Concept and Issues of Food Security

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ABSTRACT

Food availability is a necessary condition for food security. India is more or less self sufficient in cereals but deficit in pulses and oilseeds . due to changes in consumption patterns ,demand for fruits ,vegitables , dairy , meat , poultry and fisheries has been increasing. There is need to increase crop diversification and improve allied activities . It may be noted that the slowdown in agriculture growth could be attributed to structural factors on the supply side , such as public investment , credit , technology, land and water management , etc. , rather than globalization and trade reforms *per se* . Access to food can be increased through employment due to growth in labour intensive sectors and/or through social protection programmes . The malnutrition problem is much broader than that of access to food . This paper examines all related concern and issues in this regards.

Keywords – food security, poverty, population , availability .

The World Food Summit of 1996 defined food security exists 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. Food security is built on, availability of sufficient quantities of food on a consistent basis, having sufficient resources to obtain appropriate foods for a nutritious diet and finally appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation.to increase crop diversification and improve allied activities. It may be noted that the slowdown in agriculture growth could be attributed to structural factors on the supply side, such as public investment, credit, technology, land and water management, etc., rather than globalization and trade reforms *per se*. Access to food can be increased through employment due to growth in labour intensive sectors and/or through social protection programmes. The malnutrition problem is much broader than that of access to food.

The WHO states that there are three pillars that determine food security: food availability, food access, and food use. The FAO adds a fourth pillar: the stability of the first three dimensions of food security over time. In 2009, the World Summit on Food Security stated that the “four pillars of food security are availability, access, utilization, and stability”. ***(1)*****Availability: -** Growth in food production has been greater than population growth. Food per person increased during the 1961–2005 period. Food availability relates to the supply of food through production, distribution, and exchange. Food production is determined by a variety of factors including land ownership and use; soil management; crop selection, breeding, and management; livestock breeding and management; and harvesting. Crop production can be impacted by changes in rainfall and temperatures. The use of land, water, and energy to grow food often competes with other uses, which can affect food production. Land used for agriculture can be used for urbanization or lost to desertification, salinization, and soil erosion due to unsustainable agricultural practices.Crop production is not required for a country to achieve food security. Nations don’t have to have the natural resources required to produce crops in order to achieve food security, as seen in the examples of Japan and Singapore.

Because food consumers outnumber producers in every country, food must be distributed to different regions or nations. Food distribution involves the storage, processing, transport, packaging, and marketing of food. Food-chain infrastructure and storage technologies on farms can also impact the amount of food wasted in the distribution process. Poor transport infrastructure can increase the price of supplying water and fertilizer as well as the price of moving food to national and global markets.Around the world, few

individuals or households are continuously self-reliant for food. This creates the need for a bartering, exchange, or cash economy to acquire food. The exchange of food requires efficient trading systems and market institutions, which can have an impact on food security.Per capita world food supplies are more than adequate to provide food security to all, and thus food accessibility is a greater barrier to achieving food security.

(2) Access: - Food access refers to the affordability and allocation of food, as well as the preferences of individuals and households. The UN Committee on Economic, Social, and Cultural Rights noted that the causes of hunger and malnutrition are often not a scarcity of food but an inability to access available food, usually due to poverty.Poverty can limit access to food, and can also increase how vulnerable an individual or household is to food price spikes. Access depends on whether the household has enough income to purchase food at prevailing prices or has sufficient land and other resources to grow its own food.Households with enough resources can overcome unstable harvests and local food shortages and maintain their access to food.

There are two distinct types of access to food: direct access, in which a household produces food using human and material resources, and economic access, in which a household purchases food produced elsewhere. Location can affect access to food and which type of access a family will rely on.The assets of a household, including income, land, products of labor, inheritances, and gifts can determine a household's access to food. However, the ability to access to sufficient food may not lead to the purchase of food over other materials and services.Demographics and education levels of members of the household as well as the gender of the household head determine the preferences of the household, which influences the type of food that are purchased.A household's access to enough and nutritious food may not assure adequate food intake of all household members, as intrahousehold food allocation may not sufficiently meet the requirements of each member of the household.The USDA adds that access to food must be available in socially acceptable ways, without, for example, resorting to emergency food supplies, scavenging, stealing, or other coping strategies.

(3) **Utilization:-**The final pillar of food security is food utilization, which refers to the metabolism of food by individuals. Once food is obtained by a household, a variety of factors impact the quantity and quality of food that reaches members of the household. In order to achieve food security, the food ingested must be safe and must be enough to meet the physiological requirements of each individual. Food safety impacts food utilization, and can by impacted by the preparation, processing, and cooking of food in the community and household. Nutritional values of the household determine food choice.Access to healthcare is another determinant of food utilization, since the health of individuals controls how the food is metabolized.For example, intestinal parasites can take nutrients from the body and decrease food utilization.Sanitation can also decrease the occurrence and spread of diseases that can affect food utilization.Education about nutrition and food preparation can impact food utilization and improve this pillar of food security.

(4) **Stability:-** Food stability refers to the ability to obtain food over time. Food security can be transitory, seasonal, or chronic. In transitory food insecurity, food may be unavailable during certain periods of time. At the food production level, natural disasters and drought result in crop failure and decreased food availability. Civil conflicts can also decrease access to food. Instability in markets resulting in food-price spikes can cause transitory food insecurity. Other factors that can temporarily cause food insecurity are loss of employment or productivity, which can be caused by illness. Seasonal food insecurity can result from the regular pattern of growing seasons in food production.

Chronic (or permanent) food insecurity is defined as the long-term, persistent lack of adequate food. In this case, households are constantly at risk of being unable to acquire food to meet the needs of all members. Chronic and transitory food insecurity are linked, since the reoccurrence of transitory food security can make households more vulnerable to chronic food insecurity.

Related Concern and Issues

Global water crisis: - Water deficits, which are already spurring heavy grain imports in numerous smaller countries, may soon do the same in larger countries, such as China or India. The water tables are falling in scores of countries (including northern China, the US, and India) due to widespread over pumping using powerful diesel and electric pumps. Other countries affected include Pakistan, Afghanistan, and Iran. This

will eventually lead to water scarcity and cutbacks in grain harvest. Even with the over pumping of its aquifers, China is developing a grain deficit. When this happens, it will almost certainly drive grain prices upward. Most of the 3 billion people projected to be born worldwide by mid-century will be born in countries already experiencing water shortages. After China and India, there is a second tier of smaller countries with large water deficits – Afghanistan, Algeria, Egypt, Iran, Mexico, and Pakistan. Four of these already import a large share of their grain. Only Pakistan remains self-sufficient. But with a population expanding by 4 million a year, it will likely soon turn to the world market for grain.

Regionally, Sub-Saharan Africa has the largest number of water-stressed countries of any other place on the globe and as of an estimated 800 million people who live in Africa; 300 million live in a water stressed environment. It is estimated that by 2030, 75 million to 250 million people in Africa will be living in areas of high water stress, which will likely displace anywhere between 24 million and 700 million people as conditions become increasingly unlivable. Because the majority of Africa remains dependent on an agricultural lifestyle and 80% to 90% of all families in rural Africa rely upon producing their own food, water scarcity translates to a loss of food security.

Land degradation: - Intensive farming often leads to a vicious cycle of exhaustion of soil fertility and decline of agricultural yields. Approximately 40% of the world's agricultural land is seriously degraded. In Africa, if current trends of soil degradation continue, the continent might be able to feed just 25% of its population by 2025.

Land deals:- Cross-border land deals are increasing. The South Korean firm Daewoo Logistics has secured a large piece of farmland in Madagascar to grow maize and crops for biofuels. Libya has secured 250,000 hectares of Ukrainian farmland, and China has begun to explore land deals in Southeast Asia.Oil-rich Arab investors, including the sovereign wealth funds, are looking into Sudan, Ethiopia, Ukraine, Kazakhstan, Pakistan, Cambodia and Thailand. Some countries are using the acquisition of land for agriculture in return for other gains. Egypt is seeking land acquisition in Ukraine in exchange for access to its natural gas. Qatar has plans to lease 40,000 hectares of agricultural land along Kenya's coast to grow fruit and vegetables, in return for building a £2.4 billion port close to the Indian Ocean tourist island of Lamu.

Climate change: - Extreme events, such as droughts and floods, are forecast to increase as climate change takes hold. Ranging from overnight floods to gradually worsening droughts, these will have a range of impacts on the agricultural sector. By 2040, almost the entire Nile region, which once included large areas of irrigated agricultural land, is expected to become hot desert where cultivation is impossible due to water limitation. According to the Climate & Development Knowledge Network report Managing Climate Extremes and Disasters in the Agriculture Sectors: Lessons from the IPCC SREX Report, the impacts will include changing productivity and livelihood patterns, economic losses, and impacts on infrastructure, markets and food security. Food security in future will be linked to our ability to adapt agricultural systems to extreme events. For example, the Garifuna women in Honduras are helping to ensure food security locally by reviving and improving production of traditional root crops, building up traditional methods of soil conservation, carrying out training in organic composting and pesticide use and creating the first Garifuna farmers' market. Sixteen towns have worked together to establish tool and seed banks. Efforts to plant wild fruit trees along the coast are helping to prevent soil erosion. The aim is to reduce the communities' vulnerability to the hazards of shifting weather patterns.

Approximately 2.4 billion people live in the drainage basin of the Himalayan Rivers. India, China, Pakistan, Afghanistan, Bangladesh, Nepal and Myanmar could experience floods followed by severe droughts in coming decades. In India alone, the Ganges provides water for drinking and farming for more than 500 million people. The west coast of North America, which gets much of its water from glaciers in mountain ranges such as the Rocky Mountains and Sierra Nevada, also would be affected. Glaciers aren't the only worry that the developing nations have; sea level is reported to rise as climate change progresses, reducing the amount of land available for agriculture. In other parts of the world, a big effect will be low yields of grain according to the World Food Trade Model, specifically in the low latitude regions where much of the developing world is located. From this the price of grain will rise, along with the developing nations trying to grow the grain. Due to this, every 2–2.5% price hike will increase the number of hungry

people by 1%. Low crop yields are just one of the problem facing farmers in the low latitudes and tropical regions. The timing and length of the growing seasons, when farmers plant their crops, are going to be changing dramatically, per the USDA, due to unknown changes in soil temperature and moisture conditions.

Another way of thinking about food security and climate change comes from Evan Fraser, a geographer working at the University of Guelph in Ontario Canada. His approach is to explore the vulnerability of food systems to climate change and he defines vulnerability to climate change as situations that occur when relatively minor environmental problems cause major impacts on food security. Three factors stand out as common in such cases, and these three factors act as a diagnostic "tool kit" through which to identify cases where food security may be vulnerable to climate change. These factors are: (1) specialized agro-ecosystems; (2) households with very few livelihood options other than farming; (3) situations where formal institutions do not provide adequate safety nets to protect people.

Agricultural diseases: - Diseases affecting livestock or crops can have devastating effects on food availability especially if there are no contingency plans in place. For example, Ug99, a lineage of wheat stem rust which can cause up to 100% crop losses, is present in wheat fields in several countries in Africa and the Middle East and is predicted to spread rapidly through these regions and possibly further afield, potentially causing a wheat production disaster that would affect food security worldwide. The genetic diversity of the crop wild relatives of wheat can be used to improve modern varieties to be more resistant to rust. In their centers of origin wild wheat plants are screened for resistance to rust, then their genetic information is studied and finally wild plants and modern varieties are crossed through means of modern plant breeding in order to transfer the resistance genes from the wild plants to the modern variety

Fossil fuel dependence:-While agricultural output increased as a result of the Green Revolution, the energy input into the process (that is, the energy that must be expended to produce a crop) has also increased at a greater rate, so that the ratio of crops produced to energy input has decreased over time. Green Revolution techniques also heavily rely on chemical fertilizers, pesticides and herbicides, some of which must be developed from fossil fuels, making agriculture increasingly reliant on petroleum products. Between 1950 and 1984, as the Green Revolution transformed agriculture around the globe, world grain production increased by 250%. The energy for the Green Revolution was provided by fossil fuels in the form of fertilizers (natural gas), pesticides (oil), and hydrocarbon fueled irrigation.The area sown to genetically engineered crops in developing countries is rapidly catching up with the area sown in industrial nations. According to the International Service for the Acquisition of Agri-biotech Applications (ISAAA), genetically engineered (biotech, GM) crops were grown by approximately 8.5 million farmers in 21 countries in 2005; up from 8.25 million farmers in 17 countries in 2004. However, it should be noted that the ISAAA is funded by organisations including prominent agricultural biotechnology corporations, such as Monsanto and Bayer, and there have been several challenges made to the accuracy of ISAAA's global figures.

Intellectual property rights:- There is much debate on whether IPRs hurt or harm independent development in terms or agriculture and food production. Hartmut Meyer and Annette von Lossau describe both sides of the issue, while saying "Among scholars, the thesis that the impetus to self-determined development and the protection of intellectual property go hand in hand is disputed – to put it mildly. Many studies have concluded that there is virtually no positive correlation between establishing self-sustained economic growth and ensuring protection of intellectual property rights.

Price setting:- On April 30, 2008, Thailand, one of the world's biggest rice exporters, announces the project of the creation of the Organization of Rice Exporting Countries with the potential to develop into a price-fixing cartel for rice. It is a project to organize 21 rice exporting countries to create a homonymous organisation to control the price of rice. The group is mainly made up of Thailand, Vietnam, Cambodia, Laos and Myanmar. The organization attempts so serve the purpose of making a "contribution to ensuring food stability, not just in an individual country but also to address food shortages in the region and the world". However, it is still questionable whether this organization will serve its role as an effective rice price

fixing cartel that is similar to OPEC's mechanism for managing petroleum. Economic analysts and traders said the proposal would go nowhere because of the inability of governments to cooperate with each other and control farmers' output. Moreover, countries that are involved expressed their concern, that this could only worsen the food security.

Children and food security :- On April 29, 2008, a UNICEF UK report found that the world's poorest and most vulnerable children are being hit the hardest by the impact of climate change. The report, "Our Climate, Our Children, Our Responsibility: The Implications of Climate Change for the World's Children," says access to clean water and food supplies will become more difficult, particularly in Africa and Asia. A 2012 study in the Journal of Applied Research on Children found that rates of food security varied significantly by race, class and education. In both kindergarten and third grade, 8% of the children were classified as food insecure, but only 5% of white children were food insecure, while 12% and 15% of black and Hispanic children were food insecure, respectively. In third grade, 13% of black and 11% of Hispanic children are food insecure compared to 5% of white children.

Gender and food security: - Gender inequality both leads to and is a result of food insecurity. According to estimates women and girls make up 60% of the world's chronically hungry and little progress has been made in ensuring the equal right to food for women enshrined in the Convention on the Elimination of All Forms of Discrimination against Women. Women face discrimination both in education and employment opportunities and within the household, where their bargaining power is lower. On the other hand, gender equality is described as instrumental to ending malnutrition and hunger. Women tend to be responsible for food preparation and childcare within the family and are more likely to be spent their income on food and their children's needs. Women also play an important role in food production, processing, distribution and marketing. They often work as unpaid family workers, are involved in subsistence farming and represent about 43% of the agricultural labor force in developing countries, varying from 20% in Latin America to 50% in Eastern and Southeastern Asia and Sub-Saharan Africa. However, women face discrimination in access to land, credit, technologies, finance and other services. Empirical studies suggest that if women had the same access to productive resources as men, women could boost their yields by 20–30%; raising the overall agricultural output in developing countries by 2.5 to 4%. While those are rough estimates, the significant positive impact of closing the gender gap on agricultural productivity cannot be denied. The gendered aspects of food security are visible along the four pillars of food security: availability, access, utilization and stability, as defined by the Food and Agriculture Organization.

In Conclusion,Many of the issues highlighted are global problems. Meeting the world's food security challenge will require a multi-national, collaborative effort to integrate the best research from science, engineering and socioeconomics so that technological advances can bring benefits where they are most needed.

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