

DAILY EDITORIAL ANALYSIS

TOPIC

**POOR MONSOON IN INDIA:
CAUSES, IMPLICATIONS AND
PREPAREDNESS**

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Context

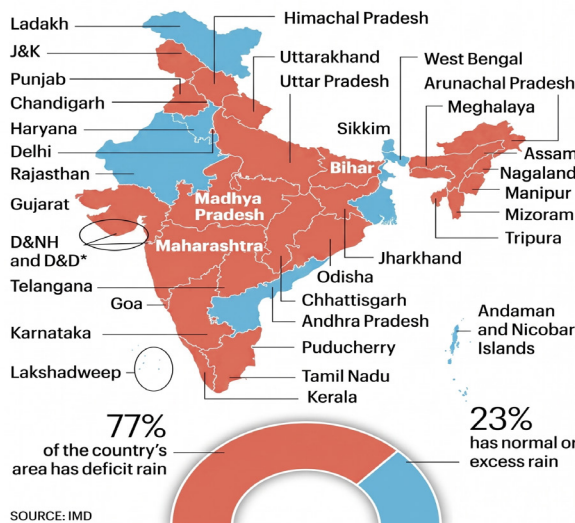
- Recently, IMD forecasts **below-normal precipitation** (about 43% below normal) that have intensified due to delayed rainfall and emerging **El Niño conditions**.

• LOOKING TO THE SKIES

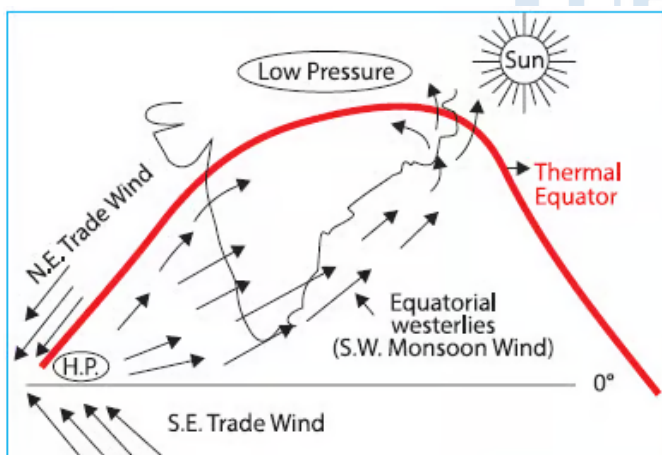
Areas with more than 20% rain deficit



The states/UTs with deficit rainfall



About Indian Monsoon



- It is the **seasonal reversal of winds**.
- It is primarily caused due to the difference between land and water heating and cooling process, movement of ITCZ, and local atmospheric and oceanographic factors.
- There are two types of monsoons in India:
 - Southwest Monsoon:** It accounts for about 75% of total precipitation in India.
 - Northeast or Retreating Monsoon:** It occurs in the southeastern part of India including Tamil Nadu.
- It is very important for the farming, water supply, and economy of the country.
- Long Period Average (LPA)** serves as the standard parameter for IMD to evaluate monsoon.

Classification of Monsoon Performance (IMD)	
Category	Rainfall (% of Long Period Average - LPA)
Normal Monsoon	96–104% of LPA
Below Normal / Weak Monsoon	< 90% of LPA
Deficient Monsoon	< 90% with significant regional deficits
Surplus Monsoon	> 110% of LPA

Key Reasons Behind the Weak Monsoon

- **Limited Impact of El Niño Before Early June:** El Niño phenomenon developed in the equatorial Pacific Ocean.
 - ♦ According to IMD, the effect of **El Niño** on the Indian monsoon shows a **lag of roughly one month**.
 - ♦ El Niño reduces the strength of **Walker Circulation**.
 - ♦ It inhibits moisture transport and convection over the Indian subcontinent.
 - ♦ However, the deficit rainfall in June could not have been caused mainly by El Niño.
- **Favorable Madden-Julian Oscillation (MJO):** MJO is an active system of cloudiness, rainfall and wind movement along the equator.
 - ♦ The favorable phase of MJO was not present over India through most of June.
 - ♦ While over India, it suppressed convection and rainfall.
 - ♦ It reduced monsoon activity over much of the country.
- **Weak Monsoon Circulation System:** It is because of:
 - ♦ Weak cross-equatorial flow from the Indian Ocean.
 - ♦ Ineffective moisture transport from the Arabian Sea and Bay of Bengal.
 - ♦ Weak progression of monsoon over northern and western India.
- **No Significant Low-Pressure Areas:** Monsoon rains over India are strongly influenced by:
 - ♦ Low-pressure areas and depressions developing over the Bay of Bengal.
 - ♦ During June, such systems were either missing or weak, producing poor rainfall distribution.
- **Increased Climate Variability:** Climate change has increased intraseasonal climate variability; occurrence of droughts and excessive rainfall; and uneven distribution of rainfall across regions.
 - ♦ Therefore, even the years having near-normal total rainfall experience localized shortages.

Implications of a Weak Monsoon Over India

- **Agricultural Stress:** Agriculture remains highly dependent on monsoon rainfall despite expansion of irrigation.
 - ♦ A weak monsoon may lead to reduced kharif sowing; lower crop yields, especially rice, pulses and oilseeds; and increased input costs for farmers due to dependence on irrigation.
- **Threat to Food Security and Inflation:** Lower agricultural output can push food prices upward; increase inflationary pressures; and affect nutritional security, particularly among vulnerable populations.
- **Water Shortage:** Poor rains reduce the groundwater level; fill the reservoirs; and decrease the availability of drinking water.
 - ♦ Past experience shows that dry years require water to be transported to drought-prone areas.
- **Economic Impact on Rural Areas:** Weak monsoon affects farm income; demand from rural sector; and job prospects in agriculture-based regions.
 - ♦ It would hamper the economic growth of the country.
- **Hydropower Production:** Low reservoir water level affects hydropower production; and availability of water for irrigation and consumption in cities.
- **Environmental Impacts:** Lack of rain increases the risk of forest fires; soil erosion; and pressure on wetlands and waterways.

India's Preparedness For Weak Monsoon

- **Weather Forecasting By IMD:** IMD provides **extended-range and district-level forecasts**.
 - ♦ Early warnings enable governments and farmers to plan crop choices and irrigation schedules.
- **Assessing Districts Vulnerability:** Around 315 districts have been identified as potentially affected by weak monsoon conditions.
 - ♦ 111 districts (high priority) have irrigation coverage below 25%.
 - ♦ 76 districts (medium-priority) have irrigation coverage between 25% to 50%.
 - ♦ 128 districts (low priority) have relatively better irrigation facilities through dams and other sources.
- **Contingency Crop Planning:** The ICAR prepares **district-specific contingency plans** involving drought-tolerant crop varieties; alternate cropping systems; and short-duration seed varieties.
 - ♦ The Centre and state governments are preparing **region-specific strategies** for vulnerable farm areas as seen in the recent contingency planning exercises.
- **Water Conservation: MGNREGS** focuses on farm ponds, check dams, rainwater harvesting structures, and watershed development. These initiatives enhance local water security.
- **Expansion of Irrigation Infrastructure:** Schemes such as **Pradhan Mantri Krishi Sinchai Yojana (PMKSY)** aim to improve irrigation efficiency through micro-irrigation; 'Per Drop More Crop' initiatives; and command area development.
- **Diversification of Energy Sources:** Rapid expansion of solar power, wind energy, and other renewables has reduced dependence on hydropower during drought years.
- **Crop Insurance:** The **Pradhan Mantri Fasal Bima Yojana (PMFBY)** provides risk coverage against weather-induced crop losses.

Way Forward

- **Strengthen climate-resilient agriculture** by using drought-resistant seeds and diversified farming.
- **Increase micro-irrigation** and water conservation to make less use of rains.
- Build up better **watersheds** and management of groundwaters locally, and advocate river basin and reservoir management.
- **Improve climate forecasting and dissemination systems** for timely decision-making.
- Incorporate climate change adaptation into rural development policies.
- Encourage community-led water conservation and sustainable agricultural practices.

Conclusion

- India's experience underscores that a weak monsoon is no longer merely a meteorological concern but a multidimensional developmental challenge.
- While improved forecasting, water conservation measures and renewable energy expansion have enhanced resilience, increasing climate variability necessitates sustained adaptation and long-term preparedness.

Daily Mains Practice Question

[Q] **Examine the causes behind poor monsoons in India. Discuss their implications and evaluate India's preparedness to deal with weak monsoon conditions.**

Source: IE

