



DAILY CURRENT AFFAIRS 05-05-2025

GS-1

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Evolution of Monsoon Forecasting in India

Syllabus GS-1: Indian Climate – Forecast.

Context:

The IMD has predicted an *above normal monsoon* for 2025 at **105% of the Long Period Average (LPA)**, reflecting progress in dynamic and ensemble-based forecasting systems like **MMCFS** and **MME**.

What is Weather Forecasting?

Scientific estimation of atmospheric conditions (rainfall, temperature, etc.) using observations and models.

Types of Forecasts:

- **Nowcasting (0–6 hrs):** Real-time updates via radars/satellites.
- **Short-range (1–3 days):** Uses Numerical Weather Prediction (NWP) models.
- **Medium-range (4–10 days):** Dynamic models simulate atmospheric systems.
- **Long-range (10 days–2 years):** Seasonal trends; based on ocean-atmosphere interaction.
- **Ensemble Forecasting:** Uses multiple models for probabilistic outcomes.

Evolution of Monsoon Forecasting in India

Pre-Independence:

- **1875 – IMD established:** After 1876 famine to monitor monsoon scientifically.
- **1882 – Henry Blanford:** Linked Himalayan snow to monsoon intensity.
- **1889 – Sir John Eliot:** Considered oceanic and Australian conditions.
- **1904 – Sir Gilbert Walker:** Used 28 global predictors for statistical forecasting.

Post-Independence:

- **1947–1987 – Walker Model retained:** High error due to outdated predictors.
- **1988 – Gowariker Model:** Introduced power regression with 16 variables.
- **2003 – Simplified Models:** Two-stage forecasts with reduced parameters.
- **2007 – SEFS Model:** Five-parameter (April) and six-parameter (June) models introduced.

Recent Developments:

- **2012 – MMCFS:** Dynamic coupled model integrating ocean-land-atmosphere interactions.

- **2021 – MME (Multi-Model Ensemble):** Combines outputs of global models for better accuracy.

Limitations of Current Forecasting

- **Model Biases:** Structural errors lead to inaccuracies.
- **Weak Teleconnections:** Inconsistent ENSO/IOD linkage with Indian rainfall.
- **Regional Gaps:** Poor district-level precision.
- **Outdated Predictors:** Loss of statistical relevance over time.
- **Extreme Events:** Inadequate for drought/flood prediction.

Way Forward

- **Refine Dynamic Models:** Improve MMCFS/MME calibration.
- **AI/ML Integration:** Enhance pattern recognition and forecasting accuracy.
- **High-Resolution Modelling:** Develop local-level (district/block) forecasts.
- **Upgrade Observations:** Increase Doppler radars, AWS, buoys.
- **Global Collaboration:** Share real-time data with international agencies.

Conclusion:

Monsoon forecasting in India has evolved from empirical correlations to dynamic models. While notable progress has been made, addressing current limitations through technology, data expansion, and global cooperation is vital. Accurate forecasts are crucial for India's **agriculture, disaster preparedness, and economic resilience.**

Appointment of Chief Justice of India

Syllabus: GS-2: Judiciary.

Context:

- **Justice Bhushan Ramkrishna Gavai** has been appointed as the **52nd Chief Justice of India.**
- He will assume charge on **May 14, 2025**, succeeding **Justice Sanjiv Khanna.**

Constitutional Provisions:

- **Article 124(2):** Empowers the President to appoint the CJI.
- **Article 126:** Provides for the appointment of an Acting Chief Justice when the position is vacant.

Appointing Authority:

- **President of India**, on the **advice of the Prime Minister** and after consultation with the **outgoing CJI**.

Tenure:

- No fixed term; holds office until the age of **65 years** as per **Article 124(2)**.

Eligibility Criteria:

- Must be a **citizen of India**.
- Must have:
 - Served as a **High Court judge** for at least **5 years**, or
 - Practiced as a **High Court advocate** for at least **10 years**, or
 - Be, in the President's opinion, a **distinguished jurist**.



Procedure for Appointment:

- **Seniority Rule:** Senior-most Supreme Court judge is usually recommended.
- **Recommendation:** Outgoing CJI recommends successor.
- **Consultation:** Mandatory with senior judges if any doubt arises.
- **Law Ministry:** Receives recommendation and forwards it to the PM.
- **President:** Appoints CJI on PM's advice.
- **Medical Fitness:** Certificate of fitness required from a designated medical officer.

- **Official Gazette Notification:** Issued post-approval.

Acting Chief Justice (Article 126):

- When the office of CJI is vacant or the CJI is unable to perform duties, the **senior-most available judge** is appointed as **Acting CJI**.

Red-Crowned Roofed Turtles

Syllabus: GS-3: Wildlife

Context:

20 individuals were successfully **reintroduced into the Ganga River** under the **Namami Gange Mission** — first reintroduction in **30 years**, marking a major **biodiversity conservation milestone**.

Scientific Classification

- **Scientific Name:** *Batagur kachuga*
- **Range:** India, Nepal, Bangladesh
- **Historic Rivers:** Ganga, Brahmaputra
- **Current Viable Habitat:** Chambal River



Conservation Status

- **IUCN Red List:** *Critically Endangered*

- **Wildlife Protection Act (India):** Schedule I
- **CITES:** Appendix I (No international trade allowed)

Key Features

- **Size:** Females up to 56 cm, 25 kg; males are much smaller
- **Shell:** Ridged, strong for swimming in currents
- **Snout:** Short, pointed – helps breathe while submerged
- **Breeding Colours (Males):** Bright red, yellow, and blue neck streaks (March–April)

Habitat & Behaviour

- **Habitat:** Deep, fast-flowing rivers with sandy banks/sandbars
- **Food:** Strict herbivores – aquatic plants and algae
- **Nesting:** March–April; 11–30 eggs/clutch, hatch in 60–70 days

Major Threats

- **Habitat Loss:** Pollution, dams, unsustainable water use
- **Nesting Disruption:** Sand mining, agriculture on riverbanks
- **Illegal Exploitation:** Poached for meat and shells, despite full legal protection

India's Waste Management Crisis

Syllabus: GS-3: Environment – Waste management.

Context:

- A recent study published in Nature has identified India as the world's largest contributor to plastic pollution, releasing an estimated 9.3 million tonnes of plastic waste annually.

India's Waste Management Crisis: A Snapshot

Waste Management refers to the **collection, segregation, treatment, and disposal** of solid, liquid, and plastic waste to **prevent environmental degradation**.

Alarming New Findings (Nature, 2025):

- India is now the world's largest plastic polluter: **9.3 million tonnes annually.**
- **Per capita plastic waste:**

- **Reported (official):** 0.12 kg/day
- **Actual (Nature study):** 0.54 kg/day
- Suggests **underreporting** in **rural areas** and **informal sector exclusion**.

Major Waste Management Initiatives in India:

- **Plastic Waste Management Rules (2016–2024):**
 - Source segregation, EPR, ban on specific single-use plastics.
- **Mandatory Jute Packaging Act, 2010:**
 - Promotes eco-friendly packaging to reduce plastic dependency.
- **Extended Producer Responsibility (EPR):**
 - **PIBOs** (Producers, Importers, Brand Owners) must collect, recycle, and reuse plastic waste; non-compliance invites environmental compensation.
- **Decentralized Waste Governance:**
 - Gram Panchayats made responsible for local waste management—focus on **rural inclusion**.

Key Challenges:

- **Data Inaccuracy:**
 - Rural and informal waste is unrecorded.
 - No standardized audit or third-party validation.
- **Poor Infrastructure:**
 - Dumpsites dominate; **sanitary landfills outnumbered 10:1**.
 - Lack of MRF connectivity and geotagging.
- **Urban-Rural Divide:**
 - Rural waste is largely unmanaged under Panchayati Raj institutions.
- **Weak EPR Implementation:**
 - Lack of accessible infrastructure and monitoring of PIBOs.
- **Culture of Non-Compliance:**
 - SC observed strong laws but **weak enforcement**; schemes fail due to administrative inertia.

Way Forward:

- **Judicial Oversight via Continuing Mandamus:**

- Inspired by **Vellore tanneries case**—ensure **time-bound compliance** and **periodic court supervision**.
- **Data System Reform:**
 - Mandatory **waste audits, third-party verification, and real-time dashboards**.
- **Infrastructure Mapping:**
 - Ensure **linkage of all ULBs and Panchayats** with MRFs and sanitary landfills.
- **Localized EPR Kiosks:**
 - Set up PIBO-managed kiosks at **ward/village level** for plastic recovery.
- **Government Pay Principle:**
 - Polluters bear the cost; victims compensated; ecological restoration initiated by State.
- **Tech-Based Monitoring:**
 - Leverage **AI, GIS tracking, and geotagging** for compliance.

Conclusion:

India's waste crisis is a **failure of enforcement, monitoring, and inclusion**, not just policy. A **people-centric, data-driven, and legally monitored** approach with **strict polluter accountability** is critical for sustainable waste governance and environmental justice.