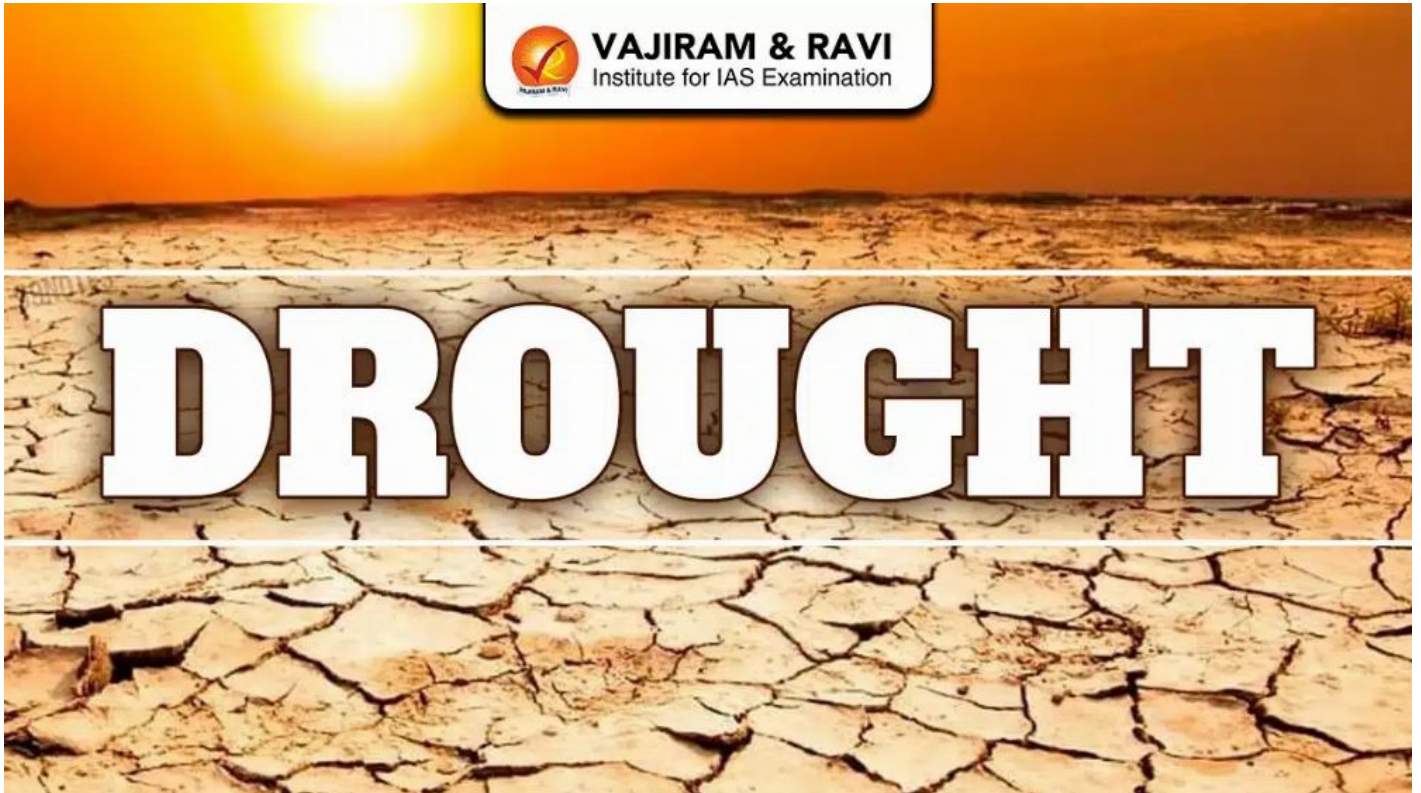


Drought, Definition, Types, Causes, Drought Prone Areas, Impact

December 18, 2025 • vajiramandravi.com



Drought is a prolonged period when rainfall is significantly below normal, leading to water shortage, crop failure, and stress on livelihoods. In India, nearly **51% of agricultural land depends on rainfall**, making the country highly vulnerable. Unlike sudden disasters, drought develops slowly but affects large populations, disrupting food security, rural incomes, and the overall economy. Its effects can last for months or even years, depending on severity.

Drought Definition

The **India Meteorological Department (IMD)** defines meteorological drought as a situation when seasonal rainfall is **less than 75% of the long-term average**, indicating a significant shortage of moisture.

The severity is classified into **moderate drought** (25-50% rainfall deficit) and **severe drought** (over 50% deficit). Such droughts have serious impacts on **agriculture, water availability, and society**.

Types of Drought

Drought can be classified based on its impact on rainfall, agriculture, water resources, and society. Each type develops differently and affects communities in various ways.

- **Meteorological Drought:** Occurs when rainfall is **25% or more below normal**, signaling a potential drought.
- **Agricultural Drought:** Happens when soil moisture is insufficient for crops, reducing yields even if the rainfall deficit is moderate.
- **Hydrological Drought:** Results from lower water levels in rivers, reservoirs, and groundwater due to prolonged dry conditions.
- **Socio-economic Drought:** Arises when water scarcity starts affecting livelihoods, food supply, employment, and income.

Causes of Drought in India

Drought in India results from a combination of climatic, environmental, and human-induced factors.

1. Climatic Factors

These are natural causes related to weather and rainfall patterns:

- **Erratic Monsoon:** About **75% of India's annual rainfall** comes from the southwest monsoon; delays or uneven distribution cause drought.
- **Low Rainfall Years:** Periods with below-normal precipitation lead to water scarcity in agriculture and reservoirs.
- **High Temperature and Evaporation:** Rising temperatures increase evaporation from soil and water bodies, reducing available moisture.
- **Extreme Weather Events:** Heatwaves and prolonged dry spells exacerbate drought conditions.

2. Environmental Factors

These relate to natural land and ecosystem changes that reduce water availability:

- **Deforestation:** Loss of forest cover reduces soil moisture retention and affects local rainfall patterns.
- **Land Degradation:** Soil erosion, overgrazing, and poor land management decrease the soil's water-holding capacity.
- **Reduced Groundwater Recharge:** Changes in natural watercourses, siltation of rivers, and loss of wetlands reduce natural water storage.
- **Arid and Semi-Arid Geography:** Regions like western Rajasthan and parts of Gujarat naturally receive low rainfall, making them prone to drought.

3. Human-Induced Factors

These are caused by human activity that worsens drought impacts:

- **Overexploitation of Groundwater:** India extracts over **250 billion cubic meters of groundwater annually**, leaving insufficient water during dry periods.
- **Poor Irrigation and Water Management:** Inefficient flood irrigation and lack of water storage infrastructure increase water stress.
- **Urbanization and Industrialization:** Cities and industries consume large amounts of water and prevent natural groundwater recharge.
- **Unsustainable Agriculture:** Mono-cropping, water-intensive crops like sugarcane and rice, and overuse of chemical fertilizers deplete soil moisture.

Drought-Prone Areas of India

Some regions in India face drought more frequently due to climate, geography, and water resource limitations.

Overall, **about 68% of India's net sown area** is considered drought-prone, affecting millions of farmers.

- **Western India:** Rajasthan and Gujarat experience frequent droughts due to arid climate.
- **Central India:** Maharashtra and Madhya Pradesh face irregular rainfall and groundwater depletion.
- **Southern India:** Karnataka, Telangana, Andhra Pradesh, and Tamil Nadu often suffer from monsoon failures.
- **Eastern Plateau:** Jharkhand and parts of Odisha are vulnerable due to poor water retention.

Impact of Drought on Agriculture and Food Security

- **Crop Losses:** Prolonged water scarcity reduces yields of major crops like rice, wheat, pulses, and oilseeds. Severe droughts can cause **10-40% reduction in crop production**, affecting both domestic supply and exports.
- **Livestock Stress:** Shortages of fodder and drinking water reduce livestock health and milk production, impacting rural income. For example, in 2016-17, drought in Maharashtra led to **loss of 3.6 million livestock units**.
- **Food Price Inflation:** Lower crop production increases food prices, making staples like wheat, rice, and pulses less affordable for the poor.
- **Nutrition and Health Risks:** Reduced food availability and income loss lead to malnutrition, especially among children and women. Surveys show malnutrition rates rise in drought-affected districts by **10-15%**.
- **Seed and Input Scarcity:** Farmers often struggle to access quality seeds, fertilizers, and irrigation inputs during droughts, reducing the capacity for recovery in the next season.

Economic and Social Impacts of Drought

Drought affects not only agriculture but also the broader economy and society, creating long-term challenges for communities. Severe drought years can even reduce India's **GDP** growth by **0.5-1%**, showing the economic scale of this problem.

- **Loss of Rural Employment** – Reduced farm activity and crop failure lead to unemployment and distress migration.
- **Increased Poverty** – Small and marginal farmers face income loss and rising debt, worsening poverty levels.

- **Decline in Livelihoods** – Livestock rearing, dairying, and seasonal labor are affected due to water and fodder shortages.
- **Food Insecurity** – Lower crop production and higher prices make food less affordable, impacting nutrition.
- **Health Risks** – Water scarcity causes poor sanitation, malnutrition, and higher incidence of waterborne diseases.
- **Social Stress and Conflicts** – Competition over scarce water resources increases tensions in affected communities.

NDMA Guidelines on Drought Management

The **NDMA Guidelines (2010)** provide a comprehensive framework to prepare for, mitigate, and manage drought in India, focusing on early warning, water conservation, agriculture, and community resilience.

- **Drought Monitoring** – Set up state and district **Drought Monitoring Cells**, automatic weather stations, and soil moisture sensors for real-time assessment.
- **Early Warning Systems** – Integrate ground-based and satellite data, and maintain ICT dashboards and web portals for timely alerts.
- **Water Management** – Promote **rainwater harvesting, watershed development, and micro-irrigation** to conserve water.
- **Agricultural Support** – Encourage **drought-resistant crops, crop diversification, credit, insurance, and market support** for farmers.
- **Community Awareness & Capacity Building** – Train officials, local bodies, NGOs, and include drought mitigation in school and college curricula.
- **Livestock & Environmental Measures** – Provide fodder, water for animals, promote afforestation and biodiesel plantations.
- **Integrated Planning & Implementation** – Prepare drought management plans at all levels, allocate funds, and involve development programs and CSR initiatives.

Challenges in Drought Management

Drought management in India faces multiple structural and operational challenges that limit effective preparedness and response.

- **Fragmented Water Governance** – Overlapping responsibilities among central, state, and local agencies create coordination gaps.
- **Delayed Relief Measures** – Slow disbursement of aid and employment schemes reduces effectiveness and increases farmer distress.
- **Low Irrigation Coverage** – Only about **52% of farmland** is irrigated, making rain-fed regions highly vulnerable.
- **Limited Real-Time Data** – Lack of localized, accurate information on rainfall, soil moisture, and crop conditions hampers early action.
- **Climate Uncertainty** – Increasing variability of monsoon and extreme weather events makes drought prediction difficult.

- **Resource Constraints** – Inadequate financial, technical, and human resources at state and district levels affect implementation of mitigation measures.

Way Forward

Effective drought management requires proactive, long-term, and sustainable strategies to reduce vulnerability and enhance resilience.

- **Promote Climate-Resilient Agriculture** – Encourage drought-tolerant and less water-intensive crops.
- **Expand Efficient Irrigation** – Increase use of **micro-irrigation, drip, and sprinkler systems** to save water.
- **Strengthen Groundwater Management** – Recharge aquifers and regulate over-extraction.
- **Leverage Technology** – Use satellites, GIS, weather forecasting, and mobile alerts for early warning and planning.
- **Community Participation** – Involve local communities, **Panchayati Raj Institutions**, and NGOs in water conservation and drought preparedness.
- **Integrate Drought in Development Planning** – Include drought risk mitigation in state and central developmental programs, budget allocations, and CSR initiatives.

Source: <https://vajiramandravi.com/current-affairs/drought/>

© Vajiram & Ravi. For personal use only.