

Daily Current Affairs To The Point by Dhananjay Gautam

Table Of Content 30 May 2025

- **1. New Defence Rulebook: Government Notifies Inter-**Services Organisations Rules, 2025
- 2. Global Temperature Likely to Breach 1.5°C in Next **Five Years: WMO**
- **3. New High-Altitude Plant Species Discovered in Rohtang Pass**
- **4. Churdhar Wildlife Sanctuary**
- 5. India's Sodium-Ion Battery Revolution
- 6. Urban Flooding in India

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

New Defence Rulebook: Government Notifies Inter-Services Organisations Rules, 2025

Context: In a significant move to modernise India's defence structure, the Ministry of Defence has officially notified the Inter-Services Organisations (Command, Control & Discipline) Rules, 2025. These rules have been brought into force under the Inter-Services Organisations (ISO) Act, 2023, and will become operational from May 27, 2025.



Why This Matters: Strengthening Joint Military Command

India has long pursued the goal of greater jointness and integration among its armed forces. These new rules are a crucial step in that direction, aiming to streamline the command and disciplinary framework in Joint Services Commands (ISCs) and Inter-Service Organisations (ISOs).

Purpose and Objectives of the New Rules:

- Unified Command Structure: Ensures seamless command and control within joint establishments comprising personnel from the Army, Navy, and Air Force.
- **Expedited Disciplinary Procedures:** Enables faster resolution of cases by avoiding procedural overlaps between different services.
- **Operational Synergy:** Facilitates **interoperability and administrative efficiency**, crucial for joint military operations and national security preparedness.

ISO Act, 2023: Foundation for Integrated Defence Governance

The **Inter-Services Organisations Act**, **2023** serves as the legislative backbone for the new rules.

- **Creation of ISOs**: Empowers the **Central Government** to establish joint structures like theatre commands or integrated service units.
- **Central Oversight**: The **superintendence** of all ISOs remains with the government, allowing for national security-centric directives.
- **Commanding Officer (CO)** Framework: Designates a **CO** to lead units, ships, or establishments under the ISO umbrella.

Key Features of the ISO Rules, 2025:

- Full Authority to ISO Commanders: The Commander-in-Chief (CiC) of a JSC, the Officer-in-**Command (OiC)** of Inter-Service Establishments, and the **Commanding Officer (CO)** of ISO units will now exercise complete disciplinary and administrative control over all attached personnel, regardless of their parent service.
- Preservation of Individual Service Identity: While commanders gain power, the Army Act, Navy Act, and Air Force Act will continue to apply to personnel, ensuring that their core service traditions and legal frameworks remain intact.
- **Central Government's Role in Disputes**: In cases not covered by the ISO Rules or Act, final authority rests with the **Central Government**, ensuring a **unified resolution mechanism**.
- Continuity in Command: Provisions exist for replacement or interim leadership if the CiC, OiC, or CO is unavailable, preventing any vacuum in command.

Challenges to Implementation:

Despite its progressive framework, the ISO structure may encounter several hurdles:

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- **Cultural Integration Issues**: Each service has a unique identity, operational doctrine, and command culture. **Harmonising these differences** may lead to internal friction.
- **Overlapping Jurisdictions**: Dual authority between ISO commanders and parent service chains could result in **confusion or command conflicts**, especially in sensitive matters like court-martials or administrative actions.
- **Legal Complexity**: Harmonising provisions across **multiple service acts** will require careful legal interpretation to avoid contradictions and ensure uniform justice.

Significance for India's Defence Future:

This development aligns with India's long-term plan to implement **Integrated Theatre Commands**, a reform envisioned by the **Chief of Defence Staff (CDS)** to enhance **tri-service synergy**. Countries like the **United States**, **Russia**, **and China** already operate under joint command structures for strategic and operational advantage.

Conclusion: A Step Closer to a Unified War-Fighting Machine

The notification of the **Inter-Services Organisations (Command, Control & Discipline) Rules, 2025** signals a new era in India's defence administration. While implementation will require patience and coordination, the long-term benefits in terms of **efficiency, accountability, and combat readiness** are undeniable.

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TOGETHER WE SCALE HEIGHTS









GS Paper 3 – Environment and Ecology

2

Global Temperature Likely to Breach 1.5°C in Next Five Years: WMO

Context: The **World Meteorological Organization (WMO)** has released its latest climate outlook titled 'Global Annual to Decadal Climate Update (2025–2029)', offering a sobering forecast for global temperatures. The findings point towards an increasing likelihood of breaching the critical 1.5°C warming limit, as set by the Paris Agreement.



Key Findings: Temperature Projections for 2025–2029

- 2024: Already marked as the hottest year ever recorded, it was the first year to temporarily exceed the 1.5°C mark above pre-industrial levels (1850–1900 baseline).
- 2025-2029 Outlook:
 - There is a 70% probability that the average global temperature for this period will surpass
 1.5°C above the pre-industrial baseline.
 - There is an **80% chance** that **at least one year** will exceed the record set in 2024.
 - An 86% likelihood that at least one year in this five-year period will breach the 1.5°C threshold.
 - The projected temperature range lies between **1.2°C and 1.9°C** above the 1850–1900 average.
 - A **1% probability** exists for **exceeding 2°C** in any one of the next five years—an early sign of potentially irreversible climate damage.

Regional Climate Outlook: What to Expect Globally and Locally

- South Asia: Continued trend of wetter-than-usual monsoon seasons is likely (barring occasional dry years like 2023). The India Meteorological Department (IMD) has forecast above-normal monsoon rainfall in 2025.
- Arctic Region:
 - Projected to warm by approximately 2.4°C during winters (Nov–Mar), which is 3.5 times faster than the global average.
 - Significant **decline in sea ice** expected in regions like the **Barents Sea, Bering Sea**, and **Sea** of **Okhotsk**.
- Other Regional Projections (2025–2029):
 - **Wetter regions**: Sahel, Northern Europe, Alaska, and Northern Siberia.
 - **Drier regions**: Amazon basin—raising alarms about **deforestation and ecological balance**.

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Paris Agreement: Understanding the 1.5°C Limit

- Adopted at **COP21 in 2015**, the **Paris Agreement** is a **legally binding global treaty** aimed at curbing climate change.
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- It seeks to **limit warming to below 2°C**, while **striving to cap it at 1.5°C**.
- The **1.5°C target is a global ambition**, not a legal threshold, and refers to **long-term temperature averages over decades**, not single-year anomalies.
- Countries commit to **Nationally Determined Contributions (NDCs)**, which must be **updated every five years** to reflect growing ambition.
 - Alarmingly, **180 of the 195 signatories** have **yet to submit updated NDCs** for the 2031–2035 period, due before **COP30**.

About the World Meteorological Organization (WMO):

- WMO is a specialized agency of the United Nations, established in 1950, with 193 member countries and territories.
- It is the global authority on weather, climate, operational hydrology, and geophysical sciences.
- Headquartered in Geneva, Switzerland, its highest decision-making body is the World
 Meteorological Congress.

Why This Matters: The World Is Running Out of Time

This forecast serves as a **red alert for humanity**. Breaching the 1.5°C limit could trigger **irreversible climate tipping points**—including **melting polar ice**, **rising sea levels**, and **disruptions to global food and water supplies**.

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GS Paper 3 – Bio-diversity, Environment and Disaster Management

New High-Altitude Plant Species Discovered in Rohtang Pass: Pedicularis rajeshiana

Context: In a remarkable scientific breakthrough, researchers have identified a **new plant species**, *Pedicularis rajeshiana*, in the **western Himalayan region** near **Rohtang Pass**, Himachal Pradesh. This finding enriches India's alpine biodiversity and underscores the ecological value of high-altitude habitats.



About Pedicularis rajeshiana: A Unique Hemiparasitic Plant

- *Pedicularis rajeshiana* belongs to the Lousewort family, a group of plants known for their hemiparasitic nature—they draw nutrients from host plants while still conducting photosynthesis.
- It was discovered at a **staggering altitude of 4,390 metres** (approx. **14,400 feet**), thriving on **shaded**, **rocky slopes** in scattered clusters.
- This plant is **adapted to extreme alpine conditions**, a trait typical of many Himalayan endemics.

Discovery and Significance:

- The plant was found during a botanical survey conducted by the Botanical Survey of India (BSI) and the Ministry of Environment, Forest and Climate Change (MoEF&CC).
- The discovery is part of the prestigious "Flora of India" project, a national mission to document India's rich plant heritage.
- The identification of this species highlights the **undocumented floral diversity** in remote and difficult-to-access Himalayan terrains.

Key Features and Ecological Role:

- India hosts 83 known species of the Pedicularis genus, with 36 species endemic to the Western Himalayas.
- These plants are often highly specialized, evolving to survive in narrow ecological niches.
- Many species in this genus are **region-specific and vulnerable**, making new discoveries crucial for **conservation biology**.
- *Pedicularis rajeshiana* adds to the growing evidence that the **Himalayan ecosystem is a global biodiversity hotspot** that requires **urgent protection**.

Why It Matters: Conservation and Climate Relevance

- **High-altitude ecosystems** like those in Rohtang Pass are **sensitive to climate change**, habitat degradation, and human encroachment.
- Discoveries such as *Pedicularis rajeshiana* reinforce the need for **continued ecological monitoring**, **plant conservation**, and **policy support for biodiversity research**.
- These plants not only maintain ecological balance but may hold **potential medicinal or ecological benefits** yet to be explored.

Extra Insight: The Role of Hemiparasitic Plants

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- **Hemiparasitic plants** play a unique role in ecosystems by influencing **plant community dynamics** and nutrient cycles.
- They are often **indicator species** of ecological health, especially in **fragile alpine environments**.

Conclusion: A Blooming Beacon for Himalayan Biodiversity

The discovery of *Pedicularis rajeshiana* serves as a **symbol of nature's hidden wonders** and a **call to action for conservationists**. As scientists continue to explore the **rich botanical tapestry of the Himalayas**, each new finding strengthens the case for **safeguarding these irreplaceable ecosystems**.

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GS Paper 1 – Geography

Churdhar Wildlife Sanctuary: A Sacred Jewel of the Shivaliks

Context: In a recent update, the **Himachal Pradesh Forest Department** has **put on hold** its decision to impose a **visitor fee** for entry into the **Churdhar Wildlife Sanctuary**, located in the **Sirmaur district**. The move follows public and environmentalist concerns and will be reviewed for further clarity and implementation.



Churdhar Sanctuary: Where Nature Meets Spirituality

Nestled in the **Shivalik range** of the mighty Himalayas, the **Churdhar Wildlife Sanctuary** is one of Himachal Pradesh's most captivating natural havens. Established in **1985**, it spans an area of **56 sq.km**., wrapping around the towering **Churdhar Peak**, also known as **Choordhar**—the **highest peak in the outer Himalayas**.

Spiritual Significance of Churdhar Peak:

Standing tall at **3,647 metres (11,965 feet)**, the **Churdhar Peak** offers **breathtaking panoramic views** of the **Gangetic plains**, the **Satluj River**, and even distant **Badrinath** in the north. At its summit lies a **revered temple dedicated to Lord Shiva**, making the sanctuary a **popular pilgrimage destination** as well as an ecological treasure.

Rich Floral Diversity: A Natural Pharmacy:

The sanctuary is **renowned for its herbal richness**, especially species known for their **medicinal and aromatic properties**. Key plants include:

- Wild Himalayan Cherry
- Aloe Vera (locally known as Dhrit Kumari)
- Amaranthus spinosus (Chulai)

These herbs are traditionally used in **Ayurvedic remedies** and add immense **ethnobotanical value** to the region. The sanctuary is also covered with lush **oak and deodar forests**, providing a cool and verdant canopy.

Thriving Fauna: A Refuge for Himalayan Wildlife

Churdhar is home to a **diverse range of Himalayan fauna**, including:

- Musk Deer a shy and endangered species
- Himalayan Black Bears frequently spotted in higher altitudes
- Leopards the elusive predators of the hills
- Monals the vibrant state bird of Himachal Pradesh

The sanctuary serves as a **critical habitat** for these species and plays a key role in **biodiversity conservation**.

Why Churdhar Matters: Ecological and Cultural Legacy

- The sanctuary is part of the Western Himalayan Biodiversity Hotspot.
- It is a significant **watershed zone** supporting rivers and springs that benefit surrounding villages.
- Due to its **spiritual relevance**, Churdhar sees a **high influx of pilgrims and trekkers**, making **eco-tourism management crucial** for its preservation.

Conclusion: A Sanctuary Worth Preserving

Churdhar Wildlife Sanctuary is more than a destination—it's a **living symbol of Himachal's natural wealth and spiritual heritage**. Balancing tourism with conservation, especially through sustainable visitor policies, will be key to **protecting its fragile ecosystem** for generations to come.

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GS Paper 3 - Science & Technology

5

India's Sodium-Ion Battery Revolution: A Game-Changer Beyond Lithium

Context: In a major scientific breakthrough, researchers at the **Jawaharlal Nehru Centre for Advanced Scientific Research** (JNCASR) in Bengaluru have developed a **high-speed sodium**ion (Na-ion) battery capable of charging up to 80% in just six minutes. This innovation marks a significant step toward building an **energy-secure and lithium-independent India**.



Why Sodium-Ion Batteries? The Strategic Shift:

With global lithium reserves becoming increasingly **scarce**, **expensive**, and **geopolitically concentrated**— particularly under China's dominance—India is actively pivoting toward **sodium-ion battery technology** as a **sustainable**, **scalable alternative**.

Key Drivers for the Shift:

- Lithium Dependency: China controls over **70% of lithium refining** and battery manufacturing globally.
- Abundant Sodium Resources: Sodium is widely available, even in seawater, and is easier to extract and manage.
- Reduced Environmental Risk: Sodium poses lower ecological and safety hazards during storage and transportation.

Breakthrough by Indian Scientists: Superfast Charging Na-Ion Batteries

The JNCASR team has developed a **NASICON-type sodium-ion battery** that outperforms traditional Na-ion cells in both **charging speed and life cycle**. This cutting-edge battery can:

- Charge to 80% in just six minutes
- Endure more than 3,000 charging cycles

What Makes It Revolutionary?

- Nanoparticle Engineering: Downscaling the anode material to nanosize increases surface area for faster ion exchange.
- **Carbon Coating:** A thin **carbon wrap** stabilizes the anode and enhances conductivity.
- Aluminum Doping: Introducing aluminum atoms improves both charge transport and structural integrity.

These modifications significantly boost battery efficiency, while reducing wear and risk of overheating.

Advantages of Sodium-Ion Batteries:

- Widespread Availability: Sodium is more abundant than lithium and more evenly distributed globally.
- Lower Production Costs: Aluminum replaces copper, cutting costs significantly.
- Superior Safety Profile: Can be transported at zero volts, reducing risks of short-circuits and fires.
- **Enhanced Thermal Stability:** Functions effectively over **a wider temperature range**—ideal for Indian climates.

Challenges Still Ahead:

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While promising, Na-ion batteries are still in the early stages of commercialization and face some limitations:

- Lower Energy Density: Current Na-ion batteries store less energy per kilogram than lithium counterparts.
- **Design Constraints:** Lack of flexibility in cell design (fewer shape options). •
- Shorter Cycle Life: While 3,000+ cycles is impressive, it still trails lithium iron phosphate (LiFePO₄) batteries which exceed 8,000 cycles.
- High Initial Costs: Early-stage production remains expensive due to limited economies of scale.

Future Scope: Powering a Greener Tomorrow

Despite these limitations, sodium-ion batteries are ideal for:

- **Electric two- and three-wheelers**
- **Drones and low-speed electric vehicles** •
- Decentralized solar energy systems in rural areas
- Stationary grid storage for renewable power backup

Validated through advanced electrochemical tests and quantum simulations, India's Na-ion battery innovation could offer a **cost-effective and safe solution** for powering its vast energy needs—especially in climate-sensitive and economically diverse regions.

Global Implications: India as a Clean Tech Leader

As the world looks for lithium-free, sustainable battery alternatives, India's early investments in Na-ion R&D may position it as a global hub for green battery innovation. This aligns with the nation's "Make in India" and "Atmanirbhar Bharat" missions, and supports decarbonisation goals under the Paris Agreement.

Did You Know?

- Seawater contains over 11,000 ppm of sodium—making it an inexhaustible source for batterygrade sodium extraction.
- Na-ion batteries can be especially effective for climate-resilient power storage in heat-prone regions like sub-Saharan Africa and South Asia.

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6







GS Paper 3 - Environment, Security and Disaster Management

Urban Flooding in India: A Rising Crisis Amidst Rapid Urbanization and Climate Change

Context: Bengaluru recently witnessed intense pre-monsoon showers resulting in severe waterlogging, overflowing lakes, and substantial damage to life and property. With an early monsoon onset this year, the threat of urban flooding is expected to worsen across Indian cities, especially those already struggling with poor drainage and rapid urban expansion.



Understanding Urban Flooding:

Urban flooding refers to the inundation of land or property in densely populated urban areas, primarily caused by heavy rainfall, inadequate drainage systems, river overflows, and encroachment on natural water bodies. Unlike rural flooding, urban floods have higher economic, infrastructural, and human costs due to population density and infrastructure complexity.

Notable Examples:

- **Bengaluru (2024):** Overflowing lakes and submerged IT hubs.
- Delhi (2023): Yamuna river breached embankments after record rain. •
- **Mumbai (2020):** Monsoon floods halted transport and damaged property. •
- **Chennai (2015):** Cyclonic rains led to massive inundation and power cuts.

Key Causes of Urban Flooding in India:

Natural Factors:

- Heavy Monsoon Rainfall: The Indian subcontinent experiences intense monsoon bursts, especially during **June-September**. Cities like Mumbai, located along the **Western Ghats**, are prone to flash floods due to high rainfall in short durations.
 - *E.g., Chennai (2015)* experienced historic rainfall due to a **cyclonic system** over the Bay of Bengal.
- Geographical and Topographical Challenges: Many Indian cities are built on floodplains, coastal **belts**, or **low-lying zones**, making them naturally vulnerable.
 - *Mumbai* is on the **Konkan coast**, and *Kolkata* lies in the **Ganga-Brahmaputra delta**. 0
 - Even cities at higher elevations like **Bengaluru (900 m above sea level)** lack natural drainage 0 outlets like major rivers.
- Climate Change and Extreme Weather Events: Global warming has led to unpredictable and intense weather patterns, causing frequent cloudbursts and flash floods.
 - *Delhi (2023)* faced major flooding due to **record-breaking rainfall** within a short span.

Anthropogenic (Human-Induced) Factors:

- Unplanned Urbanization and Land Encroachment: Rapid urban growth has led to the • concretization of natural landscapes, obstructing natural water flow.
 - Bengaluru, which once had over 1,000 lakes, has lost nearly 80% to construction and 0 encroachment.
- Outdated and Inadequate Drainage Systems: Many urban centres still rely on colonial-era drainage infrastructure, which is ill-equipped to handle modern rainfall intensities.

Mumbai's drainage, designed for just **25 mm/hour**, is easily overwhelmed. 0

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- Solid Waste Mismanagement: Unregulated dumping of plastic and waste clogs drains and nullahs.
 - In the 2023 Himachal Pradesh floods, blocked waterways worsened damage.
- Deforestation and Soil Erosion: In hill regions, deforestation, shifting cultivation (Jhum), and poor land-use practices cause increased runoff and siltation.
 - *Guwahati (Assam)* frequently floods due to such upstream land degradation. 0

Major Impacts of Urban Flooding:

- Severe Economic Losses: Damages to infrastructure, transportation, housing, and businesses run into thousands of crores.
 - *Chennai (2015)* suffered losses exceeding **15,000 crore**. 0
- Public Health Emergencies: Stagnant floodwater fosters mosquito breeding, causing malaria, dengue, and waterborne diseases like cholera, typhoid, and hepatitis.
 - *Kerala (2020)* saw a spike in **leptospirosis cases** post-flooding.
- Displacement and Inequality: Floods disproportionately affect the urban poor, especially slum dwellers and those in **low-lying**, informal settlements.
 - *Mumbai* (2022) floods rendered thousands **homeless and jobless**. 0
- Environmental and Ecological Damage: Floodwaters carry sewage, industrial waste, and plastics, polluting lakes, rivers, and groundwater.
 - o *Bengaluru's lakes*, like Bellandur, have seen **foam and toxic froth** after floods.
- **Overstressed Infrastructure:** Frequent floods expose systemic flaws in urban planning, from underground drainage to surface water retention systems.

How Can India Build Resilience Against Urban Flooding?

1. Integrated Watershed and River Basin Management:

Adopt comprehensive flood control by managing entire catchment areas, from hills to plains.

The Netherlands' "Room for the River" project provides a successful model—allocating space for rivers to expand safely.

2. Implement Sustainable Urban Drainage Systems (SUDS):

Use nature-based drainage alternatives such as:

- Permeable pavements
- Rain gardens and bioswales
- Detention and retention ponds : These systems reduce surface runoff and enhance groundwater recharge.

3. Embrace the Sponge City Model:

A "Sponge City" uses green infrastructure to absorb, store, and reuse rainwater, helping mitigate flood peaks.

- Shanghai has implemented green roofs, porous pavements, and urban wetlands.
- *Mumbai* is currently integrating this model into its **stormwater strategy**.

4. Revive and Restore Urban Water Bodies:

Lakes, tanks, and wetlands act as natural flood buffers.

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Bengaluru's Jakkur Lake restoration is a prime example of how eco-restoration helps flood control.

5. Community Involvement and Early Warning Systems:

- Engage local communities in **disaster risk reduction**, education, and **preparedness drills**.
- Use real-time monitoring tools like Singapore's SWAN (Smart Water Assessment Network), which sends alerts via SMS based on live water level data.

6. Policy and Urban Planning Reforms:

- Strengthen zoning regulations, protect green belts, and enforce building codes to avoid construction in flood-prone zones.
- Include climate-resilient infrastructure in urban master plans.

Extra Insight: India's Urban Flooding Challenge by the Numbers

- **45 million people** in India are directly exposed to urban flood risk annually (UNDRR, 2023). •
- **50,000 crore** is India's average annual loss due to flood-related disasters (World Bank Report).
- Over 75% of India's cities lack basic stormwater management plans.

Conclusion: A Call for Sustainable Urban Transformation

Urban flooding is not just a natural disaster—it's a man-made crisis rooted in poor planning, ecological neglect, and climate vulnerability. India must move toward climate-responsive urban development that prioritizes resilient infrastructure, restored ecosystems, and community-led adaptation.

The way forward lies in:

- Learning from global best practices •
- Investing in green infrastructure •
- Coordinating across agencies
- And most importantly, putting nature at the heart of urban planning



