



SPECIAL ARTICLE

# COVID-19 Pandemic and its Implication for Nutritional Status of Children in Nigeria: A Call for Transformation to a Sustainable Food System

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## Keywords

Children;  
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## ABSTRACT

**Background:** Nigeria contributes the highest burden of childhood malnutrition in sub-Saharan Africa and this has been worsened by the COVID-19 pandemic. Food system unsustainability has been shown to be the main driver for continued food insecurity and subsequent malnutrition. This paper discusses key issues pertaining to child nutritional status in Nigeria within the context of the COVID-19 pandemic and highlights the importance of adopting a sustainable food system framework that ensures food and nutrition security for all including children.

**Discussion:** The COVID-19 pandemic has exposed the weaknesses in the food system, in addition to those already caused by other factors such as conflicts, climate change, demographic and economic factors, amongst others. Food systems, through diets, give rise to nutrition and health outcomes as well as those related to the dimensions of sustainability (environmental, economic, and social). The complex nature of the food system and its interactions with food and nutrition security requires adoption and practice of more effective food policy framework that embraces four critical policy shifts that support all dimensions of food security and transformation pathways which address the negative impacts of the drivers of food security.

**Conclusion:** The need for the government to adopt a sustainable, resilient, and efficient food policy that appreciates the complexity of food systems drivers and outcomes cannot be overemphasized. This is essential for upholding the right to adequate food as well as ending hunger, and malnutrition in all its forms for all children.

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## INTRODUCTION

Coronavirus disease (COVID-19) is a severe acute respiratory infection caused by the 2019 novel coronavirus, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-

2) that was first reported in Wuhan, China in December 2019. <sup>1, 2</sup> It spread rapidly to several countries of the world and was declared a pandemic by the World Health Organization (WHO) on 11 March 2020. <sup>3</sup> Nigeria

became the first country in sub-Saharan Africa to report a case of COVID-19 on 27 February 2020. <sup>4</sup>

In a bid to limit the spread of the virus, the Nigerian government like several countries of the world imposed mitigation measures <sup>5</sup> which included lockdown, closure of international borders, inter-state travel restrictions, shutdown of government offices, businesses, schools, and transportation services, amongst others. Consequently, these measures disrupted national, local and household economies, food supply chains as well as leaving millions of people especially those in the informal economy without livelihoods. <sup>6</sup>

The high levels of unemployment, loss of income, food shortages and the accompanying increase in food prices made accessibility and affordability of food difficult for many households, consequently, threatening their food security and nutrition. Furthermore, the pandemic came at a time when food security and the food system were already under strain. Insecurity from insurgencies and conflicts, natural disasters and climate change, were already undermining food security in many contexts. <sup>6</sup>

Between 720 and 811 million people in the world faced hunger in 2020 which is as many as 161 million more than in 2019. The highest burden are in Asia and Africa, with about 57 and 46 million more people affected by hunger in 2020, respectively compared with 2019. <sup>7</sup> Also, 928 million people (148 million more than in 2019) were severely food insecure in 2020; with a wider gender gap (10 percent higher among women than men in 2020, compared with 6 percent in 2019). <sup>7</sup> Child malnutrition in all its forms still remains a challenge globally and in 2020, it was estimated that several millions of children under 5 years of age were affected by stunting (149.2 million – 22%), wasting (45.4 million – 6.7%) or overweight (38.9 million – 5.7%). Africa and Asia account for more than nine out of ten of all children with stunting or wasting and more than seven out of ten children who are affected by overweight worldwide. <sup>7</sup> Moreover, the actual figures are expected to be higher due to the effects of the pandemic. Results of modelled analysis indicate that an additional 11.2 million and 3.4 million children under five years of age in low and middle-income countries (LMICs) would be affected by wasting and

stunting in 2022 due to the effects of the pandemic.<sup>7</sup>

In Nigeria, even before the COVID-19 pandemic, the nutritional status of children was already alarming. Nigeria has the highest number of stunted children below age five in sub-Saharan Africa and the second highest in the world with a stunting rate of 37%.<sup>8</sup> Seven percent of children below the age of 5 years are wasted, 22% are underweight, 2% are overweight and only 11% of children 6-23 months had access to the minimum acceptable diet.<sup>8</sup>

About 2 million children suffer severe acute malnutrition (SAM) in Nigeria with only 2 in 10 of them being reached with treatment.<sup>9</sup> Also, the prevalence of stunting is highest amongst children from the poorest households in Nigeria. The implication of this is that the prevalence of stunting will rise if COVID-19 pushes more people into poverty. In addition, Nigeria faces an increasing burden of diet-related non-communicable diseases like diabetes and hypertension. During the pandemic, the number of children treated in the out-patient clinics increased by 20%, while the number of severe malnutrition cases rose by 10%, compared to 2019.<sup>10</sup>

The enormous political and socio-economic crisis triggered by the COVID-19 pandemic impacted negatively on the nutritional status and survival of children especially those residing in resource-poor countries like Nigeria.<sup>11</sup> Children, although less directly affected by the virus, are affected indirectly through poor diet, poor health care, limited coverage of social protection systems particularly among vulnerable groups. They are also disproportionately affected in times of crisis like the COVID-19 pandemic and health services to cater for them are usually not prioritized because already scarce resources have been diverted for the pandemic response.<sup>11</sup>

Though the pandemic appears to be winding down in most countries (following the development of vaccines), the economic, food, and health systems disruptions that resulted are expected to continue to exacerbate hunger and all forms of malnutrition with serious consequences. Of particular concern is an expected increase in child malnutrition because the recovery phase from the COVID-19 crisis is likely to be protracted and many families will face extended economic challenges. The

COVID-19 crisis is driving up Nigeria's poverty rate, and is estimated to push more than 5 million additional people into poverty by the end of 2022. <sup>6</sup>

This rise in the burden of all forms malnutrition will increase vulnerability to diseases and could have far reaching consequences for health, human capital potential and economic growth of the nation. Stunted children have been shown to go on to earn 20% less income in adulthood than their non-stunted peers. This productivity losses can reduce Nigeria's gross domestic products by 2–3%. <sup>9</sup> Furthermore, the COVID-19 pandemic also exposed the weaknesses of the food system and its challenges, including the degradation of natural resources, climate change, conflicts, population change and inequities in access to food and agricultural resources, among others.

<sup>12</sup>

For instance, the relatively poor performance of the agriculture sector in Nigeria has resulted in rising importation of food to provide for the growing population of the nation which is further exacerbated by the pandemic, thus compounding the food security challenges. <sup>9</sup>

Transforming food systems so that they provide nutritious and affordable food for all and become more efficient, resilient, inclusive and sustainable is necessary for the achievement of the Sustainable Development Goals (SDGs) by 2030, especially SDG 2 to end hunger and malnutrition in all its forms and promote sustainable agriculture by 2030. <sup>12</sup>

Therefore, the need for a more effective food policy framework to facilitate a fundamental transformation of the food system to better address these highly complex situations cannot be overemphasized. This paper discusses key issues pertaining to child nutritional status in Nigeria within the context of the COVID-19 pandemic and highlights the importance of adopting a sustainable food system framework that ensures food and nutrition security for all including children.

## **DETERMINANTS OF MALNUTRITION IN THE CONTEXT OF COVID-19**

The determinants of malnutrition in the context of COVID-19 is described using the conceptual framework developed by UNICEF which highlights the complex and multi-

dimensional nature of malnutrition.<sup>13</sup> The COVID-19 pandemic directly affected the basic, underlying and immediate causes of malnutrition.

### **Basic causes**

The COVID-19 pandemic and the measures put in place by the Federal Government of Nigeria (FGN) to reduce its spread caused disruption of national and international transport systems, crash in crude oil price in the global market by 60%, and reduced government revenue. In the face of competing priorities and dwindling government revenue, there was policy diversion to urgent care, fund diversion for immediate COVID-19 response, reduced social sector spending, and increased inequity. The Federal Government's nutrition allocation was also affected even though this was only 0.02% as against the 4% recommended of the national budget for nutrition.<sup>9</sup> In 2020, the revised budget did not make any room for nutrition as the 800 million naira initially allocated was removed due to COVID-19. Also donor funding for programmes including nutrition interventions were cut.<sup>9</sup> The effect of the economic downturn resulting from the COVID-19 pandemic led to massive job losses

and drop in income with consequent increase in poverty and reduced purchasing power which impacted on nutritional status of households especially those in the informal sector.<sup>9</sup> According to a report by the National Bureau of Statistics, economic activities were lower between June and July 2020 than that before the COVID-19 crisis with a drop by 14% of people working.<sup>14</sup>

Just prior to the pandemic, around 82.9 million (40.1%) Nigerians were living in poverty. The pandemic is projected to have driven an additional 3.8 million Nigerians into poverty in 2020, with an additional 5.1 million living in poverty by 2022; implying that the number of poor people was 89.0 million in 2020 and would be 95.1 million in 2022.<sup>6</sup> The social and economic crisis triggered by the COVID-19 pandemic, in addition to the pre-existing insecurity (banditry and insurgency), poor human capital development and low social protection has further increased the susceptibility of the poor and most vulnerable households to malnutrition.<sup>6</sup> Insecurity and movement restrictions in vulnerable communities in the North-East of Nigeria, hampered agricultural production of local farmers who were

displaced and had no access to their agricultural land and production tools.

### **Underlying causes**

**Household food insecurity:** Food security is defined as a situation when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.<sup>15</sup> Food security is determined to a large extent by a functional food system (food supply chain, food environment and consumer behavior) and in turn household food security has an important role in determining the nutritional status of children. Food insecurity was more widespread than before the pandemic across the country. The proportion of the population experiencing severe food insecurity more than doubled in 2020 compared to the same period in 2018.<sup>14</sup> Disruption in the food supply chain led to increase in food prices and hoarding from fear of shortages, forcing many vulnerable households to decrease meal frequency and in some cases, go without food. In Nigeria, the Consumer Price Index for most foods increased by 1.18% between March 2020 and April 2020

with the average annual rate of change between April 2019 and April 2020 being 14.22%.<sup>14</sup> Rising food prices have a greater impact among poor households since a larger share of their income is spent on food. A larger share of income was spent on food among poor households (57.1%) than among the non-poor households (46.5%) during this period in Nigeria<sup>6</sup>

Income loss is an important driver of food insecurity with consequent malnutrition which will have long-lasting impacts on human capital, especially for children. As a result of the loss of income, reduced purchasing power and food price shocks during the pandemic, the proportion of households in which an adult skipped a meal (in the previous 30 days), ran out of food and an adult went a whole day without eating almost tripled between January–February 2019 and April–May 2020. Furthermore, between April/May 2020 and July 2020, 69.7% of households reduced their food consumption.<sup>6</sup> In addition, given limited access to healthy foods, some households could have resorted to cheaper and more accessible processed and less-nutritious foods which are unhealthy.<sup>16, 17</sup>

### **Inadequate care & feeding**

**practices:** Coronavirus illness in the mothers or other caregivers may compromise the quality of child care practices impacting child health and nutritional status. Also caregiver's knowledge about health and nutrition-related topics which is determined by educational status can impact on child feeding and caring practices and subsequently on a child's nutritional and health status. One of the major effects of COVID-19 had been on exacerbating gender inequities in education with females being further disadvantaged and experiencing higher rates of illiteracy and school drop-outs.<sup>6</sup> Poor hygiene, ignorance, illiteracy particularly among women, and inappropriate feeding habits at the household level contribute to malnutrition. The association between female education and health and nutrition outcomes have been established. The benefits of health and nutrition education to improve child nutrition and reduce intergenerational childhood stunting has been reported.<sup>16</sup>

### **Unhealthy household environment & inadequate health services:**

Lockdown measures and restricted movements limited access to clean

water, sanitation and hygiene (WASH) services<sup>18</sup> which facilitates conditions for transmission of infectious diseases such as intestinal helminthiasis, diarrhoeal diseases, acute respiratory infections and COVID-19 which can lead to under-nutrition in susceptible persons including children. In addition, caregivers particularly those in urban slums with poor access to WASH facilities were at higher risk of infection with the coronavirus. This poor maternal health could exacerbate higher risk of intergenerational transfer due to compromised maternal health. Along with the direct health threat posed by the virus, lockdown measures and restricted movements impacted on the coverage of health services, in addition to suspension of community delivery platforms for nutrition services. There was decline in coverage of all maternal, newborn and child health (MNCH) services including antenatal care, facility delivery and postnatal care and immunization during COVID-19 compared with same period in 2019. In July 2020, about 21% of households with children 0–5 years old who needed or were due for immunizations were not able to get their children vaccinated.<sup>6, 19</sup> Persistent disruptions to routine and

essential maternal care and nutrition could lead to adverse fetal outcomes including preterm birth, low birth weight, and small-for-gestational age newborns and also directly impact on morbidity and mortality and consequently on the nutritional status. There was also interruption of school nutrition programmes, the mainstay of addressing food insecurity and under-nutrition in children in Nigeria. <sup>9</sup>

### **Immediate causes**

**Poor dietary intake & disease:** Poor dietary intake can result from any of the underlying causes such as food insecurity, inadequate care, and poor feeding practices leading to malnutrition which may manifest as stunting, wasting, under-weight, micronutrient deficiencies, overweight and obesity. Also, inadequate care practices and unhealthy environment can predispose to infectious diseases which can also impact on the nutritional status. In Nigeria, an increase in malnutrition rates among children in nutrition centres was seen. <sup>10</sup> There is a strong synergistic relationship between the nutritional status and health status of an individual. Under-nutrition can predispose to infectious diseases and

vice versa, thereby creating a vicious cycle of poor dietary intake, severity of the disease and poor nutritional status.

### **THE ROLE OF THE FOOD SYSTEM**

All forms of malnutrition are the result of intake of poor diets which is influenced by the existing food system. <sup>20</sup> Food system unsustainability has been shown to be the main driver for continued food insecurity and subsequent malnutrition. <sup>21</sup> Therefore, achieving adequate nutritional status will require more sustainable food systems that facilitate healthy and sustainable food choices and ensure food security and nutrition for all children, now and in the future.

Food systems approach addresses the direct and underlying system actors, drivers, and dynamics that affect food, people, and the planet. This approach engages actors at all levels of the system to reshape it and ensure that the food system delivers healthy, affordable and sustainable diets to all children. <sup>22</sup> It shows how existing food systems influence consumer choices and diets, thus impacting nutrition and health; and how adequate consumer food choices could, in turn,



shape more sustainable food systems. Therefore, it underscores the role of diets as a core link between food systems and their health and nutrition outcomes.<sup>20</sup>

A food system is defined as all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the output of these activities, including socio-economic and environmental outcomes.<sup>20</sup> The Innocenti framework on food system for children and adolescents comprises of elements including four determinants and a set of drivers which together shape children and adolescents' diets. (Figure 1).<sup>22</sup>

### **Determinants of the food system**

The four determinants (food supply chains, external food environments, personal food environments, and behaviours of care-givers, children and adolescents) represent the processes and conditions in the food system, from production to consumption that are necessary to improve the diets of children. Each determinant is associated with a list

of influencers which are the more immediate and individual-level factors that define the extent to which a determinant contributes to delivering healthy, affordable and sustainable diets.<sup>22</sup>

**Food supply chains:** comprise actors and activities that move food from production to consumption. It includes production, storage, distribution, processing, packaging, retailing, marketing and the disposal of its waste. At each step, food supply chains involve many actors that are influenced by drivers. The decisions made by one group of actors at one stage of the chain have implications for the others.<sup>20</sup> These decisions influence the way food is produced and processed along the supply chain and impact the dimensions of food security (availability, accessibility, utilization and stability), as well as the nutritional value of the food produced and processed.<sup>20</sup> Food supply chains can increase the nutritional value of food, by increasing access to macronutrients as well as micronutrients. This can be achieved through bio-fortification, food fortification and improved storage of perishable foods (such as fruits and vegetables) or by reducing the levels of substances associated with diet-related non-communicable diseases (NCDs) such as trans-fat and high



resource poor settings can render perishable foods unsafe to eat and increase the risk of transmission of food-borne pathogens. There are also emerging issues with overuse of antibiotics in livestock and significant fears of antibiotic resistance within the food supply that may put humans at serious risk.<sup>23</sup> Food quality and safety can influence consumption patterns through changes in consumer preferences or in food affordability. Food safety scares and crises can have a significant large impact on consumer purchases.<sup>24</sup>

Non-availability of a given food can influence dietary choices and increases the risk of under-nutrition, over-nutrition and diet-related NCDs depending on the context.<sup>25, 26</sup> Food promotion, advertising and information occur through various means, including simple signage, product placement, billboards, radio and television. These tend to impact negatively or positively on food acceptability, consumer preferences, purchasing behaviour and consumption patterns.<sup>27, 28, 29</sup> Studies across the globe have revealed that food promotion and advertising directly influence children's preferences, nutrition knowledge, consumption

patterns and, finally, on their diets and health.<sup>27, 28, 29, 30, 31</sup> Individual consumers can influence the external food environment through demand and advocacy.

**Personal food environments:** includes the individual and household level factors that consumers bring to the food environment, such as purchasing power, access, convenience and desirability, and determine why people choose to procure the foods that they do. They complement dimensions of price, availability, and vendor properties in the external food environment.<sup>22</sup> Economic access to food (food affordability) reflects the relative cost of food compared with a household's income and purchasing power.<sup>32</sup>

Households in LMICs tend to spend a greater proportion of their household budget on food. In Nigeria, more than half of households (55%) spend almost half of their budgets on food.<sup>12</sup>

Food price levels and instability affect households' purchasing power and affordability of food which then influences the consumption patterns and ultimately their food and nutrition security. Moreover, food price instability creates uncertainties

in the whole food system, discouraging investments and thus negatively impacting FSN in the long term.<sup>33</sup> Healthy food environments enable consumers to make nutritious food choices with the potential to improve diets and reduce the burden of malnutrition. On the other hand, unhealthy food environments promote unhealthy dietary choices for consumers through misleading aggressive marketing and advertising; and this has been associated with increasing incidence of obesity and other diet-related chronic diseases.<sup>34</sup>

**Behaviours of caregivers and children:** This refers to the food procurement, preparation, supervision, and eating practices of children and their caregivers. They reflect what and how children eat, and are influenced by their eating patterns, taste preferences, appetite, level of physical activity, as well as psychosocial factors. Caregivers are often gatekeepers for the diets of infants and young children. They are responsible for procuring and preparing foods for, and supervising eating practices of young children.<sup>22</sup> Their behaviours are influenced by the existing food environment which includes food prices, income,

knowledge and skills, time and equipment, and social and cultural norms.<sup>20</sup> A collective changes in consumer behaviour can open a pathway towards more sustainable food systems that enhance food security and nutrition as well as health.<sup>20</sup>

### **Drivers of food system changes**

Food systems are shaped by a multitude of factors called drivers. Drivers are underlying, structural factors that influence the functionality of food systems, and that need to be put in place for the food system to be able to deliver nutritious, safe, accessible, affordable and sustainable diets. They include: biophysical and environmental; innovation and technological; political and economic; socio-cultural; and demographic drivers.<sup>35</sup> These major drivers are unique but not mutually exclusive, as they interact to influence food security and nutrition by creating multiple, compounding impacts at many different points within the food systems.<sup>20</sup>

**Biophysical and environmental drivers:** include natural resource and ecosystem services, and climate

change which affect food production.

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### **Innovation and technological**

**drivers:** Building more sustainable food systems to enhance FSN will require old and new research (development of nutritious food crops), improved access to existing and new technologies (mechanical, irrigation, plant breeding, management of inputs, power grid, roads), and better access to and use of existing technologies adapted to local socio-economic and socio-cultural conditions. <sup>20, 36</sup> Infrastructure, especially for food transportation, needs to be improved and equitably accessible. The limitations and potential risks of technologies for FSN, health, livelihoods and the environment must also be considered.

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### **Political and economic drivers:**

include leadership, trade and food policies, land tenure; conflicts and humanitarian crises. For example, in situations of conflicts and protracted crises, there is a critical need for nutrition-sensitive interventions that link humanitarian response with longer-term strategies to strengthen the resilience of food systems and improve food and nutrition security. <sup>20</sup>

**Socio-cultural drivers:** Individual food choices, although deeply personal, also reflect cultures, rituals and social traditions. Food systems and food environments are consistently shaping cultures and traditions and vice versa. Gender relationships and norms are among the most significant drivers of food environments and diets. Women can influence the household diet and, as primary caregivers, have an influence on children's nutritional status. Therefore, female empowerment, through education, information and access to resources and services is key for FSN. <sup>20</sup>

### **Demographic drivers:**

Population dynamics (growth and changing age distribution), urbanization, migration and forced displacement have driven radical changes in food systems and diets in the past decades. <sup>20</sup> Population growth is associated with increase in food demand and a key driver of current and future food systems. <sup>36</sup> Increasing population growth in the poor countries like Nigeria will make it harder for the government to combat hunger and malnutrition. Urban demand will increasingly dictate what foods are grown by rural producers and how

these foods are processed, distributed and marketed.<sup>20</sup> Urbanization is also associated with more women working outside their homes with little or no time for adequate food preparation. This can lead to increase in the demand for ultra-processed food<sup>37</sup> with consequent rise in the incidence of overweight and obesity.<sup>36</sup> Food insecurity can be both a cause and consequence of migration and forced displacement; and this is a cause for concern for children who face an increased risk of malnutrition due to lack of access to healthy diets as well as social services.<sup>20</sup>

This framework shows that the four determinants interact not just as a linear chain of activities spreading from production to consumption but as a complex, heterogeneous and circular system replete with linear as well as non-linear feedbacks; with linkages to the drivers affecting them.<sup>20, 36, 38</sup> The different determinants are interrelated and reinforce one another, both positively and negatively, through feedback loops throughout the system. For instance, the food supply chain must provide nutritious foods which should be available in the food environment from where the consumers purchase them. Also, the

demands, needs, and preferences of caregivers and children also influence the external food environment and the food supply chain.

The interactions of these elements (drivers, determinants, influencers and interactions of the framework) culminate into the diets of children; which also feed back into the system by influencing and reinforcing the behaviours of caregivers and children.<sup>22</sup> Food systems, through diets, give rise to nutrition and health outcomes as well as those related to the dimensions of sustainability – environmental, economic, and social. These linkages create feedback loops that shape the drivers of food system change and the policies that address it.<sup>12</sup> Therefore, food and nutrition security as well as health interact with food systems, not only as an outcome of existing food systems but also as a driver of change for future food systems. This implies that food security and health are key outcomes and enabling conditions for sustainability.<sup>20</sup>

## **TRANSFORMATION TO SUSTAINABLE FOOD SYSTEM**

The complex nature of the food system and its interactions with food and

nutrition security requires adoption and practice of more effective food policy framework that facilitate transformation to sustainable food systems.<sup>20</sup> This approach recognizes the complex relationships among the systems (such as ecosystems, human, energy, economic and health systems) that support food supply chains, food environments, consumer behaviours, diets, and nutritional and other outcomes.<sup>36, 38</sup> This implies that sustainable food system policy choices must focus on nutritional, health as well as environmental consequences.<sup>20</sup> Therefore, policy makers need to know and consider all the nutritional, health, social, economic and environmental consequences of the food system decisions they take. This is with a view to improving the resilience of the food system to ensure achievement of SDG 2 – to end hunger, achieve food security and improved nutrition and promote sustainable agriculture).

Sustainable food system approach also recognizes the complex interactions between SDG-2 and other SDGs.<sup>20</sup> Nutrition is an indicator of development for assessing progress in health, education, employment, empowerment of women

and the reduction of poverty and inequality. Without adequate and sustained investments in good nutrition, the SDGs will not be realized. At least 12 of the 17 SDGs contain indicators that are related to nutrition.<sup>39</sup> For instance, achieving SDG-2 has a direct bearing on progress on SDG-1 (no poverty) and SDG-3 (good health and wellbeing), and vice versa. SDG-6 (access to clean water and sanitation) is necessary for food production as well as good nutrition. SDG-12 (responsible production and consumption) is necessary to achieve food security and nutrition in a sustainable manner. SDG-14 (fisheries) and SDG-15 (terrestrial biodiversity) also have direct relevance for SDG-2 as both aquatic and terrestrial ecosystems support food production. Therefore, transformation to sustainable food systems is a necessity if the SDGs by 2030 are to be achieved.<sup>39</sup>

Sustainability refers to the long-term ability of food systems to provide food security and nutrition today in such a way that does not compromise the environmental, economic, and social bases that generate food security and nutrition for future generations.<sup>40</sup> It implies that food system practices

must respect and protect the ecological, social and economic systems in ways that are regenerative and provide FSN into the long future. This is because climate change, degradation of natural resources, social and economic inequality, undermine the capacity of ecological systems to interface with social and economic systems to support diverse and healthy food production and food system livelihoods into the future.<sup>41</sup> This takes into account not only what people consume but also how it is produced, processed, transported and used, thereby encouraging practices that maintain or enhance natural resources and discourages those that deplete it.<sup>42</sup> It means that if food is not produced using sustainable practices, its stability and utilization are put at risk, which in turn, threatens availability and access over the longer term.<sup>43</sup>

Until recently, global food security policy approaches largely focused on increasing food production to address availability concerns, however, this is not sufficient to address all other dimensions of food security.<sup>12, 20</sup> It is advocated that sustainable food systems should embody qualities that support all the dimensions of food

security. These qualities include: productive and prosperous (to ensure the availability of sufficient food); equitable and inclusive (to ensure access for all people to food and to livelihoods within that system); respectful and empowering (to ensure agency for all people and groups to make choices and exercise voice in shaping that system); resilient (to ensure stability in the face of shocks and crises); regenerative (to ensure sustainability in all its dimensions), and healthy and nutritious (to ensure nutrient uptake and utilization). Transforming food systems to improve their resilience and ability to meet Agenda 2030, especially SDG-2, requires a policy approach that consistently embraces four critical policy shifts which together work to bring about more sustainable food systems that support all the dimensions of food security. These sustainable food policies include those that embrace four critical policy shifts:<sup>12</sup>

**(i) Radical transformation of food systems as a whole to achieve Agenda 2030 goals:** This involves moving beyond food policies that focus exclusively on agricultural supply and demographic change to



implement policies that support fundamental changes to food systems as a whole in order to meet SDG 2 and support all the other SDGs in an integrated way.<sup>44</sup> This involves a shift from an exclusive focus on quantity, to improving the quality of food systems as a whole, that is, encourages food systems that are more empowering, equitable, regenerative, productive and prosperous.

**(ii) Recognize the complex inter-linkages between the food system and multiple systems and sectors:**

This involves a shift from seeing food security and nutrition policy as a sectoral issue to viewing food systems as connected in complex ways with other sectors (health, agriculture, environment, culture) and systems (such as ecosystems, economic systems, social-cultural systems, energy systems and health systems). The shift focuses on ensuring that systems work synergistically in positive ways rather than working at cross purposes, encourages more regenerative, productive and resilient food systems.

**(iii) Focus on addressing hunger and all forms of malnutrition:** The focus should be on hunger and all forms of malnutrition such as under-

nutrition, micronutrient deficiencies, overweight and obesity, and diet-related non-communicable diseases.<sup>20, 42</sup> These diverse forms of malnutrition can coexist in the same community, household and even in the same individual at different phases of the life cycle. As such, it is important to focus on inequalities (in terms of power, income, gender and access to natural resources and services) and at-risk populations in all communities.

**(iv) Appreciate context-specific situations that require diverse solutions:**

There is need to understand that food systems are situated in different environmental, sociocultural and economic contexts and face diverse challenges across and within countries and requires policies that are designed and adapted for each situation.<sup>23</sup> Hence, policy actors need to design context-specific transition pathways to sustainable food systems which takes into account technical interventions, investments and enabling policies and instruments, and incorporate different types of knowledge, including local and indigenous knowledge.

These four policy shifts are complementary to one another, and

together reinforce a shift toward a new policy framework that supports more sustainable food systems. Furthermore, by making food systems more resilient, these policy shifts improve the ability of food systems to overcome the many challenges they face. These policy shifts can be supported by effective governance mechanisms that encourages representation and participation especially of vulnerable and marginalized groups; and research to continually build knowledge on what types of initiatives and policy approaches work best.<sup>12</sup> Additionally, to address the negative impacts of the drivers on food security and nutrition, six possible transformation pathways have also been recommended. They may be applied alone or simultaneously depending on context in which case there should be coherence among them to ensure efficiency in implementation. These pathways include integrating humanitarian, development and peace building policies in conflict-affected areas; scaling up climate resilience across food systems; strengthening economic resilience of the most vulnerable to economic adversity; intervening along the food supply chains to lower the cost of nutritious

foods; tackling poverty and structural inequalities, ensuring interventions are pro-poor and inclusive; and strengthening food environments and changing consumer behaviour to promote dietary patterns with positive impacts on human health and the environment.<sup>7</sup>

## **CONCLUSION**

The COVID-19 pandemic has shown the impact that a public health emergency can have on food systems with consequence for the nutritional status of the most vulnerable population particularly children. The food and nutrition insecurity situation exacerbated by the COVID-19 crisis is a wake-up call for the Nigerian government to move away from silo solutions towards a sustainable food system which is not only more resilient to crises, but also more equitable and inclusive, regenerative, as well as ensuring healthy and nutritious diets for all, especially children who are the most important investment for national development.

Going forward, the government at all levels, needs to adopt a sustainable, resilient, and efficient policy that appreciates the complexity of food

systems drivers and outcomes and embraces critical policy shifts that support all dimensions of food security, all of which are essential to upholding the right to adequate food as well as ending hunger, and malnutrition in all its forms.

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