

Gender and food Security in Nigeria, Analyzing Disparities and Empowering Women: A Critical Review

¹Priscilla O. Odoh, ¹Samson Olayemi Sennuga, ²Joseph Bamidele and ¹Daniel A. Ameh

¹Department of Agricultural Extension and Rural Sociology, Faculty of Agriculture, University of Abuja, FCT, PMB. 117, Abuja, Nigeria

²Faculty of Business and Law, University of Northampton, Waterside Campus, University Drive, Northampton NN1 5PH, United Kingdom

Corresponding Author's email: dr.olayemisennuga@yahoo.co.uk

Citation: Odoh, P. O., Sennuga, S. O., Bamidele, J. and Ameh, D. A. (2024). Gender and Food Security in Nigeria, Analyzing Disparities and Empowering Women: A critical Review

DOI: [10.56201/rjfsqc.v10.no1.2024.pg20.36](https://doi.org/10.56201/rjfsqc.v10.no1.2024.pg20.36)

Abstract

The issue of women's empowerment and gender equality is at the top of agendas across the world, as gender inequality is wide-spread in all cultures. In developing countries, gender disparity is highly rampant compared to the developed countries. Food security involves food access, availability, use and sustainability, hence, people can be said to be food secured when they are able to get adequate, safe and nutritious diets all year round. The paper examines gender and food security, analyzing disparities and empowering women. the paper also reviews the Food Security from Pillars to Pathways, measurement of food security, Indicators for Global Food Security, monitoring of food security, dimension of food security and determinant of food security in Nigeria. A number of studies have shown that sustainable development is impossible without women's empowerment and gender equality. Consequently, it is asserted that gender equality is both a human rights issue and a precondition for, and indicator of, sustainable development. It is also affirmed that gender disparity is prevalent across the cultures of the world and that without serious steps to tackle it, sustainable development cannot be achieved.

Keywords: Gender, food security, disparities, empowering, women, sustainable

I. Introduction

In the early 1970s, a time of global food crises, the concept of food security initially focused on ensuring food availability and the price stability of basic foods, which was due to the extreme volatility of agricultural commodity prices and turbulence in the currency and energy markets at that time (Berry *et al.*, 2015). The occurrence of famine, hunger and food crises required a definition of food security which recognized the critical needs and behavior of potentially vulnerable and affected people (Shaw, 2007). The concept of food security was defined then at the World Food Conference in 1974 as “[the] availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (United Nations, 2020). This definition stressed

understandably the need for increased production since protein-energy deficiency in 1970 was believed to affect more than 25% of the global population.

A better perception of the crises in food security later led to a shift in emphasis from the availability of food to a wider approach. A deeper grasp of the functioning of agricultural markets under stress conditions, and how at-risk populations found themselves unable to access food, led to the expansion of the FAO definition of food security to include securing access by vulnerable people to available supplies. Economic access to foods came into the concept of food security (Berry *et al.*, 2015). Then, a revised definition of food security evolved to “ensuring that all people at all times have both physical and economic access to the basic food that they need” (FAO, 1983). The next development came in 1986 when the World Bank published its seminal report *Poverty and Hunger* (World Bank, 1986). This introduced a time scale for food security by distinguishing between chronic food insecurity, associated with poverty, and acute, transient food insecurity, caused by natural or man-made disasters. These were reflected in a further extension of the concept of food security to include: “access of all people at all times to enough food for an active, healthy life” (Berry *et al.*, 2015).

The next concept evolution happened in 1994 following the UN Development Program’s Human Development Report (UN Development Programme, 1994) considering the requirements for human security. At this time, food security, which was within the larger framework of social security, entered the discussion of human rights. Since the studies on food security are often context specific, depending on which of the many technical perspectives and policy issues, this multidimensional and multifaceted operational construct had no coherent definition then. In an attempt to bring more unity to such complexity, a redefinition of food security was conducted through international consultations in preparation for the World Food Summit held in 1996 (Shaw, 2007), reflecting the complex interaction among, and between, individual, household, even to the global level. Food security, at all different levels, is achieved “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 1996). In the mid-1990s, as the term “food security” evolved, the terms “nutrition security” and “food and nutrition security” also emerged. Food security is then considered as a subset of “food security and nutrition”.

The next development of definition of food security was redefined further in the “The State of Food Insecurity in the World 2001” by adding the social emphasis as cited above (FAO, 2002). It was recognized that addressing poverty is necessary but not alone sufficient to achieve this goal (FAO, WFP and IFAD, 2012). Then at the 2009 World Summit on Food Security, the last official revision, which added the fourth dimension of stability to the concept of food security (FAO, 2009). More recently it has been suggested that sustainability be added as a fifth dimension to encompass the long-term time dimension (Berry *et al.*, 2015).

Understanding of Food Security from Pillars to Pathways

Food security is best considered as a causal, linked pathway from production to consumption, through distribution to processing, recognized in a number of domains, rather than as four “pillars” (Berry *et al.*, 2015).

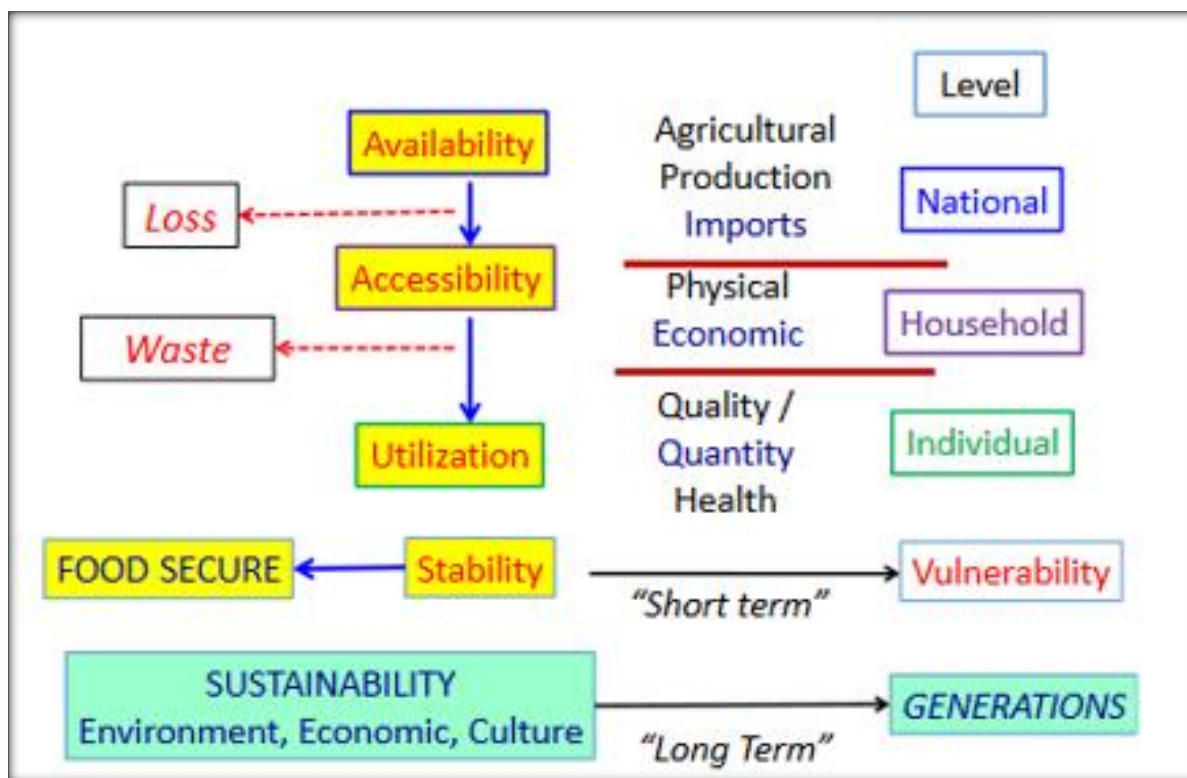


Figure 1: The pathway of the dimension of Food Security. After Berry *et al.*, 2015

In the 2009 World Summit definition on Food Security, the Summit used for the first time the phrase “four pillars of food security”, representing the four dimensions, namely, availability, accessibility, utilization and stability, of food security (FAO, 2009). However, the visualization of pillars gives a rather misleading representation of the concept since the four dimensions are surely interrelated and interdependent, rather than static and separate. Pillars give no illustration of the linkage between the dimensions of food security. The weighting of the four dimensions is another problem faced by the visualization of four pillars, which directs to an impression of average weighting of 25% for each of the four dimensions. However, not all the elements in food security are of equal importance as implied by the pillar analogy. Their weightings are context and country specific (Berry *et al.*, 2015). For example, in many developing countries, accessibility depends on the transport infrastructure which may limit the physical access to food; while in developed countries, economic access is the main barrier for food security. A scenario after a natural disaster, e.g., an earthquake, the availability, accessibility, utilization and stability are all major problems. In these different contexts, the weights of four dimensions should definitely not be equal.

Instead of pillars, a better analogy using a pathway to describe the relations among four dimensions of food security. This analogue was used by The State of Food Insecurity in the World 2013 (FAO, WFP and IFAD, 2013), to show the links from food production(availability) to household (accessibility) to individual (utilization). Accessibility contains physical (transport, infrastructure) and economic means (food purchasing power). It also involves socio-cultural access and preferences and its health effects and, with them the importance of social

protection (HLPE, 2012). Stability thus emphasized the importance of bringing a time dimension, albeit short term, to food security. The topic of stability is taken up in the companion article (Anderson, 2018b).

Apart from one-way pathways, the food security may also be considered circular, as there is a feedback loop from utilization to availability since human capital depends on optimal nutritional state for the workforce in agriculture and in all sectors of production (Berry *et al.*, 2015). These concepts are summarized in Fig. 1. An important insight from this figure is the importance of food losses (from agriculture, post-harvest and distribution) and food waste (from processing and consumption in the household and community). Worldwide these may amount to one-third of the food available and is an obvious target for improving food security (HLPE, 2014). Reducing these amounts is a major challenge for securing world food availability in the future. From a systemic view obesity may also be considered a type of food waste.

1.1 Measurement of Food Security

Universal indicators for measuring food security are challenging. They need to be widely accepted as correct and reasonably objective and to be homogeneous across time and space. Different indicators may be applied to different levels of food security.

1.2 Indicators for Global Food Security

Suitable indicators for global food security must be reliable, repeatable and available for the majority of countries of the world. There is, however, no accepted agreement as to what are the optimal ones for food security (Berry *et al.*, 2015). The measurement of food security over the years by FAO was mostly based on energy deprivation and protein deficiency. Proposed originally by Sukhatme, FAO used the parametric indicator –prevalence of undernourishment to monitor the food security in the world. The annual “The State of Food Insecurity in the World” report from FAO is considered the official release of the food insecurity worldwide.

As concluded also by the International Scientific Symposium on Measuring Food and Nutrition Security, held in January 2012 at FAO, given the existing data, the prevalence of undernourishment remains one of the few indicators available with wide coverage and comparability across time and space. At the same time, it is well recognized that as a standalone indicator, prevalence of under-nourishment is not able to capture the complexity of all the dimensions of food security and that a more comprehensive approach to the measurement is required (Berry *et al.*, 2015). In recent years, FAO, the International Fund for Agricultural Development and the World Food Programme (FAO, WFP and IFAD, 2012, 2013) have proposed a suite of food security indicators, in which each food security dimension is described by a number of indicators. Efforts are also underway to summarize these indicators into aggregated indices.

Table 1 summarizes indicators selected by FAO (FAO, WFP and IFAD, 2013) as best representing the dimensions of food security at present at the global level. These were chosen from numerous different indicators on the basis of their relevance, availability and frequency of measurement.

Indicators for Measuring Food Security at the Household Level

Maxwell *et al.* summarized several categories of indicators of household food security (Maxwell *et al.*, 2013), which have shown

Table 1 FAO suite of indicators for food security 2013

<i>Food security domain</i>	<i>FAO suite of indicators for food security 2013</i>
<i>Level</i>	
Availability	
National	Average dietary energy supply adequacy Average value of food production Share of dietary energy supply derived from cereals, roots and tubers Average protein supply Average supply of protein of animal origin
Accessibility	
Household	Percentage of paved roads over total roads Road density Rail-lines density Domestic Food Price Level Index Prevalence of undernourishment Share of food expenditure of the poor Depth of the food deficit Prevalence of food inadequacy
Utilization	
	Access to improved water sources Access to improved sanitation facilities Percentage of children under 5 years of age affected by wasting Percentage of children under 5 years of age who are stunted Percentage of children under 5 years of age who are underweight Percentage of adults underweight
Stability/Vulnerability	
	Cereal import dependency ratio Percent of arable land equipped for irrigation Value of food imports over total merchandise exports Political stability and absence of violence/terrorism Domestic food price level index volatility Per Capita food production variability Per Capita food supply variability

FAO, WFP AND IFAD (2013) the State of Food Insecurity in the World 2013: The Multiple Dimensions of Food security. Rome: FAO

Dietary Diversity and Food Frequency

This category of indicators usually captures the number of different kinds of foods or food groups that people consume, and the frequency of consuming them. The result is a score, showing the diversity of diets. The Food Consumption Score (FCS) and the Household Dietary Diversity Score (HDDS) are two common indicators measuring dietary diversity (Maxwell *et al.*, 2013; FANTA,2006; FAO, 2010).

Spending on Food

People who spend a greater proportion of expenditure on food, have been considered less secure in household food security (Maxwell *et al.*, 2013; Smith *et al.*, 2006).

Consumption Behaviors

This category of indicators measures behaviors related to food consumption, thus capturing food security indirectly. The most widely known indicator in this category is the Coping Strategies Index (CSI), with a shortened version of “reduced CSI” (rCSI) (Maxwell and Caldwell, 2008). Another well know indicator is the Household Hunger Scale, applied in more severe behaviors (Maxwell *et al.*, 2013).

1.3 Dimensions of Food Security

Four dimensions of food security have been identified according to the definition (FAO, 2008).

- 1) Availability of food produced locally and imported from abroad.
- 2) Accessibility. The food can reach the consumer (transportation infrastructure) and the latter has enough money for purchase. To such physical and economic accessibility is added socio-cultural access to ensure that the food is culturally acceptable and that social protection nets exist to help the less fortunate.
- 3) Utilization. The individual must be able to eat adequate amounts both in quantity and quality in order to live a healthy and full life to realize his or her potential. Food and water must be safe and clean, and thus adequate water and sanitation are also involved at this level. A person must also be physically healthy to be able to digest and utilize the food consumed. The fourth domain of Stability, deals with the ability of the nation/community/(household) person to withstand shocks to the food chain system whether caused by natural disasters (climate, earthquakes) or those that are man-made (wars, economic crises). Thus, it may be seen that food security exists at a number of levels.

Availability - National; Accessibility – Household; Utilization – Individual; Stability – may be considered as a time dimension that affects all the levels. All four of these dimensions must be intact for full food security. More recent developments emphasize the importance of sustainability, which may be considered as the long-term time (fifth) dimension to food security. Sustainability involves indicators at a supra-national/regional level of ecology, biodiversity and climate change, as well as socio-cultural and economic factors (Berry *et al.*, 2015). These will affect the food security of future generations.

1.4 Monitoring of Food Security (1990–2015)

The 1996 World Food Summit assigned FAO the responsibility for monitoring progress towards the objective of the Plan of Action reducing by half the number of estimated undernourished people by year 2015. From the data release by the FAO, the overall prevalence of undernourishment has been decreasing from 14.8% in 2000 to 10.7% in 2015 (FAO, 2016), showing the overall improvement in global food security. However, in 2016, the number of chronically undernourished people in the world is estimated to have increased to 815 million, up from less than 800 million in 2015 (FAO, IFAD, UNICEF, WFP and WHO, 2017). This

recent increase is a signal of a reversal of trends. The food insecurity has worsened in particular in parts of sub-Saharan Africa, South-Eastern Asia and Western Asia, and these deteriorations have been observed most notably in conflicts and conflict combined with droughts or floods. Climate change may also be implicated.

The limitation of the current parameter for monitoring food security – prevalence of undernourishment– is that, it reflects only one of the triple-burden of malnutrition, namely undernourishment, micronutrient deficiency and over-nutrition. To demonstrate and compare the overall nutritional status at the global, regional and national levels, the Global Nutritional Index (GNI) has been developed (Rosenbloom *et al.*, 2008) and updated (Peng and Berry, 2018). The overall trends of the GNI from 1990 to 2015 showed a decreased under-nutrition and increased over-nutrition, which has become a major cause of malnutrition worldwide (Peng and Berry, 2018). This trend poses new challenges to achieve overall food security and nutrition. A sustainable food system (HLPE, 2017) may be the framework to provide a possible solution. Food security, nutrition and sustainability are increasingly discussed in the same context. The integration of food security as an explicit part of the sustainability agenda would go a long way towards such a goal. The final common pathway of all these efforts is towards sustainable food security and nutrition for our planet.

1.5 Food Security in Nigeria.

There are four global threats that have significant implications for food security viz; population explosions, global warming, loss of biodiversity and globalization of injustice (Matuschke, 2009). The continent of Africa is not yet on the path to eliminate hunger by 2030 while the prevalence of malnutrition in Africa has risen from 17.6% in 2014 to 19.1% in 2019 (FAO, 2019). Over the years, the question of appropriate food security has remained a critical subject for consideration by many government administrations in Nigeria (Ejikeme, 2017; Osabohien *et al.*, 2020a, b). Small-scale farmers in Nigeria constituted 90% of Nigeria's agricultural output (Ayinde *et al.*, 2020) while the majority of such farmers are not able to feed themselves and other relatives. The low productivity is mainly as a result of fragmented land holding, over reliance on rain-fed agriculture, climate change, low access to input and poor economic base. Some interventions were developed in Nigeria since independence in 1960 to increase crop productivity, generate employment, and ensure food security. Notable among the interventions were: The Green Revolution, Lower Niger River Basin Development Authority (LNRBDA), Operation Feed the Nation (OFN), and regulatory bodies such as the Directorate of Foods, Roads, and Rural Infrastructure (DFRRI) and National Agricultural and Land Development Authority (NALDA). However, many of these programs failed due to weak institutional foundation, corruption, and poor implementation (Aderinoye and Abdulwahab, 2020). The Kano River Irrigation Project (KRIP) is one of the pioneer projects established by the Federal government of Nigeria in 1970 (Ahmad, 2018). The project aimed at increasing food production and productivity, improve the beneficiaries' income, provide employment opportunities and reduce food insecurity (Yusuf *et al.*, 2020). The study purposively used rice farmers for the study because rice is cultivated in more than 70% of the cropped area (Wudil *et al.*, 2021).

The crop is also one of the most consumed staples in Nigeria (Uduma *et al.*, 2016; Fawole and Aderinoye-Abdulwahab, 2021) while available statistics showed that Nigerians consume more

than seven million metric tons of rice in 2020 (Ihedioha *et al.*, 2021). In recent decades however, insufficient local rice production to meet the local consumption has emerged as a significant food security issue (Seck *et al.*, 2012; Matemilola, 2017). Historically over dependence on rain-fed agriculture coupled with low investments in irrigated rice production, makes the country to rely heavily on rice imports to meet growing demand (Uduma *et al.*, 2016). Previous studies have looked at food security from various angles, including government engagement, climate change, and the demand for food and associated resources for human consumption (Ayinde *et al.*, 2020). This study is thus the first attempt at investigating the project beneficiaries' food security situation in order to ascertain the extent to which Kano River Irrigation Project (KRIP) has achieved its set objectives for ensuring food security when compared with non-beneficiaries. Food security indices have been measured globally using various indicators such as: per capita expenditure on food, food insecurity access scale, food consumption score, per capita food consumption, share of dietary intake and coping strategy index (Ogundari, 2017). Notwithstanding the extensive studies on food security indicators, there is still not a consensus on the core parameters that are needed to adequately measure household food security situations at both the micro and macro levels around the world (Akukwe, 2020).

Food security and insecurity are two opposing terms used to describe how much access or lack of access to sufficient and nutritious food are available to a population. Food security involves food access, availability, use and sustainability (FAO, 2017); hence, people can be said to be food secured when they are able to get adequate, safe and nutritious diets all year round. Although, majority of the food in-secured are domiciled in developing countries, food security has become an issue of top priority for both developing and developed countries (Mohammed *et al.*, 2021). This is because household food insecurity is responsible for a huge proportion of malnutrition and deaths in developing worlds (Drammeh *et al.*, 2019); hence the emphasis on food security in the sustainable development goals (SDGs). Moreover, evidence has shown that food insecurity is closely related to socio-economic characteristics such as: poverty, low income, employment status, age, household size, level of education among others (Drammeh *et al.*, 2019; Mohammed *et al.*, 2021; Fikire and Zegeye, 2022). In addition, it has been established that an increased level of education can translate into higher level of food security (Mohammed *et al.*, 2021).

1.6 Determinant of Food Security in Nigeria

Studies on determinants of food security have been conducted across the world and they range from socio-economic, institutional, environmental, and safety-related perspectives. In focusing on a more precise approach, this study concentrates more on the socio-economic determinants at the household level and economic indicators at the macro level to uncover the determinants of food security among the beneficiaries of KRIP. Whilst Cheema and Abbas (2016) identified that off-farm income significantly impacts household food security positively, Karki *et al.* (2021) reported that assets possession is an important determinant of food security. In a similar vein, Firdaus *et al.* (2020) showed a positive association between household food security and socio-economic indices such as: family size, land size and land quality while Fikire and Zegeye (2022) also noted that age is a significant socio-economic consideration in food security index. This is because the older a farmer becomes, the more experience they must have acquired in farm operations and planning; and this will make it easier for them to attain food security.

Gundersen and Garasky (2012) had previously asserted that a positive correlation exists between age of household head and food security while food security also increases with increasing income.

Obayelu (2012) in his study on food security situation in northern Nigeria found that only 16% of the households were food secure (FS), 36% food insecure without hunger, 28% FS with moderate hunger and 21% food insecure with severe hunger. His result further revealed that geographical location, food dietary diversity, level of education, occupation of household head, household dependency ratio, social capital and agricultural land-holding size significantly affect households' food security status. Ajayi and Olutumise (2018) found that 43% of their respondents in Ondo State, Nigeria were food secured. The shortfall and surplus indices were found to be 0.13 and 0.20 respectively. Their findings further revealed that experience, education, access to credit, access to extension agent, distance to farm and farm size were the factors that influenced food security. It was also found that increase in productivity; either in terms of a rise in production or expansion of cultivated lands, will positively influence food security at the macro-level (Pieters *et al.*, 2013). Moreover, foreign direct investment in agriculture sector equally has positive impact on food security (Slimane *et al.*, 2016)

2. Empowering Nigerian Women in Agriculture

In sub-Saharan Africa, the subject of gender disparity in access to economic and productive resources has received considerable attention. Ashagidigbi (2022) Women in Nigeria play significant roles in food production and agriculture; according to reports, women small-scale farmers make up between 70 and 80 percent of the industry's work force. They are responsible for the majority of domestic food production, processing, marketing, and preservation. In contrast to their male counterparts, women's access to productive inputs, including better seed types, extension services and land input is constrained, according to a number of studies, notably in sub-Saharan Africa (Quisumbing *et al.*, 2010). They have limited access to land, credit facilities, training and advice for farm inputs, technology, and crop insurance, among other things, despite all of their massive contributions to this sector.

About 14% of the land used for farming is owned by women small farm owners, and the government's agricultural sector pays them little attention despite their important responsibilities in food production. According to estimates, women could considerably help accomplish Sustainable Development Goal (SDG) 1 (eradicating extreme poverty and hunger), if they had access to capital, land, technology and training guidance on par with men. USAID says that empowering women to own and manage their own land and produce is the first step toward ensuring Nigeria's future food security. Thousands of women farmers are receiving the tools, information, and resources they need to increase their incomes and the lives of their families and communities thanks to a partnership between Feed the Future and the Nigerian Trade Hub. Gender mainstreaming is recommended in Africa, including Nigeria, for agricultural policies and programs for inclusive financing for food security and sustainable development, as women dominate and play major roles in producing subsistence crops and livestock. (Akokuwebe, *et al* 2021)

2.1 Female empowerment in Nigeria is an economic process that involves empowering Nigerian women as a poverty reduction measure. Timothy (2014) (Pereira *et al.*, 2009) empowerment is the development of women in term of politics, social and economic strength in nation development. It is also a way of reducing women's vulnerability and dependency in all spheres of life. It can be noted that the aggregate of educational, political, health and legal empowerment are key to women's empowerment in Nigeria. Stella (2014). Like many African women, Nigerian women have a subordinate role to their male counterparts. There are twice as many women below the poverty line than men, and up to 19 times as many men in executive positions than women.

2.3 Why should we empower women and achieve gender equality?

A number of studies have shown that sustainable development is impossible without women's empowerment and gender equality. Consequently, it is asserted that gender equality is both a human rights issue and a precondition for, and indicator of, sustainable development (Alvarez and Lopez, 2013). It is also affirmed that gender disparity is prevalent across the cultures of the world and that without serious steps to tackle it, sustainable development cannot be achieved (Stevens, 2010). Furthermore, UN Women (2014) rightly outlined that to create a just and sustainable world and to enhance women's roles in sustaining their families and communities, achieving gender equality is paramount. On the other hand, if gender equality is not maintained, it will retard the country's development. In line with this idea, Stevens (2010) interestingly underlines that “an increasing number of studies indicate that gender inequalities are extracting high economic costs and leading to social inequities and environmental degradation around the world.”

Therefore, one can understand from such explanations that without the equal inclusion of women in all areas of development initiatives, all the above-mentioned components of sustainable development cannot be achieved. However, gender inequalities across economic, social and environmental dimensions remain widespread and persistent (UN Women, 2014); Nigeria's case is also very much apparent. Being cognizant of the negative effects of the prevailing gender disparity, the Ministry of Agriculture and Rural Development (2008) affirmed that “any development initiative has to engage and ensure that both men and women contribute and benefit equally from it.” The researcher, being firmly convinced by this assumption, further argues that women should be empowered and equally allowed to contribute to and benefit from all dimensions of development so as to bring about sustainability.

2.4 Definition of Empowerment

Empowerment can be defined as a “multi-dimensional social process that helps people gain control over their own lives. It is a process that fosters power in people, for use in their own lives, their communities, and in their society, by acting on issues that they define as important” (Page and Czuba, 1999). In the same way, women's empowerment refers to “women's ability to make strategic life choices where that ability had been previously denied them” (Malhotra *et al.*, 2009). Accordingly, empowerment is central to the processes of maintaining the benefits of women at individual, household, community and broader levels (Malhotra *et al.*, 2009). It involves the action of boosting the status of women through literacy, education, training and raising awareness (Alvarez and Lopez, 2013). Hence, women's empowerment is all about

allowing and equipping women to make life-determining choices across different issues in the country.

3. Gender refers to the socially constructed roles, behaviours, expressions and identities of girls, women, boys, men, and gender diverse people. It influences how people perceive themselves and each other, how they act and interact, and the distribution of power and resources in society. Gender identity is not confined to a binary (girl/woman, boy/man) nor is it static; it exists along a continuum and can change over time. There is considerable diversity in how individuals and groups understand, experience and express gender through the roles they take on, the expectations placed on them, relations with others and the complex ways that gender is institutionalized in society.

4. Disparity usually refers to a difference that is unfair: economic disparities exist among ethnic groups, there is a disparity between what men and women earn in the same job. This noun derives from Latin *dispar* "unequal." The opposite of disparity is parity, the condition of being equal or the same.

Another, almost-related and equally important concept in this paper is gender equality. Gender equality is understood to mean that the “rights, responsibilities and opportunities of individuals will not depend on whether they are born male or female” (Warth and Koparanova, 2012). It is also defined as a situation where “... all human beings are free to develop their personal abilities and make choices without the limitations set by strict gender roles; that the different aspirations and needs of women and men are considered, valued and favoured equally” (Holzner *et al.*, 2010). The ultimate goal of gender equality is the non-existence of discrimination on the basis of one's gender (Alvarez and Lopez, 2013). To this end, empowerment of women has an indispensable role (Alvarez and Lopez, 2013)

Conclusion

Food security and insecurity are two opposing terms used to describe how much access or lack of access to sufficient and nutritious food are available to a population hence, people can be said to be food secured when they are able to get adequate, safe and nutritious diets all year round. Although, majority of the food in-secured are domiciled in developing countries, food security has become an issue of top priority for both developing and developed countries. A number of studies have shown that sustainable development is impossible without women's empowerment and gender equality. Consequently, it is asserted that gender equality is both a human rights issue and a precondition for, and indicator of, sustainable development. It is also affirmed that gender disparity is prevalent across the cultures of the world and that without serious steps to tackle it, sustainable development cannot be achieved.

References

- Ahmed, R. O. (2001). Gender Issues, Population and Development in Ethiopia: In depth Studies from the 1994 Population and Housing Census in Ethiopia, Italian Multi-bi Research Project ETH/92/P01. Central Statistical Authority (CSA) Addis Ababa, Ethiopia and Institute for Population Research National Research Council (Irp-Cnr), Roma, Italy.
- Alvarez, Lopez, Michelle, (2013). From unheard screams to powerful voices: a case study of Women's political empowerment in the Philippines. In: 12th National Convention on Statistics (NCS) EDSA Shangri-la Hotel, Mandaluyong City October 1-2, 2013.
- Anderson, J. R., (2018a). Concepts of food sustainability. In: Ferranti, P., Berry, E., Anderson, J.R. (Eds.), *Encyclopedia of Food Security and Sustainability*. Elsevier Concepts, Oxford.
- Anderson, J. R., (2018b). Concepts of food stability in food security. In: Ferranti, P., Berry, E., Anderson, J.R. (Eds.), *Encyclopedia of Food Security and Sustainability*. Elsevier, Oxford.
- Aderinoye-Abdulwahab, S. A. (2020). "Agricultural policies and economic recovery and growth plan (ERGP 2017-2020)," in *Strategic Lenses: Economic Diversification and National Development in Nigeria*, eds Kadiri, M. M., Attu, E. A., Alarape, A. L., and Udeh, C. S. (Abuja: National Defence College, Abuja, Nigeria).
- Ajayi, C. O., and Olutumise, A. I. (2018). Determinants of food security and technical efficiency of cassava farmers in Ondo State, Nigeria. *Int. Food Agribus. Manag. Rev.* 21, 915–928.
- Akukwe, T. I. (2020). Household food security and its determinants in agrarian communities of southeastern Nigeria. *Agro-Science* 19, 54–60. doi: 10.4314/as.v19i1.9
- Akokuwebe, M. E., Amusan, L. and Odularu, G. (2021). "Women development in agriculture as agency for fostering innovative agricultural financing in Nigeria". *African Journal of Food, Agriculture, Nutrition and Development*. 21 (7): 18279–18299.
- Ashagidigbi, W. M., Orilua, O. O., Olagunju, K. A. and Omotayo, A. O. (2022). "Gender, Empowerment and Food Security Status of Households in Nigeria". *Agriculture*. 12 (7): 956 - 970
- Ayinde, I. A., Otekunrin, O. A., and Akinbode, S. O. (2020). Food security in Nigeria: impetus for growth and development. *Journal of Agricultural Economic*. 6, 808–820.
- Berry, E. M., Dernini, S., Burlingame, B., Meybeck, A., Conforti, P., (2015). Food security and sustainability: can one exist without the other? *Public Health Nutrition*. 18, 2293–2302.
- Browse the Library." Challenges Facing Women Empowerment in Contemporary Nigeria | Gender Hub, www.genderhub.org/get-in-the-know/resource-library/challenges-facing-women-empowerment-in-contemporary-nigeria/.

- Cheema, A. R., and Abbas, Z. (2016). Determinants of food insecurity in Pakistan:evidence from PSLM 2010-11. *Pak. J. Appl. Econ.* 26, 183–213.
- Chinekezi, S. (2014). "Education as a Tool for Women Empowerment in Nigeria" (PDF). *Journal of Resourcefulness and Distinction.* 9: 2. Retrieved 31 August 2023.
- Dino Abdula, M. (2021). Impact of climate variability on household food security in chiro District, West Hararghe Zone, Oromia Region, Ethiopia (Doctoral dissertation). Haramaya University, Dire Dawa, Ethiopia.
- Drammeh, W., Hamid, N. A., and Rohana, A. J. (2019). Determinants of household food insecurity and its association with child malnutrition in Sub-Saharan Africa: a review of the literature. *Curr. Res. Nutr. Food Sci.* 7, 610–623.
- Ejikeme, J. O., Ojiako, J. C., Onwuzuligbo, C., and Uand Ezeh, F. C. (2017). Enhancing food security in Anambra state, Nigeria using remote sensing data. *Environ. Rev.* 6, 27–44. Available online at: <http://erjournal.net/index.php/erjournal/article/viewFile/33/pdf4>
- Erokhin, V., and Gao, T. (2020). Impacts of COVID-19 on trade and economic aspects of food security: Evidence from 45 developing countries. *Int. J. Environ. Res. Public Health* 17, 57–75.
- FAO (2017). Migration, Agriculture and Climate Change. Reducing vulnerabilities and enhancing resilience. Food and Agricultural Organization of the United Nations, Rome, Italy.
- FAO (2019). The State of Food and Agriculture 2019. Moving Forward on Food Loss and Waste Reduction. Rome. Available online at: www.fao.org/3/ca6030en/ca6030en.pdf
- FANTA, (2006). Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide (Version 2). Food and Nutrition Technical Assistance Project (FANTA), Washington DC.
- FAO, (1983). World Food Security: A Reappraisal of the Concepts and Approaches. Director General's Report. FAO, Rome.
- FAO, (1996). Rome Declaration on Food Security and World Food Summit Plan of Action. FAO, Rome.
- FAO, (2002). The State of Food Insecurity in the World 2001. FAO, Rome.
- FAO, (2008). Food Security Information for Action: Practical Guides. EC - FAO Food Security Programme, Rome
- FAO, (2009). Declaration of the World Food Summit on Food Security. FAO, Rome.
- FAO, (2010). Guidelines for Measuring Household and Individual Dietary Diversity. FAO, Rome.
- FAO, (2012). Sustainable Diets and Biodiversity. FAO, Rome. Available at: <http://www.fao.org/docrep/016/i3004e/i3004e.pdf>.

- FAO, (2016). Prevalence of Undernourishment [Online]. World Bank Database. Available at: <https://data.worldbank.org/indicator/SN.ITK.DEFC.ZS>.
- FAO, (2018). The Food Insecurity Experience Scale. Voices of the Hungry [Online]. FAO. Available at: <http://www.fao.org/in-action/voices-of-the-hungry/fies/en/>.
- FAO, IFAD and WFP, (2015). The State of Food Insecurity in the World 2015. Meeting the 2015 International Hunger Targets: Taking Stock of Uneven Progress. FAO, Rome.
- FAO, IFAD, UNICEF, WFP and WHO, (2017). The State of Food Security and Nutrition in the World 2017– Building Resilience for Peace and Food Security. FAO, Rome.
- FAO, WFP and IFAD, (2012). The State of Food Insecurity in the World 2012: Economic Growth Is Necessary but Not Sufficient to Accelerate Reduction of Hunger and Malnutrition. FAO, Rome.
- FAO, WFP and IFAD, (2013). The State of Food Insecurity in the World 2013: The Multiple Dimensions of Food Security. FAO, Rome.
- FAO, IFAD, UNICEF, WFP and WHO (2021). The State of Food Security and Nutrition in the World (2021). Transforming food systems for food security, improved nutrition and affordable healthy diets for all. Rome, FAO.
- Farzana, F. D., Rahman, A. S., Sultana, S., Raihan, M. J., Haque, M. A., and Waid, J. L., (2017). Coping strategies related to food insecurity at the household level in Bangladesh. *Plots ONE* 12, e0171411.
- Fawole, B. E., and Aderinoye-Abdulwahab, S. A. (2021). “Farmers’ adoption of climate smart practices for increased productivity in Nigeria,” in *African Handbook of Climate Change Adaptation*, eds N. Ogue, D. Ayal, L. Adeleke, and I. da Silva (Cham: Springer).doi: 10.1007/978-3-030-45106-6_227
- Fikire, A. H., and Zegeye, M. B. (2022). Determinants of rural household food security status in North Shewa Zone, Amhara Region, Ethiopia. *Sci. World Journal*. 12, 18.
- Firdaus, R. R., Leong Tan, M., Rahmat, S. R., and Senevi Gunaratne, M. (2020). Paddy, rice and food security in Malaysia: a review of climate change impacts. *Cogent Soc. Sci.* 6 (1); 81- 97.
- Gundersen, C. G., and Garasky, S. B. (2012). Financial management skills are associated with food insecurity in a sample of households with children in the United States. *J. Nutr.* 142, 1865–1870.
- Garnett, T., Smith, P., Nicholson, W., Finch, J., 2016a. Food Systems and Greenhouse Gas Emissions (Food Source: Chapters). Food Climate Research Network, University of Oxford.
- Garnett, T., Smith, P., Nicholson, W., Finch, J., 2016b. Overview of Food System Challenges (Food source: Chapters). Food Climate Research Network, University of Oxford.

- "Growing rice, empowering women: Providing tools for Nigerian women rice farmers to prosper | West Africa Regional | News". *U.S. Agency for International Development*. 24 August 2022. Retrieved 11 October 2023.
- Headey, D., (2011). Was the Global Food Crisis Really a Crisis? Simulations versus Self reporting. IFPRI, Washington DC.
- Holzner, Brigitte, D. O. (2010). Gender Equality and Empowerment of Women: Policy Document. Federal Ministry for European and International Affairs, Vienna HLPE, 2012. Social Protection for Food Security. HLPE Report 4. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security (HLPE), Rome.
- HLPE, (2014). Food Losses and Waste in the Context of Sustainable Food Systems. Report 8. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security (HLPE), Rome. Available at: <http://www.fao.org/3/a-i3901e.pdf>.
- HLPE, (2017). Nutrition and Food Systems. HLPE Report 12. A report by High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security (HLPE), Rome.
- Ihedioha, J. N., Abugu, H. O., Ujam, O. T., and Ekere, N. R. (2021). Ecological and human health risk evaluation of potential toxic metals in paddy soil, rice plants, and rice grains (*Oryza sativa*) of Omor Rice Field, Nigeria. *Environ. Monit. Assess.* 193, 1–17.
- Matuschke, I. (2009). Rapid Urbanization and Food Security: Using Food Density Maps to Identify Future Food Security Hotspots, no 51643, 2009 Conference, August 16–22, 2009. Beijing: International Association of Agricultural Economists. Available online at: https://econpapers.repec.org/scripts/redir.pf?u=https%3A%2F%2Fageconsearch.umn.edu%2Frecord%2F51643%2Ffiles%2FIAAE2009_699.pdf; h=repec: ags: iaae09:51643
- Maxwell, D., Coates, J., Vaitla, B., (2013). How Do Different Indicators of Household Food Security Compare? Empirical Evidence from Tigray. Feinstein International Center, Tufts University, MA, USA.
- Maxwell, D., and Smith, M., (1992). Household food security: a conceptual review. In: Maxwell, S., Frankenberger, T.R. (Eds.), *Household Food Security: Concepts, Indicators, Measurements: A Technical Review*. UNICEF and IFAD, New York and Rome.
- Maxwell, D., Caldwell, R., and Langworthy, M., (2008). Measuring food insecurity: can an indicator based on localized coping behaviors Be used to compare across contexts? *Food Policy* 33, 533–540.
- Malhotra, Anju, F. I., (2009). Innovation for Women's Empowerment and Gender Equality. International Center for Research on Women (ICRW). North Washington, D.C.

- Ministry of Agriculture and Rural Development, (2008). Rural capacity building project gender mainstreaming guideline.
- National Research Council, (2006). Food Insecurity and Hunger in the United States: An Assessment of the Measure. National Research Council, Washington, DC.
- Obayelu, A. E. (2012). Households' food security status and its determinants in the North-Central Nigeria. *Food Econ.* 9, 241–256.
- Ogundari, K. (2017). Categorizing households into different food security states in Nigeria: the socio-economic and demographic determinants. *Agric. Food Econ.* 5, 1-20.
- Oke, M. A. (2015). Determinants of national food security in Nigeria. *J. Econ. Sustain. Dev.* 6, 100–106. Available online at: <https://www.iiste.org/Journals/index.php/JEDS/article/view/22617>
- Okemakinde, Timothy (2014). "Women Education: Implications for National Development in Nigeria". *European Journal of Globalization and Development Research.* 9. ISSN 2220-7414.
- Omotesho, O. A., Adewunmi, M. O., and Muhammed, A. (2016). Determinants of food insecurity among rural households in Kwara State of Nigeria. *African Journal of Agriculture.* 2, 7–15.
- Osabohien, R. O., Ohalete, M. P., and Osabuohien, E. (2020a). Population–poverty–inequality nexus and social protection in Africa. *Soc. Indic. Res.* 151, 575–598.
- Otekunrin, O. A., Momoh, S., and Ayinde, I. A. (2019). How far has Africa gone in achieving the zero-hunger target? Evidence from Nigeria. *Global Food Security.* 22, 1–12.
- Pereira, Charmaine (2009). "Appropriating 'Gender' and 'Empowerment': The Resignification of Feminist Ideas in Nigeria's Neoliberal Reform Programme I". *IDS Bulletin.* 39 (6): 42–50.
- Peng, W., Berry, E.M., (2018). Global Nutrition 1990–2015: a shrinking hungry, and expanding fat world. *PLoS One* 13, e0194821.
- Pieters, H., Guariso, A., and Vandeplass, A. (2013). Conceptual Framework for the Analysis of the Determinants of Food and Nutrition Security. *FOODSECURE Working Paper No. 13*.doi: 10.22004/ag.econ.285141
- Rosenbloom, J. I., Kaluski, D. N., Berry, E. M., (2008). A global nutritional index. *Food Nutrition. Bull.* 29, 266–277.
- Shaw, D.J., 2007. *World Food Security. A History since 1945.* Palm grave Macmillan, New York.
- Seck, P. A., Diagne, A., Mohanty, S., and Wopereis, M. (2012). Crops that feed the world 7: Rice. *Food Security.* 4, 7–24.

- Slimane, M. B., Huchet-Bourdon, M., and Zitouna, H. (2016). The role of sectoral FDI in promoting agricultural production and improving food security. *International Journal of Econ.* 145, 50–65.
- Smith, L., Alderman, H., and Aduayom, D., (2006). Food Insecurity in Sub-Saharan African: New Estimates from Household Expenditure Surveys. Research Report 146. IFPRI, Washington DC.
- Stevens, Candice, T. O. (2010) Are Women the Key to Sustainable Development? Sustainable Development Knowledge Partnership (SDKP), USA.
- UN Development Programme, (1994). Human Development Report. Oxford University Press, Oxford and New York.
- United Nations, (2020). Report of the World Food Conference, Rome, 5–16 November 1974. United Nations, New York.
- Uduma, B. U., Samson, O. A., and Mure, U. A. (2016). Irrigation potentials and rice self-sufficiency in Nigeria: a review. *Afric Journal of Agricultural. Res* 11, 298–309.
- World Bank, 1986. Poverty and Hunger: Issues and Options for Food Security in Developing Countries. World Bank, Washington, DC
- Wudil, A. H., Ali, A., Hassan, S., and Mushtaq, K. (2021). Exploratory factor analysis of the perceived constraints affecting rice farmers of kano river irrigation (KRIP) kano state, Nigeria. *International Journal of Agricultural Extension* 9, 485–492.
- "Women Lead Agriculture in Nigeria – CIRDDOC". Retrieved 11 October, 2023.
- Yusuf, B. L., Mustapha, A., Yusuf, M. A., and Ahmed, M. (2020). Soil salinity assessment using geo-statistical models in some parts of Kano River Irrigation Project Phase I (KRPI). *Model. Earth Syst. Environ.* 6, 2225-2234. doi: 10.1007/s40808-020-00841-7
- Vocabulary.com. (n.d.). Disparity. In Vocabulary.com Dictionary. Retrieved October 17, 2023, from <https://www.vocabulary.com/dictionary/disparity>
- Warth, Lisa, Koparanova, Malinka, (2012). Empowering Women for Sustainable Development, Discussion Paper Series, No. 2012.1. United Nations Economic Commission for Europe, Geneva, Switzerland.
- Women, U.N., 2014. World Survey on the Role of Women in Development 2014: Gender Equality and Sustainable Development. United Nations, New York.