

# Mastering Mains Answer Writing (Ep-4)

## Indian Geography, GS Paper-I

### Question

The pattern of Indian monsoon has changed in the past decade. Discuss its impacts on various facets of our lives.

### Command Word

'Discuss' – requires a broadly covered and all encompassing answer highlighting positive and negative aspects of theme. Solutions and remedies can also be suggested

### Answer Structure

- **Introduction:** We will include a brief description of the term origin - 'Monsoon' and its importance.
- **Body of the Answer:** It will cover how the pattern of monsoon has changed over the years, possible reasons for the changing pattern and importance as well as impact of monsoon.
- **Conclusion:** We will sum up our answer by highlighting the steps taken by Government to help mitigate the impact of the changing nature of Monsoon.

### Representative Answer

#### Introduction

The term monsoon has been derived from the Arabic word 'mausim', meaning season. It marks the seasonal reversal of winds. In India, two patterns of this reversal of winds is observed:

- **Southwest Monsoon** - In summers, due to the presence of a low-pressure area over northwestern India and the northward movement of the Inter Tropical Convergence Zone (ITCZ), the trade winds of the southern hemisphere cross the equator and start blowing from southwest to northeast due to the Coriolis force.
- **Northeast Monsoon** - In winters, the ITCZ moves southward, and so the reversal of winds from the northeast to the south and southwest, takes place.

#### Body

##### Changing Pattern of Indian Monsoon

- Over the past few years, the nature of Indian Monsoon has become erratic.
- Rainfall arrival, intensity, duration, frequency and spatial distribution have significantly undergone change in the past decade or two.
  - According to the Economic Survey 2017-18, average annual rainfall in India has declined by about 86mm over the last three decades.
  - While on one side, India witnesses floods in the northwest and the northeast, there is rainfall deficit in the south.
  - Extreme rainfall events, such as heavy downpour over a short span of time, have increased threefold over the last few years and now extend over all of central India - from Gujarat to Odisha. Moreover, the extreme events themselves is intensifying over time.
  - The monsoon lasts for shorter duration, compressing the Indian monsoon.
  - The interspersed breaks in the monsoon have increased resulting in larger drier periods in the monsoon itself as well as lower mean rainfall.

##### Possible Reasons of Changing Pattern

- The variability in the Indian monsoon pattern is associated with weakening monsoon wind circulation and a decrease in the number of monsoon depressions from the Bay of Bengal.
- The increase in rainfall is also partially due to climate change - increased global warming leads to warmer climate and warm air can hold more water.

- Increased warming north of the Arabian Sea is surges of moisture supply being transported across the entire central Indian belt - leading to extreme rain events.
- Other changes to the amount of rainfall may be caused by air pollution due to increase in anthropogenic aerosols such as black carbon or soot, which simultaneously absorb and heat the surrounding air, and prevent clouds from forming.
- The onset of the monsoon is often delayed depending on the corresponding El Niño period.

#### Importance and Impact of Indian Monsoon

- Agriculture - About 64 % Indian population depends on agriculture for their livelihood, which is dependent on the southwest monsoon.
  - Indian monsoon plays a vital role in India's attempt to achieve food security as around 50% of India's total food output comes in the form of summer crops.
- Monsoon is critical to replenish more than 80 reservoirs necessary for power generation, irrigation and drinking.
- Fishing Sector - Too much rainfall and overly strong winds can make coastal waters unsafe, preventing fishermen throughout South Asia from heading to sea to catch the fish they depend on for income.
- Health Hazards - During summer monsoon, diseases like cholera, dengue, chikungunya, and malaria, as well as stomach and eye infections become prevalent.
- Economic Impact -
  - A poor or delayed monsoon can have a rippling effect on India's economy and growth by causing supply issues, accelerate food inflation - forcing the government to spend on the import of food as well as take measures like farm loan waivers.
  - On the other hand, a good monsoon season results in higher farm output, boosting demand for consumer goods as well as income of rural people - leading to a stronger economic outlook.
- Monsoon regime emphasizes the unity of India with the rest of Southeast Asian region.
- Water Crisis- The changing pattern of monsoon can result in water crisis with water demand increasing by a factor of two in 2030 which could result in economic losses of an estimated 6% of GDP by 2050.
- Inter- State Water disputes - Lack of rainfall due to change in pattern can lead to escalation in inter-state water disputes such as Cauvery river dispute between Karnataka and Tamil Nadu.

#### Conclusion

Government programmes such as the National Action Plan on Climate Change launched in 2008, 'Monsoon Mission' to track the course of Monsoon, the recent 'Selfie with Sapling programme' launched on World Environment Day and India as a signatory at the Paris Climate Change Agreement 2015 - can go a long way in mitigating the adverse impact of changing pattern of monsoon.

