

## GROWTH OF POPULATION AND FOODGRAINS IN INDIA: IMPLICATIONS TO FOOD SECURITY

**Kishore Kumar Sutradhar**

*Research Scholar, Department of Economics, Gauhati University*

### **Abstract:**

In a country like India, achieving food security can be considered as one of the global imperative to end hunger, malnutrition and promote sustainable agriculture. The present study is meant to provide overall insights of the status of macro-level food self-sufficiency and food security in India. Based on secondary sources of data, the study found that being one of the largest producers of agricultural commodities; India has significantly expanded its food production during the last 50 years especially with the advent of Green Revolution. India has done well to expand food production and build up adequate safety stocks of food grains. This growth has helped India to transit from being a food-deficit nation to a self-sufficient food-producing country. Tremendous progress has been made in food self-sufficiency, and even exports of food. However, import of food grains are still there. Moreover, a large section of people suffers from food and nutritional insecurity in India.

**Key Words:** *Food Security, Nutrition, Population Growth, Green Revolution, Self Sufficiency.*

### **Introduction:**

The Classical Malthusian Theory of Population postulated the proposition that the population will grow in geometrical progression and food supply in arithmetical progression (Malthus, 1798). In consonance with his notion, there has always been a possibility that the growth rate of food production will always lag behind the growth rate of population. On the ground that, this period has been characterized by rapid growth in population and acute shortage of food. Despite many criticisms, this Malthusian view was applicable in developing countries for a long period of time. However, the modern economists have challenged the validity of the Malthusian theory. Adoption of modern technology and other strategies has helped in transforming the agricultural activities worldwide and the consequent food insecurity. Especially in recent times, as we delve into the United Nations' **Sustainable Development Goals (SDGs)**, we are focusing upon ending hunger, achieving food security and improved nutrition; and promoting sustainable agriculture.

India, the world's most populous nation which is a home to 17.76 percent of the world's population with only 2.4 percent of the world's land area is one of the emerging economies of the world. It may be thriving economically, but still dogged by poverty and hunger. In the Global Hunger Index, 2021, India ranks 101st out of 116 qualifying countries of the world. Forty-Six million children in India remain stunted and 25.5 million are defined as wasted. It is

usually the result of acute shortage of food and disease. A very high growth rate of population will exacerbate climate change effect which reduces agricultural yields and nutritional value of the crops. The increasing population has also resulted in demand for residential land leading to a decline in the agricultural land with an affect of more pressure on agricultural land to produce crops to feed the growing population. Therefore, this serious situation of population explosion and low agricultural productivity is attributable to inadequate access to food for everyone in the country. Hence, India's biggest challenge remains at ensuring food and nutritional security to its masses. The present paper tries to look into how the country has been coping up with the production of food for it's over growing population.

### **Meaning of Food Security:**

In common parlance, the concept of food security indicates access of food to all of the country at all times. The World Development Report (1986) defines food security as "access by all people at all times to enough food for an active, healthy life". The Food and Agricultural Organization (1983) defines food security in terms of "ensuring that all people at all times have both physical and economic access to basic food they need". Therefore, food security emphasizes mainly on ---

(i) Availability of food for the whole population, (ii) ensuring enough purchasing power in the hands of the people for purchasing food, (iii) providing adequate quantity and quality of food for meeting required nutritional value and (iv) proving timely and nutritional required adequate supply of food on long term basis.

Thus, the main objective of the food security system is to ensure sufficient production, availability and accessibility of the food to the individuals through an effective public distribution system. In fact, food security is the vital pre-requisite for an active and healthy life of individuals and for the economic security which leads to national security and other forms of social security like health and education and employment opportunity (Kalam, 2004).

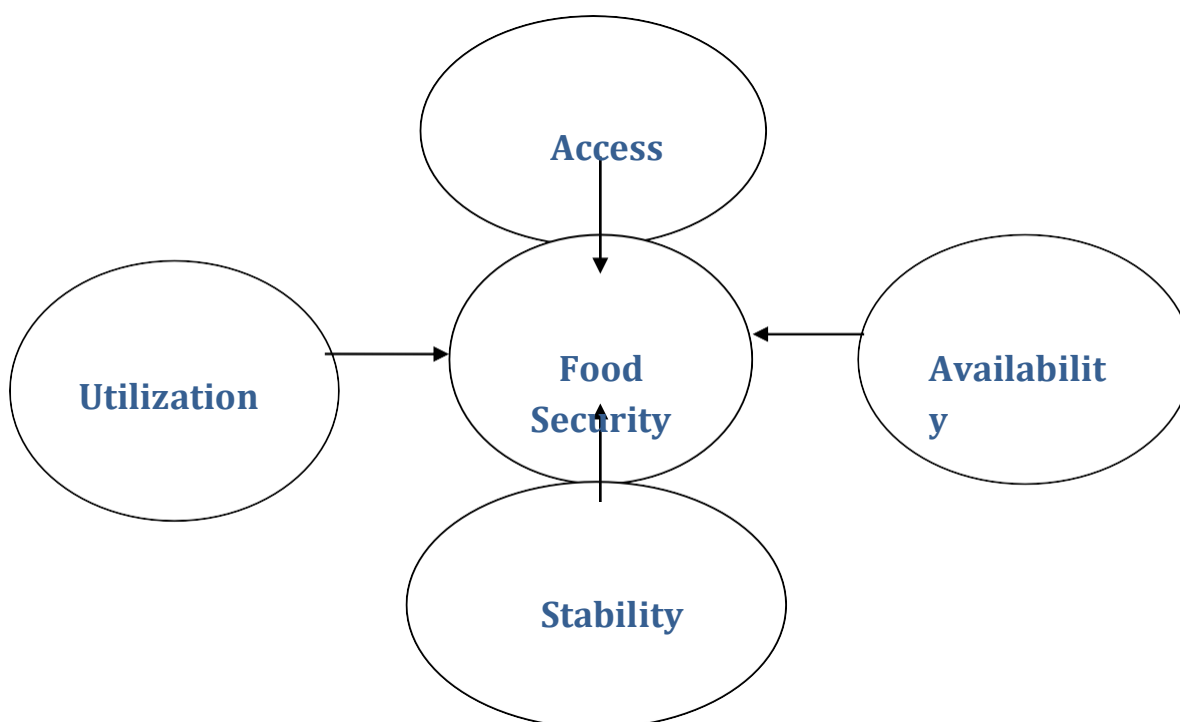
### **Review of Empirical Evidences:**

The concept of food security is relatively a new emergence. It originated in the mid 1970s in the discussion of international food problem at a time of global food crisis (FAO Corporate Document Repository). However, food security has evolved and developed in the nineties. There are no commonly agreed views on the concept of food security. FAO, 2002 defines food security as "a situation that exists when all people, at all time, have physical, social, economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. The concept has further been refined and enlarged, as elaborated by the National Commission on Farmers (NCF, 2006), which implies that every individual has the physical, economic, social and environmental access to a balanced diet that includes the necessary macro and micro nutrients, safe drinking water, sanitation, environmental hygiene, primary health care and education so as to lead a healthy and productive life.

The food security issue is essentially an integration of three sub concepts: food availability, food accessibility and food utilization (Awasthi and Singh, 2010). Therefore, food security can be studied from three different viewpoints. First, availability of food which depends upon production; second, access to food that is guided by purchasing power; and third, food absorption or utilization. Food absorption implies being able to assimilate the food consumed in order to live a healthy and long life. This can come about with good sanitation facilities and better health care infrastructure. Nutritious and safe diets, an adequate biological and social environment, a proper health care to avoid diseases ensure adequate utilization of food (Gross, Schoeneberger, Pfeifer and Preuss, 2010).

Swami Nathan & Bhavani (2011) asserted that the optimality of food production and essential prerequisites are main elements of sustainable food security. Hence, apart from availability and accessibility of food, stability can be referred as another significant determinant of food security. In fact, these concepts are inter-related and overlapping as expressed in the following figure:

Figure: 1 Food Security and its Dimensions



Thus it is observed from the figure-1 that food security is collectively determined by its availability, accessibility, utilization and sustainability. These concepts are inseparable from each other and hence overlapping.

Food availability means the availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid). Food accessibility on the other hand implies access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. The dimension of utilization indicates utilization of food

through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security. Finally, stability refers that to be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food security) The concept of stability can therefore refer to both the availability and access dimensions of food security.

Thus food security is ensured in a country when sufficient food is available for everyone, if everyone has the adequate capacity to purchase food of acceptable quality and no individual face any difficulty in accessing the essential food for a happy life.

In Indian context, the government of India has been actively addressing the food security for a long time especially with the adoption of different Economic Planning in India. More specifically, with the aim of augmenting food production in the country, India had adopted a new strategy known as “Green Revolution” in the early seventies. As a result, since 1970-71, food production in the country has increased at a trend rate close to 3 percent while population growth in the same period was 1.86 percent. Further, in the recent years, there has been a deceleration in the growth of population whereas, food production remain intact. Clearly, per capita production of total food has witnessed exponential growth. Therefore, some experts argue that India represents a paradoxical situation of “*hunger in the midst of plenty*”. Probably, there has been transformation in the food security situation in India even when the population has almost doubled. In this backdrop, the present study has the following one important objective:

### **Objectives and Research Methodology:**

(i) To study the status of macro-level food self-sufficiency and security in India.

The study is entirely based on secondary sources of data. The study is descriptive in nature. Quantitative data have been analyzed using averages, percentages, bar diagrams; pie chart etc. and qualitative data have been reported in narrative forms.

Having outlined the detailed research agenda in the previous section, here an attempt has been made to have an idea about the trends in population growth and production of food grains. For this exercise, we have presented both the trends in following table-1.

Table-1. Population Growth and Food Production in India, 1951-2021.

Year	Population (in Crore)	Net production of Food grains (in Million Tonnes)	Population Growth Rates	Growth Rates of Food Grains
1951	36.10	48.10	-----	-----
1961	43.92	72.0	21.66	49.68
1971	54.82	94.9	24.82	31.80
1981	68.33	113.4	24.64	19.49
1991	84.63	154.3	23.85	36.06

2001	102.70	172.2	21.35	11.60
2011	121.01	213.9	17.82	42.27
2021	140.75	278.4	19.74	30.15

Source: Department of Food and Public Distribution,  
Directorate of Economics & Statistics, Department of Agriculture and Cooperation

From the Table-1, it is evident that the India's population was only 36.10 crore in 1951, hereafter, it has been increasing continuously over the years which reached 140.75 crore in 2021. On the other hand, the net food grains production has also been increasing since 1950. However, there is clear distinction between the two. This is so because, the population growth rate has increased between the years 1950 to 1981 at an increasing rate, but it got increased at a decreasing rate in years after 1981. However, if we look at the growth rate of food production, it is observed that although the production is growing but such growth rates are uneven over the years. The year 2021, even recorded a decline in growth rate of food grains over the preceding decade of 2011. This implies that there has been a remarkable fluctuation in the food grains production over the years. However, India is undoubtedly moving in the path of more food production and thereby self-sufficiency particularly over the last three decades.

In overall, it indicates that the population is increasing rapidly, but food grains production has not increased up to that extent and it was very slower in 2001. This clearly indicates that an imbalance between the population growth and the growth of food grains. Thus it may be commented that although Indian food production has a much higher increase, but perhaps it is not sufficient to the fulfillment of Indian needs of food grains.

The analysis of the growth rates of population and food production provides an insight of the status of India's food security or sufficiency over the last 70 years. However, for a more meaningful and deep idea, we need to have a closer look at the demand-side analysis of the food as put forwarded below.

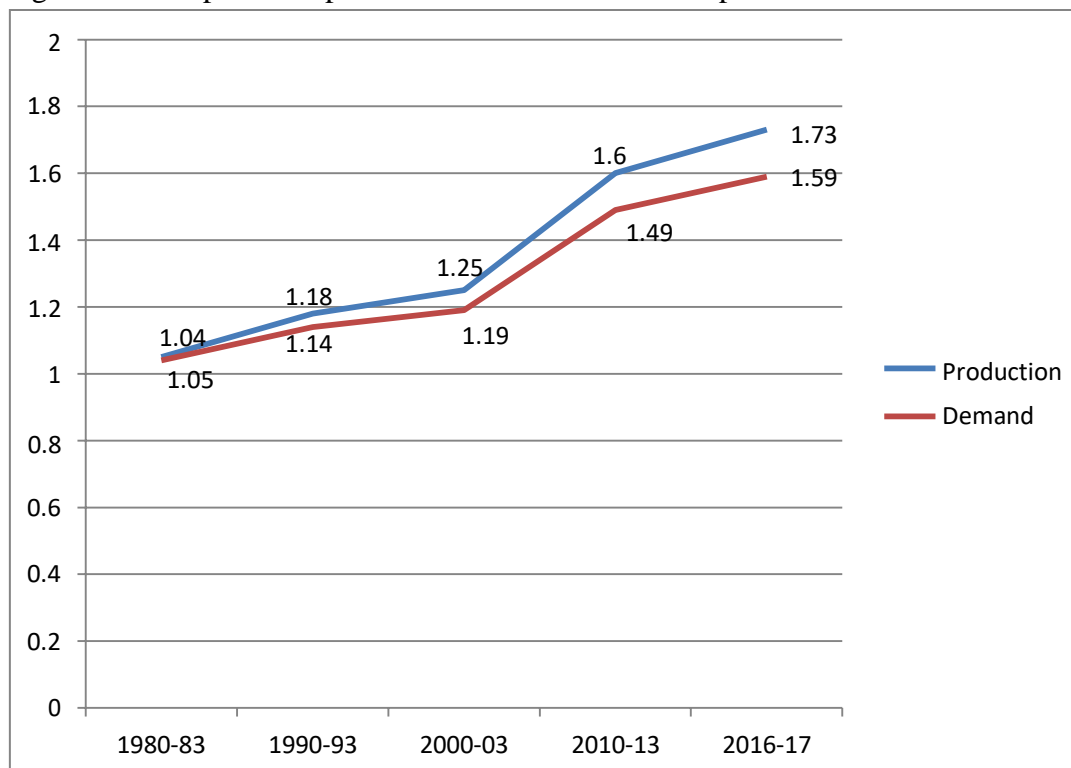
### **A Demand-Side Analysis of Food Production:**

The substantial increase in food grains production has resulted in significant shifts not only in production trend but also in the availability of food grains. But what is more important is that whether increase in food grains production would be sufficient to meet its increasing demand in the time to come. For this exercise, a comparison of per capita food production with that of domestic absorption has been presented in following figure-1.

As it can be observed from the figure-2 that, the domestic production is more than the domestic absorption. During the early 1980s, the domestic production and consumption were almost same i.e., more than 1 kg per person per day. But in recent years (2016-17), the production has gradually increased to 1.73 kg, whereas, domestic absorption increased to 1.59 kg. This indicates the continuous increase in the food surplus of the country in recent years. Thus, from facing a food shortage in 1964 to becoming a food grain-surplus nation, we've come

a long way with the adoption of Green Revolution. It was one of the various struggles the country had to undergo in meeting food demand for its burgeoning population.

Figure-2 Per capita food production and domestic absorption 1980-83 to 2016-17



Source: Author's estimate derived from:

Agricultural Statistics at a Glance, Ministry of Agriculture, GOI

However, on the flip side, we come across another fact that the country barely has enough to feed its own people, let alone be self-sufficient or a net exporter. The country is still home to 270 million hungry people, the highest in the world. India stands 97th in Oxfam's Food Availability Index, and 101st in the 2021 Global Hunger Index. This implies that much of the under nutrition in India is not due to the availability of food but it may be due to low food intake by Indian Consumers. Thus there is a need to address this issue and a complete shift in food policy from shortage management to surplus management. According to some observers India represents paradoxical situation of "hunger in the midst of plenty". This may be due to high poverty, low income or adequate purchasing power of a bulk of population of the country. Although, food production has exhibited an increasing trend, but it doesn't guarantee an equal access to food for all until and unless India adopts a comprehensive and inclusive food security policy for all. But the most surprising fact is that the country exported 20.4 million tonnes of agricultural produce in 2015-16, and 22.3 million tonnes in 2017-18. Interestingly, it imported 8.1 million tonnes in 2015-16 and 9.4 million tonnes in 2017-18. On the face of it everything seems fine, but the country has been importing food grains on a large scale. Food grain imports indicate how



insufficient the country is in staple food production. In 2015-16, food grains accounted for 79 per cent of the imported agricultural produce; the figure was 78 per cent the following year (Ministry of Agriculture, Government of India, 2019). Therefore, we cannot claim that India is a self-sufficient in feeding its people. Food production does not translate to food security. We claim to be a net exporter country. This is not true. If we distribute food grains equally among people during the years of surplus production, we will prove to be in deficit. Instead of producing in surplus, we are actually struggling to be self-sufficient. In aggregate, we export some crops and also import some. Despite the increase in imports of agriculture products, our country is net agro-exporting country. We will reach self-sufficiency within a few years. As we move towards being food surplus, we should change our strategy and shift towards producing more nutritious food than food grains. In the face of nutritional deficiency and hunger, the country should focus on farming to imports. Above all, accessibility and affordability are vital for food security in India.

Now, let us engross on the scenario of the India's nutritional level to have a portrait on the stage at which the Indians are thriving at present in terms of food sufficiency. This essay will help in identifying the status of actual food security scenario in the country. The following subsection examines this issue.

### India's Nutritional Scenario:

As discussed above, as we move towards being food surplus, we should change our strategy and shift towards producing more nutritious food than food grains. In the face of nutritional deficiency and hunger, the country should focus on ensuring adequate nutrition among its population. In the table-2, we have presented the percentage of people who unable to afford healthy food in India and world.

Table-2 Percentage of Undernourished People and Who Unable to Afford Healthy Food

Year	Prevalence of undernourishment in the total population (in percentage)		Percentage of people who unable to afford healthy food	
	India	World	India	World
2004-06	21.4	12.0	-----	-----
2020-21	16.6	9.2	74.1	42.2

Source: The State of Food Security and Nutrition in the World Report-2021.

From the data presented in the table-2 demonstrate that about 74 percent of the Indian population can't afford healthy food. Put differently, more than 100 crore people in India are in a position to eat food with insufficient nutrition. While only 42 percent of the global population can't afford food, in India it is 74 percent. The unaffordability of healthy food mounts for malnutrition and undernourishment. If we compare the undernourishment situation in India and the world, it can be observed that a total of more than 21 percent of India's population were undernourished against only 12 percent in the world in 2004-06. However, over the period of last 15 years, it has declined to 16.6 percent in India and 9.2 percent in the world. Therefore, although India is doing well in achieving sufficiency in food production, it doesn't translate to food security. Its status of unaffordability and undernourishment are the indicators of poverty, nutritional deficiency and hunger. It a sign of food insecurity in real sense. Therefore, a merely increase in production of food grains does not necessarily ensure food for all. The solution lies in collective actions such as equity, affordability and accessibility and effective distribution mechanism. Conclusively, to promote inclusive progress in security, the government and the nation's people need to collaborate cohesively.

### **Conclusion:**

Food security of a nation is ensured if all of its citizens have enough nutritious food available, all persons have the capacity to buy food of acceptable quality and there is no barrier on access to food. Being one of the largest producers of agricultural commodities, India has significantly expanded its food production during the last 50 years especially with the advent of Green Revolution. India has done well to expand food production and build up adequate safety stocks of food grains. This growth has helped India to transit from being a food-deficit nation to a self-sufficient food-producing country. Tremendous progress has been made in food self-sufficiency, and even exports of food. However, import of food grains are still there. Moreover, a large section of people suffers from food and nutritional insecurity in India. Therefore, a merely increase in production of food grains doesn't necessarily ensure food for all. The solution lies in collective actions such as equity, affordability, accessibility and effective distribution mechanism. Conclusively, to promote inclusive progress towards food security, the government and nation's people must collaborate cohesively.



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