

# Food Crisis and Sustainable Food Security in India

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## Abstract

The world population is rising rapidly over the growth of food grains and as a consequence food crisis arises. There are now more than a billion malnourished people in the world meaning that almost one sixth of humanity is suffering from hunger. Fertility of land has been reduced due to over exploitation, excessive use of chemical fertilisers, insecticides and pesticides. Due to indiscriminate deforestation the amount of rainfall reduces and land erosion takes place. Natural calamities like droughts, floods, cyclones, global warming, melting glaciers, raising sea level etc. are increasing and environment is degraded. As a result the production of food grains decreases and made food crisis at a global level. Not only that sometimes food crisis arises not due to food shortage, there is enough food in the stock though some people are in starvation due to some failure of public distribution system. The crisis not food crisis, it is the policy crisis of the government. This is a tragedy from food surplus to food scarcity. This paper concentrates on sustainable food security in the long-run in a sustainable eco-friendly manner to cover the benefit every person not only for the present but also for the future generation.

**Kew words:** Sustainable, public distribution system, body mass index, bio-fuels, green revolution, below poverty line

## 1. Introduction

For an individual three basic essential things are required for his survival: food, clothing and shelter. In the primitive community when man lived in jungles he did not have clothing or even shelter. But he needed food to survive. Animals can live without clothing or shelter but also need food. Plants also need food. While plants can make their own food man and other animals have to produce or collect food. Thus for all living beings food is the most essential component of life. It is necessary for getting energy which man needs for doing different works. Even when a man is sleeping his major organs like heart or lungs remain active. These are functioning from birth to death at a stretch. To continue these activities energy is required which can be derived from food. On an average intake capacity of 2250 Kcal. per person per day is required Dieticians prescribe the amount of amount of calories that an individual needs and how much calorie can be obtained from which type of food. For healthy one required balanced diet. In the absence of adequate and balanced food one suffers from hunger and mal-nutrition which causes many diseases. Several famines and epidemics are results of lack of food.

## 2. Sustainable Development

Sustainable development is a pattern of resource use that aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for future generations. The term was used by the Brundtland Commission which coined what has become the most often-quoted definition of sustainable development as development that “meets the needs of the present

without compromising the ability of future generations to meet their own needs". It is usually noted that this requires the reconciliation of environmental, social and economic demands - the "three pillars" of sustainability. This view has been expressed as an illustration using three overlapping ellipses indicating that the three pillars of sustainability are not mutually exclusive and can be mutually reinforcing. Sustainable development ties together concern for the carrying capacity of natural systems with the social challenges facing humanity. As early as the 1970s "sustainability" was employed to describe an economy in equilibrium with basic ecological support systems [Wikipedia]. A primary goal of sustainable development is to achieve a reasonable and equitable distributed level of economic well being that can be perpetuated continually for next generation. Thus the field of sustainable development can be broken into three constituent parts i.e. environmental, economic and social sustainability. It is proved that socio- economic sustainability is depended on environmental sustainability because the socio- economic aspects, like agriculture, transport, settlement, and other demographic factors are born and raised up in the environmental system. All the environmental set up is depended on a piece of land where it exists. Sustainable land management is necessary for sustainable food security.

### **3. The Concept of Food Security**

World Development Report (1986) defined food security as "access by all people at all times to enough food for an active, healthy life. According to Food and Agricultural Organisation (FAO) of the UNO, "Food security exists when all people at all times have access to sufficient and nutritious food to meet the dietary needs and food preference for an active and healthy life." Staatz (1990) defined food security as "The ability to assure, on a long term basis, that the food system provides the total population access to a timely, reliable and nutritionally adequate supply of food." Thus food security may be of short-term or sustainable. In case of short-term food security we consider food security of the present population only. But in case of sustainable food security we consider the food security not only of the present generation but also of the future generation as well. According to Swaminathan, "Sustainable food security means enough food for everyone at present plus the ability to provide enough food in future as well." In the long-run sustainable food security is very important.

According to the Ministry of Agriculture of the Government of USA, "Food security for a household means access by all members at all times to enough food for an active, healthy life. Food security includes at a minimum (i) ready availability of nutritionally adequate and safe foods and (ii) assured ability to acquire acceptable food in socially acceptable ways." Here food security refers to sustainable food security. From the above definition we can get three conditions for sustainable food security. i) For food security availability of food is required. The availability or supply of food comes from domestic production and import from foreign countries. ii) Food security requires access or entitlement to food. Now entitlement comes either through the market system or through the social security system of the government. Members of households earn income by participating in production process. They spend their income to purchase food from the market. Now suppose there arise a situation due to low income members of the household will not have enough money to buy food from the market. Then, even food is available in the market common people will not be able to purchase food due to lack of purchasing power and food security will be hampered even though there is not scarcity of food in physical units. Suppose in lean season agricultural labourers have no work to perform and hence no earning income. Then they will not be able to purchase food due to lack of purchasing power even though enough food is available for sale in the market. In such a situation social security system can be used for maintaining access to food. For example the Government can offer employment to the agricultural labourers under the "Food for Work" programme and thereby they can earn income to purchase food from the market. Similarly purchasing power may be provided to the old and the invalid through transfer payments made to them. In this way entitlements to food can be created either through the market or through the social security system. Many opined that the main cause of food crisis and famines were the non-availability of food supply. But in practical experience we saw that even there was no food deficit famines have occurred in many countries due to lack of

entitlement to food. The Nobel laureate economist A. K. Sen has given many examples of such famines in his analysis in different countries of the world. He argued that there was enough food in the world to feed everyone adequately but the problem was fair public distribution system (PDS) of food and hoardings by traders to rise in price to make profit. The crisis not food crisis, it is the policy crisis of the government. iii) Food absorption is necessary for food security. It is not sufficient to take food only to satisfy the hunger. It is necessary to see to it that the food taken is absorbed in the digestive system and provides nutrition to the body. For this we need pure and safe drinking water, hygienic environment to live, primary health awareness and provision of basic education to keep the environment clean and healthy.

The World Food Summit of 1996 defined food security as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”. Commonly, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. In many countries, health problems related to dietary excess are an ever increasing threat. In fact, mal-nutrition and food borne disease are become double burden. Food security is built on three pillars: i) Food availability-sufficient amount of food is available on a consistent basis, ii) Food access-having sufficient resources to obtain appropriate foods for a nutritious diet and iii) Food use- appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation.

#### **4. Reasons for Global Food Crisis**

From the above discussion it is clear that only increase in the supply of food is not sufficient for solving the food crisis to maintain food security. Apart from population growth the important causes of global food crisis are the followings:

##### *4.1 Growth of Population*

Rapid growth of population over the world is the main cause of food crisis. According to Malthus population increase at G.P. rate while the supply of food increase at A.P. rate i.e. population grow at a higher rate than the food supply and create food scarcity. This shortage of food gives rise to famines, epidemics, food riots etc. Due to these calamities a part of population is eliminated and a natural balance between population and food supply is established only in the short-run because again population begins to grow at a faster rate than food supply and the economy again moves to food crisis. In this way food crisis arises in an economy at a regular interval. Malthusian theory is based on the agrarian economy which follows the law of diminishing return with no technological progress. By introducing new improved technology it is possible to postpone the operation of the law of diminishing return. By means of this introduction of new innovative techniques in agricultural production the western countries of the world are able to escape from this. Even if the Malthusian theory has been discarded, the shadow of Malthus is still haunting us.

##### *4.2 Rise in the price of oil*

The main reason for increase in food prices all over the world is increase in the price of crude oil and devaluation of U.S. dollar. We know that there is a persistent deficit in the current account of the balance of payments of the U.S.A. To meet this deficit the U.S.A. has to purchase more units of foreign currency. As a result the price of U.S. dollar in terms of foreign currencies is decreasing. Now The OPEC countries fix the price of oil in terms of U.S. dollar. Since the value of dollar is falling in terms of foreign currencies OPEC countries will get less revenue in terms of domestic currency even if they get same revenue in terms of U.S. dollar. To compensate this OPEC countries are forced to increase in the price of crude oil. Since OPEC countries virtually produce nothing other than oil, they have to

import most of the necessities of life. In this way as the value of U.S. dollar falls in the international market the price of oil increases in international market. Moreover there is a close relationship between increase in price of oil and increase in price of essential commodities. As a result the transportation costs and the cost of production (because oil is used as fuel in the production process of many commodities) increases. Finally price of food particles increase as a result of increase in price of oil.

#### *4.3 Commercialization of agriculture*

Crisis of energy is a global problem today. As the price of oil rises bio-fuel is used as an alternative source of fossil fuel. Bio-fuel is produced from agricultural produce like oil seeds, food grains. Apart from this food products are also used for extracting ethanol. The US utilized 20% of its corn in the year 2007 to 32% by the year 2016 to produce ethanol. As the price of crude oil raised the US has set a target for producing 25 billion gallons of bio-fuel in the next 10 years and Europe has set a target of 5.75% of its diesel needs extracting from plants 2011. The China is extracting ethanol not only from corn but even from rice and wheat. These tendencies of the developed countries are the main responsible for food crisis. Due to this commercialization of agricultural products production of food grains decreases. Finally the supply of food grains is decreasing in the global market prices of food grains are raising day by day.

#### *4.4 Industrialization*

Production of food grains is also decreasing due to increased use of land (which is fixed in supply by nature) for non-agricultural purposes. Due to rapid urbanization in building roads, houses, factories etc even the fertile land is used for non-agricultural purposes. Norman Borlaug rightly told, "When people fail to recognise farmers' role in feeding the country, be sure there is something terribly wrong happening." Most of the developing countries believe that industrialization is the only key indicator for economic development and increase in national income. Hence even if they have comparative advantage in agriculture they are bent on industrialization at any cost. Even fertile agricultural lands are being used for setting up industries. As a result the production of food grains is gradually decreasing.

#### *4.5 Environment pollution*

Environmental pollution is indirectly responsible for food crisis. In the last few decades several measures have been adopted for increasing agricultural production which has adverse effects on natural environment. Fertility of land has been reduced due to over exploitation, excessive use of chemical fertilisers, insecticides and pesticides. Due to indiscriminate deforestation the amount of rainfall reduces and land erosion takes place. Natural calamities like droughts, floods, cyclones, global warming, melting glaciers, raising sea level etc. are increasing and environment is degraded. As a result the production of food grains decreased and made food crisis at a global level. Naturally a question arises: Is environmental degradation not acceptable for meeting the food crisis and maintaining food security? In answer to this question it can be said that additional food grains can be produced in the short-run by degrading the environment but this food security will not be sustainable. This is so because food security for the present generation can be maintained by the degradation of the environment but then food security for the future generation cannot be maintained.

#### *4.6 Role of World Trade Organisation*

Under WTO free trade in agricultural products has been introduced. As a consequence developed countries are still protecting their agriculture but the developing countries are forced to reduce their agriculture. Under free trade production of food grains is considered unprofitable for many developing countries. Due to commercialisation farmers are producing more cash crops and less food crops and

thereby reducing food grains in the market. By intellectual property rights are now applicable to plants and farmers have to depend on multinational corporations for getting HYV seeds. Again in many cases multinational corporations are introducing genetically modified seeds which are harmful to the environment of the developing countries. For this reason also agricultural development of developing countries is hampered. Ultimately production of food grains fall and causes to food crisis.

#### 4.7 Water Scarcity

Scarcity of water is a global problem today (Bairagya R. and Chakraborty K. 2011). For agricultural production huge amount of water is required. Water scarcity is related to food scarcity at a global level. In most of the developing countries, population are primarily engaged in agriculture which is the primary source of income to maintain their livelihood. Again agricultural production is the gambling of rainfall. To raise agricultural productivity various dams have been made in an unplanned way which have adversely affected to the commons and the environment. To control flood and supply irrigation water the construction of big dams have rarely helped. In villages for irrigation many tube-wells and submersibles have been installed in an unplanned way (it should not be bored less than 1000 feet) which use the ground- water in a massive scale and consume a huge amount of electricity. As population raises the scarcity of food grains rises. Food scarcity is highly positively-correlated with water scarcity. According to Lester Brown, "Water shortage may soon become food shortage". Rice, wheat and sugar-cane together constitute 90% of total water consuming crops. From the economic point of view, return of water in industrial sector is many times more attractive than in agriculture. Approximately 1000 tons of water is required to produce only one ton of wheat. This monetary return is much lower than if this water is invested in industrial sector. In this case the non-food grains like fruits, vegetables and animal products for daily food intake should be raised as substitutes to rice and wheat.

### 5. Global Scenario

The official global poverty statistics, based on World Bank figures, the number of people living below the international poverty line of 1.25 US dollar per day fell from 1.82 billion to 1.37 billion between 1992 and 2005 (Global Poverty Guide 2011). China accounted for 475 million of the reduction, implying poverty has increased elsewhere over this period. In India and sub-Saharan Africa, the increase was 21 million and 91 million respectively. One third of global poverty is located in India and just over a quarter in sub-Saharan Africa. The main cause is not only the rising population but also the wealth of our new millennium has tended to increase in in-equality rather than to reduce poverty. UNDP has reported that in 2005 the richest 500 people in the world earned more than 416 million. The World Bank's Global Economic Prospects 2010 estimated that 64 million people are on the verge of extreme poverty. The measurement of poverty is not flawless and is subject to some criticism. The developed countries indexes are quite different to developing countries for the inclusion of commodity baskets to calculate the poverty. The World Bank follows the international poverty line. Based on India's poverty line national poverty rate is only 28% while it is 42% on the international basis. The prices of food particles are increasing not only in India but also in developed countries like U.S.A. and the U.K. Prices of essential food grains like rice, wheat and corn have been raising globally. According to FAO data food price index increased from 121 in 2006 to 274 in 2008. The major factor behind this rise in food grains is historic decline in the production of food grains all over the globe.

### 6. Indian Scenario

According to 2011 Census, India's population increases 181 million people from 1.03 billion in 2001 to 1.21 billion in 2011 (Visaria L. 2011). The decadal growth rate of population is 17.6% compared to 21.2% during 1991-2001 suggesting a slowdown of growth. The sex ratio of population has began to improve from 927 in 1991 to 933 in 2001 to 940 in 2011. The overall literacy rate is in 2001 is 745 with

82.1% male and 65.55 female literacy rate. The child sex ratio has fallen from 945 in 2001 to 927 in 2001 to 914 in 2011. At the end of October 2011, the world population crossed over 700 crores, China 135 crores and India 124 crores. Though India possesses only 2.4% of world geographical area it covers 17.71 % of total world population. It is expected that India will become the most populous country in the world by 2030 overtaking China. India's population size is expected to stabilize at 1.8 billion at 2041. The state Uttar Pradesh is the most populous state in India with 199.6 million people covering 16.5% of country's population. This high growth of population is main retarding factor of economic development. Poverty, in-equality, hunger, mal-nutrition, unemployment, food scarcity etc. are the curse for the society today. Reduction of population growth is essential to improve the socio-economic condition of the people and to secure sustainable food security.

Creating food-surplus as an important objective of planning. India realised that food-surplus country dictated the food-deficit countries. India suffered very severe droughts during 1965 and 1966 and at the same time the American President restricted food aid to monthly basis under P.L.480 programme. Moreover imports of food grains may be a temporary tranquiliser for the country to raise food supply but for permanent cure she must be raised its food production. Later the Prime Minister Indira Gandhi went in for seed-water-fertiliser policy popularly known as "Green Revolution". After the introduction of this policy India achieved self-sufficiency in food grains by the year 1976 and onwards (except in 2006-2007). The per capita availability of food grains increased from 395 grams to 445 grams per day during the period 1951 to 2007 (Datt R. and Sundharam K.P.M. 2010).

In spite of that, according to National Family Health Survey (NFHS) in 2006, 46% of children below 3 years are underweight, 33% women and 28% men have a Body Mass Index (BMI) below the normal, 79% of children aged 6-35 months have anaemia, as do 56% of married women aged 15-49 years and 24% of similar men, and 58% of pregnant women (Ghosh J. 2010). During the period 2003 to 2008 India's population increased by 8% while food grains increased by 5% only. All these indicators show the food scarcity in India and even in rural India the situation is worse.

## **7. Food Policy of the Government of India**

The food policy of the government of India has two components. One is to sell food grains at subsidised rates through the PDS and the other is fixation of minimum support price of food grains and procurement of food grains to build stock through the levy system. In the PDS, the food grains are sold to below poverty line (BPL) families at lower prices and to above the BPL families at higher prices which is called targeted PDS. In order to sell food grains through the PDS the government purchase food from the market. Sometimes purchases are made directly from the producers and sometimes purchases from the traders through the levy system. The levy system requires that traders can sell food grains in the market only they have sold the levied amount to the government. Declaration of minimum support price ensures that market price does not fall below this level so long as the government is prepared to purchase the entire quantity which is offered for sale at this price. By this system both the producers and consumers are directly benefitted by getting fair prices.

### **7.1 Weakness of the Food Policy**

The followings are the weaknesses of the food policy:

- i) In many states the rationing system is flawed. The poor people do not get food grains from the ration shops at a subsidised rate. The dishonest ration dealers sell food grains in the open market at higher prices through the PDS and food security of the poor is hampered.
- ii) The lists of BPL families are not faultless. In fact there are some families who are actually poor are excluded from the list and some rich families included in the BPL list because of the intervention of the political parties.
- iii) Only rice, wheat and sugar and are sold through PDS. But people require other necessary food particles like pulses, edible oils and green vegetables etc. which are sold at higher prices and hence food security is disturbed.

iv) In PDS system though the government announces the minimum support price the agencies cannot purchase the entire quantity offered due to lack of buffer stock of food grains and hence the producers are forced to sell their product at lower prices to private traders.

v) In case of fiscal deficit the government is forced to curtail subsidy and food grains are sold at a higher prices against the PDS. Despite the huge stock of food grains available in FCI godowns hunger and death are still reported due to the failure of the PDS system. The PDS is flawed food system because the millions of the deserving poor does not actually benefitted by this system, the government is very much talks about and spends less.

vi) Food security not only depends upon the supply of food grains but also by the purchasing capacity of the buyers. Moreover food security requires safe drinking water, primary health facilities, basic education and healthy environment. In the absence of these basic facilities India is still lagging behind other countries in attaining food security.

## 8. Remedial Measures

The following measures which India can adopt for attaining sustainable food security:

i) From Malthusian theory of population growth we know that population grow faster than the food supply. To stabilize the population the birth and death rate are almost to be equal. Only stable population can assure sustainable food security.

ii) Sustainable land management is necessary here for sustainable food security. Conservation of land, soil erosion has to be stopped, pollution should be controlled and land fertility must be restored to raise food production.

iii) Water scarcity is very much related to food scarcity. Rain water harvesting, reduction of excessive irrigation water, change in cropping pattern (i.e. produce food crops which requires less water), same water should be used for many purposes, water recharge, controlling water pollution etc. are necessary to food security.

iv) For achieving food security pollution of water, air, land, less use of chemical fertiliser, insecticides and pesticides, forestation, plantation, bio-diversity etc must be controlled to protect common property resources not only for the present but also for the future generation.

v) For absorptions of food investment in social sectors like health, education, nutrition, social security measures, provision of safe drinking water etc. must be raised. It is a matter of fact that in India public health care system has totally collapsed and even the private health care facilities are located in the urban areas and benefit very few (Meeta and Rajiblochan 2010) Hence the health care facilities must be improved any how to raise the standard of living of the commons.

vi) "Right to food" bill should be recognised as fundamental rights. A right based approach to food security imposes obligations on national governments to establish non-discriminatory and non political laws to ensure that their populations have accessed to adequate food. All countries are directed to implement the right to food bill through a resolution to eradicate hunger by 2025. Both the Central and State government and the National Advisory Council (NAC) are responsible to ensure food security for all citizens at any cost.

vii) Integrated Child Development Scheme (ICDS), pension and cash benefit schemes for mother etc. are adopted by the government for the inclusion of the vulnerable sections of the society. Mid-day meal programme was introduced for children between ages 2-14 attending schools. Production of food grains increased 4 fold from 51 million tons in 1951 to 217 tons in 2007. Though cereal production has growing faster than the population growth but the production has lagged behind.

viii) For the improvement of health basic medicines must be supplied for all (Srinivasan S. 2011). As part of Universal Access to Healthcare, good quality healthcare should be accessible, affordable and available to all in need. Providing quality medicines to all at free services in all our public facilities is an important task to our health department of the government and the pharmaceutical industries also cooperate in this respect.

ix) The most recent effort to improve the hunger situation is the National Food Security Bill (NFSB) is headed by the NAC to cover 90% of the rural and 50% of the urban population to improve the hunger situation. But this actually covered only 465 of the rural and 28% of the urban population. Multinational companies are grabbing the India's most productive agricultural lands, two-crop and three-crop zones called Special Economic Zones, to set up urban industrial estate for commercial purposes and create shortage of agricultural land for food production. Under the NFSB the government must take some necessary actions against these grabbing of fertile agricultural lands.

xi) NREGP and self employment programmes may helped in improving incomes and hence the purchasing power (through employment generation) and can also access to food and nutrition to the common peoples (Dev S.M. and Sharma A.N. 2010). Under the national food security law, the government wants to provide rice and wheat to the poorest of the poor at Rs. 3 per Kg. Due to changes in consumption pattern demand for fruits, vegetables, dairy, meat, poultry and fisheries have been increasing. There is need to crop diversification and improve allied activities.

xii) By its nature agricultural production is seasonal in nature (Saha B. K. 2010). Some agricultural productions like fruits, vegetables, fishes etc. are perishable in nature. Whether the products are seasonal or perishable, the need for food is required throughout the year. Hence food grains storage is necessary not only for quality seeds for harvestings but also to meet the demand for food throughout the year. Hence adequate scientific storage capacities for food must be required to avoid food crisis.

xiii) According to Millennium Development Goal (MDG) a promise signed by all world governments to achieve global poverty to halve the rate by 2015. Foreign aid has an important role to reduce poverty, in building government institutions and in pioneering new ideas for development, is only a small part of the solution to the global poverty and food crisis. Rich country governments are also under pressure to honour their promises to increase aid budgets to 0.7% of national income. As the average for 2009 was only 0.31%, there is considerably scope for improving current level for foreign aid, around 120 billion US dollar per annum.

### **Conclusion:**

As food is the first and foremost basic necessity of life, absence of food security leads to social and political instability which is contrary to economic development of any country. The problem is not only located in India but also all over the globe. Food security requires safe drinking water, primary health facilities, basic education and healthy environment. Sustainable land management is necessary here. Conservation of land, soil erosion has to be stopped, pollution should be controlled and land fertility must be restored to raise food production. For achieving food security pollution of water, air, land, less use of chemical fertiliser, insecticides and pesticides, forestation, plantation, bio-diversity etc must be controlled to protect common property resources not only for the present but also for the future generation. We see that some times food crisis is not due to lack of food supply. It is the failure of PDS and the crisis not food crisis, it is the policy crisis of the government. Hence in the interest of the sustainable economic development for achieving sustainable food security every government of the world must adopt some urgent measures and should work united to make the world free from hunger.

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