

AGRICULTURE AND SUSTAINABLE DEVELOPMENT GOAL 2 ZERO HUNGER

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ABSTRACT

In order to achieve the much-needed overall progress of humanity without destroying the environment for future generations, the Sustainable progress Goals (SDGs) were created. "Zero Hunger" is the goal of Sustainable Development Goal 2 (SDG2), which has eight related targets. The total growth of agriculture that produces nutritious food and improves the standard of life for smallholder farmers while preserving the natural base is sparked by these related goals. Attaining SDG2 aims will aid in the accomplishment of other SDGs that have been weakened by climate change, carbon emissions, excessive chemical usage, droughts, locust assaults, and pandemics. Food production and access are directly related to the achievement of SDG 2. In order to achieve Goal 2: Zero Hunger, sustainable agriculture must be advanced because it guarantees long-term, economical, and environmentally responsible food production. A variety of methods, regulations, and technological advancements are included in sustainable agriculture, which helps to accomplish this objective. This overview highlights the importance of sustainable agriculture and promotes a better comprehension of the intricate obstacles to reaching Zero Hunger. It also highlights the necessity of multifaceted approaches that take into account social justice, environmental stewardship, and agricultural systems' economic viability. Additionally, it investigates how cutting-edge technologies like digital platforms, agroforestry, and precision agriculture could transform food production while reducing their negative effects on the environment. The objective is to stimulate cooperative efforts and well-informed decision-making toward the development of robust and sustainable food systems that can successfully address the worldwide issue of hunger and malnutrition through a nuanced examination of best practices and policies.

KEYWORDS: *Sustainable Development, Hunger, Malnutrition, Droughts, Farmers*

1. INTRODUCTION

The implications of the various worldwide environmental impacts they continue to cause will have a significant impact on food systems . Through a variety of direct and indirect channels and feedback processes, food prices, food insecurity, and malnutrition will all be directly impacted negatively by climate crises and shocks in particular. In fact, the growing

unpredictability of the climate is changing planting patterns, increasing the frequency of pest and disease outbreaks, increasing the strain on already limited natural resources, and causing local conflicts and migration patterns that negatively impact nutrition and food security. The existence of Most Affected People and Areas (MAPAs) highlights the need for a shared and active engagement with the sources of both existing and anticipated negative consequences, as well as for a worldwide awareness of the underlying historical and present obligations. To prevent the continuation and escalation of the environmental, social, and economic injustice that still affects the food security of people worldwide, a global, target-oriented, and evidence-based governance framework is desperately needed. In this regard, it is noteworthy that intergovernmental action is lagging behind local governments' subnational efforts, underscoring the national bodies' intolerable unwillingness to recognize the need of global action. The science-policy-society interface must be strengthened in order to close this gap. Policies must be supported by sustainability assessments that are comprehensive (covering cradle-to-grave systems), multidisciplinary (encompassing environmental, social, and economic domains), integrated (focusing on the entire diet rather than individual foods), and specifically focused on nutritional and health aspects. Although assessing policy preparation for SDG 2 is clearly a priority, current evaluations are focused on domestic policies and dispersed across different domains. One significant gap that will need to be rectified in the coming years is the absence of a worldwide comprehensive assessment of policy preparation towards SDG2. A letter written to the COP 28 (Conference of the Parties) and signed by 80 groups and people made it plain how urgent it is to recognize the importance of food systems at the intergovernmental level and how important it is to improve its governance on a global scale.

Adopting a comprehensive systemic approach that takes into consideration all the elements that link food production to food security, nutrition, and human health is necessary given the global scope of food systems' problems. A significant step toward accomplishing SDG2 may be the creation of frameworks that can accurately estimate and forecast the place-based relationships between nutrition and food production—while taking into consideration such profound diversity and complexity.

Food production and consumption are typically connected by supply chains, which can be either short (subsistence-oriented) or, more frequently, long (global food trade). Due to this, it

is imperative that the entire supply chain be taken into account when assessing the sustainability of food systems, which should be open and clearly point out how international trade contributes to adverse effects on the environment, society, or economy [28]. Globalization guarantees the availability of food items that might otherwise only be available during certain seasons through international trade. Although this could satisfy customer demands, the supply of off-season goods frequently entails greater financial and environmental costs, which mostly affect areas that grow food for export. For measures aimed at SDG2, the bridge between production and consumption—the "missing middle"—has previously been recognized as a crucial starting point.

However, big (multinational) corporations frequently influence the structure of global supply chains by imposing a monopoly driven by the goal of maximizing their profit by exploiting the crucial socioeconomic circumstances of nations with cheap labor, natural resource availability, and lax regulations. This disparity in power, which is pushed by globalization and capitalism, has the potential to exacerbate already-existing inequities, particularly in supply chains of cash crops that the Global North heavily demands but can not supply. Profit-seeking entails pursuing inexpensive main inputs, such labor and natural resources, which are frequently controlled by a small number of influential players in the food system. Conflicts frequently result from the concentration of resources around the world, upsetting the socioeconomic and environmental conditions of the affected areas and forcing out small-scale family farms that are crucial to food security in many parts of the world. The pervasive inclination to ignore the true costs of food—that is, the negative externalities related to its production—in the market price is a fundamental aspect of the global capitalist food system. Even in wealthy nations, this propensity has aided in the spread of inexpensive, unhealthy, and highly processed meals, which have detrimental socioeconomic effects. The goal of climate and environmental policy is to encourage the development of crops high in nutrients, which promote a healthy diet. Nonetheless, trade-offs are frequent and might significantly reduce the price of eating a nutritious diet. However, in practice, financial measures are hard to implement and may require international agreements. Internalizing those costs through pricing (e.g., carbon taxes or cap and trade systems) could drastically alter the relative costs of nutrient-dense foods and foods with high energy density and low nutritional value.

2. STATEMENT OF THE PROBLEM

The sustainable development goals (SDGs) are currently the focus of economic growth worldwide. In this sense, agriculture, which is the main economic activity, can serve as a natural model. Even in this high-tech age, agriculture shouldn't come at the expense of the environment. Ecological balance should be maintained while fostering and supporting farmers' lives. With the motto "think globally and act locally" in mind, we look at the principles and methods of sustainable agriculture in India. We also mention Goa, a state that is at last giving agriculture a serious look. The article addresses important issues and policy requirements for sustainable agriculture, including organic farming and other potential initiatives. We use the term "RUrban" to draw attention to the fact that some areas of Goa also need a sustainable blending of rural and urban inhabitants. Currently, the uneven growth of other industries, primarily tourism, is posing a growing danger to the state's agriculture. Therefore, it is essential to implement programs and policies that are not only technically and financially feasible but also environmentally sustainable. We recommend an integrated farming system (micro, innovative, and inclusive) approach for the state's agricultural industry based on the results of our study.

3. OBJECTIVES OF THE STUDY

1. To study the Sustainable agriculture strategies for achieving zero hunger
2. To study the food security through sustainable farming

4. RESEARCH METHODOLOGY

The study examines the goal, but in order to focus, it only looks at the objectives: 1) ensuring food security and 2) eliminating malnutrition, 3) raising smallholder farmers' incomes and productivity, and 4) sustainable agriculture. We searched the Google Scholar open database using the terms "ORGANIC FARMING," "ZERO HUNGER," "SUSTAINABLE DEVELOPMENT GOAL 2," and "ORGANIC FARMING AND FOOD SECURITY." Additional reports from the World Bank, Sustainable Development Goals (SDGs), and Food and Agriculture Organization (FAO) were examined.

5. RESULTS AND DATA INTERPRETATION

By producing food in a way that protects the environment and benefits communities over the long run, sustainable agriculture is essential to reaching zero hunger. The following sustainable agriculture tactics can aid in the goal of ending hunger: Promoting agricultural methods that resemble natural ecosystems, such as integrated pest management, agroforestry,

and varied crop rotations, is known as agroecology. This method improves biodiversity, soil fertility, and climate change resilience. To preserve soil health and lessen erosion, conservation agriculture promotes crop rotations, permanent soil cover, and little soil disturbance. Conservation agriculture reduces its negative effects on the environment while increasing productivity.

- **Management of water**

To guarantee sustainable water usage in agriculture, effective irrigation systems, rainwater collection, and water conservation techniques should be put into place. Crop productivity and food security depend on effective water management.

- **Utilizing natural resources**

Highlighting the application of compost, biopesticides, and organic fertilizers to enhance soil health, lower chemical inputs, and preserve biodiversity. Ecosystem health and long-term sustainability are supported by organic farming methods.

- **Diversification of crops**

Promoting the growth of diverse crops in order to boost ecosystem balance, increase resistance to pests and diseases, and improve nutrition. Small-scale farmers' livelihoods and food security can be guaranteed by diversified farming methods.

- **Sustainable methods for raising animals**

Putting into practice animal husbandry methods that limit their negative effects on the environment, conserve resources, and emphasize animal welfare. Greenhouse gas emissions are decreased and food security is enhanced by sustainable animal production.

- **Agroforestry**

Adding trees and shrubs to agricultural landscapes to improve biodiversity, soil fertility, and climate change resilience. Carbon sequestration, food production, and ecosystem services are just a few advantages of agroforestry systems.

- **Assistance for small-scale farmers**

Supplying small-scale farmers with market possibilities, resources, and training in order to increase their output, revenue, and food security. Achieving zero hunger and advancing

sustainable agricultural methods depend on helping smallholder farmers.

- **Climate-aware farming**

Implementing strategies that improve resilience to climate variability and lessen the effects of climate change. This covers techniques that can assist farmers in adjusting to shifting weather patterns and lowering greenhouse gas emissions, such as crop diversification, soil conservation, water management, and agroforestry.

- **Conservation of agro-biodiversities**

Encouraging the conservation of a variety of plant and animal species in agricultural settings in order to improve ecosystem services, resilience, and nutritional diversity. Agrobiodiversity conservation promotes sustainable agricultural methods and protects food security.

- **Techniques for precision farming**

Optimizing resource use, cutting waste, and increasing productivity through the use of technology like data analytics, remote sensing, and precision agriculture. According to Oliver, Bishop, and Marchant (2013), precision farming can reduce environmental impact, increase efficiency, and assist farmers in making well-informed decisions.

- **Supply chains that are sustainable**

Creating sustainable and transparent food supply chains that place an emphasis on ethical sourcing, fair trade, and conscientious production methods. Food is delivered to consumers in a way that benefits farmers, communities, and the environment thanks to sustainable supply chains.

- **Education and capacity building**

Supplying information and training on market opportunities, technical advancements, and sustainable agricultural practices to farmers, extension agents, and communities. Increasing food security and encouraging sustainable farming methods require education and capacity building.

- **Support for policies**

Implementing laws that encourage and facilitate sustainable agricultural methods, such as agroecological farming, pesticide usage regulation, and organic farming subsidies. Robust legislative frameworks can help achieve zero hunger by easing the shift to sustainable agriculture.

- **Collaborations and partnerships**

Fostering cooperation between businesses, farmers, researchers, governments, and non-governmental groups in order to address issues related to food security and advance sustainable agriculture projects. Partnerships can accomplish shared objectives and have a large-scale impact by utilizing group resources and skills.

Zero hunger can be achieved while maintaining the long-term wellbeing of our communities and environment by putting these sustainable agriculture practices into practice. Additionally, there will be more advancements made in the direction of ending hunger while fostering social justice, environmental conservation, and economic growth. In order to ensure food security for present and future generations while honoring the planet's limited resources, sustainable agriculture is essential.

SUSTAINABLE AGRICULTURAL APPROACHES

A comprehensive approach to farming, sustainable agriculture seeks to satisfy society's current demands for food and fiber without endangering the capacity of future generations to satisfy their own. Environmental health, economic profitability, and social and economic equality are its three primary foundations.

A rigorous evaluation of sustainable farming practices must take into account a number of elements. First, it's important to consider how agricultural methods affect the ecosystem. Sustainable agriculture aims to save water, encourage biodiversity, and use fewer synthetic inputs such as fertilizers and pesticides. It is crucial to assess how well various approaches accomplish these objectives.

Second, one important factor to take into account is the economic feasibility of sustainable agriculture. Critics frequently claim that compared to traditional ways, sustainable approaches might be less profitable or produce poorer results. Analyzing the long-term financial advantages, such as improved soil fertility, gradually declining input prices, and access to premium markets for sustainably produced goods, is crucial.

Thirdly, it is impossible to ignore the social facets of sustainable agriculture. Evaluating the

effects of sustainable practices on rural communities, farm labor conditions, and social fairness in the agricultural industry is crucial. Important factors to take into account include empowering small-scale farmers, encouraging fair trade methods, and guaranteeing marginalized populations have access to resources. The scalability and reproducibility of sustainable agriculture practices should also be assessed critically. To guarantee broad adoption and impact, it is crucial to evaluate whether these methods can be modified for various settings, climates, and production scales. According to the report, integrating innovation and technology is a crucial component of sustainable farming practices. Technological developments in biotechnology, agroecology, and precision agriculture could maximize resource utilization, boost productivity, and lessen environmental effect. The long-term sustainability of these technologies, possible threats to ecosystems and human health, and fair access to technology for all farmers must all be carefully considered before implementing them.

The function of laws and governance frameworks in encouraging and facilitating sustainable practices is a crucial factor in sustainable agriculture. Through encouraging laws, incentives, rules, and capacity-building initiatives, governments, international organizations, and local communities all play a vital part in fostering an environment that supports sustainable agriculture. The successful application of sustainable agriculture practices depends on assessing the efficacy of current regulations and pinpointing areas in need of development. Furthermore, the adoption of sustainable farming practices is greatly influenced by consumer awareness and the need for food that is produced responsibly. The economic feasibility and commercial potential of sustainable agriculture can be better understood by examining customer preferences, market trends, and certification programs. Finding possibilities to advance sustainable practices and propel market change toward more sustainable food systems requires an understanding of consumer behavior and preferences.

Environmental, economic, and social factors should all be taken into account while critically analyzing sustainable agriculture methods. Sustainable agriculture's capacity to address global food security issues and protect the health of our planet for future generations can be better understood by assessing its efficacy, viability, and impact.

6. CONCLUSION

The environment is increasingly favorable for the growth of sustainable agriculture. Farmers,

development workers, researchers, and policymakers are becoming more aware of new options, such as dairy farming, chicken farming, fisheries, and cattle farming. The majority of farmers are amenable to agribusiness and becoming included in the farm-to-fork value chain. Recent efforts by the government, such as the direct transmission of benefits to the farmer-buyer, are praiseworthy. There is a crisis in the Indian agriculture industry. There have been issues with free trade. Despite the fact that many of them have lost interest or their lives, the farming community is still asking for equitable treatment. Everyone on the planet is aware of what Indian farmers wanted, earned, and gained from globalization. There has never been a better moment to critically examine this crucial area of the Indian economy and to ensure a second green revolution in the near future than now, during the second generation of reforms. For farming and farmers to grow inclusively, a long-term vision is required. Indian agriculture needs to be transformed into a thriving industry that significantly contributes to the expansion and long-term viability of the country's modern economy.

REFERENCES

1. Biswas Asit K. and Hartley, Kris (2011 July 22). From Evidence to Policy in India's Groundwater Crisis. *The Diplomat*. Available at <https://thediplomat.com/2017/07/from-evidence-to-policy-in-indias-groundwater-crisis/> (accessed March 24, 2018).
2. Chahal, Mukesh (2013). Sustainable Development and Agriculture Sector Issues and Challenges. *International Journal of Management Research & Review*, 5(3), 217-222.
3. Hans, V. Basil (2009). Indian Agriculture in the Globalization Era – Position and Prospects. In Hilda P.R. (Ed.), *Impact of the Globalised Economy of India on Agriculture* (pp.79-93), Milagres College, Kallianpur, Karnataka.
4. Hans, V. Basil (2013). Making Indian Agriculture Inclusive – Opportunities and Strategies. In Siddarahu V.G. and Ramesh (Eds.), *Inclusive Agricultural Development New Dimensions* (pp. 1-13), APH Publishing Corporation, New Delhi.
5. India ranks lowest in food sustainability (2013, June 13). Available at <https://spwdindia.wordpress.com/2017/06/13/india-ranks-lowest-in-food-sustainability/> (accessed March 22, 2013).

6. Kiresur, V.R., Melinamani, V.P., Kulkarni, V.S, Bharati P., and Yadav, V.S. (2010). Agricultural Productivity, Rural Poverty and Nutritional Security: A Micro Evidence of Inter-Linkages from Karnataka State. *Agricultural Economics Research Review*, 23(1), 29-40.
7. Manral, Karan (2013, May 1). Is Goa finally getting serious about agriculture? New farmer.
8. Noronha, Ligia; Siqueira Alito; Sreekesh, S; Qureshy, Lubina; Kazi, Saltanat (2002). Goa: Tourism, Migrations, and Ecosystem Transformations. *Ambio*, 31(4), 295-302.
9. Pavaskar, Madhoo; Rachur, Sarika; and Mehta Aditi (2011). Agricultural Credit Productivity in India. *Commodity Vision*, 4(5), 16-22.
10. Ramulu, Ch. Bala (2013), Governance of Poverty Alleviation Policies in India: A Study of Food Security Policies to Rural Poor. *Journal of Land and Rural Studies*, 2(2), 287-298.
11. Rao, D. Pulla (2010). Sustainability of Dry Land Farming in India: An Approach. *Political Economy Journal of India*, 19(2): 19-22.
12. Rasure, K.A. (Ed.) (2010). *Sustainable Agricultural Development*. Oxford Book Company, Jaipur. Reganold, John P., Papendick, Robert I., and Parr, James F. (1990). Sustainable Agriculture. *Scientific American*, 262(6), 112-121.
13. Revi, Aromar (2006). Goa 2100: The transition to a sustainable RUrban design. *Environment and Urbanization* 18(1), 51-65.
14. S. Lekshmi (2013). Green Infrastructure as an important Catalyst for sustainable Development. *Asian Journal of Multidimensional Research*, 7(1), 158-166.
15. Sawant, N.N; Gaikwad, S; Ghatge, Kishore (2010). Coastal Tourism. Occupational Change and Environmental Implications: Palolem, Goa. In Debasish Mazumdar & Lavkush Mishra (Eds.), *Contemporary Tourism Development – Issues and Challenges* (pp. 185-198). Rajat Publications, New Delhi.
16. Singh, R.B. (2000). Environmental consequences of agricultural development: a case study from the Green Revolution state of Haryana, India. *Agriculture, Ecosystems & Environment*, 82(1-3), 97-103.

17. Soliman, Ibrahim (2013). *Diagnosis and Challenges of Sustainable Agricultural Development in Egypt. Sustainable Agricultural Development, Cooperative Management*, 5(3), 19-64.