

**NEXT IAS**

**DAILY EDITORIAL  
ANALYSIS**

**TOPIC**

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**Climate Phenomena and Food  
Security**

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## CLIMATE PHENOMENA AND FOOD SECURITY

### In Context

- El Niño and other climate phenomena affect rainfed agriculture in many ways, leading to the challenge of food insecurity.

### About Recently Observed Climate Phenomena

- **Western disturbances:** There has been a series of disruptive weather and climate phenomena in India, **demonstrating the complexity of the precipitation system.**
  - ◆ There was the Western disturbance, which usually brings much-needed moisture from European seas to the western Himalayas and parts of northern India in the winter and spring.
  - ◆ But this year, the Western disturbance **remained active late into the summer**, snapping at the heels of the southwest monsoon.
- **El Niño:** An El Niño phase of the quasi-periodic El Niño Southern Oscillation (ENSO) — a phenomenon in the eastern and central tropical Pacific Ocean — was intensifying and likely to affect the southwest monsoon.
  - ◆ Studies have found that **43% of heavy rainfall events** in the **northeast monsoon** (including the **2015 Chennai floods** that caused widespread devastation) coincided with an El Niño.
- **Declining but intensifying monsoon precipitation:** The amount of monsoon precipitation has been declining since the 1950s, attributed by some climate scientists to the reduction in land-sea thermal gradient due to the warming of the seas.
  - ◆ However, indications of increased frequency of intense rain events and greater heat and moisture stress for people and ecosystems align with predictions of warming's impact on the atmosphere's water-holding capacity and acceleration of the hydrological cycle.

### Challenges of Food security

- **Climate phenomenon affecting plant growth:** The El Niño and other climate phenomena affect rainfed agriculture in many ways, from delaying the start of rains, and affecting sowing, to hot temperatures that may negatively influence plant growth and soil moisture.
- **Rainfed agriculture:** Our daily diet in India — from cooking oil to diverse foods — also requires 3,268 litres of water per person per day on average, subject to regional variability.
  - ◆ Some 75% of this footprint is green water, demonstrating the importance of rainfed agriculture to our food and nutritional security.
- **Issues in irrigated areas:** Even in irrigated areas, many dominant crops require green water for different extents.
  - ◆ For example, in kharif season, rice paddy under irrigation uses green water to the tune of 35%.
  - ◆ Many staple crops like tur dal, soybean, groundnut, and maize also rely considerably on green water at this time. In the 2015-2016 El Niño year, soybean production in India declined by 28% from the 2013-2022 average.
- **Increased cost of preparing food:** While the cost of preparing a thaali at home has risen by 65% in the last five years, in this period, the average wage of a manual worker rose by 38% and that of a salaried worker by 28%.
  - ◆ The implied **reduction in purchasing power** is considerable, and it would be reasonable to expect that **food consumption has been impacted.**

### Suggestions

- **Reducing dependence on water-intensive crops:** In terms of agriculture and food security, there is now an emphasis on reducing dependence on water-intensive crops, with millets being the crops of choice.
  - ◆ Shifting to less water-intensive crops may reduce vulnerability of our food systems to phenomena like El Niño.

- **Focussing on increasing Agricultural yield:** Agricultural yield is **lower in India than in East Asia**, pointing to the **potential for an increase**.
  - ♦ It is necessary to **intervene on the supply side** to ensure that food is produced at a steady price by raising the yield on land.
  - ♦ Attention is needed to **extend irrigation to 100% of the net sown area**, an end to restrictions on **leasing of land**, a quickening of **agricultural research** and the **re-institution of extension**.
- **Improving weather forecasts:** The government, both at the Centre and in the States, along with farmers, benefit from forecasts of phenomena like El Niño and their impact on the monsoon, and improvements in short-term weather forecasts and early warning systems for both intense rain and dry spells.
- **Efficient management of water reservoirs:** Based on decades of experience, it is clear that alternative short-term and long-term management of our dams and reservoirs is required to reduce the risk of dam-based flood disasters and ecological damage to aquatic ecosystems.
- **Green Revolution:** Reeling under **extreme food shortage following two successive droughts**, the government orchestrated (**by framing Green Revolution**) a supply-side response by providing farmers with **high-yielding seeds, cheap credit, and assured prices** through procurement.
  - ♦ This succeeded spectacularly. Within a few years India was no longer dependent on food imports.
- **Correcting the mistakes of Green Revolution (GR):** Mistakes made while implementing GR, among them the rampant use of chemical fertilizer, fuelled by subsidy, which degraded the soil.
  - ♦ There was also the reliance on procurement prices rather than productivity increase to ensure farm incomes, which fuelled inflation.
  - ♦ We also see that the policy was almost exclusively focused on cereals rather than pulses, the main source of protein for most Indians.
  - ♦ However, rather than arguing on the errors made in an extraordinarily successful economic policy intervention, we should be correcting them now.

### Way Ahead

- How we respond as a society and in terms of governance to the water and climate change crisis, which links food, water, and ecological security through diversifying our agro-food systems, a lower dependence on blue water, rejuvenating our rivers, and sustainable water-sharing between humans and nature will to a great extent determine the well-being of 1.4 billion people.

### Mains Practice Question

- Q.** Discuss the impact of El Niño and other climate phenomena on rainfed agriculture in India. How do these phenomena contribute to the challenge of food insecurity? Provide examples and suggest measures to mitigate these impacts.

