



Feeding The Future: Navigating Food And Nutrition Security Amid Climate Change In India

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Abstract:

Food creation within the country, food imports, and food stored in government warehouses from previous years are all implied by the availability of food. Eating requires having sufficient material and financial resources to establish a healthy eating pattern. Usage of food implies proper utilize in view of the information on fundamental nourishment which is essential for our wellbeing. Any modification to the environment brought about by a human movement or a natural variation over time is referred to as environmental change. Three factors are taken into consideration while providing an overview of how climate change is affecting food security in India: availability, access, and absorption. It concludes that maintaining food security in the face of climate change will be extremely difficult and suggests, among other things, that sustainable agricultural methods be adopted, that public health and urban food security be given more attention, that livelihood security be provided, and that long-term relief measures be put in place in case of natural disasters. This study provides an outline of three key topics: (a) how climate change is affecting India's agricultural output; (b) how these changes in productivity will affect food security; and (c) how nutritional availability is rated in the Indian context. The policy measures adopted by the Indian government to protect the population's food security are also a major topic of discussion in this study. We will talk about in this essay. Security of food and nutrition in the context of climate change.

Keywords: Food, Nutrition Security, Climate Change, Food Security, Absorption, Sustainable Development, Food Grains, Financial Access, Mitigation Strategies, Agriculture, Ecosystem, Environment, National Policy

Introduction:

The main objectives of the Sustainable Development Goals (SDGs) are to enhance nutrition, attain food security, and put an end to hunger. Given that hunger and undernutrition have not decreased despite the nation's comparatively rapid economic growth, food security remains India's top development priority. India's GDP at factor cost and per capita income increased annually by 7% and 5%, respectively, between 1990–1991 and 2013–2014.[1]

A nation may achieve food independence at some point, but the concept of food security requires that a readily available, dependable, and healthfully sufficient supply of food be available for an extended period of time. According to this, a nation must ensure that the rate of increase in the food supply keeps up with population growth and, in addition, that the increase in popularity that results from rising personal incomes. Developed in the latter quarter of the 20th century, the concept of food security has been a major topic of discussion at several international gatherings hosted by the Unified Country Association during the decade of the 1990s. The Food

and Agribusiness Association's establishment of a global data and early warning framework on food and farming in 1975 marked a crucial early step in further developing the world food culmination and helps the local community prepare ahead of time for food emergencies. "Food security implies all individuals at all-time have physical and monetary admittance to adequate, protected and nutritious food to meet their dietary necessities and food inclinations for a functioning and sound life" (World food culmination 1996). According to FAO (1983), "access by all individuals, consistently to enough nourishment for a functioning and sound life, its fundamental components are the accessibility of food, admittance to food, and the usage of food" constitutes the concept of food security. [2]

In a developing country such as India, the concept of food security evolves in tandem with the progressive phase that the public arrives at. At this point, food security in India may be understood to mean providing the minimum amount of food grains to the entire population. Food grains are important in India because our primary concern is to reduce hunger rather than spend money on expensive items like vegetables, natural products, meats, and so forth. As a result, changes in the per capita supply of food grains are continuously seen as indicators of progress in the country's food security. In other words, to put it simply, increased food accessibility is a necessary condition for achieving food security in countries experiencing food shortages. This condition should be matched by a decline in destitution to ensure financial access (for the poor), as well as the actual admission of food by all individuals consistently, both in quantity and quality, to meet their dietary requirements enough for a functioning life. [3]

Climate Change and Food Security in India

Given that the majority of India's population depends on climate-sensitive industries like agriculture, forestry, and fisheries for a living, the country has numerous reasons to be concerned about climate change. If the current food security issue in our nation is not resolved quickly, climate change will make it worse. Under the changing environment, it will be harder to guarantee food security for a country like India, where over one-third of the population is considered to be extremely poor and half of all children suffer from some form of malnutrition. Examining how climate change is affecting India's agriculture industry is difficult because there are many variables at play. We have taken the four components of food security and discussed how climate change is affecting them in the context of India in order to get into the specifics of the impact of climate change on food security.

India's Climate Change Strategy: Preparation and Mitigation Techniques

India made strong promises in 2021, putting climate change at the forefront of its environmental policy. At the crucial COP 26 international climate meeting, Hon. Prime Minister Narendra Modi said that India is the only nation fulfilling its obligations under the Paris Agreement in "letter and spirit." With pledges to become a net carbon emitter by 2070 and produce 500 gigatons of non-fossil energy by 2030, India took the lead this year on environmental issues, drawing attention from all across the world. [4]

In order to address the challenges of maintaining domestic food production in the face of climate change, the Ministry of Agriculture and Farmers Welfare, through the Indian Council of Agricultural Research (ICAR), has launched a flagship network project that aims to develop and promote climate resilient technologies in agriculture, address vulnerable areas of the nation, and benefit districts and regions that are susceptible to climate hazards. The project's output will help study the impact of climate change on agriculture, including crops, livestock, horticulture, and fisheries. In response to climate change, ICAR has created robust crop varieties that are resistant to various environmental challenges. This will increase food grain production. 1752 types out of 2122 are resistant to climate stress. Climate resilient technologies are being exhibited on farmer's fields encompassing 446 villages, based on vulnerability assessments. Farmers receive agromet alerts via the m-Kisan portal, WhatsApp groups, SMS services, and other channels. The Indian government is addressing climate change by putting into effect a national action plan on the subject, which attempts to develop and put into practice methods to increase the adaptability of Indian agriculture to changing weather conditions while

maintaining growth in output. In order to expand the irrigated area, more crop schemes are being introduced each drop. In a similar vein, integrated farming systems that are sustainable are being encouraged through the Rainfed Area Development (RAD) program. The Government of India is making effective preparations to boost crop yield and reduce crop loss with the use of technical innovations. [5]

Government initiatives and policy implications related to food security and climate change

The Indian government has developed and implemented a few policies and programs to guard against both climate change and the need for more food grains in the future. The Indian government has designated the following name and nodal agency for the National Mission to Secure Climate Change:

1. The Ministry of Urban Development is implementing the National Mission on Sustainable Habitat plan, which aims to promote building energy efficiency, soil waste management, and a transition to public transportation, including hydrogen and biodiesel-based choices.
2. The Ministry of Water created the National Water Mission, which aims to save water, reduce waste, and guarantee a more equitable distribution both among and between states. The mission document's primary focus is:

In order to meet the need of 1120 key blocks during the 11th plan and the remaining blocks during the 12th plan, intensive rainwater gathering and ground water charging are required (march 2017). Besides 30 percent of the whole urban areas would be served by March, 2012.

- b) By 2012, boosting water use efficiency by at least 20%.
3. The Ministry of Science and Technology has launched the National Mission for Sustaining the Himalayan Ecosystem, which attempts to develop management strategies for preserving and protecting the Himalayan glacier and mountain ecosystem. The mission endeavors to tackle the subsequent principal issues:
 - a) Himalayan Glaciers and the associated hydrological consequences.
 - b) Biodiversity conservation and protection.
 - c) Wild life conservation and protection.
 - d) Planning for sustaining for the Himalayan ecosystem
4. In accordance with the national policy of increasing the amount of forest and tree cover to 33 percent of the country's total land area, the Ministry of Environment and Forests has launched the National Mission for Green India, which aims to improve eco-system services and Carbon sinks through afforestation on degraded forest land.
5. The Ministry of Agriculture and Cooperation created the National Mission for Sustainable Agriculture, which aims to create plans to strengthen Indian agriculture's resistance to climate change by introducing new crop types that are heat-resistant, as well as new loan and insurance options. Food security and the preservation of land, water, biodiversity, and genetic resources for the purpose of sustainable food production would be the primary goals of the mission.
6. The Ministry of Science and Technology prepared the National Mission on Strategic Knowledge on Climate Change, which aims to fund high-quality, narrowly focused research into various aspects of climate change and identify the challenges and solutions to climate change through research and technology development.
7. Indian Network for Climate Change Assessment developed by Ministry of Environment. The INCCA is envisioned as a scientific program that is network-based.

The idea of "food security" has changed significantly in recent years. There is a widening gap between food policy and contemporary nutritional concerns, which is seen in emerging countries such as India.

The food security bill was passed by Parliament in 2013 with a focus on the demand side. This measure establishes a monthly right to five kilograms of food grains at a heavily subsidized price for each member of the household under the Public Distribution System (PDS). [6]

Major Programs and Partnerships to Improve to Food Security:

- 1) Public Distribution System (PDS)
- 2) Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)
- 3) National Food Security Bill passed in the year 2013

The three main pillars of food and nutrition security are accessibility, availability, and absorption (nutritional outcomes). Efforts to achieve this will almost certainly involve innovation and the consideration of non-traditional policy alternatives. Collaborations and the roles played by different stakeholders will be crucial. These include bilateral cooperation between the countries as well as the public and private sectors (PPP), community organizations, international agencies, and humanitarian foundations.

A thorough definition of food security was presented during the 1996 World Food Summit, emphasizing the connection between diet, health, and food. The following "Food Insecurity Outcome" indicators have been recommended for use by the Food and Agriculture Organization (FAO):

- (i) A national assessment of food grain availability per capita.
- (ii) Hunger rates as a measure of household access to food grains.
- (iii) Health measured by mortality among infants and children under five. (iv) Nutrition as determined by adults with low Body Mass Index (BMI) and under-five underweight.

India holds the dubious distinction of having one of the highest rates of undernutrition in the world, as well as stunting, wasting, and micronutrient deficiencies include anemia, vitamin A, and foliate deficits, after 60 years of independence. Since independence, only marginal progress has been made. As a nation undergoing development, post-transition, lifestyle- and environment-related illnesses like cancer, diabetes, obesity, and hypertension, as well as cardiovascular diseases (CVD), are on the rise. Intrauterine malnutrition causes low birth weight babies, who are more likely to develop the adult-onset degenerative diseases listed above. The nation's development and health care spending are being negatively impacted by malnutrition. It is closely related to a rise in Disability Adjusted Life Years (DALYs), which would eventually have an impact on India's GDP.

"Every individual must have physical, financial, and social access to a balanced diet, safe drinking water, a secure environment, and health care (both preventive and curative) in order to be considered nutritious."

To take advantage of these services, you must be informed and conscious. Because of this, the etiology of malnutrition is complicated, and prevention involves awareness and affordable access to all of the above. In India, there is a public health context and intervention for the shift from food security to nutrition security. India's emphasis has switched from food security to nutrition security, with a focus on micronutrients in addition to calories and proteins. Three types of hunger must be eliminated: hidden hunger brought on by a lack of micronutrients like iodine and iron, calorie hunger brought on by a lack of calories, and protein hunger brought on by a lack of protein. [7]

Major Programs and Partnerships to Improve Nutrition Security:

- 1) The Integrated Child Development Scheme (ICDS)
- 2) Mid-day Meal

"Beti Bachao, Beti Padoo" tackles important nutrition-sensitive issues in tandem with the Swachh Bharat program. Another step being taken to address the issue of malnutrition in the nation is the fortification of food items including milk, wheat, maize, oil, and notably those that are supplied through the PDS. Important Nutritional Issues for Public Health include:

- Chronic energy deficiency and undernutrition
- Chronic energy excess and obesity

Micro-nutrient deficiencies:

- Anaemia due to iron and folate deficiency
- Vitamin A deficiency
- Iodine deficiency disorders [8]

In light of climate change, the agriculture sectors:

- **Combine adaptation and mitigation of climate change with an emphasis on the agriculture sectors:**

The first industries impacted by climate change are agriculture and related. Most impoverished households depend on agriculture, thus the effects on the economy and society are most obvious in these households. In addition, by decreasing their greenhouse gas emissions and boosting soil and biomass carbon sinks, the agriculture sectors themselves may contribute to the answer to climate change. Producers must be placed at the center of the solutions in order to accomplish this, and investments, training, and assistance must be made easier for them to obtain. Governments have the chance to take action for both climate change adaptation and mitigation through the implementation of Nationally Determined Contributions (NDCs) and the creation of National Adaptation Plans (NAPs).

- **Livestock farming: possible solutions**

Animal production is impacted by climate change in a number of ways, both directly and indirectly. Livestock farming is a significant agricultural industry that supports rural households' means of subsistence, food security, and health. As the industry largely contributes to climate change, it also provides enormous opportunity for giving solutions in terms of both adapting to climate change and reducing the intensity of GHG emissions per kilogram of product. These solutions are usually well-documented, but there are many different and intricate obstacles preventing their widespread application, most of which are caused by a lack of funding and manpower. It is imperative to use a comprehensive approach that is grounded in particular settings and built upon a thorough examination of the surroundings.

- **Linking forests, climate change, and food security: combining forestry and agriculture**

When it comes to the function of forests, forestry methods, and agricultural techniques, a paradigm change is required. In fact, even though deforestation is mostly caused by agriculture, forests and trees are necessary for the security of food supplies. They give populations that depend on them a variety of foods high in micronutrients, and for the most vulnerable, they are a major source of income. Additionally, they provide one-third of the world's population with the energy needed to cook food. Forests and trees are essential to the health of ecosystems and agricultural systems because of the many tasks they carry out, which include maintaining soil fertility, storing carbon, controlling water quality and quantity, and assisting in the prevention of erosion.

Approaches that merit particular attention include passing knowledge to present and future generations, enabling financial assistance for local producers, and fusing technical expertise with innovations and traditional methods. Agroforestry can be viewed as an example of an agricultural paradigm that should be promoted in order to guarantee food security in the future, as it increases resilience to climate change. [9]

NATIONAL FOOD SECURITY ACT, 2013

As per the Supreme Court's interpretation of Article 21 of the Constitution, the NFSA, 2013 is a groundbreaking law that offers the necessary components to enable individuals to exercise their right to life. After significant pressure from a large-scale civil society campaign for the right to food and victory over opposition from corporates, media, and neoliberal economists, the new legislation was finally passed. TPDS coverage was expanded to 67% of the population (or 75% in rural and 50% in urban areas); the previous distinction between BPL and above poverty line (APL) categories of households eligible for subsidized food grains was eliminated; all mothers were entitled to free meals during pregnancy and the six months following childbirth, as well as a cash maternity benefit of less than \$6,000; children in the age group of 6 months to 14 years were provided with hot cooked meals that met prescribed nutritional standards; institutional arrangements for transparency and accountability; changes were made to the public distribution system (PDS); despite its life cycle approach, the NFSA fails to comprehensively address all aspects of nutritional and food security of citizens. This includes assurance for measures to revitalise agriculture, decentralised procurement and storage of food grains, access to drinking water, sanitation and health care, and pension for senior citizens. Despite pressure and demands from civil society, the Act does not include provisions for the homeless, destitute, and disabled. Some factors that contribute to the progressive realisation of food security are as follows: ensuring adequate food production; promoting small and marginal farming; decentralised procurement; and access to health, drinking water, and sanitation. Nutritional security is ensured through the provision of pulses and edible oil; universal coverage; adequate entitlement to food grains as per calorific requirements; protection from commercial interests in the food market; and scheduling. Law enforcement is likewise subject to a number of restrictions. Concerns about entitlements being diluted and coverage reduced as a result of pressure to reduce fiscal deficit, the replacement of food grains entitlement with cash transfers, and the poor performance of several right-based welfare laws enacted earlier due to inadequate political commitment and bureaucratic accountability are a few of these. [10]

Review of Literature:

Global concern over climate change is growing. It can be characterized as an artificial alteration to the local climate. Climate change is defined by the UNFCCC as "a change in climate that is additional to natural climate variability observed over comparable time periods and that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere." While our understanding of how crop productivity is sensitive to climate change has advanced significantly, there is still a dearth of data regarding how climate change affects food security. [11]

The characteristics of the agro ecosystem where specific climate-induced changes in biochemical processes are occurring must be taken into account in the evaluation of the effects of climate change on agricultural production, food supply, and livelihoods based on agriculture in order to ascertain the extent to which such changes will be positive, negative, or neutral in their effects (FAO-2008 P. 21). The greenhouse fertilization effect will produce local beneficial effects where higher levels of atmospheric CO₂ stimulate plant growth. This is likely to occur mostly in temperate zones with yield expected to improve by 10 to 25%. (IPCC, 2007c) It is unlikely that these changes will have an impact on global food supply estimates (Tubiello et al., 2007). [12]

The world currently has a high level of food insecurity, with between 720 million and 811 million people suffering from undernourishment and roughly 2.3 billion from malnutrition. This is significant when taking into account the Sustainable Development Goal 2, which calls for achieving Zero Hunger by 2030. According to the Integrated Food Security Phase Classification (IPC), (2022), which distinguishes between acute and chronic food insecurity, there are currently 200,000 people experiencing catastrophic food insecurity, 32.3 million

experiencing emergency food insecurity, 112.3 million experiencing crisis food insecurity, and 210 million experiencing stressed food insecurity. First-level outcomes (alterations in food consumption and livelihoods), second-level outcomes (nutritional status and mortality), and contributing factors (food availability, access, utilization, and stability, hazards and vulnerability) are all taken into consideration when determining these IPC classification criteria (IPC Global Partners 2021). [13]

Furthermore, it is anticipated that the effects of climate change on food security and nutrition will be more severe and likely to occur. The degree of greenhouse gas (GHG) emissions and shared socioeconomic pathways (SSPs) determine when these effects occur and how well we can react to them. Up until 2050, there may be a little increase in the severity of the hazards to FSN brought on by climate change. Nonetheless, there is evidence that the dangers associated with climate change to food safety nets (FSN) are expected to intensify beyond 2050 and reach 2080 (Bezner Kerr et al., 2022). [14]

Reiterating that the idea of food security stems from sporadic worldwide food crises is Berry et al. Prices for agricultural commodities were extremely unstable as a result of the economic crisis of the 1970s, which was supported by the oil and currency markets. A new approach to food security that took into account the essential requirements and behavior of potentially susceptible and impacted individuals was required due to the recurrent occurrence of famine, hunger, and food crises. Following that, food security was reinterpreted when the world came together for the 1974 World Food Conference and agreed upon a definition that included "[the] availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices." Since it was estimated that 25% of the world's population suffered from macronutrient famine in 1970 (and more recent adjustments by the FAO suggest that as much as 30% were hungry at the time), the focus of this definition has been on greater production. [15]

Jarosz notes a change in the way the World Bank and UN Food and Agricultural Organizations (FAO) define food security in their publications. At first, the emphasis has been on achieving food security on a global and national scale, with a particular attention to households and gendered individuals. The distinctions between the wealthy and the poor, the powerful and the weak, are further highlighted by this paradigm shift from the global level of world regions and countries to the level of impoverished households and people. [16]

Objectives:

- A focus on climate change and its impact on food security
- To study of Food and Nutrition Security in the light of Climate Change
- Climate Change and Food Security in India

Research Methodology:

The study expands upon secondary data from current, pertinent literature on food security in a changing environment. This analysis only included pertinent English-language papers that were found primarily through Google Scholar searches for relevant research outputs. Several terms were used interchangeably in the search, such as "food systems and sustainability goals," "food security and climate change," "food security and human health," "food security and food supplies," "food insecurity and developing countries," and "smallholder farmers and climate change."

Result and Discussion:

About two thirds of the people in India work in agriculture, making it a country based mostly on agriculture (Figure 1). With agriculture accounting for roughly 16% of the GDP, it is vital to the general economic and social well-being of society. Climate is a major factor in agriculture, and annual fluctuations in temperature and precipitation can make a big difference between a bountiful crop and financial catastrophe. [17] The population employed in the agriculture industry is now more vulnerable on a social and economic level as a result of these

global climatic changes (Aggarwal et al., 2004). According to Sinha and Swaminathan (1991) and Aggarwal and Kalra (1994), a 2°C increase in mean air temperature can reduce rice production by up to 0.75 tons/hectare in high yield areas and by 0.06 tons/hectare in low yield areas. Similar conditions (2°C rise) are predicted to cause a shift in wheat's iso-yield lines towards the north and a reduction in the area under cultivation. [18]

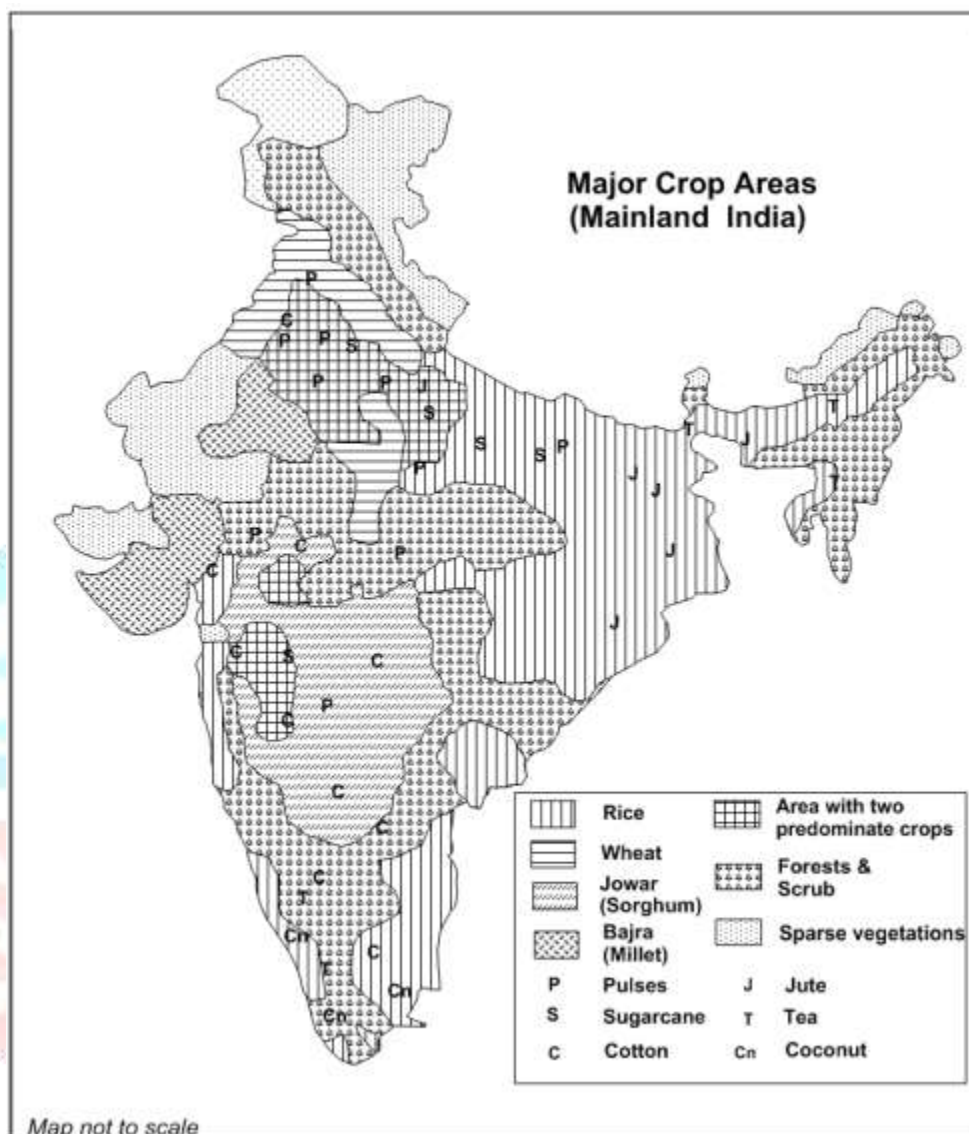


Figure 1: Major cropping regions of India (modified from map 501057, <http://www.lib.utexas.edu/>).

Due to the fact that farmers who practice rain-fed agriculture are the poorest and most susceptible, climate change will have a more noticeable effect on this sector, which accounts for 60% of all cropland in India. Despite the fact that climate change is widely acknowledged as a significant obstacle to sustainable development, there are few and dispersed studies on the effects of global climate change on India's socioeconomic structure. Research on the accessibility, availability, and affordability of food is critically needed in India, a nation heavily dependent on agriculture, in order to make national and regional development strategies more climate change-resistant. [19,20]

Climate Change and Food Security

Despite the fact that the food system seems straightforward—a farmer eating his own produce—very few households are self-sufficient in terms of food security. The system is becoming more sophisticated and has the ability to adapt to the concurrent changes in the climate, economy, and social structure. [21] Following the green revolution, agricultural output intensified, which led to significant changes in food systems and security in the areas of distribution, marketing, affordability, and preferences. The impoverished farmers in the warmer

climate zones are more affected by the changes, though, because their agricultural system offers fewer coping mechanisms. The availability of water resources and patterns of land use are significantly altered by climate change, which also has an impact on global food security. The human contexts and bio-geophysical elements related to the production, processing, distribution, and consumption of food are included in the concept of food security (Figure 2). The following elements are involved in food security: [22, 23]

- Availability: Sufficient amounts, high-quality, and diverse food suppliers
- Access: Cost-effectiveness and distribution of food according to personal preferences

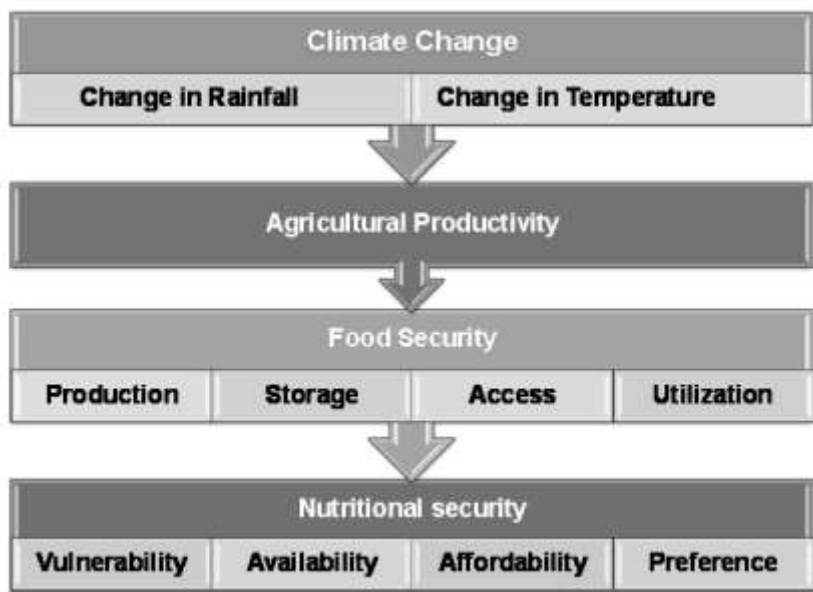


Figure 2: Components of climate change, food security and nutritional availability [24]

- Utilization: Safe and sufficient food to suit physiological requirements of the individual such as health and nutritional values
- Stability: The ability to get meals on a regular basis over an extended period.

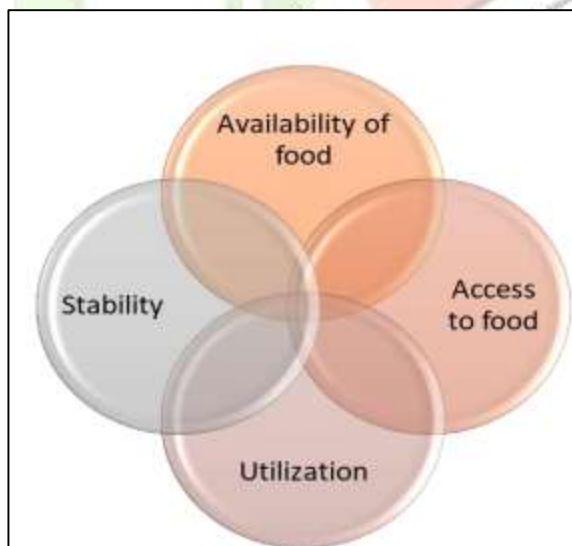


Figure 3: food security involves following components [25]

Climate change and food security in India:

The primary objectives of the Sustainable Development Goals (SDGs) are to eradicate hunger, attain food security, and enhance nutritional status. India continues to place a high priority on food security because the nation's comparatively rapid economic expansion hasn't resulted in a decline in hunger or undernutrition. Between 1990–1991 and 2013–2014, India's gross domestic product at factor cost and per capita income increased at annual rates of 7% and 5%, respectively. The incidence of undernutrition has decreased somewhat from 210.1 million in 1990 to 194.6 million in 2014, and India has not succeeded in halving the percentage of the population that experiences hunger, according to international standards. The Global Hunger Index places about 12 Indian states in the "alarming" range. The percentage of underweight children under five years old is much higher in states like Madhya Pradesh (42.8 percent), Andhra Pradesh (31.9 percent), and Bihar (43.9 percent), according to the National Family Health Survey 2015–16. [26,27]

Low productivity in Indian agriculture is one of the main problems it faces. Compared to industrialized places like North America (6671 kg per ha), East Asia and the Pacific (5,184 kg per ha), and the Euro area (5855.4 kg per ha), India's cereal yields are significantly lower (see Table 1). Table 2 demonstrates that yield per acre of foodgrains has stagnated in India since the 1980s. [28]

Table 1: Cereal yields (kg per ha, 2013)

Country/ Region	Kg per hectare
East Asia & Pacific (developing only)	5,184.0
Central Europe and the Baltics	4,131.1
Sub-Saharan Africa	1,433.5
Europe & Central Asia (all income levels)	3,661.6
Euro area	5,855.4
North America	6,671.0
India	2,961.6
World	3,851.3

Source: World Bank Database

Table 2: Growth rate of yield per hectare (%) of foodgrains

	Rice	Wheat	Coarse Cereals	Pulses	Total Foodgrains
1980-81 to 1990-91	2.7	3.4	2.6	2.0	3.0
1990-91 to 2000-01	0.9	1.7	1.3	-0.6	1.7
2000-01 to 2010-11	1.6	1.0	4.1	2.4	1.7
2010-11 to 2014-15	1.6	-1.0	3.1	1.9	1.8

Source: Reserve Bank of India database

Recent Government Initiatives

- **National Food Security Mission**

Launched in 2007, it is a Centrally Sponsored Scheme.

It attempts to boost production of rice, wheat, pulses, coarse cereals and commercial crops, through area extension and productivity development.

It aims to improve farm-level economy and restore soil fertility and productivity at the individual farm level.

It also seeks to decrease edible oil imports and increase the supply of vegetable oils.

- **Rashtriya Krishi Vikas Yojana (RKVY)**

It was started in 2007 and gave governments the freedom to select their own development initiatives for the agricultural and related sectors in accordance with the district/state agriculture plan.

In 2014–15, it was transformed into a Centrally Sponsored Scheme, same with 100% central support.

The Rashtriya Krishi Vikas Yojana (RKVY) will now be known for three years, from 2017–18 to 2019–20, as the Rashtriya Krishi Vikas Yojana- Remunerative Approaches for Agriculture and Allied Sector Rejuvenation (RKVY-RAFTAAR).

Objectives: Increasing farmer effort, reducing risk, and encouraging agribusiness entrepreneurship to turn farming into a profitable economic activity. Apart from fostering agri-entrepreneurship and innovations, pre- and post-harvest infrastructure is the main area of concentration.

- **Integrated Schemes on Oilseeds, Pulses, Palm oil and Maize (ISOPOM)**
- **Pradhan Mantri Fasal Bima Yojana**

E-marketplace: To link all regulated wholesale produce marketplaces via a pan-Indian trading platform, the government established the electronic national agriculture market, or eNAM. vast program of soil and water collecting, irrigation, and other measures to raise the nation's gross irrigated area from 90 million hectares to 103 million hectares by 2017.

Over the past 20 years, the government has also taken major action to tackle under- and malnutrition, including the start of midday meals in educational institutions. It is a Centrally-Sponsored Scheme which includes all school children studying in Classes I-VIII of Government, Government-Aided Schools.

Anganwadi systems to give nursing and pregnant women rations,

Grain subsidies provided by a public distribution system to individuals who fall below the poverty threshold.

Food fortification

According to the National Food Security Act (NFSA), 2013, the Targeted Public Distribution System allows up to 75% of rural and 50% of urban residents to receive subsidized food grains.

According to the Act, the head of the home for the purpose of issuing ration cards must be the oldest woman in the household who is at least eighteen years old. [29]

Conclusion

The impact of temperature and rainfall is only felt in the extremes, that is, when temperatures are substantially higher, rainfall is significantly lower, and the number of "dry days" is greater than normal. This is a crucial finding with important consequences as climate change approaches. Another important discovery is that the effects are considerably more detrimental in places without irrigation (and thus rainfed crops like pulses) than

in areas with irrigation (and hence crops like cereals). The consequences for policy are severe. Given the increasing shortage of water and the depletion of groundwater resources, India must expand irrigation. Well-irrigated areas include the Indo-Gangetic plain and portions of Gujarat and Madhya Pradesh. However, due to inadequate irrigation, some areas of Karnataka, Maharashtra, Madhya Pradesh, Rajasthan, Chattisgarh, and Jharkhand remain highly susceptible to the effects of climate change. Future defining challenges will include fully irrigating Indian agriculture, especially in light of water constraint and the inefficiencies of current irrigation schemes. The "more crop for every drop" campaign's focus on sprinkler, drip irrigation, and water management technologies could be crucial to the success of Indian agriculture in the future.

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