



Research Article

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Evaluating Food Security Challenges during the Covid-19 Pandemic in Nigeria's Coastal Fishing Communities

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Abstract

This descriptive qualitative study examined how food security was undermined during the covid-19 pandemic in some coastal fishing communities in Nigeria. The study used the Household Economic Approach as a theoretical basis to explain the challenges of food security in coastal communities based on evidence from the Covid-19 pandemic. Data were generated from open-ended interviews conducted with 30 participants in three coastal fishing communities in Akwa Ibom state, Nigeria. The study also relied on secondary data from books, reports, and journal articles. From the analysis, results showed that the various preventive measures adopted to curb the spread of the virus posed a challenge to fish production, access, and consumption. Furthermore, the findings revealed that in addition to other human security issues, covid-19 was a natural mechanism whose emergence only exacerbated existing food insecurity in coastal fishing communities. Based on the ongoing, the study concludes that, food security can be enhanced in coastal fishing communities through cross-sectorial partnerships and collaborations between the government, civil society groups and the blue economy.

Keywords: Covid-19, Coastal communities, Fishing, Food Security, Nigeria

1. Introduction

While the novel coronavirus crisis emerged in Wuhan China in late 2019, the spread of the virus and the number of deaths recorded in Africa remained low when compared to other parts of the world (Oriola & Knight, 2020). Scholarly literatures have argued that health crisis of this nature can have devastating effects on the economy especially when measures adopted to curb the spread of the virus interferes with the socioeconomic activities of nation-states (Siche, 2010; Bennett et al, 2020).

Accordingly, with the outbreak of the pandemic, most countries, including Nigeria, implemented various safety measures to curb the continuous spread of the virus. Some of the

measures adopted by the Nigerian government were:

- The activation of a multi-sectorial Emergency Operation Centre (EOC) on February 28, 2020.
- The screening of passengers at international airports
- The development of Infection Prevention and Control (IPC) scorecard on March 4, 2020.
- Tracking and monitoring of health care workers.
- The protocol guiding the follow-up testing of negative result was developed and implemented on March 8-9, 2020.
- On March 17, 2020, the guidelines for safe mass gathering were published.
- On March 30, 2020, the Federal Government shut down schools, worship centers, and restricted movement across the country.

While existing studies have analyzed how these restrictive measures affected the socioeconomic development of the Nigerian state, there are limited studies that examines how these restrictions affected food security in coastal fishing communities. This study therefore aims to fill this gap in literature.

2. Conceptualizing and Contextualizing Food Security

Food security has many different but overlapping definitions. According to Anderson, (2009), food security is a condition where every individual, at each given time, has physical and economic access to adequate, secured, and healthy food, which meets their daily preferences, and is nourishing to the body. Food security occurs when each person irrespective of class or social status, has access to quality and healthy food that meets their dietary needs (Kumar & Sharma, 2013). Food security is now more encompassing, embracing wider concepts such as availability, accessibility, utilization, and stability (Collier & Decon, 2014). In this context, availability of food captures the actual presence of healthy food within a particular geographical entity, and at a specific period. Food availability can be measured when sufficient quantity and quality of food is gotten through domestic production (Carletto, et al, 2013). Availability of food means the physical presence of food in a particular region or place for certain period and with given inventory levels, local and international trade, commercial imports, or food aid. One of the key factors for ensuring food availability is the presence of technology that helps in preventing food wastage, through processing fresh food into preserved forms without losing its nutritional contents.

In addition to the above, Cooper et al (2008), have maintained that when food is made available, adequate financial resources are required to ensure access to such food. Therefore, accessibility, being one of the determinants of food security entails a population's financial and economic capacity to acquire the food necessary for their daily survival (Belloumi, 2020). Food accessibility in many developing countries is however hindered by poverty. According to Belloumi, (2020), when poverty is prevalent, the purchasing power parity of an individual is limited. Also, their ability to acquire nutritious food that can sustain their livelihood will be affected. Food stability on the other hand refers to a nation's ability to always have food, including during periods of crisis. A nation can be described as food stable if households are not at risk of losing access to nutritious and healthy food during economic, environmental, political, or health shocks (Gunderson & Ziliak, 2018). Finally, food utilization is the ability of individuals to make good use of available and accessed foods. It is concerned with the provision of adequate diet, portable water supply, sanitation, and healthcare, through which the needs of individuals are met. When these indices (food availability, food accessibility, food stability, and food utilization) are absent, then a nation could be described as food insecure.

Nevertheless, achieving food security in rural and urban centers requires the presence of certain factors such as access to enhanced technology, access to the means/factors of production, ownership of farmlands, livestock and farm implements, adequate employment opportunities and education, as well as access to information in the labor market (Okafor-Yarwood, 2019). While this is important,

Chapsos et al (2019) has also observed that the demography of a nation is also a determining factor in achieving food security. A society that is characterized with mostly elderly people are likely to be food insecure since they may not possess the ability to cultivate and produce enough food for personal and public consumption. In such instance, the role of the government in ensuring that they are food secured cannot be undermined.

3. Food Security in Nigeria's Coastal Communities: The Role of Fishing System

Fish contributes to the food security of many coastal communities in Nigeria. According to Okafor-Yarwood (2019), an estimated 9 million people in West African coastal zone are dependent on fisheries as a source of income and livelihood. Fish equally plays a vital role, both as a source of food, and a means through which the general wellbeing of households is guaranteed. In reiterating the importance of fisheries, goal 14 of the Sustainable Development Goals (SDGs) highlights that over 3 billion people depend on marine fisheries for their livelihood (Ding, et al, 2017). Also, over 80 million tons of animal protein and nutrient rich for food consumption are supplied from fish annually (Okafor-Yarwood, 2019). Therefore to meet up with food security demands, coastal communities in Nigeria offers a conducive environment for the growth of fish species such as Bonga, Tilapia, Croakers, Catfish, Crayfish, Shrimps, and finfish, among other marine animals. The fishing business in coastal communities is exploited both in commercial and subsistence quantities by large and small-scale artisanal fishing vessels, which are largely dominated by both local and foreign fishers (Okafor-Yarwood, 2019).

In Nigeria, available data from National Bureau of Statistics (NBS) indicates about 69% of fish consumed daily in the country is generated by artisanal fishers (both men and women) who live in coastal areas. For instance in 2018, marine artisanal fisheries contributed 3,506,865 metric tons (Mt) to national fish production and this was higher than contributions from industrial and aquaculture that stood at 204,403 (Mt) and 1,383,690 (Mt) respectively (Okafor-Yarwood, 2019) In coastal fishing communities, artisanal fishing is a traditional small-scale fisheries system that utilizes traditional technologies such as crude fishing gear (spears or hand reels), small boats or canoes with no or very simple low-power engines, as against larger and more powerful vessels. Through this medium, fishes caught annually accounts for about 41-75% of animal protein consumed in the coastal communities (Okafor-Yarwood, 2018). Despite this feat, Nigeria's fish production is not optimal as the country remains a net importer of fish. There is compelling evidence that the estimated population of 200 million people in the country requires an estimated 2.7 million tons of fisheries yearly to meet up the total fish demand. Whereas the country produces 0.8 million tons, giving a deficit of 1.9 million tons. Thus, within the fish production and distribution chain, availability and access are not fully met from domestic production and supply.

4. Methods and Materials

This qualitative descriptive study used semi structured interviews as a data collection method to generate data from key informants in three fishing communities in Akwa Ibom state, Nigeria. These communities include Ibaka community, Mbo Local Government Area; Ayadehe community, Itu Local Government Area, and Issiat community, Uruan Local Government area. We interviewed a total of 30 participants from across these communities. The interview method provided deep insights into how Covid-19 exacerbated food insecurity in coastal fishing communities in Nigeria. It also provided insights into understanding the implications for sustainable food system in post Covid-19 era. Thus, in-depth interviews were conducted with fishermen, small scale fish farmers, and fish sellers in each of the selected coastal fishing communities. This study also relied on literature review of books, journal articles, reports and policy papers for its secondary data. The study adopted the Household Economic Approach as a theoretical basis for analyzing the challenges and prospects of covid-19 on food security in coastal fishing communities in Nigeria.

5. Theoretical Framework

The study adopted Household Economy Approach (HEA) to explain the challenges of food security in coastal communities based on evidence from the Covid-19 pandemic. HEA is a livelihood-based framework for analyzing how a particular demography or livelihood zone can have access to necessities of live during periods of crisis. It is predicated on the notion that events can best be understood if seen against the context of how people live their normal socio-economic lives, as against any changes that may be accrued if any sudden threat or shocks occurs. (Sassi, 2014). According to Seaman et al (2000), the central proposition advanced by HEA is that:

1. To what extent can people have access to food, irrespective of differences in socio-economic status during periods of crisis?
2. What are the opportunities and constraints that may arise during crisis periods?
3. What options and coping mechanism can a household readily rely on in such periods?

Based on this principle, HEA defines and provides a picture of how assets are distributed in a specific geographical entity during periods of crisis, with emphasis being placed on who gets what, when, how, and from whom. In other words, understanding the livelihoods of a particular group of people is an essential criterion required for measuring the changes households could experience due to social, economic, political, environmental, or health crisis such as the covid-19 pandemic. The conceptual framework for HEA revolves around the relationship between three theses, which results to one anti-thesis. Thus, the interaction of HEA follows that: **Baseline + Hazard+ Responses = Outcome.**

In the context of this study, the base line refers to the normal livelihood in the coastal region before the outbreak of the covid-19 pandemic. The baseline reflects the normal economy, assets, the income level, and livelihood of households in a particular area. When hazards or crisis occur, the next phase shows how the normal way of livelihood is affected by shocks such as movement order restrictions, social distancing, and closure of markets. In such periods, measuring impacts could be both negative and positive. Responses on the other hand comes in form of the coping mechanisms and the actions and reactions of policy makers towards such emergencies. The type of short- or long-term measures adopted by all actors involved, usually guarantees the quality of outcome. This is measured based on the extent to which households can meet basic needs for survival, as well as the ability to protect their livelihoods.

6. Results and Discussion

Results from interviews and review of available secondary data showed that the national lockdown as a result of the Covid-19 pandemic had a lot of impacts on the livelihood of indigenes in Nigeria's coastal fishing communities. First, the pandemic caused a fall in the production, supply, and consumption of fish because there was a total disruption in the fishing system of coastal communities (Kevin-Alerechi, 2020). Specifically, production declined because there was a drastic decrease in demand from large scale buyers such as hotels and restaurants. In an interview conducted in Ibaka community, Akwalbom state, one of the artisanal fishermen revealed that with the closure of business, and the cancelation of both public and private events, seafood products that were sold in large quantities to hotels and restaurants were disrupted. Similarly, some of the fish sellers interviewed in Ayadehe community, Akwalbom state also lamented that with the closure of local markets due to social distancing and confinement measures, small scale consumers were not able to purchase fish for their daily consumption. A respondent in Ibaka community revealed that with the closure of sea borders, there was limited access to inputs for fishermen, fish farmers, and women who sell these products for subsistence. Also, the stocking and harvesting plans of fish farmers were disrupted by the nationwide lockdown. In addition, there was limited access to transport services required in transporting harvested fishes to markets where consumers could readily have access. These constraints had drastic effect on small scale fish farmers who were unable to have access to

suppliers and markets. Even when fishermen had access to the seas, markets were not opened to guarantee the sales of these products and during market days, these products were sold at highly exorbitant prices.

Another challenge that some coastal communities dealt with was the issue of illegal fishing. While movement restrictions and limited access to fishes were prevalent, some observers also pointed out that there was an increase in illegal fishing because there were fewer surveillance missions to enforce laws in the marine space (Mukiibi, 2020). More challenges were observed in urban centers since these fishes were mostly transported from rural fishing communities to urban settings. Thus, the main problem revolved around the logistics involved in transporting these products to the markets. Some of the fish sellers in Ibaka Community stated that there were days when it was difficult to transport fishes from the villages to the state capital as transportation fares became high. Even when the lockdown gradually eased off, and few markets reopened on specific days, fishes were being sold at highly exorbitant prices because of the hike in transportation. The decrease in the demands by large scale consumers and the increase in the cost of transportation led to a hike of prices of these products. For instance, a fish seller in Ayadehe community revealed that 2 kg of mackerel fish that was sold at 1,500 Nigerian Naira (\$3.64) was now being sold for 3,000 Nigerian Naira (\$7.32), thus, indicating over 50% increase. The implication was particularly drastic for the poor and vulnerable people living in these communities.

While these negative consequences are very much glaring, available data from the study also showed that Covid-19 recorded some positive effects on the marine habitat in Nigeria's coastal region. With the restrictions put in place, there was a reduced fishing pressure on rare species of fishes such as catfish. This to a large extent paved room for recovery and sustainability. Covid-19 also reinforced collaborations and cooperation within the aquaculture community. Thus, associations like the Catfish and Allied Farmers Association of Nigeria (CAFFAN), Tilapia and Aquaculture Developers Association of Nigeria (TADAN), Fisheries Society of Nigeria (FISON), Nigeria Association of Fisheries Scientist (NAFS), Fish Processors, Corporate Sector Fish Producers, and Traders came together to collectively address the problems which coastal communities faced during covid-19 pandemic in Nigeria. Furthermore, at the local level, fishermen and those within the supply chain made attempts to revive local food networks, increase local sales through delivering directly to consumers in their homes.

6.1 Assessing impacts on the Vulnerable

Results from this study further showed that the most vulnerable group affected by the food and nutritional crisis caused by the pandemic were those who were already facing severe socio-economic challenges before the outbreak of the covid-19. Those that were largely affected were informal laborers, vulnerable urban populations (especially women), displaced populations, and other categories of people who relied heavily on the market to meet their daily food needs (Babatunde, 2020). According to the Global report on food security crisis, before the outbreak, more than 820 million people across the globe were classified as food insecure (Human Rights Watch, 2020). In West Africa for instance, records shows that undernourishment stood at 12.3% in 2005, 10.4% in 2010, 10.4% in 2012 10.7% in 2014 12.8% in 2016 and 15.1% in 2017 (Food and Agricultural Organization, 2018). Also, in the projected values of number of undernourished people in the world, the report revealed that West Africa record the following: 33.0 million people in 2005, 31.9 million people in 2010, 33.7 million people in 2012, 36.9 million people in 2014, 46.3 million people in 2016 and 56.1 million people in 2018. Also, statistics revealing the number of people in the world experiencing severe food insecurity showed that in Western Africa, 71.1 million people in 2014, 77.2 million people in 2015; 86.3 million people in 2016, and 109.8 million people in 2017 were food insecure (Food and Agricultural Organization, 2018). Similarly, a survey conducted by the Economist Intelligence Unit (2018) on the food security index of 113 countries indicates that Nigeria scored 38.0% in the world food security index, placing it as the 96th country out of the 113 countries under assessment. In the

area of food affordability evidence showed that Nigeria scored 26.5% (101 out of 113), 44.4% in the aspect of food availability, putting her at the 100th position. However, in the aspect of quality and safety of food, the country rose to the 77th position with a percentage of 49.4% (Economist Intelligence Unit, 2018)

Therefore, with the deteriorating economic condition caused by the global health crisis, and with millions of people out of job, many people became more vulnerable and moved into acute food insecurity. The most affected were children, women, informal laborers, and displaced persons. On an average scale, women constitute about 60% of the agricultural labor force in coastal communities, and most of them depend on agriculture as their primary source of livelihood. With the pandemic, the means of their livelihood and attempts at becoming food secured was drastically affected. Apart from the uncertainty of becoming food insecure, an interview conducted with some women fish vendors' in Ibaka community revealed that those who sell in the markets faced greater risk of getting infected by the virus. This is because the markets had limited hygiene and sanitation facilities that created room for adherence to Covid-19 protocols. Furthermore, these fish sellers were more prone to getting infected because they are informally employed in the fish production system and as such, they were ineligible to access various social protection benefits offered by the government.

Another vulnerable group that was affected during the pandemic were children. Before now, there were several children in the coastal region who lacked adequate nutritional contents required for proper growth. This became worst during the pandemic as there was an increase in the number of underweight or stunted children in coastal fishing communities. This invariably made them more vulnerable to ill health and possibly early death. Furthermore, the hike in prices made many informal laborers within the supply chain to lose their jobs. This led many vulnerable households to resort to negative coping mechanisms such as indulging in crimes to ensure daily living. It is worthy to note that the hike in the prices of food items in the coastal region also led to social tensions and conflicts, as higher prices constituted economic constraints that contributed towards fueling the already existing feelings of deprivation faced by the people.

6.2 *Fishing System in Nigeria's Coastal Region: Pre-Covid-19 Era*

A further review of existing literature showed that before the outbreak of Covid-19, fishes within Nigeria's coastal areas became an engendered specie threatened by continuous exploitation and exploration of oil found in the region. Suffice to note that the coastal region in Nigeria is well known for its oil-rich terrain. The coastal region is a low-lying flood plain situated in the Atlantic coastline of Southern Nigeria – spanning 450km, and which makes up 7.5% of Nigeria's total land mass (Babatunde, 2017). It is among the ten most significant marine ecosystem and wetland in the world, and the largest wetland in Africa. The region is made up of a plethora of ecosystems rain forest, freshwater swamps, and mangrove swamps. Drawing from the peculiarity of the ecosystem, indigenous communities have historically engaged in farming and cultivating various kinds' of agricultural products including sea foods. This is because the environment is supportive of diverse species of terrestrial and aquatic fauna and flora. However, due to over six decades of continuous oil production, the coastal region became a hotbed for various environmental disasters, which bears aggravating impacts on food and nutritional security. With the production of oil, many rivers, and seas in indigenous fishing communities of the coastal region became surrounded by oil platforms, flow stations, and a vast network of oil pipelines, which causes recurrent oil spillage and fire outbreaks (Ayuba, 2012). The direct fallout of this circumstances has been the drastic undermining of onshore fishing, which explicitly connotes dire implications for food security in the region.

Therefore, evidence from researches conducted by Okafor-Yarwood (2018; 2019), Babatunde (2019; 2020) shows that prior to the pandemic, fishermen and small-scale fish farmers in coastal fishing communities were already bearing the consequences of environmental disasters on fish production and consumption. For many people living in the coastal region, Covid-19 was only one of the many factors exacerbating food insecurity in the region. According to Babatunde, (2020), before

the pandemic, many coastal fishing communities which used to be famous for its rich specie of fresh and saltwater fishes could hardly find any catch to meet up with the dietary needs of households within the region. Also, just before restrictions were imposed, there were reports of dead fishes washing ashore in Rivers state and Akwa Ibom state (Sahara Reporters, 2020). In April 2020, there was an outcry by the Niger Delta Activist forum, that the depletion of the ecosystem of the coastal region was one of the many reasons responsible for the deaths of thousands of fishes in those areas (Udonquak, 2020). Further clinical observation on the dead fishes revealed that the fishes died due to certain chemical reactions. Thus, even though factual results are yet to be released, it was assumed that the fishes were poisoned because of harmful chemicals such as benzene, toluene, ethylene, xylene, and other chemicals from gas seepage (Sahara Reporters, 2020). Furthermore, it was observed that the smell emitting from the dead fishes scared away other living fishes, thus, depriving members of those host communities of their daily catches. With the absence of fishes to catch, majority of the household within these regions had to fall back on the dead fishes for consumption and sustenance.

6.3 Government's Responses to Food crisis during the Covid-19 Pandemic

There were various responses instituted by the government to cushion the effects of the lockdown imposed across the federation because of the pandemic. Thus, governments at all levels introduced social welfare packages in form of palliatives. These palliatives came in the form of moratoriums for "TraderMoni", "MarketMoni" and "FarmerMoni" loans; Loans issued by the Bank of Industry, Bank of Agriculture, and the Nigeria Export Import Bank; and direct distribution of cash/food to a targeted number of households (Ikeyi Shittu, and Co. 2020). Several state governments followed the template created by the federal government with their programmes. For instance, two months after the first index case of coronavirus was announced, the Oyo state government announced the distribution of relief materials to 90,000 households. Earmarked for the 'poorest of the poor', these palliatives which were distributed to assist people whose means of income were affected by the partial shutdown of activities. Again, a second distribution phase targeted at 30,000 vulnerable persons in the society was also initiated (Feyisipo, 2020). There were also reports of palliative distributed by other coastal states such as: Akwa-Ibom; Cross River, Rivers, and Bayelsa states.

The various responses made by governments across all levels have not been without their issues. The palliatives disbursed by federal and state governments have received substantial censure on two points: the quality and quantity of relief materials. In Osun state, residents condemned the palliatives provided by government describing it as inadequate and of low quality (Vanguard, 2020). A resident of Rivers State testified to receiving two cups of rice and a pack of noodles for a household of 6 family members. The 'paltry sharing of food' has also been an issue in Delta State (Oruisi, 2020). Similarly, controversy trailed federal government-sponsored programmes, with questions of transparency and probity featuring prominently (Haruna, 2020) Dissenting commentaries have similarly drawn attention to the limited reach and utility of such programmes by observing that payments were 'likely to reach only a fraction of the Nigerians who will need economic assistance (Human Rights Watch, 2020). The general feeling of dissatisfaction was matched with an outpouring of animosity towards the lockdown measures imposed by federal and state governments. Results also showed that despite the interventions of the government, sea foods such as fish which constitutes the primary source of animal protein in Nigeria's coastal region was not included among the food items distributed in these areas. Such exclusions inextricably revealed the tendency of the government to downplay the role of fishes in the food systems (Bennett, et al, 2020).

7. Conclusion

This study has showed that the safety measures adopted to curb the spread of Covid-19 pandemic affected efforts made by households within the coastal region to become food secured. At the same time, reduction in fishing activities contributed to ensuring the sustainability and survival of certain

species of fishes that were becoming engendered. Also, results also showed that those whose livelihood were threatened by covid-19 were mostly women, children and low-income earners, whose socio-economic status made them disadvantaged during the pandemic. Even though the government still records few cases of the covid-19 virus, this study argues that recovering from the impacts created by the pandemic will require a cross-sectorial partnership and collaboration between all sectors of the blue economy. Such collaborations should be able to increase scientific knowledge, research capacity, and crosscutting the transfer of initiatives and ideas that will aid the sustenance of the entire blue economy. While it is important to conduct this research, there is need to also ensure the visibility of research results so that it can become part of governments' policy documents. Civil society groups who engage in civic spaces within coastal communities need to identify how they can support vulnerable groups, especially women. Given the fact that most men have lost their jobs due to the pandemic, the primary responsibility of sustaining the family now rests with the women who have continued their farming and trading activities within the coastal areas. Thus, they should be provided with various forms of incentives that can aid in boosting their farming and trading businesses. Finally, small scale fish farmers should be provided with some finances to rejuvenate their businesses. Such interventions should come in the form of an efficiently managed targeted assistance scheme, which should be directed at people who are in dire need of these facilities.

References

- Babatunde, A. O., (2017). Challenges of Food Security in Nigeria's Oil Rich Niger Delta Region. *Kujenga Amani*. <https://kujenga-amani.ssrc.org/2017/02/03/challenges-to-food-security-in-nigeras-oilrich-niger-deltaregion/>.
- Babatunde, A. O., (2020) "How Covid-19 has strengthened the role of women in the Niger Delta, *Africa Portal*, July 8, 2020, <https://www.africaportal.org>
- Belloumi, B., (2020). Modelling Consortium: Investigating the Linkage between Climate Change variables and food Security in ESA Countries. Africa Growth and Development Policy (AGROPED) working paper 17th April, 2014 www.agroped.org (accessed June 22nd, 2020)
- Bennett, N. J., Finkbeiner, E. M., Ban, N. C., Behabibi, D., Jupiter, S. B., Kittinger, J. N., Mangubhai, S., Scholtens, J., Gill, D., & Patrick, C., "The Covid-19 Pandemic, Small-Scale Fisheries and Coastal Fishing Communities" *Coastal Management* 48:4, 336-347, <https://doi.org/10.1080/08920753.2020.1766937>
- Carletto, G., Zezza, A., & Banerjee, R., (2013). Towards Better Measurement of Household Food Security: Harmonizing Indicators and the role of Household Surveys. *Global Food Security*. 2:1 (2013) 30-40. <https://doi.org/10.1016/j.gfs.2012.11.006>
- Collier, P., & Dercon, S., (2014). African Agriculture in 50 years: Small holders in a rapidly changing world *World Development*. 34:1, 256-265. <https://doi.org/10.1016/j.worlddev.2013.10.001>
- Cooper, P. J. M, Dimes, K. P. C., Shapiro, R. B., Shiferaw, B., & Twomlow, S., (2008). Coping better with Current Climatic Variability in the rain-fed farming systems of Sub Saharan Africa: An essential first step in adapting to future climatic change" *Agricultural Ecosystem Environment*, 126:1-2 (2008) 24-35 <https://doi.org/10.1016/j.agee.2008.01.007>
- Gunderson, C., & Ziliak, P., (2018). Food insecurity in the United States: Where we have been and where we need to go. *Applied Economic Perspectives and Policy*, 40:1 (2018) 119-135. <https://doi.org/10.1093/aep/pxx058>
- Feyisipo, R., (2020). Covid-19: Oyo kicks off distribution of palliatives in Ibarapa," *Business Day*, May 6, 2020, <https://businessday.ng/coronavirus/article/covid-19-oyo-kicks-off-distribution-of-palliatives-in-ibarapa> (accessed June 17, 2020).
- Food and Agricultural Organization of the United Nations (2018), "Africa Regional Overview of Food Security and Nutrition" FAO 2018. www.fao.org
- Food and Agricultural Organization, (2020). "Fishery and Aquaculture Country Profiles: The Federal Republic of Nigeria" www.fao.org/fishery/facp/NGA
- Human Rights Watch, "Nigeria: Protect most vulnerable in covid-19 response" April 14, 2020, <https://www.hrw.org/news/2020/04/14/nigeria-protect-most-vulnerable-covid-19-response> (accessed June 17, 2020)
- Ifesinachi Okafor-Yarwood, I., (2019). Illegal unreported and unregulated fishing, and the complexities of the sustainable development goals (SDGs) for countries in the Gulf of Guinea. *Marine Policy* 99, 414-422. <http://dx.doi.org/10.1016/j.marpol.2017.09.016>

- Kadafa, A. A., (2012). "Environmental Impacts of Oil Exploration and Exploitation in the Niger Delta of Nigeria" *Global Journal of Science Frontier Research Environment & Earth Sciences*. 12:2 (2012) 19-28.
- Kumar, A., & Shama, P., (2013). Impact of Climate Variation on Agricultural Productivity and Food Security in Rural India. *Economics Discussion papers* 43 (2013), Kiel Institute for World Economy. <http://www.economics-ejournal.org/economics/discussionpapers/2013-43>
- Niger Delta Group Calls for Urgent Intervention as Dead Fishes Wash Ashore in Rivers and Akwa Ibom State" Sahara Reporters New York, last modified April 20, 2020, accessed June 28, 2020. <https://saharaeporters.com/2020/04/20>
- Okafor-Yarwood, I., (2018). The effects of oil pollution on marine environment in the Gulf of Guinea-the Bonga Oil Field example. *Transnational Legal Theory*, 9:3-4, 254-271. <https://doi.org/10.1080/20414005.2018.1562287>
- Oriola, T. B., & Knight, W. A., (2020). "George Floyd and Human Security," *African Security* 13:2, 111-115, <https://doi.org/10.1080/19392206.2020.1783760>
- Orusi, K., (2020) "Palliative: Group knocks Delta governor over paltry sharing of food items", *The Nigerian Voice*, April 28, 2020, <https://m.thenigerianvoice.com/news/287479/group-knocks-delta-governor-over-paltry-sharing-of-food-items.html> (accessed June 18, 2020)
- Ozili, P. K., (2020). "Covid-19 in Africa: Socioeconomic Impact, Policy Responses and Opportunities," *International Journal of Sociology and Social Policy* <http://dx.doi.org/10.219/ssrn.3567419>
- Pinstrup-Anderson. (2009). Food Security. Definition and Measurement. *Food Secure* 1, 5-7, <https://doi.org/10.1007/s12571-008-9992-y>
- Sassi, M., (2014). Conceptual Framework for the Analysis of Food Security. In, *Understanding Food Insecurity*, 2014. https://doi.org/10.1007/978-3-319-70362-6_2
- Shittu, I., & Co. (2020). Covid-19- additional palliatives issued by the federal government of Nigeria. ICLG Briefing, April 28, 2020, <https://iclg.com/briefing/11746-covid-19-additional-palliatives-issued-by-the-federal-government-of-nigeria> (accessed June 17, 2020).
- Siche, R., (2020). "What is the Impact of Covid-19 disease on agriculture?" *Agropecuaria* 11:1 <http://dx.doi.org/10.17268/sci.agropecu.2020.01.00>
- The Economist Intelligence Unit, Global Food Security Index 2018: Building Resilience in the face of Rising Food – Security Risk. <https://foodsecurityindex.eiu.com>
- Udonquak, A., (2020). "How coronavirus deals a deadly blow on night life, others in Akwa Ibom" *Business Day*, May 24, 2020, <https://businessday.ng/life/article/how-coronavirus-deals-a-deadly-blow-on-night-life-others-in-akwa-ibom> (accessed June 17, 2020)
- Vanguard, "Lockdown palliative a scam, residents fume", April 16, 2020, <https://www.vanguardngr.com/2020/04/lockdown-palliative-a-scam-residents-fume/> (accessed June 17, 2020)