settlers into Kolhan.
- Introduced the concept of private property and land deeds (pattas), creating individual land ownership among the Ho community.

### Kolhan Government Estate (KGE) dissolved

- After India became independent in 1947, the British-created Kolhan Government Estate (an administrative unit) was abolished.
- However, the rules that had been laid down by Captain Thomas Wilkinson (the "Wilkinson's Rules") for the Manki-Munda system were largely left untouched.
- This means that even though India introduced general laws for governance, the traditional tribal system continued to operate in Kolhan with some autonomy.

### Courts and Wilkinson's Rules

- Over the years, courts accepted Wilkinson's Rules as a legitimate customary system, recognizing the role of Mundas and Mankis in their villages.
- In *Mora Ho vs State of Bihar* (2000), the Patna High Court clarified that these rules are customary law, not formal statutory law, but could still be applied because there was no alternative system suitable for the Ho tribal areas.

### Recognition of Nyaya Panch (Feb 2021)

- The Jharkhand government formally recognized the Nyaya Panch, which is essentially a local court system run by Manki-Munda leaders.
- These leaders were given responsibilities like:
  - **Revenue-related work:** Keeping track of land records, collecting small local taxes.
  - **Local dispute resolution:** Settling minor conflicts and disagreements in villages.
- This integration ensures that the traditional system works alongside modern governance, helping tribal communities manage their affairs while respecting Indian law.

#### In short:

Even after Independence, the Ho tribe's traditional governance continued to exist. Courts and the state government have worked to recognize and integrate it into modern administration, giving Mundas and Mankis a legal role while preserving their cultural autonomy.

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### INS Aravali Commissioned at Gurugram

- **Purpose and Strategic Importance:** INS Aravali, the Indian Navy's latest shore-based naval facility, was commissioned in Gurugram, Haryana, to enhance Maritime Domain Awareness (MDA) and strengthen India's command, control, and communication networks. The base will serve as a technological hub, integrating information from various naval centers for better situational awareness in the Indian Ocean Region (IOR).
- **Name and Motto:** Named after the resilient Aravali mountain range, the base embodies vigilance and endurance. Its guiding motto is: 'सामुद्रिकसुरक्षायाः सहयोगं' (Maritime Security through Collaboration).
- **Functions and Capabilities:**
  - Acts as a center for information and communication infrastructure supporting naval operations.
  - Facilitates coordination among multiple Indian Navy information centers and intelligence networks.
  - Enhances India's ability to monitor maritime activity and respond to emerging challenges in the IOR.
  - Supports the vision of MAHASAGAR, promoting regional maritime cooperation and security.
- **Significance:** INS Aravali reinforces India's strategic posture as a preferred security partner in the IOR, contributing to both national security and regional stability.

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## India-USA Joint Military Exercise Yudh Abhyas 2025

- **Event and Location:** The 21st edition of Exercise Yudh Abhyas is being held at Fort Wainwright, Alaska, USA. An Indian Army contingent, comprising personnel from a battalion of the Madras Regiment, has been deployed for the exercise.
- **Training Focus:** Over two weeks, participants will conduct a range of tactical drills, including:
  - **Heliborne operations** and employment of surveillance and unmanned aerial systems (UAS).
  - Mountain warfare and rock-craft techniques.
  - Casualty evacuation and combat medical aid.
  - Integrated operations involving Artillery, Aviation, and Electronic Warfare systems.
- **Expert Workshops:** Subject-matter experts from both armies will hold working groups on Counter-UAS operations, information warfare, communications, and logistics.

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## Swasth Nari Sashakt Parivar Abhiyaan (SNSPA) 2025

### Introduction:

The Swasth Nari Sashakt Parivar Abhiyaan (SNSPA) is a flagship initiative jointly launched by the Ministry of Health and Family Welfare (MoHFW) and the Ministry of Women and Child Development (MoWCD). It represents the largest-ever health outreach for women and children in India and emphasizes women's health, family well-being, and community participation.

### Objectives:

#### 1. Enhance Women's Health:

- Comprehensive screenings for anaemia, hypertension, diabetes, reproductive health issues, breast & cervical cancer, tuberculosis, and sickle cell disease.
- Specialist care by gynaecologists, surgeons, dentists, and other medical professionals.
- Early detection and timely treatment to reduce health disparities in urban, rural, and tribal areas.

#### 2. Maternal and Child Health:

- Provision of antenatal care, immunisation, and Mother & Child Protection (MCP) cards.
- Nutritional support through Poshan 2.0 and other national programs.
- Focus on reducing maternal and child mortality rates.

#### 3. Behavioural Change and Education:

- Awareness campaigns on menstrual hygiene, balanced nutrition, healthy lifestyles, and preventive care.
- Community-level education facilitated by Anganwadis, ASHAs, and Nikshay Mitras.

#### 4. Community Participation:

- Engagement through Jan Bhagidaari model, involving private hospitals, volunteers, and local leaders.
- Strengthening grassroots support for health interventions.

### Implementation Strategy:

- **Health Camps:**

- More than 10 lakh health camps to be conducted at Ayushman Arogya Mandirs, Community Health Centres (CHCs), and District Hospitals.
- Services tracked via the SASHAKT portal for real-time monitoring, transparency, and accountability.
- **Digital and Grassroots Integration:**
  - Healthcare workers (ASHAs, ANMs, MPWs, CHOs) report activities through the portal.
  - Volunteers and Nikshay Mitras assist in outreach and TB control.
- **Multi-Platform Awareness:**
  - Campaign leveraged via Doordarshan, All India Radio (AIR), and social media.
- **Specialist Services:**
  - Mobilisation of specialists from AIIMS, Defence/Railway hospitals, ESIC, CGHS, INIs, and private hospitals to ensure quality care.

**Key Health Services Covered:**

- **Screening and treatment:** Anaemia, hypertension, diabetes, cancer, tuberculosis, sickle cell disease.
- **Maternal and child health:** Antenatal care, immunisation, nutrition monitoring, MCP cards.
- **Specialist medical services:** Gynaecology, Paediatrics, Dermatology, Eye, ENT, Dental, Psychiatry.
- **Preventive and behavioural health:** Menstrual hygiene, nutrition awareness, lifestyle education.

**Integration with Other Schemes:**

- **Janani Shishu Suraksha Karyakram (JSSK):** Free antenatal and postnatal care for mothers and newborns.
- **Janani Suraksha Yojana (JSY):** Financial assistance for institutional deliveries.
- **Surakshit Matritva Aashwasan (SUMAN):** Zero-cost maternal and neonatal care up to six months post-delivery.
- **Mission Indradhanush:** Enhanced immunisation for children and pregnant women.
- **Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA):** Antenatal check-ups for high-risk pregnancy detection.
- **Pradhan Mantri Matru Vandana Yojana (PMMVY):** Maternity benefits for first and second children.
- **Suposhit Gram Panchayat Abhiyaan:** Rewards top-performing Gram Panchayats in maternal and child nutrition.

**Expected Impact:**

- **Improved health indicators:** Reduced maternal and child mortality, early detection of NCDs and communicable diseases.
- **Behavioural change:** Greater awareness on hygiene, nutrition, and wellness.
- **Expanded healthcare access:** Especially in **rural and tribal areas**.
- **Community engagement:** Active participation of volunteers, health workers, and local institutions.

**Significance:**

- SNSPA is aligned with the Viksit Bharat 2047 vision, emphasizing women-led development, family empowerment, and inclusive growth.

- Strengthens preventive, promotive, and curative healthcare for women and children.
- Integrates technology, community participation, and national health schemes to ensure sustainability and equitable impact.

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### Rashtriya Poshan Maah (RPM)

- Rashtriya Poshan Maah is celebrated every September across India to raise awareness on nutrition and malnutrition prevention among children, adolescent girls, pregnant women, and lactating mothers.
- Launched under the POSHAN Abhiyaan (National Nutrition Mission) by the Ministry of Women and Child Development (MoWCD).
- Focuses on improving maternal and child nutrition, aligning with India's goal to reduce stunting, undernutrition, and low birth weight.

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### Moran Community Economic Blockade in Assam

#### Context:

- The Moran community in Tinsukia district, Assam, has initiated an economic blockade, halting the movement of goods to press for Scheduled Tribe (ST) status recognition.
- Tinsukia is a resource-rich district with oil, coal, and tea industries, making the blockade significant for the regional economy.

#### About the Moran Community:

- **Aboriginal Tribe:** The Morans were historically an independent kingdom before coming under Ahom rule.
- **Religious Affiliation:** In the 17th century, they were converted to Vaishnavism by Aniruddhadeva, leading to cultural and social renewal.
- They are associated with the Moamoria sect of Vaishnavism and have a small population in Arunachal Pradesh's Namsai district.

#### Demand for ST Status:

- The Morans are among six communities in Assam demanding ST recognition, along with Tea Tribes/Adivasis, Motok, Tai Ahom, Chutia, and Koch-Rajbongshi.
- **Recent Development:** In March 2025, the Assam government announced issuing Permanent Residence Certificates (PRCs) to Moran residents in Arunachal Pradesh, addressing part of their long-standing concerns.

#### Significance:

- Recognition as a Scheduled Tribe would provide the Moran community with constitutional safeguards, reservations in education and employment, and enhanced socio-economic development opportunities.
- The blockade highlights ongoing ethnic and identity-based demands in Assam, reflecting broader challenges in addressing the rights of indigenous communities.

## Aquamonitrix: Portable Ion Chromatography System

### Context:

- Aquamonitrix is a portable ion chromatography (IC) system recently developed for rapid, on-site water quality analysis.
- It allows monitoring of ions and chemical pollutants in rivers, lakes, and drinking water without the need for a full laboratory setup.
- The system is particularly relevant for environmental monitoring, supporting initiatives under the National Water Quality Monitoring Program (NWQMP) in India.

### Chromatography: Overview

- **Definition:** Chromatography is a technique for separating components of a mixture based on differences in their interaction with a stationary phase and a mobile phase.
- **Principle:** Components move at different rates through the medium, allowing separation and analysis.
- **Types:** Includes gas chromatography (GC), liquid chromatography (LC), thin-layer chromatography (TLC), and ion chromatography (IC).

**Chromatography** is like a race between different ingredients in a mixture. Imagine you drop a mix of colored inks on a piece of paper. Some colors move faster, some slower, as water (or another liquid) carries them along.

The stationary phase is like the paper—it stays in place. The mobile phase is like the water—it moves and carries the mixture along.

Because each ingredient interacts differently with the paper and water, they separate out, letting us see or measure them individually.

**In short:** chromatography is a way to separate and identify different substances in a mixture, even if they are invisible to the naked eye.

### Ion Chromatography (IC): Explanation

- **Definition:** Ion chromatography is a form of liquid chromatography that separates and quantifies ionic species—cations (e.g.,  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ) and anions (e.g.,  $\text{Cl}^-$ ,  $\text{NO}_3^-$ ,  $\text{SO}_4^{2-}$ ).
- **Mechanism:**
  1. A sample solution is passed through a column containing resin that selectively binds ions.
  2. Ions interact differently with the stationary phase and are eluted at different times.
  3. A detector measures the ions, providing quantitative analysis.

In ion chromatography, the “column” is like sponge, but instead of soaking water, it’s filled with special beads (resin).

These beads grab specific charged particles (ions) from a mixture as it flows through, while other particles pass through.

By the time the mixture comes out the other end, the ions are separated and can be measured.

So basically, the column acts like a filter that knows exactly which ions to catch, helping scientists see what’s in a water sample or other solution.

### Applications of Ion Chromatography:

1. **Water Quality Analysis:** Detects heavy metals, nitrates, chlorides, sulfates, and other pollutants in rivers, lakes, groundwater, and drinking water.
2. **Environmental Monitoring:** Tracks industrial effluents and chemical contaminants to prevent pollution.
3. **Food and Beverage Industry:** Monitors salt, sugar, and additive levels in food products.
4. **Pharmaceutical Industry:** Detects ionic impurities in drugs and formulations.
5. **Research & Laboratories:** Used in chemical, biological, and material sciences to quantify ionic species.

### Significance of Aquamonitrix:

- Enables rapid, field-level water quality assessment, reducing dependence on centralized laboratories.
- Supports real-time decision-making for water safety and pollution control.
- Aligns with India's Sustainable Development Goal 6 (Clean Water and Sanitation) initiatives.

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## Sarnath

### Why Sarnath is in the News

- India has officially nominated the “Ancient Buddhist Site, Sarnath” for inclusion in the UNESCO World Heritage List under the 2025–26 nomination cycle.
- Sarnath has been on UNESCO's Tentative List since 1998, highlighting its historical and cultural importance.
- The nomination seeks global recognition of Sarnath's Outstanding Universal Value (OUV) and aims to strengthen its conservation and heritage management.

### Sarnath: Historical and Religious Significance

#### Location

- Situated near Varanasi in Uttar Pradesh, Sarnath is a major Buddhist pilgrimage site.
- It is famously associated with Gautama Buddha's first sermon (Dhammacakkappavattana Sutta) after attaining enlightenment.

#### Other Names

- Historically known as Rishipatana, Mrigadava, Mrigadaya.
- The modern name likely derives from Saranganatha (“Lord of the Deer”), reflecting its historical association with deer parks.

### Significance in Buddhism

- Sarnath is one of the **four key pilgrimage sites** in Buddhism:
  1. **Lumbini** – Birth of Buddha
  2. **Bodh Gaya** – Enlightenment
  3. **Sarnath** – First sermon
  4. **Kushinagar** – Death (Mahaparinirvana)

- The ashes of Buddha were enshrined in stupas at these sites to commemorate significant events in his life.

## Architectural and Archaeological Features

### Main Monuments

#### Group A

##### 1. Chaukhandi Stupa

- Built around the **5th century CE** to honor Buddha.
- Features a tall brick structure with an **octagonal tower** added in **1588 CE** by Govardhan, son of Raja Todarmal, commemorating Humayun's visit.

#### Group B

##### 1. Dhamek Stupa

- Constructed around **500 CE**, marks the **exact spot of Buddha's first sermon**.

##### 2. Dharmarajika Stupa

- Built by **Emperor Ashoka (3rd century BCE)** to house relics of Buddha.

##### 3. Ashokan Pillar

- Originally crowned with the **Lion Capital**, now **India's National Emblem**.

##### 4. Ancient Monasteries and Votive Stupas

- Structures from the **3rd century BCE to 12th century CE** reflect Mauryan, Kushan, Gupta, and Gahadavala architectural styles.

### Restoration and Historical Changes

- Ashoka promoted Buddhism and built stupas and monasteries after the Kalinga War.
- The site flourished under the Kushans, Guptas, and Harshavardhana, who restored structures after Huna invasions.
- Guptas added artistic stone-carved floral designs to the Dhamek Stupa.
- Destroyed during Mahmud of Ghazni's 11th-century raids, later restored by Mahipala of the Pala dynasty.
- Dharmachakra Jina Vihara, built in the 11th century by Kumaradevi, marks the last major historical monument.

### Excavations and Museums

- **Sir Alexander Cunningham** conducted the first scientific excavation (1834–36).
- **Ashokan Lion Capital** and pillar base excavated by Friedrich Oscar Oertel (1904–05), later adopted as India's State Emblem (26th Jan 1950).
- **Sarnath Archaeological Museum** houses the original Lion Capital and other artefacts.
- **Mulagandha Kuti Vihar**, built by the Mahabodhi Society, contains vibrant frescoes narrating Buddha's life.

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## UNESCO World Heritage Context

### About UNESCO Sites

- Sites recognized for their exceptional cultural or natural significance under the World Heritage Convention, 1972.
- India ratified the Convention in 1977, joining 195 countries.
- Only one site per year can be nominated by a State Party for inscription.

### Nodal Agency in India-

- **Archaeological Survey of India (ASI)** handles all World Heritage matters in India.

### UNESCO Designation Criteria

#### Selection Criteria

- A site must demonstrate Outstanding Universal Value (OUV) and meet at least one of ten criteria (merged into a single list in 2005).

#### Nomination & Evaluation Process

1. Inclusion in the Tentative List.
2. Submission of a detailed nomination dossier by the State Party.
3. Evaluation by advisory bodies:
  - **ICOMOS** (cultural sites)
  - **IUCN** (natural sites)
  - **ICCROM** (technical expertise and training)
4. **World Heritage Committee** makes the final decision (annual meeting).

#### India's Role

- India is a current member of the World Heritage Committee (2021-25), contributing to global heritage governance.

## Kerala Urban Policy Commission (KUPC) and Lessons for Sustainable Urbanisation

Kerala has become the first Indian state to establish an Urban Policy Commission with a 25-year roadmap to manage rapid urbanisation sustainably. The KUPC report, recently submitted to the State government, has drawn national attention as it offers lessons for other states on balancing growth with climate resilience, governance reform, and financial empowerment.

### Key Recommendations of KUPC for Sustainable Urbanisation

1. **Climate-Sensitive Urban Planning**
  - Integrate hazard maps (floods, landslides, coastal risks) into zoning rules to prevent development in disaster-prone areas.

- Encourage restoration of wetlands, waterways, and heritage zones to preserve ecosystems and cultural heritage.

## 2. Real-Time Urban Data System

- Establish a digital observatory using LiDAR, satellite data, and weather sensors to guide municipal planning.
- Promote community-driven data by incorporating experiences of fisherfolk, street vendors, and other urban communities into planning.

## 3. Financial Autonomy & Resilience

- Introduce green fees for eco-sensitive projects and parametric climate insurance for disaster management.
- Issue municipal bonds for large cities; smaller towns can adopt pooled bond models for infrastructure funding.

## 4. Urban Governance Reforms

- Form elected city cabinets led by mayors.
- Set up specialist municipal teams for waste management, climate adaptation, transport, etc.
- Launch “Jnanashree” to recruit skilled youth into local governance.

## 5. Place-Based Growth & Inclusive Planning

- Recognise city-specific strengths:
  - Kochi – FinTech hub
  - Thiruvananthapuram & Kollam – knowledge corridor
  - Kozhikode – literary city
  - Palakkad & Kasaragod – smart-industrial centres
- Establish City Health Councils to provide healthcare and welfare support for migrants, gig workers, and students.

## 6. Participatory & Inclusive Approach

- Ensure citizen participation in urban planning.
- Blend technological data with lived experiences to make urban policy grounded and effective.

## Urbanisation Trends in India

- India’s urban population is projected to reach 600 million (40%) by 2036, up from 31% in 2011, with cities contributing nearly 70% of GDP.
- **Key Drivers:**
  1. **Demographic Transition & Migration** – rural-to-urban migration for jobs, education, and healthcare.
  2. **Economic Transformation** – growth of IT, manufacturing, and service sectors.
  3. **Policy Initiatives** – Smart Cities Mission, AMRUT, PMAY-U 2.0, and National Infrastructure Pipeline.
  4. **Technological Integration** – AI, IoT, and Digital Public Infrastructure (DPIs) for smart governance.
  5. **Globalisation & Aspirations** – rising urban lifestyles and consumption patterns.

## Smart Cities Mission Link

- **Kerala’s approach complements Smart Cities Mission objectives:**

- Citizen-centric governance via digital tools and participatory decision-making.
- Sustainability through green infrastructure, energy efficiency, and climate resilience.
- Economic hubs tailored to city strengths, aligning with the mission's goal of economic growth and quality of life improvement.
- Lessons from KUPC can guide scaling Smart Cities projects across India, integrating climate sensitivity, local culture, and financial autonomy.

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## **Swachhata Hi Seva (SHS) 2025 – Key Highlights**

**Theme:** “Swachhotsav” – blending festive celebrations with the responsibility of cleanliness.

### **Organizers:**

- Department of Drinking Water & Sanitation
- Ministry of Housing & Urban Affairs
- Ministry of Culture (along with all attached, subordinate, and autonomous bodies)

### **Key Focus Areas of SHS 2025**

#### **1. Nukkad Natak & Awareness Drives**

- Street plays (Nukkad Natak) to sensitize citizens.
- Digital outreach via social media campaigns targeting Gen-Z to promote civic responsibility.

#### **2. Creative Engagement**

- Essay and poster-making competitions.
- “Kaabad se Jugaad” Workshop at National Science Center, Delhi – transforming waste/scrap into art forms, sculptures, and public displays.
- Participation of students, NGOs, and local communities.

#### **3. Shramdaan & Plantation Drives**

- “Ek Din, Ek Ghanta, Ek Saath” initiative with Archaeological Survey of India at Purana Quila, Delhi.
- Involves employees, citizens, and volunteers in cleaning and planting activities.

#### **4. Support for Sanitation Workers**

- Distribution of sanitation kits to safai mitras and other sanitation staff.

#### **5. Health and Social Awareness**

- Free health checkup camps.
- Sensitization on various Government of India schemes.
- Engagement with street vendors to promote hygiene adoption.

### **Special Initiatives**

- Cleanliness Target Units (CTUs): Over 200 neglected areas around ministry field offices identified for transformation.
- Promotion of community participation in keeping cultural spaces clean and green.
- Integration of cleanliness with cultural heritage preservation and environmental protection.

### Key Takeaways

1. **Policy/Programmatic Focus:** Demonstrates citizen-centric, participatory governance under flagship cleanliness initiatives.
2. **Alignment with National Goals:** Supports Swachh Bharat Mission, Swachh Bharat, Swasth Bharat, and indirectly contributes to Viksit Bharat 2047 vision.
3. **Innovative Approaches:**
  - Use of art (waste-to-art workshops) for awareness.
  - Digital engagement of youth (Gen-Z) for civic responsibility.
  - Integration of health, sanitation, and environmental objectives.
4. **Cultural Linkage:** Promotes preservation of cultural heritage alongside hygiene and urban cleanliness.
5. The campaign focuses on voluntarism, collective action, and public participation, promoting the three R's – Reduce, Reuse, Recycle to engage citizens in maintaining clean surroundings.

### Swachh Bharat Mission (SBM) –

**Launch:** 2nd October 2014 (on Mahatma Gandhi's birth anniversary)

**Aim:** Achieve Clean India, improve sanitation, eliminate open defecation, and promote hygiene awareness.  
Flagship Programme of: Ministry of Housing & Urban Affairs (Urban) and Ministry of Jal Shakti (Rural).

### Objectives

1. **Eliminate Open Defecation:** Construct toilets in households, schools, and public places.
2. **Solid Waste Management:** Improve waste collection, segregation, and disposal.
3. **Behavioral Change & Awareness:** Promote hygiene practices, cleanliness, and civic responsibility.
4. **Capacity Building:** Train local bodies and communities for sustainable sanitation practices.

### Phases of SBM

1. **SBM (Rural) – Phase I (2014–2019):**
  - Achieved Open Defecation Free (ODF) status in many villages.
  - Focus on community participation and behavioral change campaigns.
2. **SBM (Urban) – Ongoing:**
  - Integrates **waste management**, urban cleanliness, and public-private partnerships.
  - Aligns with **Smart Cities Mission** to improve urban infrastructure and sanitation.
3. **SBM (Rural) – Phase II (2020–2025):**
  - Focus on **ODF Plus**, sustainability, and solid & liquid waste management.
  - Includes **community-led sanitation & hygiene promotion**.

### Key Features & Strategies

- **Financial Incentives:** Grants for toilet construction and waste management infrastructure.
- **Technology Integration:** Digital monitoring, dashboards, mobile apps, and geo-tagging of toilets.
- **Community Participation:** Engagement through Swachhata Hi Seva (SHS) campaigns, nukkad nataks, and awareness programs.

- **Private Sector & NGOs:** Involvement in funding, awareness, and technical support.
- **Urban-Rural Convergence:** Coordination between SBM, Smart Cities Mission, AMRUT, and Jal Jeevan Mission.

### **Achievements**

- Over 10 crore toilets constructed in rural areas (Phase I).
- Large-scale behavioral change campaigns involving citizens, students, and volunteers.
- Many villages and urban wards declared ODF.
- Enhanced focus on waste management & resource recovery in both urban and rural areas.

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## **India Adds 7 Natural Sites to UNESCO Tentative List**

1. **Deccan Traps (Panchgani & Mahabaleshwar), Maharashtra**
  - Preserved lava flows; part of Koyna Wildlife Sanctuary.
  - Offers insights into massive volcanic activity.
2. **St. Mary's Island Cluster, Karnataka**
  - Known for columnar basaltic rock formations.
  - Dates back to Late Cretaceous period (101–66 million years ago).
3. **Meghalayan Age Caves, Meghalaya**
  - Mawmluh Cave serves as global reference point for Meghalayan Age (Holocene Epoch).
  - Reflects significant climate and geological transitions.
4. **Naga Hill Ophiolite, Nagaland**
  - Rare exposure of ophiolite rocks (oceanic crust on continental plates).
  - Offers insight into tectonic processes and mid-ocean ridge dynamics.
5. **Erra Matti Dibbalu (Red Sand Hills), Andhra Pradesh**
  - Red sand formations near Visakhapatnam; paleo-climatic and coastal geomorphology.
  - Declared a GeoHeritage Monument by GSI in 2016.
6. **Natural Heritage of Tirumala Hills, Andhra Pradesh**
  - Includes Eparchaeon Unconformity & Silathoranam (Natural Arch).
  - Part of Seshachalam Biosphere Reserve & Venkateswara National Park.
  - Represents over 1.5 billion years of Earth's history.
7. **Varkala Cliffs, Kerala**
  - Exposes Warkalli Formation (Mio-Pliocene age); features natural springs and erosional landforms.
  - Holds scientific and touristic significance.

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## UNESCO World Heritage Sites (WHS) – India

- **Definition:** Sites of outstanding universal value protected for future generations; can be cultural, natural, or mixed.
- **Convention:** Protected under the 1972 World Heritage Convention.
- **India's Ratification:** 1977
- **Current Status (Sept 2025):**
  - **Total WHS:** 44
    - Cultural – 49
    - Natural – 17
    - Mixed – 3
  - **Latest Inscription:** Maratha Military Landscapes of India (44th WHS)

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## Revisions in GST

Context: The 56th GST Council, chaired by Finance Minister Nirmala Sitharaman, approved a "Next-Gen GST" reform package, effective 22 September 2025

### Key Policy Reforms

#### 1. Simplified GST Structure

- A two-slab structure: 5% (Merit Rate) and 18% (standard rate); eliminating prior 12% and 28% slabs
- Designed for easier compliance, broader tax base, and transparent administration.

#### 2. Goods: Sector-Wise Rate Reductions

- **Essential consumer goods & food items:** GST cut to 5% or Nil (e.g., soaps, toothpaste, Indian breads).
- **Electronics & housing:** TVs (>32"), ACs, cement reduced from 28% → 18%; building materials like marble, bamboo, etc. from 12% → 5%.
- **Automotive:** Two-wheelers ≤350 cc & small cars, auto-parts: 28% → 18%

#### 3. Agriculture & Allied Inputs

- Input acids (e.g. ammonia), farm machinery including tractors (<1,800 cc), sprinklers, harvesters, drip irrigation: 12–18% → 5%, fixing inverted duty structures
- Bio-pesticides and micronutrients, prepared fruits/vegetables/nuts, dairy inputs (milk cans), honey, solar irrigation devices: 5% GST .

#### 4. Health & Nutrition

- Life-saving drugs, diagnostic kits, surgical devices: GST cut from 12% → Nil or 5%, improving affordability and access.
- Vision correction equipment: glasses and frames reduced from 28% → 5%.
- Health insurance, individual life insurance: exempted from GST, promoting coverage expansion.

#### 5. Goods with Higher Tax ("Sin Goods")

- Tobacco products, pan masala, cigarettes: GST increased to 40%; tax levied on retail price vs. transaction value to ensure simplicity and revenue collection .

### 6. Services Rate Rationalisation

- Key services such as gyms, salons, yoga studios: rate lowered from 18% → 5% to promote preventive wellness.
- Hotel accommodation (≤ ₹7,500/day): GST cut to 5%.

### 7. Trade Facilitation Process Reforms

- Establishment of GST Appellate Tribunal (GSTAT) by December 2025 to streamline dispute resolution.
- Administrative adoption of 90% provisional refunds (especially for inverted duty issues), pending legislative amendments.

### Strategic Merits & Forward Linkages

- **Pro-consumption & household relief:** Lower GST on essentials, health goods & services eases inflationary burden.
- **Strengthening MSMEs and exports:** Aligned fibre-to-garment tax rates (esp. textiles, handicrafts, toys) remove inverted duties and enhance competitiveness.
- **Agrarian support & sustainability:** Affordable farm inputs fuel mechanisation; bio-inputs support organic farming efforts.
- **Health agenda alignment:** Tax incentives bolster Ayushman Bharat, Fit India, and Poshan Abhiyaan efforts.
- **Structural simplification:** Two-slab system + process reforms promote transparency, compliance ease, and growth-oriented tax administration.

### Implementation Timelines

Initiative	Implementation From
GST rate changes for services and most goods	22 September 2025
Goods and services under 40% Demerit Rate	Continues under old rates until compensation cess obligations cleared; govt to notify transition date later

**7 PILLARS OF NEXT-GEN GST REFORMS**

- Pillar 1: Building on the success of GST.** One Nation, One Tax. Expanded the taxpayer base. Simpler 2-tier system (5% & 18%).
- Pillar 2: Rationalising rates for fairer taxation.** Smoother duty structures. Faster processing of refunds.
- Pillar 3: Simplifying filing through technology.** Easy registration for small & low-risk businesses. 90% upfront provisional refunds for exporters. Digital compliance with e-invoicing. AI-driven risk detection.
- Pillar 4: Putting consumers first.** Essential goods in the 0-5% bracket. High-value items like cars down from 28% + 18%.
- Pillar 5: Empowering MSMEs & manufacturers.** Fixed inverted duty structures. Simpler rates to support make in India.
- Pillar 6: Stronger states, stronger Bharat.** Sustainable revenue growth for all states. Rationalised rates will increase demand.
- Pillar 7: Lower taxes = Higher spending.** Families buy more, demand rises, industries grow. Cheaper appliances, electronics will increase demand.

Source – Ministry of Finance

## All India Debt & Investment Survey (AIDIS)

- Conducted by National Statistics Office (NSO) under Ministry of Statistics & Programme Implementation (MoSPI)
- **Legacy:** Originated in All-India Rural Credit Survey (1951–52); expanded to include investments from 1961–62 onward
- **Frequency:** Conducted roughly once every decade; last (77th round) took place January–December 2019 at the request of RBI
- **Upcoming round:** July 2026 – June 2027, under preparation, with public feedback invited on draft schedule

### Survey Coverage & Scope

- **Domains:** Household assets & liabilities, capital formation, investment behaviour, indebtedness, and financial inclusion
- **Population:** Nationally representative across rural & urban India
- **Sample size (2019 round):**
  - ~69,455 households in rural areas (5,940 villages)
  - ~47,006 households in urban areas (3,995 blocks)

### Policy Significance

- Informs national accounts and estimation of household wealth
- Assists in assessing asset inequality and wealth distribution patterns
- Shapes credit-market understanding and RBI's policy formulations
- Used by MoSPI, RBI, NITI Aayog, Ministry of Agriculture, financial researchers, and institutions for evidence-based policymaking

### Key Findings from 2019 Survey (77th Round)

- **Household net worth:** Highly skewed distribution
  - Mean ~ ₹19.5 lakh; median ~ ₹7.6 lakh
  - Bottom 10% net worth < ₹56,200; top 10% > ₹44 lakh
- **State-wise variation:**
  - Highest average net worth: J&K UT, Goa, Delhi
  - Lowest: Odisha, Tripura, Assam
- **By employment type:**
  - Self-employed (agricultural in rural; urban self-employed) show highest net worth (~₹24–40 lakh)
  - **Lowest:** casual labour households
- **Education correlation:**
  - Positive correlation between the education level of household head and net worth
- **Formal vs informal credit:**
  - Households with formal financial access (e.g. insurance, credit cards, e-wallets) have 2× higher net worth

- Informal loan holders show lower net worth (~₹15.5 lakh) vs non-holders (~₹20.5 lakh)

### Upcoming AIDIS 2026–27 — Key Features

- Public consultation open until 30 September 2025 (feedback on concept note & schedules)
- Likely new modules on:
  - Asset ownership trends, digital financial inclusion
  - Investment behaviour across income classes
  - Detailed indebtedness tracking (formal vs informal)
- Improved utility for RBI, ministries, researchers with more granular insights

### Key Facts

- **Institution:** NSO (MoSPI)
- **Last round:** 77th round (Jan–Dec 2019)
- **Next round:** Scheduled July 2026–June 2027
- **Sample size:** ~116,500+ households across rural & urban India
- **Primary users:** RBI, MoSPI, NITI Aayog, Ministry of Agri, researchers

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## India's National Sustainable Aviation Fuel (SAF) Policy

In news- India is formulating a National SAF Policy with a roadmap through 2050, aligned with its net-zero emissions target by 2070

### Blending Targets & Timeline

- Indicative targets approved by NBCC (Nov 2023):
  - **1% blending by 2027**
  - **2% by 2028**
  - **5% by 2030** — initially applicable only to international flights
- Estimated feedstock requirement:
  - ~700 million litres ethanol-equivalent for 5% blend by 2030

### Policy Drivers & Strategic Rationale

- **Compliance with global norms:** Meet CORSIA obligations and position India as a contributor to global SAF supply chain
- **Energy security:** Reduce import dependence on fossil-based jet fuel
- **Export potential:** Leverage low carbon-intensity ethanol and strong sugar/ biomass sector to become an SAF export hub by 2030

### Feedstock & Production Pathways

- Major feedstocks explored:
  - Sugarcane-derived ethanol (syrup, molasses, bagasse)
  - Used cooking oil (UCO), non-edible oils, agricultural residue, algae
- Technology pathways under ASTM standards:

- **HEFA, Fischer-Tropsch, Alcohol-to-Jet (ATJ)** up to 50% drop-in blends; 100% trial flights being tested internationally

### Sãofa Infrastructure & Industry Moves

- **IOC Panipat refinery** upgrading diesel desulphuriser unit (late 2025/early 2026) to produce ~30,000 tonnes/year of SAF from UCO
- **IndianOil's Panipat** plant has achieved international SAF certification for producing jet fuel from used cooking oil; target: 35,000 tonnes by year-end

### Challenges & Policy Bottlenecks

- **High production cost:**
  - SAF  $\approx 3\times$  cost of conventional jet fuel
  - Synthetic SAF (Power-to-Liquid)  $\approx 7\times$  cost
- **Classification issue:**
  - Currently treated as fossil fuel; reclassification under bioenergy would unlock incentives (e.g. under GOBAR-Dhan)
- **Feedstock constraints:**
  - Scaling supply without compromising food security or land-use demands careful management
- **Infrastructure & logistics gaps:**
  - Storage, blending, distribution networks at airports and refineries need upgrades
- **Certification & LCA:**
  - India lacks standardized Life Cycle Assessment benchmarks critical for CORSIA compliance; studies underway with TERI-ISMA

### Policy Architecture & Institutional Setup

- **Bio-Aviation Turbine Fuel Programme Committee** (under MoPNG/MoCA) facilitating policy formulation, certification, and stakeholder coordination
- Industry collaborators: **ISMA, Deloitte, TERI** working on LCA and feedstock planning

### Impacts & Benefits

- **Emission reduction:** Estimated reduction of **20–25 million tonnes CO<sub>2</sub> annually** by 2040, with 8–10 Mt SAF production capacity by FY2040
- **Rural & industrial benefits:** Job creation, value addition for sugarcane byproducts, enhanced energy access and circular economy potential
- **Alignment with net-zero goals and global bioenergy commitments**, such as the Global Biofuel Alliance

### Key Facts (Box)

- **Policy status:** In formulation; roadmap to 2050 aligned with net-zero by 2070
- **Blending targets:** 1% by 2027 → 2% by 2028 → 5% by 2030 (international flights initially)
- **Key ministries:** MoPNG (feedstock, certification), MoCA (implementation, compliance)
- **Notable infrastructure:** IOC Panipat SAF unit, certified for UCO-based SAF (~30–35 k t/yr)

- **Main challenges:** Cost, classification, feedstock availability, infrastructure, LCA certification

### Next Steps & Way Forward

- Finalise National SAF Policy with firm mandates, incentives, reclassification, and LCA benchmarks
- Scale up production capacities, especially ethanol-based and synthetic SAF, including HPCL–Boeing, Boeing–HPCL partnerships
- Build logistics infrastructure: airport blending facilities, storage tanks, supply chains
- Integrate SAF with biofuel, ethanol, and green hydrogen policies under aligned bioenergy plans and investment strategies

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## Five Years of the Blue Revolution

### Blue Revolution & PM Matsya Sampada Yojana — Background

- Blue Revolution refers to the integrated scheme for sustainable development of fisheries and aquaculture, overseen by the Ministry of Fisheries, Animal Husbandry & Dairying, executed via NFDB
- **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** launched on 10 September 2020, approved by Cabinet in May 2020, with an approved outlay of ₹20,050 crore during 2020-21 to 2024-25. Central share: ₹9,407 cr; State share: ₹4,880 cr; Beneficiaries: ₹5,763 cr
- Scheme extended to **2025-26** under the same design. As of July 2025: ₹21,274.16 cr approved, ₹5,587.57 cr released; central share ₹9,189.79 cr

### Vision & Objectives

- **Aim:** Harness fisheries potential sustainably, with inclusive growth to increase fish production, strengthen value chains, and enhance livelihoods and export earnings
- **Objectives include:**
  - Boost production & productivity (inland, marine, aquaculture)
  - Modernise post-harvest infrastructure
  - Double fisher/farmer incomes
  - Ensure food & nutritional security
  - Empower women & vulnerable groups
  - Strengthen regulatory frameworks and fisheries management

### Achievements (Five-Year Highlights)

- Fish production grew to 195 lakh tonnes in 2024-25, up from 141.64 lakh tonnes in 2019-20
- India became the second-largest fish producer globally, contributing nearly 8% of global output
- Exports rose from ₹46,662.85 cr (2019-20) to ₹60,524.89 cr (2023-24)
- Employment generation: 58 lakh jobs created by December 2024, surpassing the 55 lakh target
- Women empowerment: 99,018 women engaged via PMMSY with ₹4,062 crore sanctioned (2020-25)

### Structure & Components

- Dual components:

- Central Sector Scheme (fully central-funded)
- Centrally Sponsored Scheme (with state implementation), sub-divided into:
  - Production & productivity enhancement
  - Infrastructure & post-harvest management
  - Fisheries management & regulatory frameworks

### Challenges & Bottlenecks

- **Ecological risks:** Overfishing, biodiversity loss, coastal ecosystem threats due to climate change
- **Infrastructure gaps:** Cold storage, transport, value chain weak in remote areas
- **Limited reach:** Many small-scale fishers remain outside formal framework and assistance

### Case Study: Transformative Impact

- **Gumla (Jharkhand):** Ex-Maoist, Om Prakash Sahu, switched to fish farming with PMMSY support; transformed livelihoods of over 150 families in Basia block. PM Modi cited this as a symbol of the “Blue Revolution” changing lives

### Key Facts (Box)

- **Blue Revolution** umbrella scheme under Ministry of Fisheries
- **Scheme:** PMMSY, launched Sept 2020, ₹20,050 crore (2020-25), extended to 2025-26
- **Production:** 195 lakh tonnes in FY25; Exports: ₹60,525 cr in 2023-24
- **Employment:** 58 lakh jobs; Women beneficiaries: 99,018 with ₹4,062 cr funding

### Way Forward

- Strengthen cold chain logistics, insurance, traceability, and climate-smart practices
- Deepen outreach to marginal fishers via training and women-led enterprises
- Enhance governance: use GIS, MCS, and integrated data for sustainable fisheries management
- Scale blue economy initiatives under Maritime Amrit Kaal Vision and Sagarmala synergy for coastal development

## Decentralized Finance (DeFi)

In news- risks and vulnerabilities of DeFi

### What Is DeFi?

- **DeFi:** financial services (lending, borrowing, payments, trading, insurance) enabled through smart contracts on public blockchains (e.g. Ethereum), removing intermediaries like banks or exchanges .
- Operates via dApps, digital wallets, liquidity pools (e.g. Uniswap), and smart contracts that execute automatically once conditions are met.

### Key Features & Promise

- **Permissionless access:** Only needs internet connection and a crypto-wallet (no KYC/users remain pseudonymous).

- **Composability:** Modules like lending, token-swap, staking can be stacked to innovate new financial products .
- Offers fast settlement, low structural costs, and potential financial inclusion to unbanked populations

### Risks & Vulnerabilities

#### Technical & Operational Risks

- **Smart contract exploits:** Coding flaws can be hacked. Examples include price manipulation attacks and "rug-pulls" by developers.
- **Front-running and oracle failures:** Users or miners can manipulate transaction ordering; external data feeds (oracles) may be corrupted.

#### Concentration & Systemic Weaknesses

- Despite claims of decentralization, much of DeFi funding is provided by a few major depositors (less than 10 lenders supply ~50% of borrowing capacity).
- Liquidity mismatch and leverage amplify risk: shocks can cascade across protocols due to interconnectedness.

#### Governance & Illicit Use

- Governance mechanisms often centralized despite tokenized voting (e.g. Sybil attacks, proposal manipulation).
- Used for money laundering, terror financing, and other illicit flows (cybercriminal use DeFi protocols to move proceeds)

#### National Security & Regulatory Concerns

- Experts warn that DeFi's anonymity and borderless nature create national security risks by enabling unmonitored illicit finance.
- **India remains cautious:** Authorities see DeFi as a systemic risk that may undermine formal payments systems like UPI and broader financial stability.
- The FATF cautions that many platforms labeled "decentralized" actually have central points of control and should be brought under AML/CFT norms.

#### Financial Stability Impact

- **Connectedness to TradFi** is limited so far, limiting risks to mainstream finance—but rapid integration could change this balance
- IMF reports high borrower concentration and opaqueness; warns that DeFi may amplify traditional vulnerabilities like runs and liquidity gaps.

#### Key Facts

- **DeFi:** Automated financial services on blockchain with no traditional intermediary.
- **Security incidents:** Mango Markets hack (\$117M loss), numerous rug-pulls and protocol failures.
- **Major vulnerability:** Over-centralization of liquidity providers—fragile system if large withdraws occur.
- **Regulatory warning:** FATF and global bodies view DeFi as high risk; India views it as a potential threat to national payments infrastructure.

### Way Forward & Policy Outlook

- **Regulatory clarity:** Introduce AML/CFT mandates, define VASPs in DeFi context, incorporate FATF guidance.
- **Smart-contract auditing and certification:** Ministry or regulator-led standards for DeFi protocol safety.
- **Explore token tracking and traceability:** To prevent misuse without stifling innovation.
- **Monitor TradFi-DeFi linkages:** RBI should assess contagion and systemic exposure before full-scale integration.

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## Pink Tax

In News- Demands for removal of pink tax

**Pink Tax:** Invisible cost borne by women when products and services targeted at them are priced higher than similar ones for men.

- Not an official “tax” by govt → rather a market phenomenon reflecting gender-based price discrimination.
- Common in personal care products, clothing, toys, healthcare, financial services.

### Key Features

- **Not statutory:** Unlike GST or income tax, it’s an implicit cost from differential pricing.
- **Global presence:** Studies in US, EU show women’s products cost 7–13% more on average.
- **Sectors affected:**
  - Razors, shampoos, deodorants, haircuts.
  - Dry cleaning, clothing, children’s toys.
- **Financial services:** Higher health & auto insurance premiums for women in some markets.

### Causes

- **Market segmentation:** Branding & packaging differentiate products as “for women,” leading to higher margins.
- **Societal stereotypes:** Expectation of women spending more on grooming & appearance.
- **Inelastic demand:** Perceived as essential by women, so companies price higher.
- **Lack of awareness & regulation.**

### Evidence

- **India:**
  - No official nationwide survey.
  - Civil society & consumer reports highlight higher prices in FMCG & personal care.
- **International:**
  - 2015 New York City DCA study: Women’s products averaged **7% costlier** than men’s.
  - EU studies show systemic bias across categories.

### Policy & Legal Angle

- **India:**
  - No explicit “Pink Tax” law.
  - Consumer Protection Act, 2019 could be used for unfair trade practices.
  - GST Council exempts/reduces tax on **sanitary napkins**, partly addressing gender-based financial burden.
- **Global:**
  - California banned “gender-based pricing” (1995).
  - EU exploring regulations under gender-equality commitments.

### Implications

- **Economic:** Shrinks disposable income for women → deepens gender wealth gap.
- **Social justice:** Reinforces systemic gender inequality.
- **Policy debate:** Whether state should regulate private pricing practices.

### Key Facts Box

- Term first popularized in 1990s (US) consumer rights discourse.
- India: Women spend more on identical products due to branding & packaging differences.
- Pink Tax ≠ “Tampon Tax” →
  - Pink Tax = higher market price.
  - Tampon Tax = actual GST/VAT on menstrual products.

### Way Forward

- **Awareness:** Public campaigns on consumer rights.
- **Regulation:** Ban discriminatory pricing (like US states).
- **Consumer activism:** Pushback via social media, reviews, choices.
- **Research:** Official surveys to quantify the gendered cost gap in India.

## \*\*\*\*\* India’s Semiconductor Market & Ecosystem

In News- India’s semiconductor market is currently worth US \$54.3 billion in 2025, projected to reach approximately US \$103.5 billion by 2030. Broad estimates place India’s chip market between \$100–110 billion by 2030, signifying India’s rising global role.

### Market Drivers & Demand Segments

- Key demand sectors:
  - Consumer electronics, automobiles (especially EVs), 5G infrastructure, data centers, AI and industrial automation. These sectors account for roughly 70% of semiconductor demand.
- Global semiconductor market is headed toward US \$1 trillion by 2030, with India aspiring to capture ~10% share.

### Policy Push: India Semiconductor Mission (ISM) & Incentives

- Launched in December 2021 with a ₹76,000 crore (≈ US \$10 billion) incentive outlay under ISM, covering design, fabrication, assembly, and testing units

- As of Aug 2025, 10 semiconductor units approved across 6 states, with total investment ~₹1.6 lakh crore (~US \$19-20 billion).

### Major Projects & Collaborations

- **Tata-Semiconductor Assembly & Test (TSAT), Assam:** Indigenous OSAT unit worth ₹27,000 crore (~US \$3.6 billion), expected to produce ~48 million chips/day, generating 25-30k jobs.
- **HCL-Foxconn JV, Jewar (UP):** ₹3,706 crore (~US \$435 million) plant producing 20,000 wafers/month and 36 million display driver chips annually, targeted for commissioning by 2027.
- Other approved units in Gujarat and Assam with major partnerships (Tata-Powerchip; CG Power-Renesas & Stars Microelectronics) with total value of ₹1.26 trillion (~US \$15.2 billion).
- **L&T Semiconductor Technologies (LTSCT):** Planning a standalone US \$10 billion fab by 2027, backed by L&T and eligible for ~90% government incentives; transitioning from fabless to IDM.

### Talent & R&D Ecosystem

- Government plans to cultivate a pool of 275,000 chip designers by 2032, and expand semiconductor workforce to 1.2 million professionals.
- **SCL Mohali modernization:** India's only PSU integrated device fabrication lab (~180 nm CMOS), being upgraded with ₹2 billion investments for R&D and prototype production.
- **Indigenous chip architecture:** SHakti RISC-V processors developed by IIT Madras and manufactured at SCL; supported by MeitY under Digital India initiative.

### Challenges & Bottlenecks

- **High capital intensity:** Establishing fabs costs US \$5-7 billion per plant, washing out returns without strong demand and policy support.
- **Leadership gap:** Workforce skewed toward juniors—80% with less than 10 years' experience; shortage of mid- to senior-level talent.
- **Global competition:** Established hubs in Taiwan, South Korea, USA; India must close infrastructure, tech, and supply-chain gaps.

### Key Facts

- **Current market size:** US \$54.3 bn (2025); Projected range: US \$100-110 bn (2030).
- **ISM outlay:** ₹76,000 crore (~US \$10 bn) under India Semiconductor Mission.
- **Major investments:** ₹1.6 lakh crore approved across 10 units; includes OSAT, fabrication, packaging hubs.
- **Talent goal:** 275k designers by 2032; modernizing SCL; promoting SHAKTI – India's first RISC-V microprocessor.

### Way Ahead

1. Accelerate commissioning of fab units and build local supply chains (chemicals, gases, equipment).
2. Build talent ecosystem with university-industry collaboration, scholarships, design clusters.
3. Strengthen IP regulations and ease global tech partnerships while balancing autonomy.
4. Promote indigenous design (SHakti) and open-source frameworks to reduce dependence.
5. Monitor geopolitical shifts in chip supply chains to position India strategically in global electronics trade.

## AI for Viksit Bharat

In news- Report titled “AI for Viksit Bharat – The Opportunity for Accelerated Economic Growth” released by NITI Aayog

- Accompanied by launch of the Frontier Tech Repository under NITI Frontier Tech Hub, showcasing 200+ AI use-cases in Agriculture, Healthcare, Education, and National Security

### Growth Potential: AI’s Economic Impact by 2035

- AI adoption projected to add US \$500-600 billion to India’s GDP by 2035, acting as a key lever to achieve 8%+ annual growth and the Viksit Bharat vision
- Financial services and manufacturing expected to capture 20-25% of AI-driven GDP gains

### Strategic Pillars & Five-Point Roadmap

NITI identifies five key enablers for AI-led economic growth across sectors:

1. Accelerate AI adoption across industries (banking, auto, pharma, logistics, etc.)
2. Leverage generative AI to transform R&D, innovation, product discovery
3. Expand AI services exports, including AI-as-a-Service models
4. Build AI infrastructure: industrial parks, federated compute networks, data exchanges
5. Ensure ethical AI governance, include explainability, risk audits, consumer protection

### Enablers identified

- Public compute infrastructure (50,000 GPUs by 2027)
- Foundational models in Indian languages for model sovereignty
- Unified, sectoral data access with standardised, anonymised datasets
- AI-skilling: ~2.5 million AI-ready professionals by 2030
- Regional AI hubs and shared infrastructure to expand adoption

### Challenges highlighted

- GPU scarcity, high energy needs, compute bottlenecks
- Fragmented data ecosystem, limiting AI accuracy
- Talent gap, especially senior-level expertise, and persistent brain-drain
- Limited AI penetration among MSMEs, widening digital divide
- Regulatory ambiguity: sectoral rules not keeping pace with AI complexity

### Institutional Architecture & Initiatives

- Anchored by NITI Frontier Tech Hub under the IndiaAI Mission framework
- Frontier Tech Repository: Use-case library for districts and states to deploy proven AI solutions
- New initiatives:
  - **Frontier 50:** AI deployment in 50 aspirational districts/blocks
  - **NITI Frontier Tech Impact Awards:** Recognizing state governments for impactful tech adoption
- Existing base: IndiaAI Mission, operational under MeitY, informed by prior AI strategy (2018)

## Sectoral Opportunities & Impact Areas

(Estimates from NITI and McKinsey-aligned analysis)

- **Manufacturing:** Smart factories, automation → ~30% output rise (~US \$90 billion boost)
- **Financial inclusion:** AI-enabled credit scoring for ~150 million underserved borrowers
- **Agriculture:** AI advisory and predictive yield tools → 20-25% farm output gain
- **Healthcare:** AI triaging at CHCs can halve diagnostic backlog in high-vacancy districts

## Key Facts

- **Launch Date:** 15 September 2025, via PIB and NITI Aayog
- **Projected GDP Gains:** US \$500-600 billion by 2035
- **Top Beneficiaries:** Financial services & manufacturing (20-25%)
- **Compute Target:** 50,000 GPUs in public infrastructure by 2027
- **Skilling Goal:** ~2.5 million AI professionals by 2030
- **Flagship Initiatives:** Frontier Tech Repository, Frontier 50, Tech Impact Awards

## Way Forward & Policy Imperatives

1. **Domestic infrastructure scale-up:** Federated data platforms, GPU clusters, and regional innovation hubs
2. **Legislative oversight & ethical AI frameworks:** Incorporate AI audit norms, incident reporting, and consumer protections (in light of Sitharaman's caution)
3. **MSME inclusion:** Subsidies, awareness, hub-based AI adoption models for small enterprises
4. **Educational integration:** AI micro-credentials, diaspora reverse-skilling plans, continuous workforce upskilling
5. **Data access clarity:** Speed up operationalisation of IDMO for standardised public sector data exchange

## Himachal Pradesh Declared "Fully Literate State"

### Background & Context

On International Literacy Day, September 8, 2025, Himachal Pradesh (HP) was officially declared a fully literate state. It has achieved a literacy rate of 99.3%, much higher than the national benchmark defined for "fully literate". With this, HP has joined the elite group of states/UTs that have been declared "fully literate" under India's literacy initiatives (e.g., under the ULLAS / New India Literacy Programme).

### Definitions & Criteria

- Literacy is defined by the Ministry of Education as the ability to read, write, and compute with comprehension, i.e., to identify, understand, interpret and create, along with "critical life skills" such as digital literacy, financial literacy, etc.

- Full literacy (or being declared a “fully literate state/UT”) is considered when a state/UT achieves at least 95% literacy as per this definition.
- The programme under which this is recognised is ULLAS – Understanding of Lifelong Learning for All in Society, also referred to as the New India Literacy Programme (NILP)

### **Historical Progress of Literacy in Himachal Pradesh**

At independence (or early years post-independence), HP's literacy rate was very low; reports suggest just about 7%. Over decades, through successive governments, investments in education infrastructure, community engagement, and policy focus, the literacy levels have steadily increased to the current figure.

State Government of Himachal Pradesh- Prioritising education budget: the state spends about 17–18% of its total budget on education. Education reforms, reducing dropout rates to almost zero. Focusing on improving student-teacher ratio and quality of education.

### **Significance**

- Educationally, socially and politically this is a major milestone. Full literacy implies greater inclusion, empowerment, ability to access information, improved awareness.
- It reflects success in meeting goals of Inclusive education, adult education, and reducing disparities (gender, rural-urban).
- It strengthens the foundation for higher levels of schooling, skill training, employability.
- Aligns Himachal with national goals under NEP 2020, SDG 4
- Serves as a model state for others with challenging geography to learn from.

### **Challenges**

1. **Definition vs. Reality:** The “fully literate” tag is based on the definitions under ULLAS, which include assessment via FLNAT and with certain criteria (skills beyond just reading/writing). Some people may still be “functionally illiterate” (i.e., able to read/write but not comprehend, or lack digital/financial literacy, etc.)
2. **Data Lag / Accuracy:** Census data is older; periodic surveys etc. may lag in capturing all groups (e.g., very remote, marginalized, migrants).
3. **Sustainability:** Maintaining nearly zero dropout rates, ensuring quality (not just quantity), updating skills etc.
4. **Equality Issues:** Gender gaps, rural/urban disparity, social group differences may persist even if overall state average is high.
5. **Beyond Basic Literacy:** Literacy today means more—digital literacy, financial literacy, life skills, comprehension, critical thinking; one has to ensure those dimensions are also addressed.

### **Way Forward**

1. **Focus on Quality:** Ensuring comprehension, critical thinking, ability to apply what is learned (reading, arithmetic, etc.), not just passing exams.
2. **Strengthen FLNAT & Assessment:** Regular assessments for adult learners to check functional literacy and numeracy, digital skills, etc.
3. **Expand Digital, Financial, Legal Literacy:** These are part of modern definitions of literacy; programmes should include them robustly.

4. **Continuous Capacity Building:** Training teachers, volunteers; ensuring infrastructure, teacher-student ratios remain good; continuous monitoring.
5. **Special attention to marginalized sections:** Scheduled Castes, Scheduled Tribes, remote hamlets, women, migrants.
6. **Policy & Budgetary Sustainment:** Ensuring funding remains high; education remains a priority; integrate with other development programmes (health, social welfare) to ensure holistic development
7. **Learning from Best Practices:** Documenting what worked in HP (e.g. community participation, drop-out reduction, teacher ratios) so other states can replicate.

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## ULLAS / NEW INDIA LITERACY PROGRAMME

### What is ULLAS / NILP?

**Full form:** ULLAS stands for Understanding of Lifelong Learning for All in Society. It is also known as Nav Bharat Saaksharta Karyakram or New India Literacy Programme.

**Goal:** To achieve universal literacy among adults aged 15 years and above, especially those who missed out on formal schooling.

**Timeframe & Funding-** The scheme is approved for the period FY 2022-23 to FY 2026-27.

**Financial outlay:** ₹1,037.90 crore. Central share is about Rs.700 crore; State share approx Rs.337.90 crore.

**Definitions** -Under ULLAS, literacy is redefined: not just ability to sign name, but functional literacy (reading, writing, numeracy) plus ability to understand, interpret, apply. Added dimensions like digital literacy, financial literacy etc. (

Non-literates are those aged 15+ who were not able to go through or complete formal schooling.

### Key Objectives & Targets

- Impart Foundational Literacy & Numeracy (FLN) to non-literates aged 15+.
- The target is to cover 5 crore learners under FLN over 5 years (i.e. ~1 crore learners per year).

### Implementation Strategy & Mechanisms

**Volunteerism:** The scheme relies heavily on volunteers (“Volunteer Teachers / VTs”), motivated civic duty (Kartavya Bodh).

**Hybrid mode:** Both online and offline modes of delivery. Use of digital platforms, apps, as well as physical classes.

**Digital Platforms / Tools:** ULLAS Mobile App and Portal for registration of learners & volunteer teachers, content delivery, assessments.

### Assessment:

FLNAT (Foundational Literacy & Numeracy Assessment Test) is used to assess learners’ reading, writing, arithmetic etc.

Certifications are given jointly by NIOS & DoSEL (Department of School Education & Literacy) upon successful completion.

### Priority & Focus Groups

Particular focus on marginalised groups: women, SC/ST, OBC, minorities, persons with special needs, nomadic / migrant populations, construction workers labourers etc.

Geographic priority: Aspirational districts, educationally backward districts/blocks, districts with literacy rates below state average, etc.

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## Supreme Court Declares Mental Health As a Fundamental Right – Sukdeb Saha v. State of Andhra Pradesh (2025)

**Background & Context-** A 17-year-old student preparing for NEET died under suspicious circumstances while in a coaching institute/hostel. This case gave rise to a petition before the Supreme Court.

The case raised issues about student well-being, the burden of academic competition, mental health infrastructure in educational institutions & coaching centres.

### Judgment & Key Findings

- The Supreme Court held that mental health is an integral component of the Right to Life under Article 21 of the Constitution of India. The right to life includes dignity, autonomy, well-being—not merely survival.
- The Court observed that the Mental Healthcare Act, 2017, is rights-based legislation that mandates access to mental health care, prohibits inhuman or degrading treatment, and decriminalises attempted suicide. These legislative provisions underscore the constitutional duty.

### Guidelines (“Saha Guidelines”) Issued

To enforce this right, the Court provided a set of binding directions (interim orders) applicable especially to educational institutions, coaching centres, hostels, etc.

### Some of these guidelines include:

#### Area

1. **Educational Institutions & Coaching Centres-** Must proactively establish support systems for mental health — counselling services, safe & stigma-free environment.
2. **Regulatory Oversight-** States & UTs to notify rules within a specified timeline (e.g. 2 months) to register private coaching centres and enforce the guidelines.
3. **Monitoring Mechanisms-** District-level monitoring committees, often chaired by District Magistrates, to oversee implementation and handle complaints

### Legal & Constitutional Bases

1. Article 21 (Protection of life and personal liberty) is expanded to include psychological integrity, mental health and well-being, not merely physical health.
2. Mental Healthcare Act, 2017 is a statutory guarantee for mental health rights — Section 18 (right to access mental health services), Section 115 (decriminalisation of attempted suicide), protection from inhuman treatment, etc.

3. **Earlier precedents:** The Court draws on earlier judgments which recognised dignity, personal autonomy, freedom from degrading treatment under Article 21 (e.g. Navtej Singh Johar, Shatrughan Chauhan). These are woven into the reasoning.

### Relevance & Significance

1. **For Constitutional Law:** Elevates mental health from a statutory or policy objective to a fundamental right, enforceable via writ jurisdiction. Previously, mental healthcare was protected under legislation; now, its constitutional enforceability is clearer.
2. **For Students & Educational Institutions:** Recognises the role of competitive pressure, institutional neglect, and the mental health burden in settings like coaching centres and hostels. Institutions are now under obligation to ensure well-being, not just academics.
3. **Social & Human Rights Dimension:** Transforms perception of mental health — no longer just a welfare issue. Fosters accountability, reduces stigma, and supports legal redress.

### Challenges & Implementation Issues

1. **Resource constraints:** India has a severe shortage of mental health professionals, especially in rural areas. The judgment demands counsellors and support systems, which may be difficult to ensure everywhere.
2. **Quality & Reach:** Even where services exist, quality, competence, confidentiality, cultural sensitivity may be lacking. Also, many institutions may not have prior experience or infrastructure.
3. **Regulation of Coaching Centres:** Private coaching centres are often loosely regulated; enforcing guidelines, registration, oversight may face resistance or slow roll-out.
4. **Monitoring & Accountability:** District-level committees are a good idea in the judgment, but whether they will have teeth, resources, or autonomy is to be seen.
5. **Stigma and Awareness:** Legal rights are necessary but insufficient — societal mindsets, stigma around mental illness, shame, non-disclosure are big roadblocks.

### Way Forward

1. **Legislative codification:** Parliament may consider passing a mental health code or amending existing laws to embed these guidelines permanently.
2. **Institutional capacity building:** Recruiting, training, deploying sufficient counsellors, psychologists, psychiatric professionals across urban & rural India.
3. **Policy & Budgetary Commitment:** Increased allocation in health budgets specific to mental health. Support for the infrastructure needed in educational institutions.
4. **Awareness, education & anti-stigma campaigns:** Schools, colleges, communities need awareness programmes so that students, parents, teachers recognize psychological distress early.
5. **Data, research & monitoring:** Regular mental health surveys, tracking compliance with guidelines, recording student suicides or near misses, assessing implementation of the right in practice.

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## Who Mental Health Report 2025

**Context-**The World Health Organization (WHO) released its latest comprehensive World Mental Health Report in September 2025. The report provides updated data on the global mental health burden, challenges, policy gaps, and urgent recommendations. It is a key international benchmark shaping mental health policies worldwide, including India.

### Key Highlights and Data

1. **Global Prevalence-** Over 1 billion people globally suffer from mental health disorders, such as anxiety, depression, bipolar disorder, and schizophrenia.
2. **Leading Cause of Disability-** Mental illnesses are the second leading cause of long-term disability worldwide after cardiovascular diseases.
3. **Suicide -** Nearly 727,000 annual suicide deaths worldwide; suicide is a leading cause of death among youth. Current global efforts project only a 12% reduction by 2030, below the UN SDG target of one-third reduction.
4. **Economic Impact-** Estimated \$1 trillion USD loss in productivity annually due to mental health conditions globally.
5. **Treatment Gap -** More than 75% of people with mental health conditions in low- and middle-income countries receive no treatment or inadequate care.

### Legal and Policy Insights

- Only 45% of countries have mental health laws fully compliant with international human rights standards.
- Median government spending on mental health is approximately 2% of total health budgets, indicating chronic underfunding.
- Many mental health policies remain outdated, with a strong institutionalization bias rather than community-based, rights-centered care.

### Recommendations by WHO

1. Urgent transformation of mental health systems.
2. Shift from institutional care to community-based, rights-respecting services.
3. Ensure accessibility, quality, and non-discrimination in mental health care.
4. Scale-up of mental health services worldwide, focusing on integration with primary health care.
5. Investment increase: Call for countries to raise the proportion of health budgets dedicated to mental health.
6. Focus on human rights: Eradicate coercive, abusive practices in mental health care.
7. Data & Research: Strengthen data collection systems to better understand and address mental health needs.

### Relevance to India

India accounts for a significant share of the global mental health burden.

#### Challenges include:

1. Severe shortage of mental health professionals (less than 1 per 100,000 population).
2. Mental health services mainly urban-centric, poor rural penetration.
3. Social stigma prevents many from seeking care.

4. India's Mental Healthcare Act, 2017 aligns with WHO's rights-based approach but requires stronger implementation and increased funding.

**WHO recommendations encourage India to:**

1. Increase mental health budget allocation (currently less than 1.5% of total health expenditure).
2. Strengthen community mental health programs.
3. Improve mental health literacy to reduce stigma.
4. Enforce human rights safeguards in mental health care.

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## Launch of 'SabhaSaar' – AI-Powered Tool for Panchayats

**Context-** Launch of SabhaSaar by Union Minister of Panchayati Raj, Shri Rajiv Ranjan Singh (Lalan Singh). Union Minister of State for Panchayati Raj, Prof. S.P. Singh Baghel will also be present.

**About SabhaSaar:**

- An AI-powered meeting summarization tool developed by the Ministry of Panchayati Raj (MoPR).
- Designed to automatically generate structured Minutes of Meeting (MoM) from audio/video recordings of Gram Sabha and other Panchayat meetings.
- Uses advanced AI and Natural Language Processing (NLP) technologies.
- **Capable of:** Transcribing spoken discussions.  
Identifying key decisions and action points.  
Producing well-formatted meeting minutes.

**Purpose:**

1. Designed for Gram Sabhas, the primary body of the Panchayati Raj system, comprising all registered voters of a Gram Panchayat.
2. Aims to automate and standardize the process of preparing structured meeting minutes.

To be used in Special Gram Sabhas held on national days such as January 26, May 1, August 15, and October 2.

**Language Support:** Integrated with Bhashini, the Government of India's National Language Translation Mission. Currently supports 13 Indian languages. Bhashini aims to bridge the literacy, language, and digital divides across the country

**Implementation on Independence Day:** All States/UTs urged to use SabhaSaar for generating MoMs for Special Gram Sabhas on 15 August 2025.

**Initial implementation in Tripura:** All 1194 Gram Panchayats (GPs), including traditional local bodies, to use the tool on the day.

**User Access:** Panchayat officials can upload meeting recordings to the tool using their e-GramSwaraj login credentials.

**Key Benefits:**

- Promotes digital innovation in local governance.
- Strengthens participatory democracy.
- Reduces time and effort required for manual documentation.
- Enables Panchayat officials to focus more on governance and service delivery.
- Enhances transparency and accountability in local self-governance.
- Promotes consistency in record-keeping nationwide.
- Generates transcriptions from video or audio recordings.
- Translates content into the user's chosen output language.
- Prepares a summarized version of the meeting content.
- Enhance governance efficiency by reducing manual workload

**Other Initiatives-**

1. **Panchayat NIRNAY Portal-** launched by the Ministry of Panchayati Raj. Acts as a real-time monitoring system for tracking Gram Sabha meetings and decisions.

It facilitates:

- Recording panchayat decisions.
- Storing decisions for ready reference.

**Promotes:**

- Transparency in panchayat decision-making.
- Accountability of panchayat functionaries in decision-making and implementation.

**Usage Data:** Over 10,000 Gram Sabha meetings were conducted through the Panchayat NIRNAY platform. States with the highest number of meeting- Punjab, Andhra Pradesh, Telangana and Bihar

2. **Bhashini Platform**

**Full Form:** BHASHa Interface for India.

**Launched by:** Ministry of Electronics and Information Technology (MeitY) in 2022.

**Under:** National Language Translation Mission.

**Functionality:** Facilitates AI-powered language translation, breaking literacy and digital access barriers.

3. **Audit Online-** Enables digital audits of Panchayat accounts.

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## 2025 Vice Presidential Election in India

### Background and Constitutional Framework

- Article 63-71 deal with the Vice President of India. Article 66 specifically governs the election of the Vice President
- The Vice President is the second-highest constitutional office after the President and acts as the Chairman of the Rajya Sabha.
- The election was held due to the resignation of Jagdeep Dhankhar (previous VP) who became the President of India in 2022.

**Election Date:** September 9, 2025.

The Vice President election was a keenly watched contest given the political significance of the role as the Rajya Sabha Chair and constitutional successor.

### **Electoral College and Voting**

- The Electoral College consists of all members of both Houses of Parliament (elected and nominated). This differs from the Presidential Election where state legislators also vote.
- Voting is by secret ballot using the Single Transferable Vote (STV) system with proportional representation.

**Total votes cast:** 767 (out of 788 MPs).

The majority needed was 377 votes.

**Term of office:** 5 years.

- The Vice President is eligible for re-election.
- The office becomes vacant upon resignation, death, or removal.

### **Qualifications**

- Must be a citizen of India.
- Must have completed 35 years of age.
- Must be qualified to be a member of the Rajya Sabha.
- Should not hold any office of profit under the Government of India or any state government

### **Candidates and Results**

#### **Winner: C.P. Radhakrishnan (NDA)**

- Former Governor of Maharashtra.
- Known as the "Vajpayee of Coimbatore".
- Represents BJP's political consolidation in Rajya Sabha.

#### **Runner-up: Justice B. Sudarshan Reddy (INDIA Bloc)**

- Retired Supreme Court Judge.
- Backed by the united opposition alliance INDIA Bloc.

### **Political Significance**

- Cross-voting observed: Despite strong opposition unity, the NDA candidate won by a clear margin, reflecting cross-party support.
- Reinforces BJP's dominance in Rajya Sabha, crucial for legislative agenda.
- The Vice President's role as Rajya Sabha Chairman is pivotal in managing upper house debates, bill passage, and checking government actions.
- Election highlighted the political alliances and opposition strategies ahead of 2026 state elections and 2029 General Elections.

### **Role & Powers of Vice President**

1. Ex-officio Chairman of Rajya Sabha
2. Presides over sessions and ensures orderly conduct

3. Has a casting vote in case of a tie.
4. Acts as President during vacancy or absence.
5. Can influence parliamentary proceedings, acting as a neutral arbiter.
6. Plays a ceremonial role in Indian polity but with constitutional importance in times of political instability.
7. The Vice President's role impacts legislative efficiency and democratic functioning, especially in a politically divided Rajya Sabha.

### **Comparison with Previous Vice President Elections**

- The 2025 election marked one of the highest voter turnouts (98.2%) in VP elections.
- The margin was significant compared to earlier closely contested elections.
- Demonstrates BJP's consolidated position compared to fragmented opposition.

### **Removal**

- The Vice President can be removed by a resolution of the Rajya Sabha passed by an effective majority (more than 50% of the total membership).
- The resolution must be agreed upon by the Lok Sabha.
- There is no provision for impeachment like the President, but this process acts as a removal mechanism

### **Historical Significance and Notable Vice Presidents**

- The first Vice President was Dr. Sarvepalli Radhakrishnan (1952-1962), who later became the President.
- Vice Presidents have often been senior statesmen, diplomats, or experienced politicians.
- The office has served as a stepping stone to the Presidency for several individuals.

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## **Nominated Members of Jammu and Kashmir Assembly**

**Background-** Amendments to the J&K Reorganisation Act, 2019 in 2023

**New Sections Inserted:** Section 15A and 15B added in 2023 amendments.

### **New Nominations Permitted:**

- Two Kashmiri migrants, including one woman.
- One person from the Pakistan-occupied J&K community.
- In addition to existing provision to nominate two women if they are inadequately represented.

**Total Nominated Seats Created:** Five.

- The 2023 amendment increased the total Assembly seats from 114 to 119.
- 24 seats remain vacant for the PoJK areas.
- Therefore, the sanctioned strength of the Assembly is not just 114, but 114 plus all members nominated under Sections 15, 15A, and 15B.
- Nomination increases J&K Assembly strength from 90 to 95 seats.
- Last year's maiden Assembly election for J&K UT was held for 90 seats.

- **Currently, two seats are vacant:** One due to a member's death and other due to CM Omar Abdullah vacated Budgam seat but retained Ganderbal seat (he won from both seat)

#### **Recent Elections-**

- The 90-seat J&K Assembly election took place in September-October 2024.
- Results were declared on October 8, 2024.
- The National Conference-Congress alliance won the elections decisively.

#### **High Court's Concern**

- These nominations could "convert a minority government into a majority government and vice versa".
- Poses a risk of subverting the electoral process and democratic mandate.

**Ministry's Claim:** Nominations lie "outside the realm of the business of the elected government." Lieutenant Governor (L-G) can nominate five members to the J&K Legislative Assembly: Without the aid and advice of the elected government (currently led by Omar Abdullah in the Union Territory).

**This contradicts: Supreme Court's rulings in Delhi services cases (2018 & 2023):** The L-G must act on the aid and advice of the elected government. Discretionary powers are to be used only as exceptions.

#### **Key Argument in the MHA Affidavit:**

1. The nomination process lies outside the elected government's domain.
2. Parliament recognizes the Lieutenant Governor as a distinct constitutional authority, separate from the UT government. Therefore, when a statutory power is conferred upon the L-G, it must be exercised as a statutory function.
3. Is not an extension of duties as head of the UT government. So should be carried out at the L-G's discretion, without requiring consultation with the elected government.
4. References the K. Lakshminarayanan vs Union of India case (from Puducherry) to justify the position.
5. Asserts that the "sanctioned strength" of the Assembly includes both elected and nominated members
6. It argued that Section 12 of the Union Territories Act, 1963 applies similarly to Sections 15, 15A, and 15B of the J&K Reorganisation Act.

#### **Reactions in response to this -**

1. J&K's conversion to a Union Territory happened without consultation with elected representatives.
2. This makes democratic accountability more critical.
3. The promise of Statehood restoration remains unfulfilled, despite: Acknowledgment by the Supreme Court and Strong public support within Jammu & Kashmir.
4. Blatant subversion of democratic principles.
5. Stressed that the court, not the MHA, will decide the matter
6. PDP Chief Mehbooba Mufti: Criticized the move as "handpicking legislators" that overrides the public mandate, called it a blow to democracy in J&K
7. LG nominating members without elected government's consent as contempt for people's mandate and it a threat to parliamentary democracy and the constitutional principle of 'aid and advice'

8. Nominations that carry voting rights in an elected assembly must originate from a democratic mandate, not from administrative discretion.
9. Violating Supreme court's earlier judgements

### **Judicial Precedents Regarding Nominated Members**

1. Puducherry Case (K. Lakshminarayanan vs Union of India, 2018): Madras High Court upheld Union government's power to nominate three MLAs to Puducherry Assembly without needing UT government's advice. It suggested statutory clarity on this process, but the Supreme Court later set aside these recommendations.
2. Delhi Case (Government of NCT of Delhi vs Union of India, 2023):

### **Supreme Court explained the "triple chain of command":**

- a. Civil servants accountable to ministers.
- b. Ministers accountable to legislature.
- c. Legislature accountable to electorate.

Ruled LG must follow advice of the Council of Ministers, except in matters beyond Delhi Assembly's powers.

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## **Overseas Citizenship of India (OCI) Scheme**

### **Background**

The OCI Scheme was introduced in August 2005 by amending the Citizenship Act, 1955, in response to demands from the Indian Diaspora, especially from North America and other developed countries, for a form of "dual citizenship." The Scheme was formally launched during the Pravasi Bharatiya Divas convention in 2006.

### **Eligibility criteria-**

Persons of Indian origin who:

- Were citizens of India on or after 26th January 1950, or
- Were eligible to become citizens of India on that date, or
- Belong to territories that became part of India after 15th August 1947, or
- Are children or grandchildren of such persons, or
- Are minor children of eligible persons.

### **Exclusions:**

Persons who are or were citizens of Pakistan, Bangladesh, or any other country specified by the Central Government are not eligible for OCI registration.

### **Features of this card-**

1. **Not Dual Citizenship:** OCI does not confer Indian citizenship or political rights (such as voting or holding public office).

2. **Lifelong Visa:** OCI holders receive a multiple-entry, multi-purpose, lifelong visa to visit India without requiring registration with foreign registration authorities.
3. **Parity with NRIs:** OCIs enjoy parity with Non-Resident Indians (NRIs) in economic, financial, and educational fields, except in acquisition of agricultural land or plantation properties.
4. Equal tariffs as resident Indians for domestic air travel.
5. Equal entry fees as resident Indians for national parks, wildlife sanctuaries, monuments, museums
6. Eligible to practice certain professions: doctors, dentists, nurses, pharmacists, advocates, architects, chartered accountants
7. Eligible to appear in All India Pre-Medical Test and other relevant exams.
8. They are not eligible for public employment, election as President/Vice President, judicial appointments.
9. They cannot register as voters or contest elections (Lok Sabha, Rajya Sabha, State Assemblies).
10. Appointments to public services and posts are generally barred, except for those specified by the Central Government.

### **Cancellation and Renunciation**

OCI status can be renounced voluntarily or cancelled by the Government for reasons such as:

- Fraud or false representation in application.
- Disaffection towards the Constitution of India.
- Supporting an enemy during war.
- Imprisonment for 2+ years within five years of registration.
- Threats to sovereignty, security, friendly relations, or public interest.

**What's New-** Stricter Cancellation Grounds: The Ministry of Home Affairs (MHA) has notified that OCI registrations will be cancelled if:

The OCI holder is sentenced to imprisonment of 2 years or more, OR

The OCI holder is charge-sheeted for an offence with punishment of 7 years or more.

**Scope:** Applies regardless of whether the offence or conviction happened in India or abroad, provided the offence is recognized under Indian law

**Legal Basis:** The move is made under Section 7D of the Citizenship Act, 1955.

### **Why This Move**

- To strengthen the legal framework around OCI privileges, ensuring that those with serious criminal backgrounds do not continue enjoying benefits meant for responsible foreign nationals of Indian origin.
- To align OCI privileges with higher standards of legal and moral conduct, protecting India's security and public interest.

### **Implications:**

- OCI holders now face greater scrutiny and can lose their status if involved in serious crimes.
- This move sends a strong message that criminality will not be tolerated, regardless of the holder's foreign citizenship.
- Helps maintain the integrity of the OCI scheme by preventing misuse.

**Legal Concerns:**

- Critics argue this may undermine due process rights because charge-sheeting is a stage prior to judicial determination of guilt or innocence.
- There is potential for misuse or arbitrary cancellation if OCI status is revoked based only on accusations, without a conviction.

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## Jammu And Kashmir Public Safety Act (Psa)

### Introduction & Background

The Jammu and Kashmir Public Safety Act (PSA) was enacted in 1978 by the Jammu and Kashmir state legislature. Initially enacted to control timber smuggling and anti-state activities, it later became a tool for preventive detention aimed at maintaining public order in a region prone to militancy and political unrest.

The PSA permits the government to detain individuals without trial for up to two years on grounds related to public safety and security.

### Legal Provisions & Key Features

1. **Preventive Detention:** The PSA allows detention of a person without charge or trial for a maximum period of two years.
2. **Grounds for Detention:** Includes activities prejudicial to the security of the state, maintenance of public order, or prevention of smuggling and other crimes.
3. **Authority for Detention:** The District Magistrate or Divisional Commissioner can issue detention orders. The state government has the power to confirm or revoke detention orders.
4. **Advisory Board:** Constituted to review detention orders. Consists of retired High Court judges. Reviews must be completed within 3 months
5. **Limited Rights of Detainees:** Detainees have restricted access to legal counsel. Limited rights to challenge detention in courts
6. Non-Applicability of Certain Safeguards:

### Constitutional and Human Rights Issues

Article 22 of the Indian Constitution guarantees protection against arbitrary arrest and detention but allows preventive detention under specific laws.

The PSA has been criticized for violating fundamental rights such as:

- Right to personal liberty (Article 21).
- Right to a fair trial.
- Freedom of speech and expression (Article 19).

### Supreme Court's view:

In A.K. Roy vs Union of India (1982), the Supreme Court held that preventive detention laws must adhere to the "principle of reasonableness" and be subject to judicial review.

**Human Rights Concerns:** Amnesty International and other bodies have repeatedly condemned the PSA for excessive use, lack of transparency, and suppression of political dissent.

## **Recent Developments (2024-2025)**

### **1. Political Context**

After the abrogation of Article 370 in August 2019, Jammu and Kashmir was reorganized as a Union Territory. The PSA remains in force, continuing to be used by authorities in the region.

### **2. Notable Cases**

#### **Detention of Mehraj Malik (2025):**

- The only AAP MLA from Jammu and Kashmir was detained under PSA for one year.
- Marked the first instance of a sitting legislator detained under PSA.
- Raised concerns about political suppression and the misuse of preventive detention.

#### **Mass Detentions in Security Operations:**

- In 2025, 23 persons were booked under PSA in coordinated operations against terror sympathizers.
- Detainees lodged in various district jails, including Poonch and Udhampur.

### **3. Judicial Interventions**

- Jammu and Kashmir High Court quashed the detention of a political activist, Tarun Bahl, citing violation of procedural norms.
- Courts have occasionally intervened to review PSA detentions but often judicial oversight is limited due to the Act's nature.

## **Criticism and Challenges**

### **1. Lack of Due Process:**

- Detainees often held without formal charges or trial.
- Limited access to lawyers and family visits.

### **2. Potential for Abuse:**

- Used against political activists, journalists, and dissenters.
- Viewed as a tool for political intimidation.

### **3. Impact on Democracy:**

- Undermines freedom of expression and assembly.
- Weakens political opposition in Jammu and Kashmir.

## **International Scrutiny:**

- Raised concerns at global forums regarding human rights violations.

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## Controversial Bills

**Context-** Lok Sabha saw a fierce exchange between Opposition and ruling party MPs over the government's introduction of three bills aimed at enhancing political morality. These Bills propose the removal of elected representatives who are arrested on serious criminal charges and held in custody without bail for more than 30 days.

**Opposition Protest-** During the Bill tabling, Union Home Minister Amit Shah and Congress leader K.C. Venugopal engaged in a sharp verbal spat recalling Mr. Shah's 2010 arrest when he was Gujarat's Home Minister. Trinamool Congress (TMC) MPs protested vehemently, tearing copies of the bills near Mr. Shah's seat, leading to a brief scuffle between Opposition and ruling party MPs. BJP Ministers Kiren Rijiju and Ravneet Singh Bittu intervened to shield Mr. Shah. TMC accused the BJP of "pushing and shoving" women MPs during the altercation.

Opposition members, including Rahul Gandhi, condemned the bills as "unconstitutional and anti-federal," with Rahul Gandhi stating the country was regressing to "medieval times."

### Next Steps:

A resolution was passed by voice vote to refer the bills to a Joint Parliamentary Committee (JPC) comprising 21 Lok Sabha and 10 Rajya Sabha members. The committee is tasked with submitting its report by the Winter Session, typically convened by late November.

**Bills-** The government has introduced three bills aimed at enabling the removal of key elected officials who face serious criminal charges:

### Bills Introduced:

- Government of Union Territories (Amendment) Bill, 2025
- Constitution (One Hundred and Thirtieth Amendment) Bill, 2025
- Jammu and Kashmir Reorganisation (Amendment) Bill, 2025

### Main Proposal:

Any Prime Minister, Chief Minister, Union Minister, or Minister of States/Union Territories who is arrested and held in custody for 30 consecutive days without bail on charges punishable by imprisonment of five years or more shall be removed from office by the 31st day.

### Mechanism of Removal:

- The President can remove the Prime Minister.
- The Governor can remove a Chief Minister.
- This applies if the individual does not resign voluntarily within 30 days of custody.

Modi questioned why individuals holding key government positions should be allowed to continue functioning from prison. He pointed out that if any government employee—whether a driver, clerk, or peon—is imprisoned for even 50 hours, they automatically lose their job. So, why should the same not apply to top political leaders?

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## The Constitution (One Hundred And Thirtieth Amendment) Bill, 2025

### 1. Amendment of Article 75:

In Article 75 of the Constitution, after clause (5), the following clause (5A) shall be inserted:

"(5A) A Minister who, during their tenure, is arrested and detained in custody for a continuous period of thirty days on charges of an offence punishable with imprisonment of five years or more under any law currently in force, shall be removed from office by the President on the advice of the Prime Minister by the thirty-first day after being taken into custody.

Provided that if the Prime Minister does not advise the President to remove the Minister by the thirty-first day, the Minister shall cease to hold office from the following day.

Provided further that if the Prime Minister themselves is arrested and detained for thirty consecutive days on similar charges, they must tender their resignation by the thirty-first day; if they fail to do so, they shall cease to be the Prime Minister from the next day.

Provided also that nothing in this clause shall prevent the Prime Minister or Minister from being reappointed to their respective offices by the President after their release from custody, as per clause (1)."

### 2. Amendment of Article 164:

In Article 164, after clause (4), the following clause (4A) shall be added:

"(4A) A Minister who, during their tenure, is arrested and detained in custody for thirty consecutive days on charges of an offence punishable with imprisonment of five years or more under any law currently in force, shall be removed from office by the Governor on the advice of the Chief Minister by the thirty-first day after being taken into custody.

Provided that if the Chief Minister does not advise the Governor to remove the Minister by the thirty-first day, the Minister shall cease to hold office from the next day.

Provided further that if the Chief Minister themselves is arrested and detained for thirty consecutive days on similar charges, they must resign by the thirty-first day; if they fail to do so, they shall cease to be the Chief Minister from the following day.

Provided also that nothing in this clause shall prevent the Chief Minister or Minister from being reappointed to their respective offices by the Governor after their release from custody, as per clause (1)."

### 3. Amendment of Article 239AA:

In Article 239AA of the Constitution, after clause (5), the following clause (5A) shall be inserted:

"(5A) Subject to the provisions of this Constitution, if a Minister, while holding office, is arrested and detained in custody for a continuous period of thirty days on charges of an offence punishable with imprisonment for five years or more under any law in force, such Minister shall be removed from office by the President on the advice of the Chief Minister, which must be given by the thirty-first day after the Minister has been taken into custody.

Provided that if the Chief Minister does not advise the President for the removal of such Minister by the thirty-first day, the Minister shall cease to hold office from the following day.

Provided further that if the Chief Minister themselves is arrested and detained for thirty consecutive days on such charges, they must tender their resignation by the thirty-first day; failure to do so will result in them ceasing to be the Chief Minister from the next day.

Provided also that nothing in this clause shall prevent such Chief Minister or Minister from being reappointed as Chief Minister or Minister by the President upon their release from custody, in accordance with clause (5)."

Additionally, two other Bills have been introduced to extend these provisions to the UTs of Puducherry and Jammu and Kashmir.

**Grounds for removal:**

**A Minister will be removed if:**

- (i) they are accused of an offence punishable by imprisonment of five years or more, and
- (ii) they have been arrested and detained in custody for 30 consecutive days.

**Concerns-**

1. Political morality
2. Political Misuse and Procedural Lapses- proposed amendments risk turning India into a police state. These laws undermine the principles of criminal justice and distort Parliamentary democracy.
3. overturn the legal principle of 'innocent until proven guilty ( PRESUMPTION OF INNOCENCE)
4. Going back to medieval times when a king could remove anybody at will. There is no recognition of an elected representative.
5. Procedural Hurdles:Opposition protested due to bills not being circulated in advance as per Lok Sabha rules.
6. Potential Violation of Fundamental Rights:
7. Possible conflicts with Article 14 (Right to Equality) and Article 21 (Right to Life and Liberty) of the Constitution.
8. Fear that the Bill could be exploited by the central government using agencies like CBI and ED to target political opponents.
9. Federalism Concerns: The Bill may centralize power and reduce the autonomy of state governments in managing their ministers.
10. Judicial Scrutiny: Likely to face challenges under the Basic Structure Doctrine regarding executive independence and separation of powers

**Rationale Behind the Bill**

1. Good Governance & Constitutional Morality
2. Closing a Constitutional Gap
3. Political and Legal Background
4. Integrity in Public Life: Strengthens democracy and public trust.

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## Vote Issue and Bihar Special Intensive Revision

The Supreme Court directed the Election Commission (EC) to provide a detailed response to an application regarding the deletion of 65 lakh voters from Bihar's draft electoral roll.

### Allegations by Rahul Gandhi

- Rahul Gandhi, Leader of the Opposition in Lok Sabha, accused the Election Commission of India (ECI) of "criminal fraud".
- Claimed that over 1 lakh fake votes were created in Mahadevapura Assembly segment (Bangalore Central constituency) during the 2024 general election.
- Alleged that the fraud aimed to ensure a BJP victory.

### Alleged Electoral Malpractices (5 Key Categories)

1. Duplicate voter registrations within the same constituency.
2. Identical EPIC numbers (voter ID) across different States.
3. Multiple voters listed at single addresses.
4. Booth slips showing multiple votes cast by the same person at a booth.
5. Suspicious increases in electoral registrations in marginal constituencies.
  - ECI demanded evidence under oath, which legal experts argue is not mandatory in such cases.
  - Blamed political parties for not raising objections during voter registration.
  - Released voter data in bulky image PDFs, hindering analysis and verification.
  - Verification systems are weak, relying heavily on self-declarations.

### Congress' Planned Campaigns

**Campaign title:** "Vote Chor, Gaddi Chhod" (Vote thief, vacate the seat)

#### Campaign Timeline:

1. August 14 – Candlelight march in all districts at 8 p.m.
2. August 22 – September 7 – Statewide rallies
3. September 15 onward – Nationwide signature campaign to collect 5 crore signatures

**Objective:** To raise awareness and protest against alleged voter fraud and manipulation of electoral rolls.

### Supreme Court Observations on Bihar's Electoral Roll SIR

*The Supreme Court described the Bihar SIR as a clash between:*

- Article 324 – Empowers the Election Commission (EC) to conduct and control elections.
- Article 326 – Guarantees universal adult suffrage (citizen's right to vote).

Justice Joymalya Bagchi remarked this is essentially a battle between EC's authority and the citizens' right to vote.

### Supreme Court-

1. Section 21(3) allows EC to conduct special revisions "in such manner as it thinks fit" — but only in exceptional cases, e.g., natural disasters. Normally, EC must strictly adhere to prescribed rules.
2. Publish booth-wise list of ~65 lakh excluded voters from draft roll (dated August 1).
3. **Include individual reasons for each exclusion:**
  - Death

- Permanent migration
- Duplicate entries
- Being untraceable

4. Names must be made public to counter narratives of arbitrary deletions.

5. Transparency & Voter Rights

- Transparency inspires trust in democracy.
- Right to vote cannot be denied based on internal processes alone.

6. Aadhaar as Acceptable ID

- The court formally allowed Aadhaar as proof of:
- Identity
- Residence

Electors excluded from the roll can file objections using Aadhaar.

### **Constitutional Provisions-**

#### **Article 324: Superintendence, direction and control of elections to be vested in an Election Commission**

1. The superintendence, direction and control of the preparation of the electoral rolls for, and the conduct of, all elections to the Parliament and to the Legislature of every State and of elections to the offices of President and Vice-President held under this Constitution shall be vested in a Commission (referred to in this Constitution as the Election Commission).
2. The Election Commission shall consist of the Chief Election Commissioner and such number of other Election Commissioners, if any, as the President may from time to time fix, and the appointment of the Chief Election Commissioner and other Election Commissioners shall, subject to the provisions of any law made in that behalf by Parliament, be made by the President.
3. When any other Election Commissioner is so appointed, the Chief Election Commissioner shall act as the Chairman of the Election Commission.
4. The conditions of service and tenure of office of the Election Commissioners and the Regional Commissioners shall be such as the President may by rule determine: Provided that the Chief Election Commissioner shall not be removed from his office except in like manner and on the like grounds as a judge of the Supreme Court and the conditions of service of the Chief Election Commissioner shall not be varied to his disadvantage after his appointment. Provided further that any other Election Commissioner or a Regional Commissioner shall not be removed from office except on the recommendation of the Chief Election Commissioner.
5. The President or the Governor of a State shall, when so requested by the Election Commission, make available to the Election Commission or to a Regional Commissioner such staff as may be necessary for the discharge of the functions conferred on the Election Commission by clause (1).
6. The Election Commission shall have the power to supervise the elections to ensure they are free and fair.

**Article 325:** No person to be ineligible for inclusion in, or to claim to be included in a special electoral roll on grounds of religion, race, caste or sex

There shall be one general electoral roll for every territorial constituency for election to either House of Parliament or to the House or either House of the Legislature of a State and no person shall be ineligible for inclusion in any such roll or claim to be included in any special electoral roll for any such constituency on grounds only of religion, race, caste, sex or any of them.

**Article 326:** Elections to the House of the People and to the Legislative Assemblies of States to be on the basis of adult suffrage

The elections to the House of the People and to the Legislative Assembly of every State shall be on the basis of adult suffrage; that is to say, every person who is a citizen of India and who is not less than eighteen years of age on such date as may be fixed in that behalf by or under any law made by the appropriate Legislature and is not otherwise disqualified under this Constitution or any law made by the appropriate Legislature on the ground of non-residence, unsoundness of mind, crime or corrupt or illegal practice, shall be entitled to be registered as a voter at any such election.

**Article 327: Power of Parliament to make provision with respect to elections to Legislatures**

Subject to the provisions of this Constitution, Parliament may from time to time by law make provision with respect to all matters relating to, or in connection with, elections to either House of Parliament or to the House or either House of the Legislature of a State, including the preparation of electoral rolls, the delimitation of constituencies, and all other matters necessary for securing the due constitution of such House or Houses.

**Article 328: Power of Legislature of a State to make provision with respect to elections to such Legislature**

Subject to the provisions of this Constitution and in so far as provision in that behalf is not made by Parliament, the Legislature of a State may make provision with respect to all matters relating to, or in connection with, the elections to the House or either House of the Legislature of the State including the preparation of electoral rolls and the delimitation of constituencies and all other matters necessary for securing the due constitution of such House or Houses.

**Article 329: Bar to interference by courts in electoral matters**

Notwithstanding anything in this Constitution:

- (a) the validity of any law relating to the delimitation of constituencies or the allotment of seats to such constituencies, made or purported to be made under Article 327 or Article 328, shall not be called in question in any court;
- (b) no election to either House of Parliament or to the House or either House of the Legislature of a State shall be called in question except by an election petition presented to such authority and in such manner as may be provided for by or under any law made by the appropriate Legislature.

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## About Election Commission of India

**Article 324 is a cornerstone of India's electoral framework as it guarantees the autonomy and authority of the Election Commission, thus enabling it to conduct free and fair elections without external interference.**

**Vision:** To be an institution of excellence, enhancing active participation, engagement, and strengthening electoral democracy both nationally and globally.

**Mission:** To uphold independence, integrity, and autonomy, ensuring accessibility, inclusiveness, and ethical participation in elections. The goal is to deliver free, fair, and transparent elections, fostering trust in democracy and governance.

### Guiding Principles:

1. Constitutional Values: Uphold equality, impartiality, independence, and rule of law.
2. Credibility and Transparency: Conduct elections with fairness, integrity, and accountability.
3. Inclusive Participation
4. Stakeholder Engagement
5. Voter Awareness
6. Human Resource Development
7. Infrastructure Development
8. Technological Advancement

### Composition

#### Election Commission comprises:

1. Chief Election Commissioner (CEC) and
2. Other Election Commissioners, as appointed by the President.
3. The CEC acts as the chairman when other commissioners are appointed.
4. The President may appoint Regional Commissioners to assist the Commission after consulting the Election Commission.

### Evolution:

- 1950–1989: Functioned as a single-member body with only the Chief Election Commissioner.
- 1989: Two more Election Commissioners were appointed to manage increased responsibilities due to the lowering of the voting age from 21 to 18 by 61<sup>st</sup> CAA 1988.
- 1990: The two additional posts were abolished, reverting to a single-member body.
- 1993: Reinstated as a multi-member body with three Election Commissioners, a structure that continues today.

### Chief Election Commissioner and Other Election Commissioners (Conditions of Service) Rules, 1992

The CEC and other Election Commissioners have equal powers, receive equal salaries, allowances, and perquisites, similar to those of a Supreme Court judge. In case of disagreements, decisions are made by a majority vote.

**Term-** Their term is six years or until the age of 65 years, whichever earlier.

**Independence of the Election Commission**

1. The CEC can be removed similar to the process for removing a Supreme Court judge.
2. The service conditions of the CEC cannot be altered to their disadvantage after appointment.
3. Any other Election Commissioner or Regional Commissioner can only be removed on the recommendation of the CEC.

**Powers and Functions of the Election Commission**

4. Delimitation
5. Electoral Rolls
6. Election Schedules
7. Grant recognition to political parties and allot election symbols.
8. Act as a quasi-judicial body to resolve disputes concerning political party recognition and symbol allocation.
9. Appoint officers to handle electoral disputes.
10. Establish the model code of conduct for parties and candidates during elections.
11. Create a schedule for the dissemination of political parties' policies on radio and TV during elections.
12. Advise the President on disqualifications of Members of Parliament.
13. Advise the Governor on disqualifications of state legislature members.
14. Cancel elections in cases of rigging, booth-capturing, violence, or irregularities.
15. Request the President or Governor to requisition staff needed for elections.
16. Oversee the election process nationwide to ensure fairness.
17. Register political parties and determine their status as national or state parties based on electoral performance.
18. Monitoring Election Expenditure

**Limitations in Safeguarding Independence:**

1. No specified qualifications for Election Commissioners.
2. Unclear tenure for members.
3. No restriction on reappointment after retirement, leading to potential conflicts of interest.
4. Influence of Money Power
5. Unrealistic spending limits for candidates.
6. Loopholes allowing large corporate donations and unregulated political funding.
7. Politicization of Appointments
8. The budget of the ECI is not charged on the Consolidated Fund of India, which weakens its financial independence

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## Rising Judicial Pendency

### Judiciary Pendency: Recent Updates & Trends

#### Supreme Court Pendency Rising

- Supreme Court pendency reached 87,115 cases.
- In June 2025, it crossed 85,000 cases (85,204 cases), the highest so far that year.
- In March 2025, pendency stood at about 81,394 cases, which is significantly higher than earlier years.

#### Disposal vs. Institution Rates

- The Supreme Court has been disposing cases at high rates: in 2023, for example, SC disposed of ~52,191 cases, somewhat close or exceeding the number of new cases filed.
- Even with good disposal rates, pendency continues to rise because new cases filed outnumber the disposals in many months.

#### Constitution Bench / Bench-wise Pendency

Constitution Bench (larger benches for substantial issues) matters also have significant pendency. For example, in 2024 there were many cases pending before multi-judge benches (5, 7, 9 judge benches).

#### District / Subordinate Courts Load

As per a Supreme Court judge (Justice Abhay S Oka) in 2025: over 4.50 crore cases pending in all district courts across India.

#### Causes Highlighted

- Lack of sufficient number of judges (vacancies) at various levels.
- Inadequate physical infrastructure, court staff, facilities.
- Frequent adjournments and delays in hearing (witnesses, investigations etc.).
- Complexity of cases; variety of procedural rules; backlog accumulated especially during COVID-19 lockdowns.
- Counting changes: More matters being included (miscellaneous applications, unregistered matters, defective cases etc.) in "pendency" numbers.

#### Significance

- Justice delayed is justice denied: Long pendency undermines trust in the judiciary, makes access to justice very slow, especially for poorer litigants.
- In many cases, prolonged litigation can mean loss of rights, evidence, witnesses, etc.
- Undermines constitutional promises of timely justice under Article 21.
- Economic costs: Litigation costs, delaying business or land matters, etc.
- Social costs: Harassment, mental stress, uncertainty for people involved.

#### Challenges

- Strengthening judge strength is slow; many courts still have unfilled vacancies.
- Budgetary constraints: resources for courts, staff, infrastructure etc.
- Backlog cumulation during COVID-19 still being cleared.

- Inefficient case management: how cases are listed, how matters are tagged, grouping of similar cases etc.
- Poor use of technology in many areas; delays in digitisation.
- Rules/procedures still cumbersome; too many adjournments.
- Variations across states / high courts in performance. Some HCs much worse than others.

### Recent Measures

- NJDG (National Judicial Data Grid) helps in transparency: makes pendency numbers visible.
- Increase in disposal efforts in SC under CJI DY Chandrachud: streamlining registry, better listing of cases.
- Appointments of additional judges: e.g., Madhya Pradesh High Court got 11 new judges to reduce backlog

### Way Forward

1. **Filling up vacancies swiftly at all levels:** Supreme Court, High Courts, subordinate courts.
2. **Case management reforms:** enforce stricter norms for adjournments, optimize listing procedures, cluster similar cases, dispose old cases.
3. **Use technology more:** virtual hearings, electronic filing, better NJDG use, AI-tools for case prediction etc.
4. **Alternate dispute resolution (ADR):** promote Lok Adalats, mediation etc. to take load off courts.
5. **Court infrastructure:** more courtrooms, better court staff, training etc.
6. **Tracking aged cases:** special focus on very old cases (5-10+ years) so that backlog doesn't persist.
7. **Monitoring and accountability:** periodic reporting of case pendencies, performance metrics for courts / judges.

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## Supreme Court on Reservation

**Context:** The Supreme Court delivered a landmark judgment on September 9, 2025, clarifying the eligibility of reserved category candidates (SC/ST/OBC) to be appointed under general/unreserved category seats, especially after availing age or fee relaxations.

The case emerged from a 2015 Staff Selection Commission (SSC) recruitment drive for Constables (GD) in paramilitary forces like BSF, CRPF, ITBP, and Assam Rifles.

### Supreme Court Verdict: Key Highlights

1. Reserved category candidates (SC/ST/OBC) who avail benefits like age relaxation, fee concession, or attempt relaxation cannot migrate to the unreserved category if the applicable recruitment rules or notifications bar such migration.
2. The Court ruled that eligibility for appointment to general category posts depends on:
  - Whether the candidate has availed relaxations, and
  - Whether the recruitment rules or Office Memoranda (OMs) permit such migration.

### Key Legal Principles Established

1. **Migration Conditional on Governing Rules**

- No universal right for reserved category candidates to be appointed in general category even if they secure higher marks than the last general category candidate.
- Recruitment rules and specific instructions (e.g., OMs) govern the permissibility of such migration.

## **2. Bar Under 1998 Office Memorandum**

- The OM dated July 1, 1998, prohibits SC/ST/OBC candidates who avail relaxations in age, number of attempts, qualifications, or experience from being considered under unreserved vacancies.
- This OM was binding on candidates unless specifically challenged.

## **3. Importance of Recruitment Notifications**

- If the recruitment notification does not bar such migration, then candidates may be allowed to compete in general category based on merit.
- But where the notification expressly prohibits migration post-relaxation, such movement is not permissible.

### **Case Background**

- **SSC Recruitment 2015 for Constables (GD):** OBC candidates were granted 3 years of age relaxation.
- Writ petitioners (OBC) scored higher than the last selected general category candidate, but had availed age relaxation.

### **High Court Ruling (2018 & 2019):**

- Allowed them to be considered under general category.
- Relied on *Jitendra Kumar Singh v. State of U.P. (2010)* – stating that benefits availed do not negate merit.

### **Supreme Court's Reasoning**

#### **1. Disagreed with High Court:**

- *Jitendra Kumar Singh* dealt with Uttar Pradesh laws, which do not apply universally.
- The 1998 OM applicable here explicitly barred such migration if relaxation was availed.

#### **2. *Deepa E.V. v. UoI (2017)* and *Gaurav Pradhan v. State of Rajasthan (2018)*:**

- Reinforced that where recruitment rules prohibit migration, the benefit of higher marks does not override the rule. These precedents support the binding nature of OMs and recruitment conditions.

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## **Constitutional Provisions**

### **ARTICLE 16-Title- Equality of Opportunity In Public Office Only**

**Article-16 (1)** – Provides for equality of opportunity to all the citizens in public employment under State (Article 12).It provides equal opportunity in access to jobs, opportunity of training etc.Equal opportunity doesn't mean complete negligence of merit, it doesn't do away with basic merit required to carry out job.

**Article-16 (2)**- It prohibits state from discriminating against citizen only on the ground of religion, race, caste, sex, place of birth, residence, descent or any of them in gaining public employment under State

**Article-16 (4)**-It empowers the state to make special provisions in favour of Backward Classes of citizens in reserving jobs which are of the nature of public jobs. Article 16 (4) is an enabling provision which allows the state to reserve seats for Backward Classes however the reservation can be done only if 2 conditions are met- 1. the said class must be Socially and Educationally Backward. 2. Class is not well represented in public employment in the opinion of State. Supreme Court said article 16 (4) would take SC/ST within its purview.

**Article-16 (4)(A)**-Nothing in this article shall prevent the State from making any provision for reservation [in matters of promotion, with consequential seniority, to any class] or classes of posts in the services under the State in favour of Scheduled Castes and the Scheduled Tribes which in the opinion of State are not adequately represented in the services under the State. Consequential Seniority allows reserved category candidates to retain seniority over general category peers. (Added by 77<sup>th</sup> CAA 1995 and 85<sup>th</sup> CAA 2001)

**Article-16 (4)(B)**-Nothing in this article shall prevent the State from considering any unfilled vacancies of a year which are reserved for being filled up in that year in accordance with any provision for reservation made under clause (4) or clause (4A) as a separate class of vacancies to be filled up in any succeeding year or years and such class of vacancies shall not be considered together with the vacancies of the year in which they are being filled up for determining the ceiling of fifty per cent, reservation on total number of vacancies of that year. Unfilled reserved vacancies are to be treated as separate class and are not to be included under ceiling of 50 percent reservation of vacancies of the year (Added by 81<sup>st</sup> CAA 2000)

**MANDAL COMMISSION**-In December 1978, a commission was established by the President of India under the leadership of B.P. Mandal, as a follow-up to a similar commission in 1953 led by Kakasaheb Kalelkar. The purpose of this commission was to investigate the living conditions of backward classes in India. Its primary objectives were to define the criteria for identifying socially and educationally backward classes and to recommend measures for their advancement. The commission's findings indicated that around 52% of India's population belonged to Other Backward Classes (OBCs) based on the 1931 census data. The commission developed 11 indicators to assess social, educational, and economic backwardness. In 1990-91, the VP Singh government introduced two significant provisions:

- a. 27% reservation for OBCs and
- b. 10% reservation for economically weaker sections.

**Indira Sawhney v/s UOI 1992 also called Mandal Case**, Case challenged the reservation system, arguing that it should be based either on caste or economic class, not both- court held that 27 per cent reservation for OBCs in public jobs were constitutionally valid. The Supreme Court ruled in favour of caste-based reservation, striking down the government's notification regarding the 10% reservation for economically weaker sections.

**Court also directed-**

- a. Court also held that ordinarily the reservation in the favour of Backward Classes shall not exceed 50 percent of total seats
- b. The concept of the "creamy layer" was introduced. It was established that individuals falling into the creamy layer would not be eligible for reservation benefits.
- c. Caste by itself may constitute a Class (reverse earlier judgement)
- d. Economic criteria by itself cannot identify a class as a backward unless the economic backwardness of the class is on account of its social backwardness

- e. Court also held that reservation benefit can be extended for the backward classes only at entry stage I e at the time of recruitment and not in promotion thus reservation for SC and ST in the matter of promotion was held unconstitutional however parliament responded by introducing Article 16 (4 A) through 77<sup>th</sup>CAA 1995 which provides for reservation in promotion for SC and ST

**SC in NAGARAJ V/S UOI case 2006**-Court upheld the constitutional validity of A 16(4A) subject to the fulfilment of the following conditions –

**Doctrine of Proof of compelling reason-**

- a. SC and ST should be socially and educationally backward (state should have quantifiable data to show backwardness of the class)
- b. Not adequately represented in public employment
- c. Such reservation should not affect the overall efficiency in the administration

**Jarnail Singh v. Lachhmi Narain Gupta Case (2018)** – Supreme Court held that reservation in promotions does not require the state to collect quantifiable data on the ‘backwardness’ of the SC and ST but retain other 2 points of doctrine.

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## Green Finance: Backbone of Sustainable and Collaborative Growth

### 1. Introduction

- Union Environment Minister addressed the 4th Edition of FICCI LEADS 2025 on the theme of Green Finance.
- Stressed that economic growth must align with ecological sustainability to ensure inclusive and resilient development.

### 2. Key Takeaways

- Green Finance is the foundation of strong, competitive, and future-ready economies.
- Sovereign Green Bonds have drawn global confidence in India’s green growth trajectory.
- Article 6 of the Paris Agreement holds the key to unlocking large-scale climate finance through carbon markets.
- **Green Credit Programme (2025 revision)**: Enhanced role for private sector & eco-restoration commitments.
- **Financing green transition** = ethical duty to future generations.

### India’s Green Finance Strategy

- **India faces a twin challenge:**
  1. Meeting the developmental needs of a young population.
  2. Addressing climate change, biodiversity loss, and ecological degradation.
- Under PM Narendra Modi’s leadership, India follows a path of ambition, innovation, and transformation.

### Major Steps Taken

1. **Sovereign Green Bonds** – Successfully attracted international investors, showcasing trust in India's green potential.
2. **Regulatory Push (RBI & SEBI)**: Ensuring disclosure, transparency, and accountability in green instruments.
3. **Blended Finance**: Public funds used to de-risk and accelerate private investments in renewables, e-mobility, waste-to-wealth, and nature-based solutions.
4. **Green Credit Programme (2023, revised 2025)**: Voluntary eco-restoration with private participation and measurable outcomes.

### Core Principles of Climate Action

- **Climate finance = development finance.**
- **Clean energy, resilient infrastructure, and climate-smart agriculture** are the foundations of security and competitiveness.
- **Early movers in green investment** will dominate global value chains and trade in the future.

### Role of Carbon Finance & Article 6

- **Article 6 of the Paris Agreement** enables trade in “climate outcomes” between nations.
- High-integrity **carbon markets** can channel billions into climate action.
- Benefits:
  - Buyer countries meet emission targets.
  - Seller countries gain finance, technology, and capacity-building support.

### Future Opportunities

- **Renewable Energy**: Solar, wind, and green hydrogen.
- **Sustainable Agriculture**: Climate-smart practices & circular economy.
- **E-mobility & Transport**: Electric vehicles, clean logistics.
- **Resilient Infrastructure**: Climate-proof urbanisation and job creation.

### Inclusivity & Innovation

- Green Finance must benefit MSMEs, farmers, and vulnerable groups.
- FinTech, AI, and digital platforms can improve efficiency, scale, and transparency.
- Instruments such as green bonds, sustainability-linked loans, and impact funds should move from margins to mainstream.

### Ethical Responsibility

- Financing the green transition is not just economics but a **moral duty** to protect future generations.
- Any delay risks **ecological collapse, competitiveness loss, and human well-being.**

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## Sovereign Gold Bonds (SGBs): RBI Announces Premature Redemption of 2019–20 Series X

### 1. Context

- On 11 September 2025, the Reserve Bank of India (RBI) announced the premature redemption price for SGB 2019–20 Series X.
- Investors received ₹10,905 per gram, compared to the issue price of ₹4,260 per gram (March 2020).
- This marks a 156% return (₹6,645 per gram) excluding the annual 2.5% interest payout.

### 2. What are Sovereign Gold Bonds (SGBs)?

- Launched in 2015 by the Government of India to reduce dependence on physical gold.
- **Features:**
  - Backed by Government of India (low-risk instrument).
  - Denominated in grams of gold.
  - Tenure: 8 years (with exit option after 5 years, only on interest payment dates).
  - Fixed annual interest: 2.5%, paid semi-annually.
  - Redemption linked to prevailing market price of gold.

### Premature Redemption Mechanism

- Allowed after 5 years, twice a year (on interest payout dates).
- Redemption price = average closing price of 999-purity gold (last 3 business days) as published by India Bullion & Jewellers Association (IBJA).
- For Series X (2020 issue), RBI used 8–10 September 2025 prices.

### Why SGBs are Attractive

- **Dual benefit:** Capital appreciation (gold price rise) + 2.5% fixed interest.
- **Tax advantage:** No capital gains tax on redemption.
- **Liquidity option:** Premature redemption after 5 years or tradable in secondary markets.
- **Safety:** No risk of theft/purity issues (unlike physical gold).

### Gold Market Trends (2025)

- **Gold prices surged 30% in 2025** due to:
  - Geopolitical tensions.
  - Global economic uncertainty.
  - Investors shifting towards safe-haven assets.
- SGBs have, therefore, become high-yielding instruments for Indian households.

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## India's Economic Resilience Amid Global Headwinds

- India recorded 7.8% GDP growth in Q1 of FY2025-26 (April-June 2025), its best performance in five quarters.
- Growth came from agriculture, manufacturing, and services.
- However, risks remain from rising US tariffs, imported inflation, rupee depreciation, weak FDI inflows, and slow trade agreements.

### Key Challenges Facing India's Economy

#### 1. Trade Pressures

- The US imposed 50% tariffs on nearly two-thirds of Indian exports, citing India's energy and defence links with Russia.
- **Key affected sectors:** textiles, engineering goods, chemicals.
- Export growth slowed to 3.9% in Q4 FY24, compared to 7.4% in Q3.

#### 2. Imported Inflation

- Global spikes in oil and food prices → rising costs in India.
- Imported inflation surged from 1.3% (Jun 2024) to 31.1% (Feb 2025).
- Threat of inflation breaching RBI's 4-6% target range.

#### 3. Geopolitical Uncertainty & Supply Chain Disruptions

- Tensions in Europe, Indo-Pacific, and Red Sea routes disrupted global shipping.
- Led to higher transport costs and uncertainty for import-dependent industries.

#### 4. Weakening Currency & Financial Pressures

- Tight monetary policies abroad, especially by the US Fed, strained global liquidity.
- Rupee hit a record low of ₹88.36 per USD.
- External debt repayment and forex reserve management became tougher.

#### 5. Delayed Trade Agreements

- India-EU FTA and India-Canada trade talks face delays due to disagreements on tariffs, IPR, and environmental standards.
- Slows down efforts to diversify markets.

#### 6. Declining FDI

- Net FDI fell sharply: **\$35 million (May 2025)** vs **\$2.2 billion (May 2024)**.
- Limits capital availability for infrastructure and weakens rupee stability.

#### 7. Energy Dependence

- India imports 80% of its oil → vulnerable to price shocks.
- Rising oil costs worsen fiscal deficit, fuel inflation, and weaken balance of payments.
- Signals need for renewable push and energy diversification.

### Opportunities Amid Global Disruptions

#### 1. New Trade & Supply Chain Role

- With companies seeking alternatives to China, India can become a reliable manufacturing hub.

- **Focus regions:** ASEAN, Africa, Latin America.
- **Initiatives:** Atmanirbhar Bharat, Make in India.

## 2. Digital & Tech Economy

- India's IT sector projected to reach \$350 bn by 2026 (10% of GDP).
- Demand rising for cloud services, AI, cybersecurity.
- Indian platforms like UPI & Aadhaar emerging as global models.

## 3. Clean Energy Leadership

- Renewable energy capacity: 220 GW (Mar 2025).
- Expanding solar, wind, green hydrogen, and battery storage.
- Potential to export green energy technologies.

## 4. Regional Leadership

- India's credit and trade support to Sri Lanka, Bangladesh, Nepal strengthens regional influence.
- Can lead to South Asian economic integration.

## 5. Defence Exports

- Defence exports grew 34 times (2013–14 to 2024–25).
- Opportunities in Indo-Pacific partnerships via Make in India for defence.

## 6. Semiconductors

- SEMICON India Programme (₹76,000 crore) under the India Semiconductor Mission (ISM).
- Global chip market: \$1 trillion by 2030 → India well-placed to attract investment.

## Strategies to Build Resilience

1. **Diversified Trade Networks** – friend-shoring, near-shoring, and critical sector focus (energy, chips, rare earths).
2. **Stronger Financial System** – stress testing, domestic capital markets, digital finance, managed rupee policy.
3. **Food & Agriculture Security** – climate-smart farming, post-harvest infra, crop diversification, transparent reserves.
4. **Technological Self-Reliance** – local capacity in AI, 5G/6G, cybersecurity, and domestic data storage.
5. **Human Capital Strengthening** – skill-building, gig/migrant worker protection, better public health systems.
6. **Global Leadership Role** – proactive engagement in G20, BRICS, Indo-Pacific, shaping trade & tech rules.
7. **Rupee Internationalisation** – settlement agreements in rupees, digital rupee adoption, bilateral invoicing.
8. **Boosting Domestic Demand** – MSME credit reforms, public infra investment, green technologies, tourism.

## Conclusion

India stands at a strategic juncture—its fundamentals are strong, but vulnerabilities remain in global trade, inflation, energy, and investment.

- To sustain growth, India must diversify trade, secure energy & food systems, deepen domestic demand, and ensure tech sovereignty.
- Long-term resilience lies in self-reliance with global integration.

**“Economic resilience is not about avoiding turbulence, but about steering confidently through it.”**

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## New Strategic EU–India Agenda

- India and the European Union (EU) share long-standing diplomatic, economic, and strategic relations.
- Formal diplomatic ties with the European Economic Community (EEC) began in 1962.
- Relations were upgraded to a Strategic Partnership in 2004 (5th India–EU Summit, The Hague).
- In 2025, the EU has unveiled a New Strategic Agenda to elevate relations, focusing on five cooperation pillars.

### Five Pillars of the New Strategic Agenda

#### 1. Prosperity & Sustainability

- **Trade and Investment:** Finalizing the India–EU Free Trade Agreement (FTA) by end-2025 (largest of its kind globally).
- **Supply Chains:** Strengthening resilience through the Trade and Technology Council (TTC).
- **Green Transition:** Cooperation on food security, health, climate resilience, disaster management, and renewable energy.
- **Sustainability:** Focus on sustainable growth, energy transition, and resource-efficient industrial policies.

#### 2. Technology & Innovation

- Cooperation in critical emerging technologies: AI, semiconductors, high-performance computing, and space technology.
- Expansion of EU–India Startup Partnership and joint research via Horizon Europe.
- Collaboration in digital finance, cross-border transactions, and fintech innovation.

#### 3. Security & Defence

- **Maritime Security:** Joint initiatives in the Indian Ocean and Indo-Pacific.
- **Cyber Defence & Counter-Terrorism:** Enhancing capabilities against hybrid threats.
- **Defence Industrial Cooperation:** Support for co-production, technology sharing, and supply chain security (e.g., Airbus C-295 aircraft manufacturing in India).
- **Geopolitical Cooperation:** Joint response to global crises, including the Russia–Ukraine conflict.

#### 4. Connectivity & Global Issues

- **Economic Corridors:** Support for India–Middle East–Europe Economic Corridor (IMEC) and EU’s Global Gateway Initiative.
- **Multilateral Engagement:** Cooperation on UN reforms, WTO modernization, human rights, and climate governance.

- **Trilateral Partnerships:** Joint development and infrastructure projects in the **Global South**.

## 5. People-to-People Cooperation

- **Skills & Mobility:** Creation of the European Legal Gateway Office to facilitate student, professional, and researcher mobility.
- **Academic & Cultural Diplomacy:** Expanded educational exchanges, youth engagement, and think tank partnerships.
- **Business Engagement:** Proposal for an EU–India Business Forum to deepen private sector cooperation.

## Cross-cutting Enablers

- Strengthened institutional coordination between India, EU institutions, and member states.
- Building a comprehensive roadmap aligned with shared values and strategic autonomy.

## Significance of India–EU Relations

### Mutual Importance

- **Trade:** The EU is India's 2nd-largest trading partner (2024; €120 billion, 11.5% of India's total trade).
- **Strategic Alignment:** Cooperation on climate action, multilateralism, renewable energy, and counter-terrorism.
- **Technology:** TTC promotes collaboration on semiconductors, clean energy, AI, and digital innovation.
- **Global Governance:** Both emphasize a rules-based international order in G20, WTO, and UN forums.

### Key Challenges & Barriers

1. **Stalled FTA Negotiations:**
  - EU demands tariff cuts on cars, dairy, and spirits.
  - India seeks access for IT, pharmaceuticals, and services.
2. **Regulatory Hurdles:**
  - Technical Barriers to Trade (TBT) and Sanitary & Phytosanitary (SPS) standards affect Indian exporters.
  - The EU's Carbon Border Adjustment Mechanism (CBAM) raises costs for Indian industries.
3. **Investment Issues:**
  - Concerns over policy predictability and intellectual property rights (IPR) in India.
  - Example: Switzerland suspended MFN clause in its DTAA with India.
4. **Data Privacy & Digital Rules:**
  - India lacks EU data adequacy status → higher compliance costs for IT firms.
5. **Foreign Policy Divergences:**
  - India's neutral stance on the Russia–Ukraine war contrasts with EU sanctions on Russia.
6. **Supply Chain Dependence:**
  - Both India and EU continue to rely heavily on China, limiting strategic diversification.

### Conclusion

- The New Strategic EU–India Agenda (2025) reaffirms the growing importance of this partnership in the evolving global order.

- With five pillars—prosperity, sustainability, technology, security, connectivity, and people-to-people ties—the agenda aims to create a future-ready relationship.
- If challenges such as stalled FTA talks, regulatory barriers, and geopolitical divergences are managed, the partnership can:
  - Boost India’s growth and strategic autonomy.
  - Strengthen the EU’s influence in the Indo-Pacific and Global South.
  - Reinforce a rules-based multilateral order in a time of global uncertainty.

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## Bima Sugam: India’s Unified Digital Insurance Marketplace

- The world’s largest online marketplace for insurance, was officially launched by the Bima Sugam India Federation (BSIF) at the headquarters of the Insurance Regulatory and Development Authority of India (IRDAI) in Hyderabad.
- The launch marks a historic milestone in India’s Digital Public Infrastructure (DPI) journey, comparable to the impact of UPI in digital payments.

### Key Highlights of the Launch

- **Phased Rollout:**
  - Initial phase → Website as an information & guidance hub.
  - Gradual integration of transactions, claims, and services as insurers and ecosystem partners adapt.
- **Vision:**
  - Supports ‘Insurance for All by 2047’, aligned with Viksit Bharat 2047 mission.
  - Aim: Deepen insurance penetration, empower policyholders, and ensure transparency.

### What is Bima Sugam?

- A unified digital marketplace integrating insurers, agents, brokers, banks, and aggregators under one platform.
- **Functions:**
  - Buy, sell, service, renew, and claim insurance.
  - Securely store digital policy documents.
  - Provide a centralised database for insurance-related queries.
- **Analogy:** Just as UPI/NPCI revolutionized payments, Bima Sugam is designed to redefine insurance access.

### Offerings on the Platform

#### 1. Life Insurance Products

- Term plans, endowment & savings products (participating/non-participating).
- Annuity & pension products.
- Unit-Linked Insurance Plans (ULIPs).

#### 2. Health Insurance Products

- Individual, family floater, critical illness, and wellness-focused products.

### 3. General Insurance Products

- **Motor:** Third-party liability + own-damage policies.
- **Travel Insurance:** Domestic & international covers.
- **Personal Accident Insurance.**
- **Commercial Insurance:** Property, marine, agriculture, and industry-specific covers.

### 4. Future Flexibility

- Platform remains open to new/sandbox products as approved by regulators.

### Why is Bima Sugam Significant?

#### For Policyholders

- **Single Window Access:** Compare, purchase, and manage policies on one platform.
- **Transparency:** Minimal charges, unlike private aggregators that rely heavily on commissions.
- **Ease of Claims:** End-to-end servicing, including claim settlement.

#### For the Insurance Industry

- **Unified Ecosystem:** Brings insurers, agents, banks, brokers, and aggregators together.
- **Innovation Platform:** Accelerates adoption of new insurance products.
- **Digital Storage:** Ensures secure, accessible records for all policyholders.

#### For India's Economy

- **Digital Public Infrastructure:** Creates an insurance equivalent of UPI.
- **Financial Inclusion:** Enhances accessibility of insurance, especially in underserved areas.
- **Global Benchmark:** Positions India as a pioneer in large-scale digital insurance ecosystems.

#### Strategic Importance

- **For India's Financial Sector:** Deepens insurance penetration (currently <4% of GDP).
- **For Citizens:** Provides affordable, transparent, and easy-to-manage policies.
- **For Global Leadership:** Establishes India as a trendsetter in insurance technology.

#### Challenges Ahead

- **Ecosystem Integration:** Need for smooth onboarding of insurers, agents, and partners.
- **Cybersecurity:** Ensuring data privacy and security of sensitive insurance information.
- **Awareness:** Educating customers, especially in rural areas, about digital insurance access.
- **Regulatory Compliance:** Continuous monitoring to maintain trust and transparency.

#### Conclusion

- Bima Sugam represents a paradigm shift in India's insurance sector, laying the foundation for Digital Public Infrastructure for insurance.
- By unifying the fragmented insurance ecosystem and enabling transparency, innovation, and accessibility, it is a giant leap toward "Insurance for All by 2047".
- If implemented effectively, Bima Sugam could become for insurance what UPI became for payments—a globally replicable model of inclusive financial technology.

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## Dioscorea balakrishnanii – A Newly Discovered Edible Tuber (Environment)

A team of researchers in Kerala has reported the discovery of a new edible yam species, which has been named *Dioscorea balakrishnanii*. This plant is native to the Western Ghats, specifically the Wayanad district, and belongs to the genus *Dioscorea*.

Locally, the tuber is referred to as “Chola Kizhangu” by the Kattunayikar tribal community of Wayanad. The underground tubers, once cooked, are considered highly palatable and noted for their distinctive taste.

**Habitat:** The species thrives exclusively in the shola ecosystems of evergreen forests, making it an endemic plant of ecological importance.

**Nutritional and Agricultural Value:** The yam is believed to have a low glycemic index, making it suitable for diabetics and those seeking healthier carbohydrate alternatives. With its adaptability, it also shows promise as a sustainable food crop that can contribute to food security.

**Significance of the Discovery:**

- Enhances understanding of plant diversity in the Western Ghats, a global biodiversity hotspot.
- Preserves and validates the traditional knowledge of indigenous tribes.
- Offers potential applications in the food industry and medicinal research.
- Highlights the need to conserve wild relatives of crops that could strengthen genetic diversity for future cultivation.

This discovery not only underscores the ecological richness of the Western Ghats but also opens possibilities for its role in nutrition, agriculture, and conservation strategies.

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## Ramon Magsaysay Award 2025 (Awards)

The Ramon Magsaysay Award, regarded as Asia’s most prestigious honor, has been conferred in 2025 on ‘Educate Girls’, an Indian NGO dedicated to promoting education among underprivileged girls across the country. The award recognizes exceptional contributions marked by integrity, courage, and transformative leadership in Asia.

### About the Award

- Instituted in 1957 in memory of Ramon Magsaysay, the third President of the Philippines, the award reflects his ideals of public service and moral leadership.
- Each awardee receives a certificate and a medallion engraved with the side profile of Ramon Magsaysay.
- The award is conferred annually on August 31, the birth anniversary of President Magsaysay, in a formal ceremony held in Manila, Philippines.

### Evolution of Categories :

From 1958 to 2008, the awards were presented under six distinct categories:

1. **Government Service** – Recognizing public interest contributions through government roles (executive, legislative, judiciary, or military).

2. **Public Service** – Honoring individual efforts for the common good outside government.
3. **Community Leadership** – For those leading communities toward inclusive growth and opportunities.
4. **Journalism, Literature & Creative Communication Arts** – For impactful work in media, literature, and arts as a tool for social good.
5. **Peace and International Understanding** – For fostering peace, solidarity, and cooperation across borders.
6. **Emergent Leadership** – Introduced in 2000 with support from the Ford Foundation, this category acknowledges young leaders (under 40) driving social change at the grassroots level.

### Change in Format

- Since 2009, the award is no longer bound to fixed categories, except Emergent Leadership, which continues as a special recognition.

### Significance:

The award is celebrated as a symbol of moral leadership and service to humanity, shining a spotlight on individuals and organizations working selflessly for equity, justice, and social transformation across Asia.

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## Multi-Lane Free Flow (MLFF) Tolling System (Technology)

The Multi-Lane Free Flow (MLFF) tolling system is a next-generation, barrier-free toll collection mechanism that eliminates the need for vehicles to halt at toll plazas. The system operates through high-performance RFID readers and Automatic Number Plate Recognition (ANPR) cameras, which identify vehicles via FASTag and Vehicle Registration Numbers (VRN) to enable seamless transactions.

### Key Significance

- **Reduced Congestion:** Vehicles move without stopping, cutting down wait times at toll plazas.
- **Time & Fuel Efficiency:** Faster movement leads to lower travel time, improved fuel economy, and reduced vehicular emissions.
- **Revenue Optimization:** Enhances accuracy and efficiency in toll collection, curbing revenue leakages.
- **Smarter Highways:** A step toward creating a modern, tech-driven National Highway network that is both efficient and environmentally sustainable.

### Institutional Framework: National Highways Authority of India (NHAI)

- NHAI is the principal agency responsible for developing, managing, and maintaining National Highways in India.
- It functions as a statutory body under the Ministry of Road Transport and Highways (MoRTH).
- Established under the National Highways Authority of India Act, 1988, it became operational in February 1995.

### Composition of NHAI

- A full-time Chairman.

- Up to five full-time Members.
- Four part-time Members, who include:
  1. Secretary, Road Transport & Highways (RT&H)
  2. Secretary, Expenditure
  3. Secretary, Planning
  4. Director General (Road Development) & Special Secretary

The MLFF system not only marks a significant technological leap in tolling but also supports India's transition towards sustainable and efficient transport infrastructure.

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## Air Quality Life Index (AQLI) 2025 (Reports and Indices)

The Air Quality Life Index (AQLI) 2025 report highlights air pollution as the most critical health hazard for India, cutting the nation's average life expectancy by 3.5 years. The index assesses the impact of particulate matter (PM2.5) pollution on human longevity.

### About AQLI

- Developed by Michael Greenstone and the Energy Policy Institute at the University of Chicago (EPIC).
- It merges data on long-term exposure to PM2.5 pollution with global particulate concentration levels.
- Provides a clear measure of the life years lost due to toxic air, offering communities and policymakers insights into the real cost of pollution.

### Major Findings - India (2025 Report)

- **Average Life Expectancy Loss:** Air pollution trims 3.5 years off the average Indian's lifespan.
- **Comparative Impact:** Toxic air is nearly twice as harmful as childhood and maternal undernutrition and over five times deadlier than unsafe water, sanitation, and hygiene issues.
- **Population Exposure:** Every one of India's 1.4 billion people lives in areas where PM2.5 levels exceed the WHO safe guideline of  $5 \mu\text{g}/\text{m}^3$ .
- **Worst Affected Belt:** Northern India remains the most polluted zone globally, affecting 544.4 million people (38.9% of India's population).
- **City & State Impacts (based on WHO standards):**
  - **Delhi-NCR:** 8.2 years lost
  - **Bihar:** 5.6 years lost
  - **Haryana:** 5.3 years lost
  - **Uttar Pradesh:** 5 years lost
- Even under India's lenient PM2.5 standard of  $40 \mu\text{g}/\text{m}^3$ , residents of Delhi-NCR would still lose 4.74 years of life expectancy.
- 46% of Indians live in regions that surpass even India's own pollution standards.

**Potential Gains if Standards Met**

- Meeting India's PM2.5 benchmark → Average gain of 1.5 years in life expectancy.
- Meeting WHO's stricter 5 µg/m<sup>3</sup> limit → Up to 9.4 additional months in cleaner regions.

**Regional Insights**

- South Asia is identified as the most polluted region worldwide.
- PM2.5 levels in the region rose by 2.8% in 2023, reversing a temporary decline observed in 2022.
- Across South Asia, pollution shortens average life expectancy by 3 years, with the most affected areas losing over 8 years.

The AQLI findings reinforce that air pollution is not just an environmental issue but a profound public health crisis, demanding urgent policy interventions to curb emissions and secure healthier lives.

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**(Srivilliputhur–Meghamalai Tiger Reserve) (Biodiversity)****Srivilliputhur–Meghamalai Tiger Reserve (SMTR)**

Concerns have recently surfaced regarding unauthorized road construction and repair activities inside the Theni district portion of the Srivilliputhur–Meghamalai Tiger Reserve (SMTR), raising alarm over threats to its fragile ecosystem.

**General Overview**

- Located in Tamil Nadu, the reserve spans the districts of Theni, Virudhunagar, and Madurai.
- It falls within the Western Ghats, a globally recognized biodiversity hotspot.
- Established in February 2021, the reserve was created by merging the Grizzled Squirrel Wildlife Sanctuary with the Meghamalai Wildlife Sanctuary.
- The reserve also plays a critical ecological role by acting as a corridor linking Kerala's Periyar Tiger Reserve with Tamil Nadu's Kalakkad–Mundanthurai Tiger Reserve.

**Rivers**

The landscape is sustained by three perennial rivers:

- Vaigai
- Suruliyaru
- Shanmuganathi

**Flora**

The vegetation is a mosaic of:

- Tropical evergreen forests
- Semi-evergreen forests
- Dry and moist deciduous woodlands
- High-altitude grasslands

**Fauna**

- **Mammals:** Tiger, Elephant, Leopard, Gaur, Nilgiri Tahr, Sambar, Barking Deer, Spotted Deer, Wild Boar, Porcupine, Nilgiri Langur, Lion-Tailed Macaque, among others.

- **Birds:** Red-Whiskered Bulbul, Common Iora, Pied Bush Chat, Grey Wagtail, White-Browed Wagtail, etc.
- **Reptiles:** Monitor Lizard, Chameleon, Wood Snake, and several other species.

### **Significance**

- Serves as a critical tiger habitat in the Western Ghats.
- Strengthens landscape connectivity between major protected areas in Tamil Nadu and Kerala.
- Ensures the conservation of endemic and endangered species like the Grizzled Giant Squirrel and the Lion-Tailed Macaque.
- Acts as a watershed region sustaining vital rivers in southern Tamil Nadu.

The Srivilliputhur–Meghamalai Tiger Reserve stands as a vital ecological link in the Western Ghats, but increasing anthropogenic pressures like road construction highlight the urgent need for stringent conservation measures.

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## **Exercise Yudh Abhyas – 21st Edition**

An Indian Army contingent has recently left for Fort Wainwright, Alaska (USA) to take part in the 21st edition of Exercise Yudh Abhyas, a long-standing bilateral military drill between India and the United States.

### **About the Exercise**

- Exercise Yudh Abhyas is a joint annual training exercise conducted between the Indian Army and the U.S. Army.
- The Indian side is represented by a battalion of the Madras Regiment in this edition.
- The exercise spans two weeks, covering a broad spectrum of operational and tactical drills.

### **Key Training Modules**

- Heliborne operations and high-altitude warfare.
- Use of UAVs, surveillance systems, and counter-UAS measures.
- Mountain warfare tactics including rock craft and survival drills.
- Casualty evacuation and combat medical assistance.
- Integration of multiple arms – Artillery, Aviation, and Electronic Warfare.
- Information warfare, communication, and logistics management through expert-led working groups.

### **End Objectives**

- Jointly planned and executed live-fire exercises.
- Training for high-altitude combat scenarios.
- Enhancing interoperability for United Nations peacekeeping operations (UNPKO).
- Preparing both armies for multi-domain operational challenges.

### **Other India–US Defence Exercises**

- **Army:** Vajra Prahar
- **Navy:** Malabar (multilateral)
- **Air Force:** Cope India, Red Flag (multilateral)

**Significance:** Exercise Yudh Abhyas not only deepens military-to-military cooperation but also strengthens the strategic partnership between India and the U.S., with a focus on joint operational readiness in diverse environments.

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## Painted Stork (*Mycteria leucocephala*)

The National Zoological Park has recently intensified biosecurity and monitoring measures after the carcass of a migratory Painted Stork was found near a pond, alongside another sick stork in the aviary for water birds.

### General Description

- The Painted Stork is a large wading bird belonging to the stork family (Ciconiidae).
- It is easily identified by its long, heavy yellow beak with a distinct down-curved tip.
- Scientific Name: *Mycteria leucocephala*.

### Distribution & Habitat

- Found across tropical Asia, particularly the Indian subcontinent and Southeast Asia, extending south of the Himalayas.
- Prefers freshwater wetlands, including lakes, marshes, irrigation canals, and flooded rice fields during the monsoon.
- Absent from arid zones, dense forests, and high-altitude regions.
- Generally non-migratory, but some populations make short seasonal movements linked to food availability and breeding.

### Key Features

- Height: 93–102 cm
- Weight: 2–5 kg
- Only member of the *Mycteria* genus with a distinct black pectoral band.
- Plumage is white, with rose-colored feathers near the tail.
- Legs vary from yellowish to red, often appearing white due to urohidrosis (defecating on legs to regulate temperature).
- Bill & Face: Long yellow bill and bare yellow facial skin.
- Sexual Dimorphism: Minimal; males are slightly larger than females but otherwise similar in appearance.

### Ecological Importance

- Painted Storks are important indicators of wetland health.
- Their presence highlights the availability of fish and other aquatic prey, making them vital for monitoring ecosystem balance.

The Painted Stork is not only a striking wetland bird but also an integral part of India's avian biodiversity, with its survival closely tied to the conservation of freshwater ecosystems.

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## Gastrochilus pechei – A Newly Discovered Orchid in Arunachal Pradesh

Researchers have recently reported the discovery of a new orchid species, *Gastrochilus pechei*, from Vijoyagar in Arunachal Pradesh, expanding India's rich orchid diversity.

### About the Species

- Belongs to the genus *Gastrochilus*, a group of orchids known for their striking floral structures.
- Flowering Season: Blooms during September–October.
- Habitat: Thrives in moist evergreen rainforests, particularly on small trees along riverbanks.
- Previously, this orchid was documented only in Myanmar, making the Indian record a significant range extension.

### Gastrochilus in India

- Prior to this discovery, 22 species of *Gastrochilus* were reported in India.
- Of these, 15 species occur in Arunachal Pradesh, underlining the state's unique floral wealth.
- Arunachal Pradesh, often called the "Orchid State of India", harbors nearly 60% of the country's orchid diversity.

### About the Genus *Gastrochilus*

- First described in 1825.
- A monopodial orchid genus comprising 77 recognized species, widely distributed across tropical, subtropical, and temperate Asia.
- **Key Characteristics:**
  - Short axillary inflorescence.
  - Brightly coloured flowers with distinctive patterns.
  - Presence of an epichile (frontal lobe) on the saccate hypochile (sac-like structure).
  - Two globose pollinia borne on a slender stipe.

The discovery of *Gastrochilus pechei* highlights the ecological richness of Arunachal Pradesh and reinforces its status as a global hotspot for orchid diversity, with immense potential for conservation and botanical research.

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## Exercise MAITREE-XIV

The 14th edition of Exercise MAITREE recently commenced with a ceremonial opening at the Joint Training Node (JTN), Umroi, Meghalaya, marking another milestone in India–Thailand military cooperation.

### About Exercise MAITREE

- Bilateral Military Exercise between the Indian Army and the Royal Thai Army.
- **Institution:** Launched in 2006, it is a key component of the ongoing defence exchange programme between the two nations.
- **Objectives:**
  - Enhance interoperability and mutual understanding.
  - Strengthen bilateral defence cooperation.

- Promote peace, stability, and regional security.

### Previous Edition

- The 13th edition took place at Fort Vachiraprahan, Tak Province, Thailand.

### Indian Contingent

- Represented by a battalion of the Madras Regiment.

### Training Focus

- Company-level counter-terrorist operations in semi-urban terrain under Chapter VII of the UN Charter.
- Tactical modules include:
  - Joint planning and operational drills
  - Special arms skills and raiding operations
  - Physical fitness exercises
- Exercise concludes with a 48-hour validation exercise, simulating realistic operational scenarios.

### Significance

- Reinforces India–Thailand defence relations.
- Enhances joint operational capabilities and preparedness for complex, multi-domain operations.
- Reflects a shared commitment to regional security and counter-terrorism initiatives.

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## Global Peace Index (GPI) 2025

Iceland has retained its position as the world's most peaceful country according to the 2025 Global Peace Index (GPI).

### About the Global Peace Index

- Compiled by the Institute for Economics & Peace (IEP), the GPI is the leading global measure of peace.
- Assesses 163 independent countries and territories, covering 99.7% of the world's population.
- Uses 23 quantitative and qualitative indicators to evaluate peace across three dimensions:
  1. Societal Safety and Security
  2. Ongoing Domestic and International Conflict
  3. Degree of Militarisation

### Highlights – 2025 Edition (19th Edition)

- Global peacefulness continues to decline, with many conflict indicators higher than at any time since WWII.
- Militarisation is increasing in multiple countries.
- There are 59 active state-based conflicts, the highest since WWII, three more than the previous year.
- **Conflict fatalities:** 17 countries recorded over 1,000 deaths last year.
- **Conflict resolution is at a 50-year low:**
  - Decisive victories dropped from 49% in the 1970s to 9% in the 2010s.

- Peace agreements declined from 23% to 4% over the same period.
- Average global peacefulness deteriorated by 0.36%.

### Most and Least Peaceful Countries

- Top 5 peaceful countries: Iceland, Ireland, Austria, New Zealand, Switzerland.
- Least peaceful countries: Russia (first time), followed by Ukraine, Sudan, Democratic Republic of the Congo, and Yemen.

### Regional Trends

- **Western & Central Europe:** Most peaceful region; hosts 8 of the 10 most peaceful countries, though regional peacefulness has declined over the last four years.
- **South America:** The only region showing improvement in peacefulness.
- **Middle East & North Africa (MENA):** The least peaceful region globally.
- **South Asia:** Second least peaceful region, experiencing the largest decline in peacefulness.

### India and Asia

- **India:** Ranked 115th, a slight improvement from 2024.
- Most peaceful Asian countries:
  - Singapore (6th)
  - Japan (12th)
  - Malaysia (13th)
  - Bhutan (21st)
  - Mongolia (37th)

The GPI 2025 underscores that global peace is eroding, with rising militarisation, unresolved conflicts, and regional disparities highlighting the urgent need for international cooperation and conflict resolution strategies.

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## Senna spectabilis – Kerala's Community-Driven Eradication

Kerala has successfully undertaken India's first science-based, community-led initiative to eradicate *Senna spectabilis*, an invasive plant, aiming to restore the forests of South India.

### About *Senna spectabilis*

- **Origin:** Native to tropical America.
- **Common Names:** Popcorn Bush Cedar, Archibald's Cassia, Calceolaria Cassia, Golden Shower, Scented Shower, Fetid Cassia.
- **Characteristics:**
  - Forms dense, sterile thickets, suppressing native vegetation.
  - Alters soil chemistry and reduces food availability for herbivores.
  - Height: 7–18 metres with a dense, spreading crown.
  - Often planted for fuelwood, ornamental purposes, shade, and agroforestry.

- Resembles *Cassia fistula* (Kanikkonna), Kerala's state flower.

- **IUCN Status:** Least Concern.

### Challenges

- Rapid and aggressive growth can degrade forest lands, making control difficult.
- Its dense thickets choke native plants and disrupt ecosystems.

### Invasive Species – A Brief Overview

- **Definition:** An organism that is non-native to an area and causes ecological or economic harm.
- **Introduction Pathways:**
  - Ballast water of ships
  - Release of aquaculture species
  - Escape from aquariums or ornamental plantings
- **Impacts:**
  - Can lead to extinction of native species
  - Reduces biodiversity and disrupts ecosystem balance

The eradication of *Senna spectabilis* in Kerala serves as a model for science-driven, community-based management of invasive species, offering hope for forest restoration and biodiversity conservation in India.

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## Acanthamoeba – Widespread in Kerala's Waterbodies

Recent studies reveal that *Acanthamoeba*, a microscopic amoeba, is more prevalent in Kerala's freshwater systems than previously believed.

### About *Acanthamoeba*

- A free-living, single-celled organism commonly found in water, soil, and dust.
- Present in swimming pools, hot tubs, drinking water systems, humidifiers, and HVAC (heating, ventilation, and air conditioning) systems.
- Can cause serious infections affecting the brain, skin, eyes, and sinuses.
- **Infection pathways include:**
  - Cuts or wounds in the skin
  - Inhalation into lungs or nostrils
  - Eyes, often through contact lens use

### Types of Infections

1. **Granulomatous Amebic Encephalitis (GAE):**
  - Affects the brain and is almost always fatal.
2. **Cutaneous Acanthamoebiasis:**
  - Skin infections caused by the amoeba.
3. **Acanthamoeba Rhinosinusitis:**
  - Infection of the nasal cavity and sinuses.

#### 4. Acanthamoeba Keratitis:

- Eye infection, commonly in healthy individuals, which may lead to permanent vision loss.

The detection of Acanthamoeba in Kerala's waterbodies highlights the public health risks associated with waterborne pathogens, emphasizing the need for safe water practices, proper hygiene, and careful contact lens management.

#### Debrigarh Wildlife Sanctuary – Odisha's Upcoming Tiger Reserve

Odisha's Debrigarh Wildlife Sanctuary is poised to be designated as India's newest tiger reserve, adding to the country's network of protected tiger habitats.

##### Location & History

- Situated in Bargarh district, Odisha, near the Hirakud Dam on the Mahanadi River.
- Hirakud Dam is notable for being the longest dam in India and the longest earthen dam in the world.
- Established as a wildlife sanctuary in 1985.
- Historically significant as the base of freedom fighter Veer Surendra Sai, whose rebellion against the British had its stronghold at Barapathara within the sanctuary.

##### Vegetation & Flora

- Predominantly mixed and dry deciduous forests.
- Key tree species include Sal, Asana, Bija, Amla, and Dhaura.

##### Fauna

- **Mammals:** Indian leopard, sloth bear, chousingha (four-horned antelope), sambar deer, gaur (Indian bison), wild boar, and Indian wild dog.
- **Birds:** The sanctuary serves as an important wintering ground for migratory birds. Notable species include crested serpent eagle, flower peckers, red-vented bulbul, tree pie, drongo, and white-eye oriental.

With its rich biodiversity, historical significance, and strategic location, the elevation of Debrigarh Wildlife Sanctuary to a tiger reserve will strengthen conservation efforts, protect native species, and boost eco-tourism in Odisha.

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### Vulture Network Portal – India's First Knowledge Platform for Vulture Conservation.

An Assam-based foundation has launched the Vulture Network Portal, a cloud-based platform dedicated to the conservation and awareness of vultures in India.

#### About the Portal

- Designed as a comprehensive knowledge and awareness hub for individuals and organizations working to protect India's large scavenger birds.
- First of its kind in India, aiming to build a network of vulture conservation enthusiasts.
- Initiated by We Foundation India, in collaboration with partners such as the Assam Bird Monitoring Network and other conservation organizations.

- Provides scientific data, educational resources, and freely downloadable outreach materials, enabling citizens to conduct awareness campaigns.

### **Focus Areas**

- Carcass poisoning and the use of harmful veterinary drugs, especially diclofenac, which are major threats to vultures.
- Addresses negative social perceptions that hinder conservation efforts.
- Content is being shared in local languages, starting with Assamese, to increase community engagement.

### **Vultures Found in India**

- **Critically Endangered / Endangered Species:**
  - Slender-billed Vulture (~800 mature individuals remaining)
  - White-rumped Vulture
  - Red-headed Vulture
  - Indian Vulture
- **Other Notable Species:**
  - Himalayan Griffon
  - Cinereous Vulture
  - Eurasian Griffon
  - Egyptian Vulture
  - Bearded Vulture

The Vulture Network Portal is a pioneering effort to curb the decline of vulture populations in India, promote scientific research, and mobilize local communities for long-term conservation success.

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## **Mission Mausam – Strengthening India’s Weather Forecasting Capabilities.**

The Indian Meteorological Department (IMD) is set to install four additional weather radars in Jammu & Kashmir under Mission Mausam, enabling more district-specific and accurate weather forecasts.

### **About Mission Mausam**

- Launched in 2024 by the Ministry of Earth Sciences (MoES).
- Implemented collaboratively by the IMD, National Centre for Medium-Range Weather Forecasting (NCMRWF), and Indian Institute of Tropical Meteorology (IITM).
- Focuses on improving weather and climate services to provide timely, precise, and actionable information for multiple sectors including agriculture, disaster management, and rural development.

### **Objectives**

1. Enhance India’s weather forecasting capabilities across all timescales – short-term, medium-term, extended-range, and seasonal.

2. Develop high-resolution models for better prediction of monsoon behaviour.
3. Strengthen the observational network using advanced radars, satellites, and automated weather stations.
4. Provide actionable advisories for sectors like agriculture, water resources, energy, health, and disaster management.
5. Build scientific capacity through research collaborations with national and international institutions.

### **Significance**

- Represents a transformative step in India's fight against climate variability and extreme weather events.
- Supports sustainable development while protecting lives, livelihoods, and critical infrastructure.
- Enhances the country's preparedness for climate-sensitive sectors, particularly agriculture and disaster response.

Mission Mausam exemplifies India's commitment to modernizing meteorological infrastructure and leveraging technology for accurate, actionable weather information across the nation.

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## **MY Bharat – Mobilising Youth for Disaster Response**

The Union Minister of Sports and Youth Affairs recently announced that MY Bharat Aapda Mitras will be deployed to assist in rescue operations in flood-affected areas of Punjab and Himachal Pradesh.

### **About MY Bharat**

- An autonomous initiative established by the Department of Youth Affairs, Ministry of Youth Affairs and Sports.
- Operates through a digital platform that provides youth with equitable access to opportunities for personal growth and nation-building, contributing to a Viksit Bharat.
- Targeted at youth aged 15–29 years, catering to the dynamic needs of this demographic.
- Offers mentorship programs, experiential learning, industry connections, and networking opportunities, enabling youth to develop skills and realize their potential.

### **About MY Bharat Aapda Mitras**

- Trained by the National Disaster Management Authority (NDMA) under the Aapda Mitra programme.
- The programme provides structured NDMA-certified disaster response training to young volunteers.
- Equips participants with skills in:
  - Search and rescue operations
  - First aid and medical assistance
  - Crowd management
  - Emergency coordination

- Volunteers operate at the community level, ensuring the delivery of food, medical aid, and essential supplies to villages affected by floods and landslides.

**Significance:** The Aapda Mitras initiative under MY Bharat empowers youth to play an active role in disaster preparedness and response, reinforcing community resilience and strengthening India's disaster management ecosystem.

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## **Himalayan Brown Bear – The Giant of the High Himalayas**

### **About the Species**

The Himalayan Brown Bear is the largest mammal inhabiting the high-altitude regions of the Himalayas and represents one of the most ancient lineages of brown bears.

- Scientific Name: *Ursus arctos isabellinus*
- Also called the Himalayan Red Bear or Isabelline Bear
- Known locally as Denmo in Ladakhi
- Folklore suggests that its ability to walk upright may have inspired the legend of the Yeti or “Abominable Snowman.”

### **Distribution**

- Found in the northwestern and central Himalayas, covering parts of Pakistan, India, Nepal, Bhutan, and the Tibetan Autonomous Region of China.
- Typically inhabits areas above the timberline, at altitudes ranging from 3,000 to 5,500 meters (9,800–18,000 feet).
- In India, they survive in small, fragmented populations across the alpine and subalpine habitats of Jammu & Kashmir, Himachal Pradesh, and Uttarakhand.

### **Physical Characteristics**

- **Size:** Males average 1.9 m in length and 135 kg in weight, while females are smaller at 1.6 m and 70 kg.
- **Fur:** Thick and usually sandy or reddish-brown.
- **Diet:** Omnivorous; feeds on grasses, roots, bulbs, insects, and small mammals like marmots, pikas, and voles.
- **Behavior:** Solitary, except during mating or a mother raising cubs. Hibernates during the winter months.
- **Life Span:** 20–30 years in the wild.

### **Conservation Status**

- IUCN Red List: Critically Endangered
- Wildlife (Protection) Act, 1972: Schedule I
- CITES: Appendix I

The Himalayan Brown Bear is a symbol of high-altitude biodiversity, and its protection is crucial to preserving the fragile alpine and subalpine ecosystems of the Himalayas.

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## Combined Commanders' Conference (CCC) 2025 – Strengthening India's Armed Forces.

The Prime Minister of India is set to inaugurate the Combined Commanders' Conference (CCC) 2025 in Kolkata, West Bengal.

### About the Conference

- The CCC serves as the premier strategic forum of the Indian Armed Forces, bringing together the nation's top military and civilian leadership to deliberate on conceptual and strategic matters.
- Dates: September 15–17, 2025
- Venue: Kolkata, West Bengal
- Theme for 2025: "Year of Reforms – Transforming for the Future"

### Focus Areas

1. Reforms, Transformation & Change – Reflecting the Armed Forces' drive toward institutional modernization and deeper integration.
2. Operational Preparedness – Ensuring high readiness across multi-domain operations in response to evolving geo-strategic challenges.
3. Technology and Modernisation – Emphasizing the adoption of new technologies and innovative strategies to maintain agility and decisiveness.

### Participation and Engagement

- In keeping with its tradition of inclusive deliberation, CCC 2025 will feature interactive sessions with officers and personnel of various ranks, ensuring field-level insights inform high-level discussions.
- **Key attendees include:**
  - Defence Minister
  - National Security Adviser
  - Minister of State for Defence
  - Chief of Defence Staff (CDS)
  - Defence Secretary

**Significance:** The conference strengthens strategic decision-making, institutional reforms, and operational efficiency within the Indian Armed Forces, ensuring they remain agile and capable in an increasingly complex global security environment.

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## Nilgiri Tea – Aroma of the Blue Mountains Facing Cost Price Challenges

Tea growers in the Nilgiri region are grappling with a persistent cost price crisis for green tea leaves, affecting primarily small-scale farmers.

### About Nilgiri Tea

- **Origin:** Grown in the southern Western Ghats, particularly in the Nilgiri (Blue) Mountains.
- **Cultivation Areas:** Mainly Nilgiri district in Tamil Nadu, with smaller plantations in Kerala and Karnataka.

- **Recognition:** Awarded Geographical Indication (GI) Tag in 2008.
- **Characteristics:** Known for its intense aroma, delicate flavor, and notes of floral and citrus.
- **Usage:** Popular for iced tea and often blended with other teas to create distinctive taste profiles.

#### Climatic and Soil Requirements

- **Altitude:** 1,000–2,500 meters above sea level
- **Annual Rainfall:** 150–230 cm
- **Soil Type:** Well-drained laterite soil
- **Growth Pattern:** Tea is cultivated year-round and benefits from two monsoon cycles annually in the Nilgiris.

#### Challenges Facing Nilgiri Tea

1. **Pricing Pressure:** Falling prices for green tea leaves (GTL) are threatening the livelihoods of small growers.
2. **Market Dependency:** Over-reliance on Russian exports has made the market vulnerable.
3. **Quality Issues:** Problems include poor quality management, adulteration, and neglect in local markets.

**Significance:** Nilgiri Tea is not only a premium aromatic tea of India but also a key source of income for farmers in the southern Western Ghats. Addressing the cost and market challenges is crucial for sustaining this heritage crop.

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## Giant African Snail – A Rising Threat in Chennai

#### Latest Update:

Experts have raised alarms over the presence of the Giant African Snail (*Lissachatina fulica*) in Chennai, highlighting serious risks to residents and local agriculture.

#### About the Species

- The Giant African Snail refers to several large African land snail species, with *Lissachatina fulica* being the most destructive.
- Recognized as one of the world's worst invasive species, it can consume over 500 varieties of crops and ornamental plants.
- **Native Range:** East Africa
- **Global Spread:** Introduced widely through the pet trade, food resource cultivation, and accidental transport.

#### Habitat and Ecology

- Thrives in warm tropical climates with year-round mild temperatures and high humidity.
- **Commonly found in:**
  - Agricultural lands
  - Coastal areas and wetlands
  - Natural and planted forests

- Riparian zones, scrublands, shrublands
- Urban environments
- **Diet:** Adult snails feed on decaying organic matter, including garbage, fallen fruits, and animal manure.

### Impact on Humans and Animals

- Poses health risks as a vector for parasites and diseases.
- Can transmit parasitic nematodes such as *Angiostrongylus cantonensis* and *A. costaricensis*.
- These parasites are responsible for eosinophilic meningoencephalitis (brain infection) and abdominal angiostrongyliasis in humans.
- Infections typically occur through ingestion of contaminated snails or their residues.

**Significance:** The Giant African Snail threatens both public health and agriculture, making early detection, awareness, and containment measures crucial for urban areas like Chennai.

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## Apatani Tribe – Guardians of Ziro Valley’s Unique Heritage

The Apatani women of Ziro Valley, Arunachal Pradesh, are historically known for their facial tattoos and wooden nose plugs. Though banned in the 1970s, this tradition continues among elder women.

### About the Apatani Tribe

- Also known as Tanw, or Apa/Apa Tani, the Apatani are an indigenous tribal community residing in Ziro Valley, Arunachal Pradesh.
- Language: Speak a local Tani language.
- Religious Beliefs: They worship the sun and the moon.

### Culture and Lifestyle

#### 1. Festivals:

- **Dree:** Marks prayers for a bountiful harvest and the well-being of the community.
- **Myoko:** Celebrates friendship, similar to modern Friendship Day.
- **Yapung and Murung:** Other significant cultural festivals celebrated with rituals and communal participation.

#### 2. Tattooing and Nose Plugs:

- Facial tattoos (Tippei) are applied by elder women when a girl is around 10 years old.
- Wooden nose plugs (Yaping Hullo) are made from forest wood.
- This tradition initially served as a protective measure against abduction.

#### 3. Agriculture:

- Known for integrated rice-fish farming on mountain terraces since the 1960s.
- They primarily cultivate three rice varieties: Emeo, Pyape, and Mypia.

**Significance:** The Apatani tribe preserves a unique cultural identity, combining distinctive traditions with sustainable agricultural practices, making Ziro Valley a living repository of heritage and biodiversity.

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## Hilsa Fish – Culinary Treasure of Bengal.

Bangladesh has announced that it will export Hilsa fish to India ahead of the Durga Puja festival, symbolizing the strong and enduring friendship between Bangladesh and India.

### About Hilsa Fish

- **Family:** Clupeidae (same family as herring)
- **Local Name:** Ilish
- **Scientific Name:** Tenualosa ilisha
- **Significance:** Highly valued in Bengal's culinary traditions, Hilsa is prized for its delicate flavor, unique taste, and silky texture.

### Habitat and Distribution

- Found in rivers, estuaries, and coastal waters of Bangladesh, India, Pakistan, Myanmar, and the Persian Gulf region.
- Hilsa is a migratory fish, living mostly in the ocean but swimming upstream into rivers to spawn.
- Major river habitats include:
  - **Bangladesh:** Padma and Meghna rivers
  - **India:** Ganges and Godavari rivers
- Bangladesh accounts for about 70% of global Hilsa production and regards it as a national fish.

### Economic Importance

- Contributes roughly 12% of total fish catch in Bangladesh.
- Adds about 1% to the country's GDP, making it an important economic resource.

### Physical Characteristics

- **Appearance:** Silvery, flat-bodied fish with a pointed head
- **Size:** Can grow up to 50 cm in length and weigh over 3 kg
- **Special Feature:** Known for having many small bones

### Conservation Status

- Classified as Least Concern on the IUCN Red List

**Significance:** Hilsa is not only a cultural and culinary icon but also a key economic resource, strengthening both local livelihoods and international trade, particularly between Bangladesh and India.

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## Pallas's Cat – Recent Update

- A biodiversity survey in Arunachal Pradesh has, for the very first time, captured photographic proof of the Pallas's cat in the region.
- This finding extends the known range of the species within India and emphasizes the significance of the Eastern Himalayas as a habitat for rare fauna.

**Overview**

- **Scientific name:** *Otocolobus manul*
- A small-sized wild feline, highly adapted to cold and arid landscapes.
- The species is named after the German naturalist Peter Simon Pallas, who described it in 1776 from specimens collected near Lake Baikal (Russia).

**Geographical Distribution**

- Widely distributed across Central Asia. Countries include:
  - Iran (west), Mongolia, China, Russia (Mongolia–China borderlands), Kazakhstan, Kyrgyzstan.
- The recent discovery in Arunachal Pradesh highlights its presence in the Indian Himalayan zone.

**Habitat Preferences**

- Inhabits rocky grasslands and shrub-dominated slopes at high altitudes.
- Usually found in places with snow accumulation less than 15–20 cm.
- Its diet is dominated by rodents and lagomorphs.

**Key Characteristics**

- **Size:** Comparable to a domestic cat.
- **Coat:** Thick, soft fur; pale grey to light brown.
- **Head shape:** Broad face, with eyes set high and ears positioned low.
- **Tail:** Distinct black rings and tip.
- **Adaptation:** Longer underfur than upper coat—helps withstand contact with frozen ground.

**Protection Status**

- **IUCN Red List:** Least Concern
- **CITES:** Listed under Appendix II

ANURAG BACHAN'S \*\*\*\*\*

## Biodiversity Heritage Sites – Latest Update

- The government has recently notified 8.6 acres of green cover at Cantonment Railway Colony in Bengaluru as a Biodiversity Heritage Site (BHS).
- This is the second BHS in the city, after the Gandhi Krishi Vigyan Kendra (GKVK) campus.

**What are Biodiversity Heritage Sites?**

- **Definition:** BHS are ecologically significant areas that harbor exceptionally rich biodiversity and play a vital role in sustaining local ecosystems.
- They are generally community-managed landscapes that hold ecological, cultural, and historical importance.

**Key Features of BHS**

A site may qualify as a BHS if it exhibits one or more of the following characteristics:

- High diversity of wild and domesticated species.

- Endemic species found only in that region.
- Presence of rare, threatened, or keystone species, or those with evolutionary significance.
- Existence of wild relatives of cultivated/domesticated plants and animals.
- Fossil records or ancient ecosystems representing the past biological heritage of an area.
- Strong cultural, ethical, or aesthetic value linked with biodiversity.
- Ecosystems may be terrestrial, aquatic, coastal, inland wetland, or marine in nature.

### Legal Backing

- Governed under Section 37 of the Biological Diversity Act, 2002.
- State Governments, in consultation with local bodies, can declare sites as BHS.
- States may also design schemes to compensate or rehabilitate communities affected by the notification.
- Rules for conservation and management can be framed by States in consultation with the Central Government.

### Community Participation

- Declaration of BHS does not restrict traditional practices of local communities, unless they themselves decide otherwise.
- Objective: To improve the quality of life of local people while conserving biodiversity.

### First Biodiversity Heritage Site in India

- Nallur Tamarind Grove, located near Bengaluru (Karnataka), was designated as the first BHS in 2007.

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## Scarlet Dragonfly – Latest Update

- A rare sighting of the Scarlet Dragonfly was recently reported from the valleys of Munnar in Kerala's Western Ghats.
- This adds to the growing list of unique insect species recorded in the biodiversity-rich Western Ghats, a UNESCO World Heritage Site.

### About Scarlet Dragonfly

- **Scientific name:** *Crocothemis erythraea*
- **Family:** Libellulidae
- Commonly called the broad scarlet, common scarlet-darter, or simply scarlet darter.

### Geographic Distribution

- Widely found across southern Europe and the African continent.
- Range extends into West Asia up to southern China.
- Known for occasional long-distance dispersal, often appearing outside its typical habitats.

### Preferred Habitat

- Favors habitats close to freshwater bodies such as ponds, rivers, and streams.

- Prefers open, sunny areas rather than shaded or forested sites.

### Distinctive Features

- **Size:** Grows to about 33–44 mm in length.
- **Body shape:** Flattened, broad abdomen.
- **Male:** Bright scarlet-red abdomen, with amber spots at the hindwing bases and red wing veins.
- **Females/juveniles:** Yellowish-brown, with a noticeable pale dorsal stripe on the thorax.

### Conservation Status

- Listed as Least Concern on the IUCN Red List due to its wide distribution and stable population.

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## Sahyadri Tiger Reserve (STR)

- **News:** The Union Environment Ministry has approved the capture and translocation of 8 tigers from Tadoba-Andhari and Pench Tiger Reserves to Sahyadri Tiger Reserve (Maharashtra) to boost its tiger population.

### About Sahyadri Tiger Reserve

- **Location:** Sahyadri ranges, Western Ghats, Maharashtra.
- **Status:**
  - 1st Tiger Reserve of Western Maharashtra
  - 4th Tiger Reserve of Maharashtra
- **Constituents:** Spread over
  - Koyana Wildlife Sanctuary (KWLS)
  - Chandoli National Park (CNP)
- **Hydrology:**
  - Shivsagar Reservoir (Koyana River)
  - Vasant Sagar Reservoir (Warana River)

### Physical Features

- **Terrain:** Undulating, with steep escarpments along the western boundary.
- **Unique Landform:** Presence of lateritic rocky plateaus (“Sadas”), barren with sparse vegetation, overhanging cliffs, and dense thorny scrub.

### Vegetation

- **Types:** Moist evergreen, semi-evergreen, moist deciduous, dry deciduous.
- **Notable:** Only region with climax & near-climax vegetation still intact, with minimal anthropogenic threat.

### Flora

- Medicinal & fruit-bearing trees, along with commercial hardwoods.

- **Common species:**

- Anjani (*Memecylon umbellatum*)
- Jambhul (*Syzygium cumini*)
- Pisa (*Actinodaphaone angustifolia*)

**Fauna**

- **Carnivores:** Tiger, Leopard, Wolf, Jackal, Wild Dog, Lesser cats.
- **Herbivores:** Sambar, Barking Deer, and other deer species.

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## Gandhi Sagar Wildlife Sanctuary

- **News:** Madhya Pradesh wildlife officials have planned to introduce a female cheetah into the Gandhi Sagar Wildlife Sanctuary as part of India's cheetah reintroduction programme.

**About Gandhi Sagar Wildlife Sanctuary**

- **Location:** Northwestern Madhya Pradesh, along the Madhya Pradesh–Rajasthan border.
- Lies within the Khathiar–Gir dry deciduous forests ecoregion.
- **Declared:** 1974
- **Area:** ~368 sq. km

**Physical & Geographical Features**

- **River:** The Chambal River flows through the sanctuary, splitting it into two parts.
- **Topography:** Hills, plateaus, and the catchment of Gandhi Sagar Dam.
- **Status:** Recognized as an Important Bird and Biodiversity Area (IBA).

**Historical & Cultural Sites**

- Chaurasigarh Fort
- Chaturbhujnath Temple
- Bhadkaji rock paintings
- Hinglajgarh Fort
- Taxakeshwar Temple

**Vegetation & Flora**

- **Forest Types:**
  - Northern Tropical Dry Deciduous Forest
  - Northern Tropical Dry Mixed Deciduous Forest
  - Dry Deciduous Scrub
- **Key Species:** Khair, Salai, Kardhai, Dhawda, Tendu, Palash

**Fauna**

- **Herbivores:** Chinkara, Nilgai, Spotted Deer
- **Carnivores:** Indian Leopard, Striped Hyena, Jackal, etc.

## Lake Natron

- **News:** The Government of Tanzania has halted a large-scale soda ash mining project at Lake Natron, due to concerns over ecological impacts on flamingo breeding grounds.

### About Lake Natron

- **Location:** Border of Tanzania and Kenya; part of the Eastern Rift Valley (Great Rift System).
- **Type:** Highly alkaline salt lake.
- **Hydrology:** Primarily fed by the Ewaso Ng'iro River (originating in central Kenya).

### Key Features

- **Chemical Composition:** Warm waters with high levels of salt, caustic soda, and magnesite, creating a harsh but unique habitat.
- **Coloration: Striking** red hue due to extreme alkalinity and microorganisms.
- **Ramsar Site:** Designated in 2001 as a Wetland of International Importance.

### Ecological Significance

- **Flamingo Habitat:**
  - Only reliable breeding ground for Lesser Flamingos in Africa.
  - Supports ~75% of the global population.
- **Landscape:** Shompole Volcano lies at the northern end, forming a striking backdrop to the lake.

### Threats

- Proposed soda ash mining projects.
- Agriculture & water diversion, affecting inflow.
- Pollution & climate change, altering lake ecology

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## Saunders's Tern.

- **News:** Saunders's Tern (*Sternula saundersi*) was recently sighted at the Adyar Estuary, Chennai (Tamil Nadu).

### About Saunders's Tern

- **Family:** Laridae (gulls, terns, and skimmers).
- **Type:** Small ground-nesting marine bird.
- **Range:**
  - **Breeding:** Red Sea, Persian Gulf, and islands between India & Sri Lanka.
  - **Wintering:** Seychelles → Maldives → Cocos (Keeling) Islands.
- **Habitat:** Estuaries, tidal lagoons, shallow inshore tropical & subtropical waters, harbors.
- **Food:** Small fish, crustaceans, mollusks.
- **Nesting:** Sandy sites, shingles, or dried mud, up to 2 km inland.
- **Breeding Season:** March–June.

### Conservation

- IUCN Red List: Least Concern (LC)
- But populations are vulnerable to coastal development and habitat loss.

### Key Facts – Adyar Estuary

- Formed at the confluence of Adyar River with the Bay of Bengal.
- Lies between Santhome Beach (north) and Elliot's Beach (south) in Chennai.
- Known for hosting migratory birds and rich biodiversity.

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## Hathei Chilli

- **News:** The 14th Sirarakhong Hathei Chilli Festival was recently inaugurated in Manipur to promote the GI-tagged Hathei Chilli.

### About Hathei Chilli

- **Common name:** Sirarakhong Chilli.
- **Origin:** Thrives only in the Sirarakhong village (~66 km from Imphal, Manipur).
- **Cultivation:** Traditionally grown under jhum (shifting) cultivation on hill slopes.
- **GI Tag:** Granted in 2021.

### Features

- Considered among the best chilli varieties globally.
- **Distinctive traits:** Unique deep red colour, taste, size, and shape—exclusive to Sirarakhong village.
- **Economic role:** Primary source of income for Tangkhul Naga-dominated Sirarakhong village.
- **ASTA Colour Value:** Exceptionally high at 164 (indicating strong natural colouring capacity).
- **Demand:** High market value both within and outside Manipur.

### Health Benefits

- Rich in Vitamin C and calcium.
- Strong anti-oxidant properties.

### Geographical Indication (GI) Tag – Quick Facts

- Indicates the geographical origin of a product.
- Covers foods, agricultural products, handicrafts, industrial items, wines & spirits.
- Governed by the Geographical Indications of Goods (Registration and Protection) Act, 1999.
- Administered by the Geographical Indications Registry under the DPIIT, Ministry of Commerce & Industry.

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## Global Innovation Index 2025

- **News:** According to WIPO's GII 2025, global R&D growth fell to 2.9% in 2024 and is projected to decline further to 2.3% in 2025, indicating slowing global innovation investment.

### About Global Innovation Index (GII)

- **Purpose:** Ranks countries based on their capacity and performance in innovation.
- **Launched:** 2007; recognized by the UN General Assembly as an authoritative reference for Science, Technology & Innovation (STI) policies.
- **Publisher:** World Intellectual Property Organization (WIPO), yearly.
- **Metrics:** Tracks investment patterns, technological progress, adoption rates, and socioeconomic impact.
- **Significance:** Useful for governments, industries, researchers, and stakeholders in innovation ecosystems.

### Key Highlights - GII 2025

- **Top 5 Innovators:**
  1. Switzerland (1st) - 15th consecutive year at the top
  2. Sweden (2nd)
  3. United States (3rd)
  4. Republic of Korea (4th)
  5. Singapore (5th)
- **Notable New Entrants:**
  - China: Enters top 10 for the first time (10th position), leading all middle-income economies.
  - India, Türkiye, Vietnam, Morocco: Significant upward movement.
- **India's Performance:**
  - Rank 38 among 139 economies in 2025
  - Substantial rise from 81st rank in 2015, reflecting strong innovation growth and improved STI ecosystem.

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## PM MITRA Park

- **News:** The Prime Minister laid the foundation stone for India's first PM MITRA Park in Dhar District, Madhya Pradesh.

### About PM MITRA Park

- **Full Form:** Pradhan Mantri Mega Integrated Textile Region and Apparel (PM MITRA)
- **Purpose:** A mega integrated textile hub combining all stages of textile production—spinning, weaving, dyeing, printing, and garment-making—in one location.
- **Area Covered:** ~1,000 acres or more per park.
- **Types:** Greenfield (new) or Brownfield (existing infrastructure) projects.

- **Vision:** “Farm to Fibre to Factory to Fashion to Foreign” – aims for faster, cheaper, high-quality textile production.
- **Nodal Ministry:** Ministry of Textiles

### Key Features

1. **Integrated Value Chain:** Reduces transport time and costs by having all production stages in one zone.
2. **World-Class Infrastructure:**
  - Roads, reliable power & water, worker hostels, logistics.
  - Plug-and-play factory units with space for research, skill training, and commercial activity.
3. **Land Use:**
  - 50%: Manufacturing activity
  - 20%: Utilities
  - 10%: Commercial development
4. **Employment & Investment:**
  - 1 lakh direct & 2 lakh indirect jobs per park
  - Expected investment: Rs 70,000 crore+
5. **Public-Private Partnership:** Developed by SPV owned by State & Central Government in PPP mode.
6. **Financial Assistance:**
  - Up to Rs 800 crore for Greenfield projects
  - Up to Rs 500 crore for Brownfield projects
  - State governments provide land and utility infrastructure

### Locations of PM MITRA Parks

1. Tamil Nadu (Virudhunagar)
2. Telangana
3. Gujarat
4. Karnataka
5. Madhya Pradesh (Dhar)
6. Uttar Pradesh (Lucknow district)
7. Maharashtra

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## National Tiger Conservation Authority

- **News:** The Supreme Court has sought responses from the Centre, NTCA, and others on a PIL requesting a CBI investigation into an alleged organised tiger poaching and illegal wildlife trade operating in states like Maharashtra and Madhya Pradesh.

### About National Tiger Conservation Authority (NTCA)

- **Type:** Statutory body under the Ministry of Environment, Forest, and Climate Change (MoEFCC)
- **Established:** 2006, under the Wildlife (Protection) Act, 1972 (WPA 1972)

### Objectives of NTCA

1. Provide statutory authority to Project Tiger, ensuring its directives have legal compliance.
2. Strengthen Project Tiger, a Centrally Sponsored Scheme (CSS) funding tiger range states for in-situ tiger conservation in designated tiger reserves.
3. Promote Centre-State accountability in tiger reserve management through formal MoUs.
4. Ensure Parliamentary oversight over tiger conservation activities.
5. Address livelihood concerns of local communities surrounding tiger reserves.

### Composition

- **Chairperson:** Minister in charge of MoEFCC
- **Vice-Chairperson:** Minister of State (MoEFCC)
- **Members:**
  - 3 Members of Parliament
  - Secretary, MoEFCC
  - Other appointed members

### Powers & Functions (As per WPA 1972, amended 2006)

1. Approval of Tiger Conservation Plans submitted by State Governments.
2. **Evaluation of ecological sustainability:** Disallow unsustainable land use (mining, industry, etc.) in tiger reserves.
3. **Norms & guidelines:** Lay down standards for tourism and Project Tiger activities in core and buffer areas.
4. **Human-wildlife conflict management:** Provide strategies for coexistence in areas outside tiger reserves, national parks, or sanctuaries.
5. **Monitoring & reporting:** Provide data on tiger populations, prey species, habitat status, mortality, disease, patrolling, and conservation plans.
6. **Research & coordination:** Approve and coordinate ecological, socio-economic, and tiger-related research.
7. **Habitat protection:** Prevent diversion of tiger reserves or wildlife corridors for unsustainable uses, except in public interest with NBWL approval and NTCA advice.
8. **Support for eco-development:** Facilitate biodiversity conservation and people's participation in tiger reserve management, consistent with Central and State laws.
9. **Scientific & legal support:** Provide technical, IT, and legal assistance for implementing tiger conservation plans.
10. **Capacity building:** Conduct skill development and training programs for officers and staff of tiger reserves.
11. **Issuing directions:** NTCA can direct any person, officer, or authority to ensure the protection of tigers and tiger reserves, which is legally binding.

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## Qatar

- **News:** India defended Qatar's sovereignty at the United Nations Human Rights Council, reaffirming support for the Gulf nation on the international stage.

### About Qatar

- **Official Name:** State of Qatar
- **Location:** Western Asia, northeastern coast of the Arabian Peninsula
- **Area:** 11,586 sq.km
- **Borders:**
  - **Land:** Saudi Arabia (south)
  - **Sea:** Surrounded by the Persian Gulf
  - Separation from Bahrain: Gulf of Bahrain
- **Capital & Largest City:** Doha
- **Languages:** Arabic (official), English (widely used)
- **Currency:** Qatari Riyal (QAR)
- **Ruling Family:** House of Thani since 1868
- **Historical Milestones:**
  - **British protectorate:** 1916–1971
  - **Independence:** 1971

### Geography & Landscape

- **Terrain:** Predominantly flat and barren desert
- **Southern Region:** Sand dunes, including Khor al Adaid ("Inland Sea")
- **Northern & Western Region:** Slightly rockier with low limestone formations
- **Wadis:** Valleys that remain dry except during rains
- **Salt Flats (Sabkhas):** Formed by high evaporation, leaving salt deposits
- **Islands:** Notable ones include Hawar Archipelago, Halul, Al Bashiria

### Demography & Ethnic Groups

- **Original settlers:** Bedouin nomads from central Arabian Peninsula
- **Population:** Qatari citizens form roughly 1/9th of total population
- **Foreign Workers:** Major workforce from India, Pakistan, Iran
- **Lifestyle:** Few Qataris retain traditional nomadic ways

### Economy

- **Primary Sectors:** Oil, natural gas, and related industries (over 90% of exports)
- **LNG Reserves:** Third largest globally
- **Financial Hub:** Doha hosts international banks, financial institutions, and investment firms
- **Economic Growth:** Post-1970s expansion heavily reliant on foreign labor

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## Moran Community

- **News:** The Moran community in Assam has intensified its demand for Scheduled Tribe (ST) status, seeking constitutional recognition.

### About Moran Community

- **Location:** Primarily in Tinsukia district, Assam, with populations in Arunachal Pradesh.
- **Historical Background:** Before the Ahoms, the Morans had an independent kingdom at Bengmara (modern-day Tinsukia).
- **Language:**
  - Originally spoke a dialect from the Bodo group of Tibeto-Burman languages.
  - Later adopted Assamese for daily use.

### Religion & Cultural Practices

- **Religion:** Vaishnavism, belonging to the Moamoria sect.
  - Introduced by Sri Aniruddha Deva, disciple of Sri Sankara Deva.
  - Previously followed Shakta faith, centered at Kechaikhati Than, a shrine for the mother goddess.
- **Festivals:**
  - **Gasar Talar Bihu:** Bihu dance performed under a tree, unique to the Moran tribe.
  - **Kheri:** Another traditional festival celebrated by the community.

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## Periyar Tiger Reserve

- **News:** A recent report from the State Finance Inspection Wing under the Finance Department revealed significant financial irregularities at Periyar Tiger Reserve, Kerala.

### About Periyar Tiger Reserve

- **Location:** Idukki district, Kerala, named after the Periyar River.
- **Geography:**
  - Situated in Cardamom Hills and Pandalam Hills of the Western Ghats, near the Tamil Nadu border.
  - Surrounds Periyar Lake, created in 1895 by damming the Periyar River.
- **Terrain:** Hilly and undulating; maximum altitude: 2016 m (Kottamala peak).
- **Rivers:** Periyar and Pamba
- **Dams:** Mullaperiyar Dam within the reserve

### Tribes

- Inhabited by Mannans and Palians, among other tribal communities.

### Vegetation & Flora

- **Vegetation Types:** Tropical evergreen, semi-evergreen, moist deciduous, transitional fringe evergreen forests, grasslands, eucalyptus plantations.

- **Notable Flora:** Teak, mango, rosewood, jamun, jacaranda, terminalia, tamarind, royal ponciana, bamboo

#### Fauna

- **Large Mammals:** Elephants, Tiger, Gaur, Wild Pig, Sambar, Barking Deer, Indian Wild Dog
- **Primates:**
  - Lion-tailed macaque (rare)
  - Nilgiri Langur
  - Gee's Golden Langur
  - Common Langur
  - Bonnet Macaque
- **Others:** Mouse Deer, Dole Deer, and possibly Nilgiri Tahr

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### Achanakmar Tiger Reserve

- **News:** Forest officials report that a tigress named Jhumri has played a pivotal role in boosting the tiger population within the Achanakmar Tiger Reserve (ATR).

#### Overview of Achanakmar Tiger Reserve

- **Location:** Situated in the Bilaspur district of Chhattisgarh.
- **History:** Initially declared as Achanakmar Wildlife Sanctuary in 1975, it was upgraded to a tiger reserve in 2009.
- **Biosphere Reserve:** Forms part of the extensive Achanakmar–Amarkantak Biosphere Reserve.
- **Significance:**
  - One of three tiger reserves in Chhattisgarh.
  - Functions as a key tiger corridor, enabling wildlife movement between protected areas.
  - Maintains a crucial link between Kanha and Bandhavgarh Tiger Reserves, aiding in tiger dispersal and genetic exchange.
- **River:** The Maniyari River, flowing through the reserve, is considered the lifeline of its forest ecosystem.

#### Tribal Communities

- The reserve is inhabited by indigenous groups such as the Baigas (a Particularly Vulnerable Tribal Group), Gonds, and Yadavs.

#### Vegetation and Flora

- **Forest Type:** Predominantly tropical moist deciduous forest.
- **Key Plant Species:** Includes sal, bija, saja, haldu, teak, tinsa, dhawara, lendia, khamar, and bamboo.
- **Medicinal Plants:** Over 600 species of plants with medicinal properties thrive in the reserve.

#### Wildlife

- **Carnivores:** Tiger, leopard, wild dog, hyena.

- **Herbivores:** Bison, chinkara, sambar, chital.
- **Other Mammals:** Flying squirrel, Indian giant squirrel.
- **Avifauna:** Home to more than 150 bird species, making it an important site for bird conservation.

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## Dadasaheb Phalke Award – Recent Update

- **News:** The Government of India has announced that the renowned actor Shri Mohanlal will be awarded the Dadasaheb Phalke Award 2023, recognizing his lifetime contribution to Indian cinema.

### Overview of the Dadasaheb Phalke Award

- **Purpose:** This award honours individuals for their exceptional lifetime achievements in Indian cinema, acknowledging their role in shaping and advancing the film industry.
- **Year of Institution:** 1969, marking the birth centenary of Dhundiraj Govind Phalke, the pioneer of Indian filmmaking.
- **Importance:** It is considered the highest official accolade in Indian cinema.
- **First Recipient:** Devika Rani, popularly called the “first lady of Indian cinema.”
- **Award Components:**
  - Golden Lotus (Swarna Kamal) medallion
  - Ceremonial shawl
  - Cash prize of ₹10 lakh
- **Presentation Ceremony:** The award is conferred by the President of India.

### About Dhundiraj Govind Phalke

- **Birth:** Born on 30 April 1870 in Trimbak, Maharashtra
- **Early Career:** Before entering filmmaking, Phalke was a painter, photographer, magician, and stage playwright, showcasing multifaceted talent.
- **Contribution to Cinema:**
  - Widely regarded as the father of Indian cinema
  - Directed India’s first full-length feature film, Raja Harishchandra (1913)

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## Striped Dolphin – Latest Update

- **News:** A pod of striped dolphins, which are rarely observed in Andhra Pradesh waters, was recently sighted off the coast of Visakhapatnam.

### About Striped Dolphin

- **Scientific Name:** Stenella coeruleoalba
- **Description:** The striped dolphin is a slender, streamlined oceanic dolphin, resembling the common dolphin in shape and size. It is among the most widespread dolphin species globally.

### Distribution

- Found in temperate and tropical oceans worldwide.

- Their range includes waters near Greenland, northern Europe (UK, Denmark), the Mediterranean Sea, Japan, Argentina, South Africa, western Australia, and New Zealand.

### Habitat

- Prefer deep, offshore waters, often over continental shelves.
- Frequently observed in upwelling zones (nutrient-rich waters rising to the surface) and convergence areas where ocean currents meet.

### Physical Features

- **Size:** Typically 2.2–2.3 m, with males slightly larger (up to 2.5–2.6 m).
- **Head & Rostrum:** Rounded forehead (melon) and elongated, well-defined rostrum.
- **Dorsal Fin:** Hooked, tall, and positioned at mid-back.
- **Coloration & Stripes:**
  - A dark grey stripe runs from the beak, above the eye, along the flank, and down to the belly.
  - A second stripe extends below the eye to the pectoral flipper.
  - Upper flanks: light blue or grey; underside: blue, white, or pink; fins and appendages: black.

### Behavior & Social Structure

- Found in tight-knit groups of 25–100 individuals.
- Known for breaching, jumping, and leaping over 20 feet above water.
- Exhibit roto-tailing behavior, where they leap and spin their tail mid-air.
- **Lifespan:** Can live up to 58 years.

### Conservation Status

- Classified as 'Least Concern' on the IUCN Red List due to wide distribution and abundant population.

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## Clean Plant Programme - Latest Update

- **News:** The Clean Plant Programme (CPP), approved by the Union Cabinet, is rapidly progressing in its implementation across the country.

### Overview of Clean Plant Programme

- **Conceptualization:** Initiated by the Ministry of Agriculture & Farmers' Welfare in collaboration with the Asian Development Bank (ADB).
- **Objective:** To provide farmers with high-quality, virus-free planting material for important fruit crops, ensuring improved productivity and crop health.
- **Implementation:** The programme is executed by the National Horticulture Board (NHB) in partnership with the Indian Council of Agricultural Research (ICAR).

### Key Components

#### 1. Establishment of Clean Plant Centres (CPCs):

- A total of nine CPCs will be set up to handle disease diagnostics, treatment of planting material, and development of mother plants for nurseries.

- These centres will also quarantine all domestic and imported planting material intended for commercial propagation and distribution.

## 2. Infrastructure Development:

- Large-scale nurseries will be developed to mass-produce clean planting material.
- Mother plants cultivated at the CPCs will be propagated in these nurseries and subsequently distributed to farmers across the country.

## 3. Regulatory and Certification Framework:

- A robust certification system will be instituted to ensure traceability and accountability at every stage of production and distribution of planting material.

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## Impatiens selvasinghii – Latest Update

- **News:** Scientists have recently identified a new flowering plant species, *Impatiens selvasinghii*, in the Kudremukh range of the Western Ghats, Karnataka.

### About *Impatiens selvasinghii*

- **Taxonomy:** It is a newly discovered species within the genus *Impatiens*.
- **Location & Altitude:** Found in the Kudremukh region of the Western Ghats at an elevation of approximately 1,630 meters.
- **Etymology:** Named in honor of a botany associate professor at Madras Christian College.
- **Unique Features:**
  - One of the smallest-flowered balsams in the Western Ghats.
  - Features very small flowers with distinctively lobed wing petals, making it easily distinguishable.
  - Serves as an important plant for small insect species that rely on it for sustenance.

### Genus *Impatiens* in India

- The genus *Impatiens* comprises over 280 taxa in India, primarily found in the Eastern Himalayas and Western Ghats.
- More than 210 taxa are endemic to India, with 130 taxa restricted to the Western Ghats.
- Alarmingly, 80% of Western Ghats *Impatiens* species are currently classified as endangered, highlighting their conservation significance.

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## Fishing Cat – Latest Update

- **News:** Forest officials reported a Fishing Cat (*Prionailurus viverrinus*) was recently captured on camera for the first time inside Ramgarh Vishdhari Tiger Reserve (RVTR), adding to the reserve's small cat population.

### About Fishing Cat

- **Scientific Name:** *Prionailurus viverrinus*

- **Description:** A medium-sized wild cat, stocky and powerfully built, adapted to aquatic environments.
- **State Symbol:** It is the state animal of West Bengal.

### Distribution

- **Native Range:** South and Southeast Asia, including India, Sri Lanka, Malaysia, Thailand, Java, and Pakistan.
- **Indian Distribution:** Found in the Sundarbans mangroves, foothills of the Himalayas along the Ganga and Brahmaputra valleys, and Western Ghats.

### Habitat

- Prefers wetland ecosystems, such as mangrove forests, swamps, marshes, and water-adjacent areas.
- Adapted to both freshwater and saltwater habitats, tolerating tropical rainforests to temperate regions.

### Physical Characteristics

- **Size:** Height 15–16 inches; length 38–47 inches; short tail about one-third of body length.
- **Build:** Stocky with short limbs and powerful body.
- **Head & Fur:** Long head, coarse brownish-gray fur with distinctive dark spots and stripes arranged longitudinally.
- **Markings:**
  - Six to eight dark lines extend from above the eyes across the crown to the neck.
  - Short, round ears with black backs.
- **Sexual Dimorphism:** Males are significantly larger than females.
- **Behavior:** Nocturnal and excellent swimmers, often diving to catch fish.

### Conservation Status

- Classified as 'Vulnerable' under the IUCN Red List due to habitat loss and human-wildlife conflict.

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## Bonnet Macaques – Latest Update

- **News:** The Forest Department of Kerala has launched an investigation into the mysterious deaths of nine Bonnet macaques near Palode in Thiruvananthapuram.

### About Bonnet Macaques

- **Scientific Name:** *Macaca radiata*
- **Other Name:** Commonly referred to as Zati
- **Endemism:** Native to southern India

### Behavior

- **Activity:** Diurnal, active during daylight hours.
- **Locomotion:** Both arboreal and terrestrial quadrupeds.
- **Social Structure:** Live in multimale-multifemale troops.

- **Swimming:** Strong swimmers, often venturing into water bodies.
- **Communication:** Utilize gestures, facial expressions, and vocalizations for social interaction.

#### Habitat and Distribution

- **Habitat:** Found in evergreen high forests and dry deciduous forests of the Western Ghats.
- **Distribution:** Recorded across Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Tamil Nadu, and Gujarat.

#### Diet

- **Omnivorous:** Consume fruits, nuts, seeds, leaves, insects, soil, small invertebrates, eggs, and reptiles.

#### Reproduction

- **Gestation Period:** Approximately 5–6 months

#### Ecological Significance

- Play an important role in forest ecology by dispersing seeds, contributing to tree reproduction and forest regeneration.

#### Conservation Status

- **IUCN Red List:** Vulnerable
- **Wildlife Protection Act, 1972:** Listed under Schedule I

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### Betla National Park

- **News:** An AI-enabled nature experience centre, a first of its kind in India, is planned to be established at Betla National Park to enhance wildlife tourism and awareness

#### About Betla National Park

- **Location:** Situated on the Chota Nagpur Plateau in Latehar district, Jharkhand.
- **Status:** The only National Park in Jharkhand, officially notified in 1986.
- **Tiger Reserve:** Forms the core area of Palamau Tiger Reserve and was among the first national parks in India to conserve tigers under Project Tiger.
- **Wolf Sanctuary:** Includes the Mahuadanr Wolf Sanctuary within its boundaries.
- **Biogeographic Realm:** Falls under the Indo-Malayan realm, notable for its rich biodiversity.

#### Vegetation and Flora

- Comprises tropical wet evergreen forests, temperate alpine forests, and mixed moist and dry deciduous forests.
- Dominant plant species include sal, bamboo, mahua, semal, along with numerous medicinal plants.

#### Indigenous Communities

- The region has been inhabited for centuries by tribes such as the Oraon and Munda, who contribute to its cultural heritage.

### Rivers and Water Features

- The North Koel River flows through the park, forming picturesque waterfalls during the monsoon season.

### Fauna

- **Carnivores:** Tigers, leopards, wolves, wild dogs, and jungle cats.
- **Herbivores:** Chital, deer, bison, and other species.
- **Birdlife:** Rare and endemic species such as the Malabar pied hornbill and Indian pitta can also be observed.

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## Apterichtus kanniyakumari

- **News:** Scientists from the National Bureau of Fish Genetic Resources (NBFGR) have identified a new species of finless snake eel from the southern coast of India and named it *Apterichtus kanniyakumari*, in honor of Kanniyakumari.

### About *Apterichtus kanniyakumari*

- **Taxonomy:** Belongs to the genus *Apterichtus*, a group of finless snake eels.
- **Location:** Discovered off the Colachel coast in Tamil Nadu.

### Distinguishing Features

- Exhibits a golden-yellow body coloration with a pale white ventral side of the head.
- Yellow lines run along the lower jaw, while three prominent black blotches appear: one behind the eyes, one at the rictus, and a third behind the origin of the rictus.
- Molecular analysis using the mitochondrial CO1 gene indicates that this species forms a distinct clade, closely related to its sympatric species, *Apterichtus nanjilnaduensis*.

### About Snake Eels (Family: Ophichthidae)

- **Appearance:** Named for their snake-like body, they are elongated and finless.
- **Distribution:** Found in tropical and temperate oceans globally.
- **Habitat:** Prefer sandy seabeds in shallow coastal waters, though some species inhabit depths up to 800 meters.
- **Behavior:** Use their tail to burrow backward into the sand, creating protective underground tunnels.

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## UNEP Young Champions of the Earth Prize

- **News:** In 2025, the UN Environment Programme (UNEP) awarded its Young Champions of the Earth prize to three young entrepreneurs from India, Kenya, and the United States for their innovative solutions to global environmental challenges.

### About the UNEP Young Champions of the Earth Prize

- **Overview:** This is the flagship youth-focused initiative of UNEP, aimed at fostering innovation and environmental leadership among young people.
- **Establishment:** Launched in 2017 and relaunched in 2025 in collaboration with Planet A.

- **Eligibility:** Recognizes individuals under 30 years of age who develop pioneering solutions to pressing environmental problems.
- **Prize:** Winners receive \$20,000 in seed funding, mentorship, and access to a global platform to scale their initiatives.

### 2025 Winners

1. **Jinali Mody (India):** Founder of Banofi Leather, which produces eco-friendly leather alternatives using banana crop waste, reducing water consumption, toxic waste, and CO<sub>2</sub> emissions.
2. **Joseph Nguthiru (Kenya):** Founder of HyaPak, a company that converts invasive water hyacinth from Lake Naivasha into packaging materials and biodegradable seedling wrappers.
3. **Noemi Florea (United States):** Founder of Cycleau, a compact water reuse system that transforms greywater into potable water, developed in collaboration with marginalized communities.

### About the UN Environment Programme (UNEP)

- **Established:** 1972
- **Role:** Serves as the leading global authority on environmental issues, acting as a neutral platform to bring together Member States, UN agencies, civil society, and the private sector to address urgent ecological challenges.

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### Pallikaranai Marshland

- The Southern Bench of the National Green Tribunal (NGT) has ordered a ban on construction activities within one kilometre of the Pallikaranai Marshland.
- This restriction will remain in place until a comprehensive scientific study on the ecosystem is completed.

### About Pallikaranai Marshland

- **Location:** A freshwater marsh with some saline stretches, located about 20 km south of Chennai, Tamil Nadu.
- **Function:** Acts as a natural flood buffer for the Chennai and Chengalpattu districts, which are highly prone to waterlogging.
- **Hydrology:** Comprises 65 interconnected wetlands, draining through Okkiyam Madavu and Kovalam Creek into the Bay of Bengal.
- **Boundaries:** The Buckingham Canal runs along its eastern edge.
- **Conservation Status:** Designated as a Ramsar site (wetland of international importance).

### Biodiversity of Pallikaranai

- **Supports a rich faunal diversity, including:**
  - **Birds:** ~115 species (e.g., Glossy ibis, Grey-headed lapwing, Pheasant-tailed jacana).
  - **Mammals:** 10 species.
  - **Reptiles:** 21 species, including the Russell's viper (*Daboia siamensis*).

- **Amphibians:** 10 species.
- **Fish:** 46 species.
- **Molluscs:** 9 species.
- **Crustaceans:** 5 species.
- **Butterflies:** 7 species.
- **Climate Influence:** Though located in a tropical zone, the Bay of Bengal significantly influences its ecological character.

### Threats to the Marshland

- Encroachments due to rapid urban expansion.
- Pollution from sewage and solid waste dumping.
- Infrastructure pressures, which continue to degrade its fragile ecosystem.

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## Hanle Dark Sky Reserve (HDSR)

The Hanle Dark Sky Reserve (HDSR) in Ladakh recently hosted its third edition of the annual Star Party, attracting astronomy enthusiasts, scientists, and tourists.

### About Hanle Dark Sky Reserve (HDSR)

- **Establishment:** Declared in December 2022 by the Administration of Ladakh.
- **Significance:** Recognized as India's first International Dark Sky Reserve, with its core centred around the Indian Astronomical Observatory (IAO) at Hanle. The observatory is operated by the Indian Institute of Astrophysics (IIA) under the Department of Science and Technology (DST).
- **Objectives:** The initiative is designed as a science-based socio-economic model built on two key aspects:
  1. Reducing light pollution in the region.
  2. Encouraging astro-tourism to create sustainable local employment opportunities.
- **Location:** Situated at an elevation of around 4,500 metres within the Changthang Wildlife Sanctuary, it offers Bortle-1 category skies, which are considered the darkest possible for stargazing.
- **Support:** The Union Territory administration of Ladakh backs the project by financing astro-tourism infrastructure and implementing light control measures.
- **Recent Event:** The Star Party was a collaborative effort of the IIA, the Department of Wildlife Protection (UT Ladakh), and the Bhabha Atomic Research Centre (BARC).

### What is a Dark Sky Reserve?

According to the International Dark Sky Association (IDSA), a Dark Sky Reserve is a designated land area, typically covering at least 700 square kilometres, where the night skies are exceptionally dark and preserved for scientific study, cultural heritage, biodiversity conservation, and public enjoyment.

To receive the designation, the following conditions must be met:

- A core zone completely free from artificial light pollution.
- A buffer zone that safeguards the core area.
- A Lighting Management Plan (LMP) that covers at least 80% of the population and geographical area.
- Annual compliance reports to the IDSA.

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## India's Dugong Conservation Reserve

The International Union for Conservation of Nature (IUCN) has recently passed a motion acknowledging India's first Dugong Conservation Reserve, located in Palk Bay, Tamil Nadu. This recognition highlights the global ecological importance of India's initiative in protecting dugongs and their seagrass habitats.

### About India's Dugong Conservation Reserve

- **Establishment:** Created on 21 September 2022 by the Tamil Nadu government under provisions of the Wildlife (Protection) Act, 1972.
- **Area Covered:** Spans 448.34 sq. km in northern Palk Bay.
- **Ecological Value:**
  - Contains more than 12,250 hectares of seagrass meadows, which serve as the main feeding grounds for dugongs.
  - Seagrass ecosystems also provide habitat to several other marine organisms, enhancing biodiversity.

### Key Facts about Dugongs

- **Scientific Name:** Dugong dugon.
- **Unique Status:** The only herbivorous marine mammal found in Indian waters.
- **Appearance:** Popularly called the "sea cow", dugongs resemble a mix between whales and seals.
- **Global Distribution:** Found in the Indo-Pacific region.
- **Indian Distribution:** Present along the Andaman & Nicobar Islands, Palk Bay, Gulf of Mannar, and Gulf of Kutch.
- **Longevity:** Can live up to 70 years.
- **Habitat Preference:** Confined to shallow coastal waters, where they graze on seagrass species such as Cymodocea, Halophila, Thalassia, and Halodule.

### Reproduction & Growth

- Reach sexual maturity at around 9–10 years.
- Females give birth once every 3–5 years.
- Because of this slow breeding rate, dugong populations have a maximum growth potential of only ~5% annually, making them highly vulnerable to decline.

### Conservation Status

- **IUCN Red List:** Vulnerable
- **CITES:** Appendix I
- **Wildlife Protection Act, 1972 (India):** Schedule I species (highest protection).

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## New Ramsar Sites in Bihar

Two wetlands from Bihar — Gokul Jalashaya in Buxar and Udaipur Jheel in West Champaran — have recently been included in the list of Ramsar sites, gaining international recognition for their ecological importance.

### Gokul Jalashaya

- **Location:** Situated in Buxar district, Bihar, along the southern edge of the Ganga River.
- **Type:** An oxbow lake formed due to the meandering course of the river.
- **Hydrology:** Seasonal flood pulses of the Ganga shape its land use pattern — exposing marshes and farmland in the dry season while increasing inundation after monsoons.
- **Ecological Role:**
  - Acts as a natural buffer for nearby villages during floods.
  - Provides habitat for over 50 bird species, especially during the pre-monsoon season when exposed marshes and shrubs become crucial for food and breeding.
- **Livelihood Linkages:** Supports local communities through fishing, farming, and irrigation.

### Udaipur Jheel

- **Location:** Found in West Champaran district, Bihar, adjoining the Udaipur Wildlife Sanctuary to the north and west.
- **Type:** An oxbow lake with rich forest surroundings.
- **Flora:** Hosts more than 280 plant species, including *Alysicarpus roxburghianus*, a perennial herb endemic to India.
- **Avifauna:** Serves as an important wintering site for around 35 migratory birds, including the Vulnerable common pochard (*Aythya ferina*).
- **Threats:** Faces ecological stress due to illegal fishing, over-dependence on agriculture, and intensive use of fertilizers and pesticides.

## Amrabad Tiger Reserve – Latest News

A 54-kilometre-long elevated road bridge is planned to pass through the Nallamala forests within the Amrabad Tiger Reserve (ATR) in Telangana. This unique project aims to divert vehicular traffic above the forest canopy, thereby reducing disturbance to wildlife habitats. Once completed, it could serve as a model conservation-friendly infrastructure initiative for other forest regions in India.

### About Amrabad Tiger Reserve

- **Location:** Nestled in the Nallamala Hills of the Eastern Ghats, Telangana.
- **Area:** Spread across 2,611.39 sq. km, with 2,166.37 sq. km notified as the core zone.
- **Ranking:** In terms of core area, it is the second-largest tiger reserve in India.
- **History:** Earlier part of the Nagarjunasagar-Srisailem Tiger Reserve, ATR was carved out following the bifurcation of Andhra Pradesh and Telangana in 2014.
- **Terrain:** Known for its rugged landscapes, deep valleys, and dense forests.

- **Cultural Heritage:** Houses the historic Nagalapuram Fort.
- **Hydrology:** The Krishna River and several perennial streams arising within ATR feed major reservoirs like Srisailem Dam and Nagarjunasagar Dam.
- **Tribal Communities:** Home to the Chenchu tribe, a Particularly Vulnerable Tribal Group (PVTG), who depend on forest produce and traditional practices.

#### Flora

- Dominated by dry deciduous forests.
- **Key vegetation:** Sal, teak, bamboo, and acacia species.
- Rich in medicinal plants and shrubs, traditionally used by local tribes for healing purposes.

#### Fauna

- **Big Cats:** Apart from tigers, ATR shelters leopards and wild cats.
- **Herbivores:** Includes sambar deer, chital (spotted deer), nilgai, wild boar, and gaur (Indian bison).
- **Avifauna:** Over 303 bird species recorded, featuring groups like eagles, cuckoos, pigeons, doves, and woodpeckers.

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### Cold Desert Biosphere Reserve.

The Cold Desert Biosphere Reserve (CDBR) in Himachal Pradesh has recently been added to the World Network of Biosphere Reserves (WNBR) by UNESCO. This inclusion highlights the global importance of conserving India's high-altitude cold desert ecosystems.

#### About the Cold Desert Biosphere Reserve

- **Location:** Situated in the Trans-Himalayan zone of Himachal Pradesh.
- **Extent:** Covers about 7,770 sq. km in the Lahaul-Spiti district.
- **Establishment:** Declared a biosphere reserve in 2009.
- **Terrain & Landscape:** Characterized by windswept plateaus, glacial valleys, alpine lakes, and stark high-altitude deserts.
- **Unique Feature:** India's first high-altitude cold desert biosphere reserve and among the coldest and driest ecosystems within UNESCO's WNBR.
- **UNESCO Recognition:** With this addition, India now has 13 biosphere reserves included in the World Network of Biosphere Reserves.
- **Protected Areas:** Encompasses Pin Valley National Park, Chandratat, Sarchu, and the Kibber Wildlife Sanctuary.

#### Flora

- Hosts around 732 vascular plant species, including 30 endemics and 157 near-endemic species of the Indian Himalayas.
- Vegetation includes alpine grasses, medicinal herbs, and rare species like willow-leaved sea-buckthorn, Himalayan birch, and Persian juniper.

**Fauna**

- Mammals: Snow leopard, Himalayan ibex, blue sheep, and Himalayan wolf.
- Birds: Rich avifauna, including species like the Himalayan snowcock and golden eagle.

\*\*\*\*\*

**Ophiorrhiza echinata – Recent Discovery**

A previously unknown coffee plant species, *Ophiorrhiza echinata*, has been identified in the Western Ghats.

**Key Details:**

- This newly described plant was located in the shola forests of Devikulam, situated in Kerala's Idukki district, a region noted for its rich biodiversity.
- The species thrives in the transitional zone between evergreen forests and grasslands, at around 1,630 metres elevation.
- It belongs to the Rubiaceae family and shares close relations with *Ophiorrhiza mungos*, a plant recognized for its role in cancer therapy and antidote formulations, suggesting potential medicinal value.
- So far, *Ophiorrhiza echinata* has been documented only at its original site of discovery. Its distribution is extremely limited, covering less than four square kilometres, with the current population estimated at no more than 35 individual plants.

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**Pallid Fish Eagle – Recent Update**

A joint survey by the State Forest Department and WWF has reported the rare nesting of the Pallid Fish Eagle within Corbett Tiger Reserve, marking an important conservation finding.

**About the Species**

- Also called Pallas's sea eagle or band-tailed fish eagle, it is a large raptor with a brownish body.
- **Preferred Habitat:** Found around lakes, marshes, and broad river systems, from lowland areas up to 5,000 metres.
- **Diet:** Primarily piscivorous (fish-eating), though it also preys on a variety of other animals.
- **Breeding:** Typically nests near waterbodies, constructing large nests on tall trees.
- **Migration:** The species is partially migratory—Central Asian populations move southward in winter, joining resident birds in northern India, and also travel westward towards the Persian Gulf.
- **Distribution:** Widely spread across the eastern Palearctic—Kazakhstan, Russia, Mongolia, Central Asia, China, India, Nepal, Bangladesh, and Myanmar.

**Conservation Status**

- **IUCN Red List:** Endangered
- **Major Threats:** Habitat loss due to human activity, overfishing of lakes, water pollution, and wetland degradation.

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## Red Sanders – Recent Update

The National Biodiversity Authority (NBA) has allocated ₹82 lakh to the Andhra Pradesh Biodiversity Board for the conservation of Red Sanders (*Pterocarpus santalinus*), a rare and endemic tree species of India.

### About Red Sanders

- **Geographical Range:** Endemic to the southern Eastern Ghats, especially concentrated in Anantapur, Chittoor, Kadapa, and Kurnool districts of Andhra Pradesh.
- **Growth Conditions:** Prefers red soil tracts in rocky, degraded, or fallow lands with a hot and dry climate.
- **Major Threats:** Faces intense pressure due to illegal logging and smuggling driven by its high market demand.

### Conservation Status

- **IUCN Red List:** Endangered
- **CITES:** Appendix II (trade regulated)
- **Wildlife (Protection) Act, 1972:** Listed under Schedule IV

### National Biodiversity Authority (NBA) – Key Points

- **Legal Basis:** Created under the Biological Diversity Act, 2002 and became functional in 2003.
- **Purpose:** To regulate, conserve, and promote the sustainable use of biological resources, along with ensuring fair and equitable sharing of benefits.
- **Supporting Institutions:**
  - State Biodiversity Boards (SBBs) – oversee biodiversity regulation at the state level.
  - Biodiversity Management Committees (BMCs) – operate at the grassroots (village/panchayat) level to document and conserve local biodiversity.
- **Headquarters:** Chennai, Tamil Nadu.

### Composition

- **Chairperson:** A distinguished individual with expertise in biodiversity conservation, sustainable resource use, and benefit-sharing.
- **10 Ex-Officio Members:** Senior officials from the Government of India for inter-ministerial coordination and policy support.
- **5 Non-Official Members:** Independent experts drawn from diverse fields of biodiversity and resource management.

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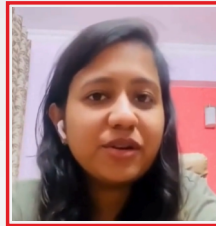


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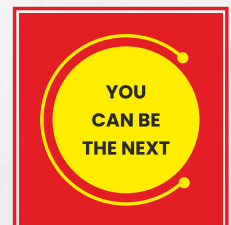
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