



Rethinking Agenda 2063: Leveraging STEM Women's Empowerment for Food Security in a Post-COVID-19 Pandemic Era

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9.1 Introduction

During the golden jubilee celebration of the formation of the Organization for African Unity/African Union, African leaders made a declaration of their commitment to support Africa's new path for attaining inclusive and sustainable economic growth and development. This led to the development of Agenda 2063 which is a blueprint and master plan for the transformation of Africa into a global driving force of the future. Agenda 2063 is Africa's strategic framework that aims to deliver on its goal for inclusive and sustainable development. Agenda 2063 seeks to deliver on a set of *seven aspirations*, each with its own set of goals which if achieved will move Africa closer to achieving its vision for the year 2063. These seven aspirations reflect our concrete manifestation of the pan-African drive for shared prosperity and well-being; unity and integration; and freedom and expanded horizons for the citizens, where the full potential of women and youth are realized, with freedom from fear, disease, and want (African Union 2021). Africa

plans to achieve this vision within a 50-year period from 2013 to 2063 through Agenda 2063.

Aspiration 1 of Agenda 2063 foresees "a prosperous Africa based on inclusive growth and sustainable development." To achieve this ambition, one of the key goals (goal 5) for Africa (Nigeria inclusive) is to ensure the transformation of agriculture for increased production and to ensure that its citizens are food secure. Food security means having, at all times, both physical and economic access to sufficient, safe, and nutritious food to meet dietary needs and food preferences for a productive and healthy life (Food and Agriculture Organization, United States AID, USAID 2021). Food security goes far beyond having enough food. It is being able to access food of high nutritional quality regularly, without worrying about not having food on the table. There are four components of food security. These include *availability, affordability/access, utilization, and stability*.

Availability: This is having sufficient and consistent quantities of appropriate food available. Such food can be supplied through household production, other domestic outputs, commercial imports, or food assistance.

Affordability/access: This is about having adequate income or other resources to access appropriate food for a nutritional diet. Access depends upon the income available to the household, on the distribution of income within the household, and on the price of food.

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Utilization/consumption: This is having adequate dietary intake and the ability to absorb and use nutrients in the body (FANTA n.d.). Effective food utilization is mostly dependent on knowledge within the household of food storage and processing techniques, basic principles of nutrition, and proper childcare (FAO 2011).

Stability: This is the ability to have access to adequate food at all times.

A family is food secure when its members do not live in hunger or fear of hunger. Food and nutrition security issues occupy a central place on the global agenda for sustainable development and Agenda 2063.

It is worrisome to realize that between 720 and 811 million people, the majority of whom live in Africa, still go to bed hungry each night, in 2020 in particular (FAO 2021). The World Food Programme estimates that this number could exceed 1 billion (WFP 2021). Africa is the region with the highest prevalence of undernourishment in percentage terms, at 21 percent (WFP 2021). About 257 million people with an exponential rise of 32.6 million are malnourished in sub-Saharan Africa, and more than half of this figure is from West Africa (FAO and Economic Commission of Africa, ECA 2018).

This indicates that the food security situation in West Africa is even more alarming as between 36 and 40 million people in this region are estimated to be food insecure. The prevalence of undernourishment rose from 10.4% in 2010 to 14.7 percent in 2018 (FAO 2019). In 2019, over 821 million people were food insecure, and the prevalence of undernourishment rose from 8.4 percent in 2019 to 9.9%. This report indicates a worsening food insecurity scenario. The total population of the West African sub-region is projected to reach 420 million in 2020 (Zoungrana 2013). In order to feed a population expected to grow to 9 billion people by 2050, the world will have to double its current food production (United States AID, USAID 2021). The number of food insecure people is expected to reach 12.9 million. This scenario was primarily driven by unsustainable food systems, conflict and social unrest, socioeconomic conditions, natural hazards, cli-

mate change, and pests and is now compounded by the COVID-19 pandemic.

SARS-CoV-2 was first reported in Wuhan city of China in December 2019 (World Health Organization 2020). The disease is caused by a zoonotic respiratory epidemic that has been declared by the World Health Organization (WHO) as a global public health emergency. COVID-19 disease and the fear of disease generated extensive global economic and social impacts, along with restrictions on international travel imposed by most countries, the quarantining of millions of people, and disruption of supply chains for food and manufactured products (Nicola et al. 2020). The agricultural sector is not left behind as COVID-19 disrupted many activities in fisheries, livestock, crops, and their supply chains (McNamara et al. 2020; Gortazar and de la Fuente 2020). In fact, COVID-19 affects agriculture in both the supply and demand for food (FAO 2020), placing food security at risk in many key aspects of the food system value chain. Inflation coupled with job losses (OCHA. Global Humanitarian Response Plan Covid-19 2020) due to COVID-19 and persistent income inequality continue to exacerbate food insecurity and malnutrition (WFP 2021).

Households are also affected as the COVID-19 pandemic is creating worrisome impacts on their incomes and food supply chains. For instance, movement restrictions have reduced the availability of migrant labor, interrupting some harvesting and agricultural activities, increasing levels of post-harvest losses due to a reduced workforce, and delaying the delivery of fresh produce to various target markets (OECD 2020).

The use of quarantines, bans, and restrictions on the movement of goods and people as disease control measures has resulted in significant socioeconomic consequences for livelihoods, especially for poor rural farmers in developing countries (Nicola et al. 2020). The COVID-19 pandemic is estimated to push half a million communities in developing countries into poverty (Sumner et al. 2020). Poor countries are the worst-hit by the pandemic as additional 54 million and 24 million people, respectively, will live

below the poverty line and go into extreme poverty (Azcona et al. 2020).

The story is the same in Nigeria as World Food Programme reported a 34.1 percent loss in its gross domestic product due to COVID-19, which amounts to USD 16 billion. The agriculture sector in particular, which serves as the primary means of livelihood for most Nigerians, suffered a 13.1% loss in output amounting to USD 1.2 billion during the lockdown periods. Unfortunately, during the lockdown periods alone, 27 million additional people fell below the poverty line in Nigeria. Broadly speaking, 40% of Nigerians (83 million people) live below the poverty line, while another 25% (53 million) are vulnerable due to the pandemic. With COVID-19, many of these 53 million vulnerable people could fall into poverty. A devastating reality is that the path to zero hunger through goal I of Agenda 2063 is being stopped dead in its tracks by COVID-19.

World Food Programme estimates that *272 million people are already at risk of becoming acutely food insecure due to the aggravating effect of the COVID-19 crisis* (WFP 2021). This scenario poses a serious threat to Agenda 2063. With the COVID-19 pandemic ravaging the whole world, food insecurity will likely remain for some time in the near future (FAO 2011). The report by OECD corroborates that the pandemic has had and will continue to have a major impact on the health and well-being of many vulnerable groups (OECD 2020). Therefore, our collective ability to meet zero hunger by 2063 appears elusive unless urgent actions are taken. The ultimate solution to combating hunger and food insecurity at the national as well as the global level is to empower people with opportunities to earn adequate income and to assure an abundant supply of food from either domestic production or imports, or both.

Women are more adversely affected by the social and economic impacts of the COVID-19 pandemic, including losing livelihoods and experiencing decreases in their personal incomes. This is because women are more likely to experience food insecurity than men in more countries worldwide (UN Women 2018). Unfortunately,

women constitute 43 percent of the agricultural labor force in developing countries and, despite their contribution to half of the world's food, often face constraints that limit profits, contributions, and productivity (UNDRR 2019). Increasing women's access to resources and opportunities could substantially reduce the number of hungry people in the world. No wonder, FAO reported that increasing women's contribution to food production and enterprise could reduce the number of hungry people in the world by 12–17%, or by 100 to 150 million people (FAO 2011). Hence, empowering women and the food systems that nourish them in this era is more important than ever.

“Women's empowerment means enhancing women's sense of worth, their right to have and to determine choices, their right to have access to opportunities and resources, their right to have the power to control their own lives both within and outside the own and their ability to influence the direction of the social change to create a more just economic order nationally and internationally” (United Nations Population Information Network 2n.d). The International Food Policy Research Institute (IFPRI) created an innovative measure called the Women's Empowerment in Agriculture Index (WEAI) which is used to capture women's empowerment. According to them, it is categorized into five dimensions which include: decisions about agricultural production, access and decisions over productive resources, control over the use of income, leadership, and time use (Salazar and Fahsbender 2019).

“More involvement of women in the creation of post-COVID future is critical in building back better food systems where there is equal access to nutritious food and decent livelihoods” (International Fund for Agricultural Development), a vision for sustainable development goal 3.

“Therefore, when women and girls have better access to information, resources and economic opportunities, and are free to make their own decisions, hunger rates fall and nutrition improves not only for themselves but also their families, communities and countries”. Empowering them will contribute to the recovery from the

COVID-19 pandemic and in creating an environment that will reduce poverty, enhance productivity, and improve food security.

9.2 How Can this be Achieved?

Agenda 2063 can be achieved in a post-COVID era through the empowerment of women, which will be considered in two dimensions: direct empowerment of STEM women and the transfer of knowledge to others who will benefit from the empowered STEM women.

9.2.1 Direct Empowerment of STEM Women

The women can be empowered in the following areas:

1. Empowerment in Knowledge Sharing and Participation.

Food security can be achieved through the involvement and active participation of women in educational, capacity building, and knowledge transfer activities and projects on technologies in agriculture and sustainable practices. Although the role of women in agriculture cannot be over-emphasized, there are still a significant number of initiatives that are directed at men. Incentivizing the adoption of advanced technologies among STEM women will also boost agricultural production.

2. Empowerment Through the Formation of STEM Women Agripreneurs.

STEM women can establish the Women Agripreneurs-in-STEM (WASTEM) program. STEM women who want to start their own innovative business build and grow your dream business especially in agripreneurship can be trained, empowered, and supported through this platform. Empowering women through participatory approaches will allow them to identify specific actions to promote and recognize their roles in agriculture toward increased productivity vis-à-vis food security. Studies have shown that for every dollar

raised, women generate 78 percent of revenue compared to 31 percent from their male-run start-ups. This will undoubtedly enhance their income level, thereby increasing their level of food security in the post-COVID-19 pandemic era. Innovative entrepreneurship contributes to the wealth of nations and their economic dynamism through, for instance, job creation.

Training and empowerment can be in the areas of aquaponics (using fish/aquatic waste to grow plants, through a cyclical system), hydroponics [the process of growing plants in a medium (without soil) and adding nutrients], aeroponics (the process of *growing* plants in an air or mist environment without the use of soil or an aggregate medium), bucket farming, bag farming, portable snail, goat, fish, and battery cage system among others. It can also be in the area of exposing them to the opportunities of participating as actors in the agricultural value chain for agricultural development and food security. They could get involved in crop production, livestock production, agroforestry, and fisheries, among others. They can also get involved in the processing and marketing/distribution of any of these enterprises in addition to their jobs. In Australia, STEM women are positioning themselves as key players in agriculture by applying their skills in STEM (Science, Technology, Engineering, and Mathematics) to give them that competitive edge to improve health and well-being (SDG3) through quality food.

Mentorship can also be provided to the agripreneurs, through which STEM women can access a whole stream of insightful online events focused to address key issues affecting the sector.

3. Empowerment with Financial Resources.

This can be achieved through the development of partnerships with government, financial institutions, non-governmental agencies, and other relevant stakeholders. It will also involve the design and development of programs that facilitate STEM women agripreneurs' access to financial resources,

especially from financial institutions and other concerned agencies.

4. Empowerment to Establish Group Farms.

UniPort STEM women can be encouraged to establish group farms within or outside the university environment. This will lead to increased agricultural productivity. The income generated from the sales of the proceeds when sold to the members of the university community obviously translate to food security towards the attainment of Agenda 2063 in this post-COVID-19 pandemic era.

9.2.2 Empowered STEM Women Transfer the Knowledge and Skill to Others

This can be achieved in the following areas:

1. Formation of Young Farmers' Club for STEM Girls.

The formation of young farmers' clubs in secondary schools particularly for STEM girls will stimulate their interest in agriculture. This will help to "catch them young." Empowerment can be through the exposure of students to innovative agricultural practices and agriculture potential information thereby raising a generation of students who are willing to get involved in agriculture. This will help to improve agricultural production. Moreso, the empowered STEM women train the students on how to manage farms and regularly organize agricultural science debates and competitions for them. This is geared toward the achievement of food security in a post-COVID-19 pandemic era.

2. Empower Women in University Host Communities.

Women in the communities are key agents for achieving the transformational economic, environmental, and social changes required for sustainable development. The STEM women can reach out to the women farmers in the university host communities and empower them through capacity building on new, innovative, better, and sustainable farming prac-

tices. Training equips them with skills to pursue new livelihoods, increase their productive potential, and adapt technology to their needs. Empowering them is key not only to their well-being, households, and communities but also to overall economic productivity. Evidence shows that this spurs productivity gains, enhanced growth, and improved development prospects for current and future generations. Empowering women economically and socially can enhance economic growth and food security and sustainable development. "If women had the same access to productive activities as men, agricultural production would increase, resulting in the feeding of approximately 150 million more people" (FAO 2011). The empowered STEM women can partner with government and non-governmental agencies and other concerned stakeholders for the provision of such farm inputs as fertilizers, pesticides, high-yielding crops, and livestock varieties at subsidized rates. Training can also be a better way of marketing their farm produce as well as for easy and affordable access to loans and credit facilities.

Women in university host communities can also be exposed to better farming methods through exposure visits, agricultural shows, and exhibitions. This will help to improve productivity and nutritional quality.

Women can be trained in group dynamics and encouraged to form small groups for easy training, mentoring, financing, and monitoring. This will promote their income-earning opportunities along the value chain, toward the attainment of food security.

3. Organizing Career Guidance and Counseling in Secondary Schools.

The empowered STEM women, through the organization of career guidance and selling in secondary schools, will share insights, lessons, and tips to motivate and inspire students to make informed decisions about their future. The career talks will allow students to hear from real-life role models who can demonstrate the relevance and connection of what is taught in the classroom. It will also equip stu-

dents with the inspiration and information to make better-informed decisions about their future career paths. This will undoubtedly promote food security.

4. Link and Learn Online Social Media Platforms on Agriculture.

The empowered STEM women will establish links and learn online social media platforms. This will be achieved through organizing knowledge sharing and networking events, training, and webinars for the agripreneurs. This platform will connect agripreneurs from all walks and provide them the opportunity to widen their network and interact with peers from other environments. This will help to connect with new talent from a wide variety of backgrounds, showing them that agriculture is a field in which they can make a great impact on food security.

Through this platform, mentorship can be provided that can challenge and provide mentorship to upcoming agripreneurs to help them grow their agribusiness.

9.3 Conclusion

Achieving zero hunger in the year 2063 in the post-COVID-19 pandemic era will require new and existing applications in science, technology, and engineering across the food system, addressing all dimensions of food security. The empowerment of STEM women is critical, not only for ensuring food at all times but also for harnessing agriculture and the broader food system as a driver of Agenda 2063.

References

African Union. Our Aspirations for the Africa We Want. Agenda 2063. 2021. <https://au.int/en/agenda2063/aspirations>

- Azcona G, Bhatt A, Encarnacion J, Plazaola-Castano J, Seck P, Staab S, Turquet L. From Insights to Action: Gender Equality in the Wake of COVID-19. New York, NY: UN Women; 2020.
- FAO. COVID-19 and the Risk to Food Supply Chains: How to Respond? Rome: FAO; 2020. p. 7.
- FAO. Empowering women and girls is crucial to ensure sustainable food security in the aftermath of COVID-19, say UN food agency heads on International Women's Day. 2021.
- Food and Agriculture Organization. Women and food security; 2011.
- Gortazar C, de la Fuente J. COVID-19 is likely to impact animal health. *Prev Vet Med.* 2020;180:105030. <https://doi.org/10.1016/j.prevetmed.2020.105030>.
- McNamara T, Richt JA, Glickman L. A critical needs assessment for research in companion animals and livestock following the pandemic of COVID-19 in humans. *Vector Borne Zoonotic Dis.* 2020;20:393–405. <https://doi.org/10.1089/vbz.2020.2650>.
- Nicola M, Alsafi Z, Sohrabi C, Kerwan A, Al-Jabir A, Iosifidis C, et al. The socio-economic implications of the coronavirus pandemic (COVID-19): a review. *Int J Surg.* 2020;78:185–93. <https://doi.org/10.1016/j.ijsu.2020.04.018>.
- OCHA. Global Humanitarian Response Plan Covid-19. Geneva: United Nations Office for the Coordination of Humanitarian Affairs (OCHA); 2020.
- OECD. COVID-19 Policy Brief on Well-being and Inclusiveness. 2020. <http://www.oecd.org/coronavirus/en/>
- Salazar L, Fahsbender J. Improving food security through women's empowerment. The Agrifood Support Program (APAGRO); 2019. <https://blogs.iadb.org/sostenibilidad/en/improving-food-security-through-womens-empowerment/>
- Sumner A, Hoy C, Ortiz-Juarez E. Estimates of the impact of COVID-19 on global poverty. In: WIDER Working Paper 2020/43. Helsinki: UNU-WIDER; 2020. Available online at: <https://www.wider.unu.edu/sites/default/files/Publications/Working-paper/PDF/wp2020-43.pdf>.
- UN Women. UN Women Annual Report 2017–2018 | UN Women. 2018. <https://www.unwomen.org/digital-library/publications>
- UNDRR. Gender research in IPM: Women's empowerment as a key to unlocking food security. 2019.
- United States AID, USAID. Agriculture and Food security. 2021.
- WFP. World Food Programme: Nigeria. Country Brief April 2021. 2021.
- World Health Organization. Intensive prevention and control during health care when Covid-19 is suspected. 2020.