

RISKING THE GLOBAL FOOD BASKET: What's at Stake?

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India is the largest producer and consumer of major crops be it fiber or food crops like cereals, pulses, and oilseeds. Agriculture in India contributes around 17% of the GDP and around 45% of the population is directly or indirectly dependent on agriculture. The most populous country India with a staggering population of around 145 crore is supported with crops within India. There was a time when we were not independent in terms of food security and imported a lot of crops from other agro economies, but after the Green Revolution everything took a turn, and from being one of the highest importers of food crops, we became the global champions in the export of agricultural produce. In India still, the agricultural sector is majorly dependent on monsoon rainfall for irrigation (around 55%) which is a major portion considering that around 90% of farmers are small and marginal having a land area of less than 2 Hectares. In the last few years, the instances of heatwaves and erratic rainfall have been continuously increasing. This used to happen every year when the rainfall and the coming of monsoon were delayed by around 3-4 days but now this time period of delay has increased to a month which has disturbed the crop cycle affecting the productivity and yield of majorly water-intensive crops like paddy, sugarcane, and cash crops like cotton and jute. This phenomenon is called lower tail dependence where productivity and yield are affected due to the delay in monsoon drastically.

According to the Economic Survey 2023-24 the chances of dry spells in the country is now 36% which is a significant increase in probability. States such as Punjab, UP, Haryana, Delhi, Tamil Nadu, and Maharashtra

are facing a water crisis. The instances of heatwaves in India have increased from 12 in 2020 to around 76 times in 2024, also the rise in crop area damaged due to weather conditions has increased from 1.7 million hectares in 2022 to 3.4 million hectares in 2024 which is a significant increase according to the economic survey 2023-24.

This has a cyclical effect on the vulnerable sections of our society, as a decrease in productivity leads to more borrowing of non-institutional credit, leading to debts and an increase in the number of suicides. On the consumer side, the vulnerable sections of society face the brunt of the increase in prices of food leading to high food inflation. Last year, the major culprit for the increase in food inflation was also the increase in prices of Tomatoes, onions, potatoes, vegetables, and pulses. Had they not been affected, the food inflation would have been around 5% but it was around 8% for the year 2023-24.

The introduction of various schemes by the government such as PM Fasal Bima Yojana for the insurance of crops and various technologies such as Yes tech (technology-based yield system) and WINDS (Weather Information system at the Gram panchayat level) to caution the farmers in advance regarding the change in monsoon pattern are a welcome step with this regard but this does not solve the root cause of the problem which is climate change.

The development of techniques such as fertigation to solve the combined problem of irrigation and fertilizers is one such technique. The introduction of genetically modified crop seeds is also in talks to fight against crop damage due to climate change. To increase groundwater and stop the depletion

crop rotation must be practiced in rotation with millets which also restores the soil salinity and health instead of water-intensive crops which directly reduce the amount of pesticides and fertilizers used like urea which pollutes the water bodies due to urea leakage.

Nations including India need to cut emissions by 42% by 2030 and 57% by 2035 relative to 2019 levels to follow the least cost pathway for 1.5C. For a 2 degrees Celsius target reductions of 28% by 2030 and 37% by 2035 are needed. This can only happen if we focus the nationally determined targets especially India which is a developing country with major cities of India being the most polluted. The government is aggressively working towards its target of achieving electricity production by renewable energy to 50% by 2030 and hopefully, it is quite possible that it might be achieved even before 2030.

The introduction of a carbon trading scheme is also a major step towards creating an indirect awareness among major industries. Agroforestry is one such technique that would play a dual role of increasing the profits of the vulnerable farmers and also works towards working as carbon offsets. Rainwater harvesting techniques and the promotion of community-managed water resources, and also promotion of drip and sprinkler irrigation are some more techniques that are working towards sustainable agricultural practices.

In summary, though India has come a long way in becoming food secure, the growing challenges of climate change need to be addressed with greater urgency. The growing number of extreme weather conditions such as heatwaves, delayed monsoons, and irregular rainfall

patterns are threatening agricultural output, affecting both farmers and consumers. Though government programs such as PM Fasal Bima Yojana and technology-driven solutions provide some relief, the real cause—climate change—needs to be tack-

led with a holistic approach. Through the use of sustainable agriculture practices, climate-resilient technology investments, and better water management, India can establish a more adaptive agriculture sector. International efforts like the Global Agriculture and Food Security Program (GAFSP) also play significant roles in supporting improved food security and adaptive capacity building. In the future, it is important that India and the world prioritize climate change mitigation and developing agricultural systems that can endure its threats to ensure food security for generations to come.