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## CHALLENGES TO ZERO HUNGER SUSTAINABILITY

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### ABSTRACT

The research article scrutinizes the progress and challenges associated with achieving SDG 2, which focuses on ending hunger and promoting sustainable agriculture as outlined in the UN's 2030 agenda. Despite concerted efforts, global hunger remains a pressing issue, with concerning trends indicating a rise in the number of undernourished individuals and those experiencing moderate to severe food insecurity. By 2022, an estimated 735 million people found themselves in chronic hunger, while 2.4 billion suffered from varying degrees of food insecurity.

The study explores the multifaceted nature of food insecurity, recognizing three dimensions of hunger: calorie deprivation, protein deficiency, and hidden hunger caused by micronutrient deficiencies. While initiatives such as India's National Food Security Act of 2013 aim to address calorie deprivation by ensuring access to basic food staples, they often fall short in addressing broader nutritional needs, sanitation, and sustainable agricultural practices. This inadequacy is particularly evident in the persistence of protein and micronutrient deficiencies among populations, highlighting the complexity of achieving comprehensive food security.

Moreover, the article examines strategies implemented by various countries to combat food insecurity, acknowledging both successes and limitations. It underscores the importance of holistic approaches that integrate nutrition, agriculture, and sanitation interventions to effectively address the root causes of hunger. By synthesizing insights from diverse experiences, the research aims to inform policy-making and advocacy efforts aimed at achieving zero hunger globally.

**Keywords** - Corona Virus, Geopolitics, Sustainable Development Goals, Sustainable Development Solutions sustainable agriculture

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### 1. INTRODUCTION

The United Nations agenda sets out 17 goals that were opted out and were adopted by the United Nations in the year 2015 and rise in the people of people with chronic malnutrition and who could not afford the food were suffering from malnutrition and somewhere we are getting far away from achieving our goals and talking about the mining acting as a barrier in achieving SDG goals. Agriculture has the impact on the development of food and nation and natural security natural resources and environment. This aspect of the Zero Hunger Challenge includes providing clean water and sanitation, harvesting clean and affordable energy, building sustainable cities and communities, consuming and producing food responsibly, climate action and developing concern for life on land and in water all to be achieved and hunger and malnutrition fall under the extreme poverty and this affects the rural areas and the focus of SDG needs to be in the rural areas to reduce food unavailability and access to free and healthy sanitation.

SDSN proposed the 10 goals the 1 goal of SDSN is to end hunger and remove food insecurity.

Agriculture focuses on four aspects of sustainable development and includes various issues like climate change, social inclusion. Goal 1 indicates the four dimensions of food supply, access, utilization and stability of food. This research paper would also deal with the one of the barriers a major barrier climate change.

Food security leads to a security to a number of problems of, at both the household and societal values. Household food insecurity suboptimal sleep patterns and decreased immunity to fight of diseases malaria. The increased non-communicable is causing depression. At larger crises caused by food insecurity lead to social unrest and rioting intensive agricultural methods employed in the past to tackle food security. Another problem lies in people are not well educated about food insecurity. This needs to be understood that how it will put an impact on the coming generation.

### 2. SUSTAINABLE DEVELOPMENT GOALS FOCUSED BY UNITED NATIONS

The 2030 agenda for SDG (Sustainable Development Goals) adopted by United Nations Members State in 2015. There are total 193 countries which are the part of United Nations. Some countries that are the part of United Nations are Afghanistan, Albania, Bangladesh, Belize, Canada, India United State of America. United Nations is a successor of The League of Nations. The 2030 goal of Sustainable Development Goal discusses or provides a blueprint for peace and prosperity people and the planet. There are almost 17 Sustainable development goals which are urgent call for action by all the countries it does not matter whether the country is developed or underdeveloped. In a global union ending poverty and other deprivations must go hand in hand that basically improve health, education and etc while tackling the forest and preserving the oceans.

In June 1992 at the Earth summit that was held in Rio De Janeiro a place in Brazil more than 178 countries accepted Agenda 21 it was to develop global partnership to promote sustainable development and to make human life better to protect human.

Members states adopted the Millennium Declaration at Millennium summit in the year 2000 in U.S.A. The Johannesburg Declaration on Sustainable development and the plan of implementation adopted the World summit Development in South Africa.

At the united states national conference on SDG RIO 20 outcome also had adopted the outcome in that it was mentioned and written 'The Future We Want 'where it was decided to develop a process of SDG and it also had United High Level Political Form on sustainable development it also had other ways of implementing Sustainable Development Goals including mandates for future programs of work in the development of financing, small development state island.

In 2013 General assembly set up a 30 member Open working Group for the development of proposal of Sustainable Development of Goal. There were 17 SDG goals that were put forward at its core. United Nations Sustainable Development Summit in September 2015.

In January the General Assembly started the Negotiation process post 2015 development goals. And 2030 SDG goals were adopted.

### 3. ADVANCING GLOBAL FOOD SECURITY AND SUSTAINABLE AGR-ICULTURE: SDG 2

The United Nations agenda to build a more sustainable and equitable world by 2030 includes the Sustainable Development Goal 2 (SDG 2). This goal focuses on ending hunger achieving food security enhancing nutrition and advancing sustainable agriculture. SDG 2 endeavors to guarantee that everyone has access to adequate wholesome and safe food with a focus on marginalized groups like children the impoverished and those residing in areas affected by conflict. The availability of food is emphasized but so is the significance of varied well-balanced diets that offer the necessary nutrients for overall health and wellbeing. In addition SDG 2 acknowledges the importance of sustainable agricultural methods that promote food production while preventing the depletion of natural resources or environmental harm. This include encouraging resilient farming methods protecting biodiversity and utilizing fewer chemical inputs. Additionally the goal places a strong emphasis on helping small-scale farmers particularly those in developing nations increase their incomes and productivity which goes a long way toward promoting food security and reducing poverty. Another crucial component of SDG 2 is addressing food loss and waste throughout the entire supply chain which calls for minimizing environmental impact and efficient resource use. The ultimate goal of SDG 2 is to change food systems so that they are more resilient inclusive and sustainable. To do this governments corporations civil society and international organizations must work together to adopt laws and procedures that promote more sustainably produced and distributed food.

#### FACTORS HINDDERING FOOD SECURITY AND SUSTAINABLE AGRICULTURE

1. **Climate Change and Agricultural Resilience** - Globally vulnerable communities and smallholder farmers are disproportionately affected by climate change which poses serious challenges to food security and agricultural productivity. To effectively develop adaptation strategies and promote sustainable land management practices it is imperative to comprehend the impact of climate change on agriculture. Climate Changes Effect on Food Security. Extreme weather events including heat waves droughts floods and storms are manifestations of climate change and have an immediate effect on food production and food security.
- **Weather Patterns:** Variations in temperature and rainfall patterns can produce growth conditions that are unpredictable. Droughts and floods can result in crop failures lower yields and livestock losses leading to an increase in the frequency of extreme events.
- **Changes in the Dynamics of Pests and Diseases:** Increased temperatures and modified precipitation patterns can enhance the dissemination of pests and diseases that impact livestock and crops. Food insecurity and malnutrition are exacerbated by these effects which impair food availability access and utilization particularly in areas with limited resources and adaptive capacity. The susceptibility of smallholder farmers to severe weather phenomena due to their limited resources and reliance on rain-fed agriculture smallholder farmers are disproportionately vulnerable to the effects of climate change.
- **Dependency on Rainfall:** Smallholders are vulnerable to droughts and water scarcity because they lack irrigation infrastructure and are therefore dependent on rainfall. • **Limited Technology Access:** Their capacity to adjust is hampered by a lack of climate-resilient tools seeds and practices.

- **Financial constraints:** Smallholders might not have the funds to purchase climate adaptation strategies or deal with crop failures. The susceptibility of smallholder farmers highlights the pressing need to execute focused interventions aimed at augmenting their resilience and ability to adjust. Adaptation Techniques for Agriculture that Is Climate-Resilient, The goal of adaptation strategies is to increase the resilience of agricultural systems so that farmers can withstand shocks related to climate change and recover from them.
- **Climate-Smart Farming Practices:** Endorsing methods like precision farming integrated pest management and conservation agriculture. These tactics help farmers remain sustainable and productive while improving their ability to adjust to the changing climate. In light of climate change maintaining soil fertility biodiversity and ecosystem services requires sustainable land management.
- 2. **Food security impacted by armed conflict and political instability** - Armed conflict and political instability makes it more difficult to achieve sustainable development goals by upsetting food systems and escalating hunger. Food crises are caused by armed conflict and political instability via a number of interrelated mechanisms. People displaced by conflict are forced to give up their farms and lose access to food sources which causes disruption to livelihoods. When food distribution networks are hindered by insecurity essential commodities become scarcer and the market becomes disrupted. Roads markets and storage facilities are among the vital infrastructures damaged by conflict which makes it more difficult to produce and distribute food. These variables exacerbate pre-existing vulnerabilities resulting in severe food scarcity and undernourishment in areas impacted by conflicts. Food Systems Disrupted in Conflict Areas. Significant disturbances to food systems occur in conflict areas affecting food accessibility availability and consumption. Armed conflict makes it difficult for relief workers to reach impacted communities with food assistance and basic supplies. Working in conflict areas puts farmers at higher risk which affects planting seasons and harvests. Food insecurity is made worse by the collapse of food systems which also leads to serious humanitarian crises in areas affected by conflicts.

#### INTEGRATED STRATEGIES FOR CLIMATE RESILIENT AGRICULTURE

An all-encompassing strategy for addressing the effects of climate change on agriculture involves implementing various sustainable land management techniques and adaptation tactics. This strategy includes:

- **Soil Conservation:** Implementing techniques such as agro ecology, cover cropping, and terracing to prevent soil erosion and degradation.
- **Reforestation and Afforestation:** Restoring degraded areas by planting trees to enhance biodiversity and increase carbon sequestration.
- **Conservation Agriculture:** Utilizing practices that minimize soil disturbance, preserve soil cover, and enhance water retention while lowering greenhouse gas emissions.

To ensure the long-term viability of agricultural landscapes and enhance ecosystem resilience, investments in sustainable land management are essential. This approach not only aids in climate adaptation but also contributes to building resilience and ensuring food security in a changing climate. Providing smallholder farmers with the necessary tools, information, and resources is crucial for achieving sustainable development goals and advancing climate-resilient agriculture.

Achieving these objectives requires concerted efforts from governments, research institutions, civil society, and international organizations. By merging adaptation tactics with sustainable land management techniques, stakeholders can work together to address the challenges posed by climate change in agriculture and foster a more resilient and sustainable future.

#### ADDRESSING CONFLICT INDUCED FOOD INSECURITY: A COMPRE-HENSIVE STRATEGY

Combating food insecurity caused by conflicts is a complex process that involves humanitarian assistance and long-term actions for peace building.

These include feeding vulnerable communities, including children and pregnant women among the refugees. To support affected households to meet their basic needs and access food, cash transfers or vouchers can be provided.

However, it's not enough to focus on immediate relief efforts alone because they yield less lasting impacts. Peace building should be considered as a key strategy in resolving the root causes of war such as social injustices that results from political wrangles and economic ine-qualities. In this regard, conflict prevention aims at addressing underlying concerns to alleviate future food emergencies through dialogue between parties involved. Engaging local communities in peace building helps them in building resilience, social cohesion and reconciliation. Equally important are post conflict development efforts which should concentrate on rebuilding sustainable food systems and livelihoods for long term security within affected areas.

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**ADDRESSING POVERTY AND INEQUALITY FOR RURAL FOOD SECURITY AND DEVELOPMENT**

Poverty and inequality in rural areas pose significant challenges to achieving food security and sustainable development. Access to sufficient nutritious food is hindered by several interrelated factors rooted in rural poverty:

- **Limited Income:** Low wages and scarce job opportunities restrict the ability to purchase food.
- **Insufficient Infrastructure:** Inadequate healthcare, education, and transportation facilities impede economic prospects and social mobility.
- **Lack of Land:** Families without sufficient land for farming or livelihood activities face food insecurity.
- **Land Tenure Systems:** Insecure land tenure and unequal land distribution contribute to marginalization and landlessness.
- **Limited Credit Access:** Smallholder farmers struggle to obtain credit for investments in agriculture.
- **Technological Divide:** Restricted access to modern agricultural technologies and extension services hampers productivity and competitiveness.

Rural poverty perpetuates cycles of hunger and malnutrition, particularly affecting vulnerable groups like women, children, and marginalized communities. The unequal distribution of resources exacerbates poverty and inequality in rural areas.

**INCLUSIVE RURAL DEVELOPMENT STRATEGIES FOR POVERTY ALLEVIATION**

Inclusive rural development strategies are designed to tackle rural poverty and ensure equitable access to resources. One key aspect involves investing in rural infrastructure, including road networks, irrigation systems, and market facilities. These improvements enhance access to markets and economic opportunities, which in turn can boost local economies and livelihoods.

Additionally, social protection programs play a crucial role by establishing safety nets such as food assistance and cash transfers. These programs support vulnerable households, providing essential resources during times of need and contributing to overall community resilience. Capacity building is another essential component, focusing on skill development and training programs for smallholder farmers. These initiatives help enhance agricultural practices, improve productivity, and diversify income sources. By equipping rural communities with the necessary tools and knowledge, capacity building fosters sustainable development and resilience against various challenges, including those posed by climate change and economic uncertainties.

**ENHANCING MARKET ACCESS FOR SMALLHOLDER FARMERS**

Improving market access for smallholder farmers is essential for raising incomes and securing food availability. A comprehensive approach involves various strategies:

Value Chain Development is key, as it strengthens market connections and enhances value-adding processes. By integrating smallholders into value chains, farmers can increase their income and competitiveness. Market Information Systems play a critical role by providing farmers with up-to-date market data. This information enables informed production and marketing decisions, optimizing yields and profitability. Facilitating Trade is vital for smallholder farmers to access regional and global markets. Streamlining trade procedures and promoting fair trade practices can expand market reach, enabling farmers to tap into broader opportunities for selling their products. By implementing these measures, we can empower smallholder farmers, improve their livelihoods, and contribute to broader rural development and food security objectives.

**ESTABLISHING COMPREHENSIVE STRATEGIES FOR SUSTAINABLE FOOD SYSTEMS AND FOOD SECURITY**

Food loss, waste management, and sustainable agricultural practices are essential components in achieving food security and promoting sustainable development, especially in developing nations. The detrimental impacts of food loss and waste stem from various factors along the supply chain, including post-harvest losses, inadequate cold chain facilities, and market constraints, leading to reduced farmer income and heightened resource demands.

Challenges with food supply chains and infrastructure exacerbate food loss and waste due to inadequate storage facilities, transportation constraints, and limited investment in post-harvest management technologies. To address these issues, investments in infrastructure, packaging innovations, transportation systems, and cold storage facilities are necessary. Furthermore, guiding farmers on proper handling and storage methods and promoting value addition and processing can reduce perishability and enhance shelf life.

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**ENCOURAGING SUSTAINABLE CONSUMPTION AND REDUCING FOOD WASTE**

Efforts to reduce food waste and promote sustainable consumption require changes in consumer behaviour and increased awareness through educational campaigns. Educating consumers on the economic, environmental, and food security impacts of food waste can encourage responsible shopping practices, meal planning, and proper food storage. Food recovery initiatives, such as surplus redistribution to disadvantaged populations, and policy interventions that incentivize stores and consumers to minimize waste contribute to sustainable consumption practices and align with development goals.

**POLICY FRAMEWORKS AND GOVERNANCE FOR SUSTAINABLE FOOD SECURITY**

National policies and governance systems play critical roles in achieving sustainable food systems and zero hunger. Key strategies include enacting food security laws, developing sustainable agriculture policies to support small-scale farmers, and implementing nutrition programs to reduce undernourishment. Effective governance frameworks involve inter-ministerial coordination, robust data collection, and fostering partnerships across sectors to ensure accountability and transparency in resource allocation.

Regulatory frameworks that promote sustainable agricultural practices, environmental regulations, and quality standards for food processing contribute to resilient agricultural systems and adherence to sustainability principles. Development plans that integrate food security goals, allocate sufficient budgets, and promote policy coherence with broader development objectives enhance policy effectiveness and sustainability.

**EMPOWERING LOCAL COMMUNITIES FOR SUSTAINABLE FOOD SYSTEMS**

Building sustainable food systems requires empowering local communities through stakeholder engagement, knowledge sharing, and promoting inclusive policies. Encouraging youth and women participation in agriculture, enhancing farmer capabilities through training and information accessibility, and supporting local food systems and agro ecology initiatives foster cultural diversity, community resilience, and food sovereignty.

**4. CONCLUSION**

Achieving sustainable food systems and ending world hunger necessitates comprehensive strategies that strengthen governance, enforce policies, and empower communities. Collaboration among governments, civil society organizations, academic institutions, and local communities is essential to realizing equitable access to culturally appropriate food and advancing sustainable development goals. Stakeholders must work together to implement effective policies, promote sustainable practices, and empower communities for lasting impact on global food security and well-being.

Global cooperation and integrated strategies are necessary to achieve SDG 2s goal of sustainable food security. Comprehensive approaches are necessary to address issues such as the impacts of climate change and food insecurity caused by conflicts. To make sure that everyone has access to wholesome food efforts must be focused on climate-resilient agriculture inclusive rural development and better market access for smallholder farmers. A key to this project is the establishment of strong governance frameworks policy frameworks and community empowerment programs. Achieving SDG 2 and other more general sustainable development goals requires cooperation between governments academia civil society and local communities. By working together we can create resilient food systems by 2030 that support environmental sustainability social justice and universal access to food.

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