

## Interrelationship Between Food Security, Nutrition and Sustainability in India

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### Abstract

The modern world faces challenges in creating a sustainable food system to feed a growing population while preserving ecosystems and natural resources. Sustainable aims involve providing safe, nourishing, accessible, and environmentally sustainable food for everyone. Unexpected environmental issues that might endanger human life emerged around the turn of the century. The planet's food system, already in delicate balance with its ecology, is further strained by climate change, energy and water shortages, environmental degradation, changing global population demographics, food safety, and an increase in disease pandemics. These issues, whether man-made or natural, encourage the scientific community to aggressively seek out innovative, ground-breaking approaches to food and nutrition that will ensure future global food sustainability and nutrition security. In order to address these issues and produce notable changes in the food supply, nutrition, and health status, creative solutions must be explored throughout the whole food chain, including food choices and eating habits. Food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

**Keywords:** Nutrition, Sustainable development, Malnutrition, Zero Hunger.

### Introduction

The correlation between agricultural advancement and nutrition is robust, emphasizing the critical role of increased food production in bridging the gap between agricultural progress and improved nutrition. This nexus is particularly evident in India, where historical emphasis on food security revolved around grain sufficiency. While meeting dietary energy needs through grains is undeniably crucial, the importance of dietary diversity cannot be overstated in fulfilling broader nutrient requirements. Studies illuminate the multifaceted shifts in India's food consumption patterns due to factors such as economic growth, demographic changes, and evolving lifestyles. As income levels ascend, there's a notable increase in the availability and consumption of diverse food items, particularly high-value horticultural produce and animal-based products. This transformation in dietary habits marks a notable departure from traditional reliance solely on staple grains. This shift towards a more diverse and nutrient-rich diet in India holds immense promise, poised to yield positive impacts on overall health and nutritional outcomes. Food security, nutrition, and sustainability are interconnected because sustainable agriculture ensures that food production can continue to meet the needs of the present without compromising the future. A sustainable food system provides enough nutritious food for everyone today while protecting natural resources and ensuring there is food for future generations. This is a core component of global goals like the United Nations' Sustainable Development **Goal 2 (Zero Hunger)**, which links **ending hunger, improving nutrition, and promoting sustainable agriculture**.

Food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Food security is a multidimensional concept that goes beyond mere food production to include aspects of distribution, equity, and utilization. Food security is based on **availability, access, utilization, and stability** which act as **the four pillars** of food security:

- **Availability**, the first dimension, ensures ample physical food for people's needs.
- **Access**, the second dimension, denotes economic access to food.
- **Utilization**, the third dimension, pertains to the biological utilization of food, including a diet offering sufficient energy, essential nutrients, clean water, and proper sanitation.
- **Stability**, the fourth dimension, aims for consistent access to food over time. Achieving stability necessitates mechanisms to counter price fluctuations and ensure a constant supply of nutritious food.

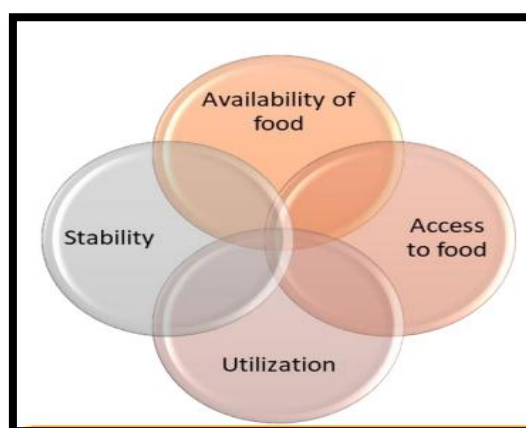


Figure-1 Pillars of Food Security

The 1995 World Food Summit declared, “Food security at the individual, household, regional, national and global levels exist when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO, 1996, p.3). The declaration further recognizes that “poverty eradication is essential to improve access to food”. Food security and sustainable development are intrinsically linked, as the ability to ensure that all people have access to sufficient, safe, and nutritious food is fundamental to the broader goals of sustainable development. This relationship encompasses various dimensions including environmental sustainability, economic stability, and social equity. This review article elucidates the relationship between food security, nutrition and sustainable development by exploring their interconnectedness, shared objectives, and the challenges and opportunities inherent in integrating these critical areas. The UN's Sustainable Development Goal 2 (Zero Hunger) directly connects these concepts by aiming to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture.

Food security is a multidimensional concept that goes beyond mere food production to include aspects of distribution, equity, and utilization. The deteriorating nutritional scenario in India demands a transformative shift in agricultural practices. M. S. Swaminathan (2010) discusses the strategies and advancements in agriculture needed to achieve food security in India, focusing on sustainable practices and technological innovations. Recent efforts have been made to enhance affordability and access to nutritious food. Despite millet production being concentrated in a few states, a coordinated effort involving both demand and supply-side measures is crucial to boost their popularity, production, and consumption. Millets, being cost-effective alternatives, can encourage dietary diversity, ensuring that no one is left behind in accessing nutritious food.

### Food Security in the Sustainable Development Goals

Several SDGs are directly related to food security, demonstrating its central role in sustainable development:

- **SDG 2: Zero Hunger:** This goal aims to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture. It focuses on doubling agricultural productivity and ensuring sustainable food production systems.
- **SDG 1: No Poverty:** Eradicating poverty is closely linked to improving food security, as poverty limits access to nutritious food.
- **SDG 3: Good Health and Well-being:** Ensuring food security is essential for health, as malnutrition and hunger lead to numerous health problems, particularly among children and vulnerable populations.
- **SDG 12: Responsible Consumption and Production:** This goal promotes sustainable consumption and production patterns, which are crucial for maintaining food security while preserving environmental resources.

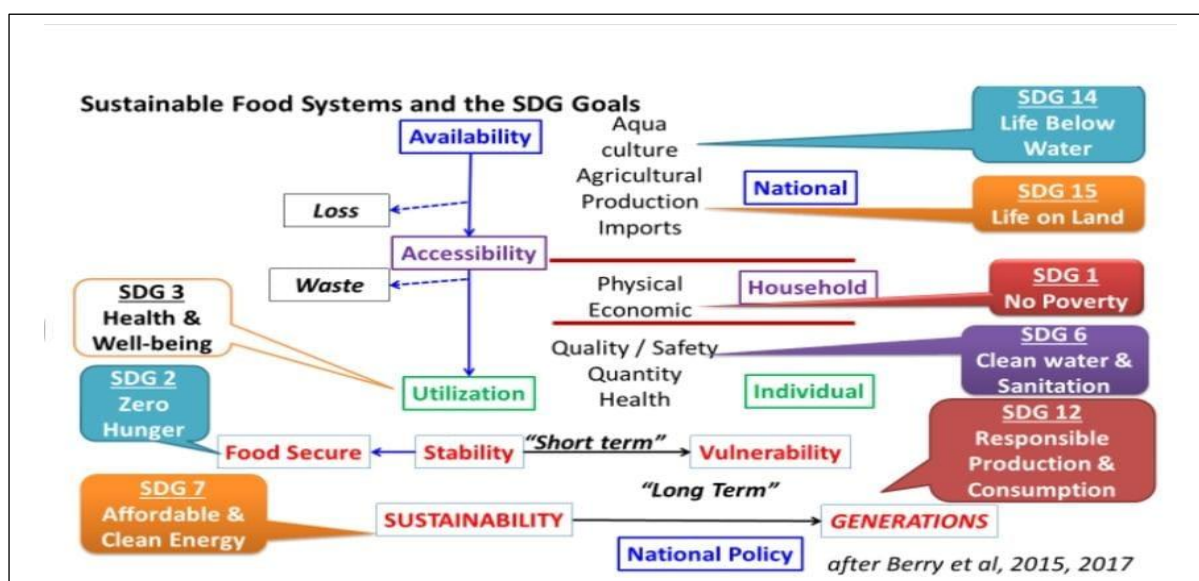


Figure -2 The Relationship between Food Security pathway and many of the Sustainable Development Sustainable Development:- Sustainable development refers to the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It integrates three core elements:

- **Economic Growth:-** Ensuring that economic development processes are inl
- **Social Inclusion:** Addressing issues of equity, health, education, and human rights.
- **Environmental Protection:** Managing natural resources and ecosystems to maintain their viability and productivity. The 17 Sustainable Development Goals (SDGs) set by the United Nations encapsulate these elements, aiming address global challenges comprehensively by 2030.

### The Link between Food Security and Sustainable Development

- **Sustainability enables food security and nutrition:** Sustainable agriculture practices are crucial for maintaining food systems that can provide both quantity and quality of food long-term. Without sustainability, current methods could lead to environmental degradation, making it impossible to feed a growing population in the future.
- **Food security and nutrition rely on sustainability:** Achieving long-term food security requires the protection of the natural resource base—soils, water, and biodiversity—that agriculture depends on. Practices

that degrade these resources threaten both the ability to produce food and its nutritional quality for future generations.

- **Sustainability as a long-term perspective:** Sustainability adds a crucial long-term dimension to the concept of food security. Viewing sustainability as the fifth pillar of food security, alongside availability, access, utilization, and stability, is essential for preventing today's actions from causing future food insecurity.
- **Sustainable diets:** Sustainable food systems involve changes in both production and consumption. Promoting sustainable diets is vital for achieving both nutritional well-being and environmental sustainability, as they help to reduce the strain on resources and improve health outcomes, according to Science and Education Publishing.
- **Addressing challenges:** Environmental stresses like climate change and resource depletion directly impact food security and nutrition, creating a vicious cycle. Sustainable approaches help to mitigate these stresses and build resilience, for example by improving water efficiency and soil health, notes the Department of Economic and Social Affairs.
- **Holistic approach:** Achieving food security and nutrition for all requires a holistic view that integrates sustainability into every aspect of food policy, production, and consumption. This means considering the environmental, economic, and social impacts of food systems simultaneously to ensure fairness and long-term viability.

The link between food, nutrition, and overall health is evident. Inadequate nutrition doesn't only affect individuals but also influences broader societal outcomes. Intergenerational malnutrition perpetuates from undernourished mothers to low birth-weight babies, continuing through childhood and adolescence due to limited access to healthcare, inadequate feeding, early marriages, and frequent pregnancies. This cycle hampers cognitive and physical development, leading to poor educational and economic achievements, thereby perpetuating poverty. This vicious cycle can be broken through timely interventions. A higher proportion of inadequately nourished individuals results in increased morbidity, mortality rates, and adversely impacts a country's overall income. Addressing these issues is crucial for holistic societal development and economic progress.

Raghav Gaiha and Vani S. Kulkarni (2005) analyses the link between food insecurity, malnutrition, and socio-economic inequality in India. They provide policy recommendations to address these issues. Low-income groups bear the disproportionate burden of food inflation, as a larger proportion of their earnings is allocated to food expenditures. The escalating prices render food unaffordable for these vulnerable populations, exacerbating poverty and perpetuating financial strain. In September 2022, India experienced an alarming 8.6 per cent year-on-year surge in food costs, with vegetables (18.05 per cent), spices (16.88 per cent), and cereals (11.53 per cent) registering the most significant spikes in nine years.

The relationship between food security and sustainable development is multi-faceted and critical to achieving global sustainability.

- **Economic Interdependence:** Food security underpins economic stability. Reliable access to food supports health, productivity, and economic growth. Conversely, economic instability can exacerbate food insecurity by limiting access to affordable food.
- **Social Equity and Inclusion:** Ensuring food security addresses social equity by reducing hunger and malnutrition, which disproportionately affect the poor and marginalized. This aligns with sustainable development's goal of inclusive growth and reducing inequalities.

- **Environmental Sustainability:** Sustainable agricultural practices are vital for long-term food security. Overexploitation of resources, deforestation, and unsustainable farming practices can degrade ecosystems and reduce food production capacity, directly impacting food security.

### Challenges in Integrating Food Security and Sustainable Development

Despite their interconnectedness, several challenges impede the integration of food security and sustainable development:

- **Climate Change:** Climate change poses significant risks to food security through its impacts on agriculture, water resources, and ecosystems. Adapting agricultural practices to mitigate these effects is crucial.
- **Resource Management:** Overuse and mismanagement of natural resources such as water, soil, and biodiversity threaten both food security and environmental sustainability. Sustainable resource management practices are essential.
- **Economic Inequality:** Economic disparities limit access to food for many people, undermining efforts to achieve food security and sustainable development. Addressing inequality is necessary to ensure equitable food distribution.
- **Policy Coordination:** Effective integration requires coherent policies that address both food security and sustainable development objectives. This involves coordination across sectors and levels of government.

### Opportunities for Synergy:

There are numerous opportunities to enhance the synergy between food security and sustainable development:

- **Sustainable Agriculture:** Promoting sustainable agricultural practices, such as agroecology, organic farming, and conservation agriculture, can enhance food security while preserving environmental resources.
- **Innovation and Technology:** Advances in agricultural technology, such as precision farming, biotechnology, and climate-resilient crops, offer potential solutions to increase food production sustainably.
- **Education and Capacity Building:** Educating farmers and communities about sustainable practices and providing them with the necessary resources and training can improve food security and promote sustainable development.
- **Policy and Institutional Support:** Strengthening institutions and governance structures to support integrated policy frameworks can ensure that food security and sustainable development objectives are mutually reinforcing.

### Conclusion :

The relationship between food security, nutrition and sustainable development is profound and complex. Ensuring that all people have access to sufficient, safe, and nutritious food is fundamental to achieving broader sustainable development goals. Both domains share common objectives of economic growth, social inclusion, and environmental protection, but face significant challenges such as climate change, resource management, and economic inequality. By harnessing opportunities for synergy through sustainable agricultural practices, technological innovation, education, and robust policy support, the global community can work towards achieving food security and sustainable development in tandem. This integrated approach is essential for building a resilient, equitable, and sustainable future for all.



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