N.Met.S
Nigerian Meteorological Society

PROCEEDINGS OF THE NMeTS 2020 INTERNATIONAL CONFERENCE
&
34TH ANNUAL GENERAL MEETING (VIRTUAL)

WEATHER, COVID-19 AND CONSEQUENCES

*UNIVERSITY OF ILORIN, ILORIN, NIGERIA (Nov 23 – 24, 2020)*

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# Climate Change, Covid-19 and Food Insecurity in Africa: A New Normal Approach

Lere Amusan
Professor and Head, Department of Political Studies and International Relations; he is also of Food Security and Safety Research Niche Area, North West University, South Africa.
E-mail: Lere.amusan@nwu.ac.za and Lereamusan@gmail.com
Orcid No: http://0000-0001-6403-5008

**Abstract:** *Climate change has been receiving a series of attention since 1962 when Rachel Carlson wrote her seminar book "Silent Spring" where she discussed the negative impact of climate change. In trying to further the nexus between climate change, food security, and health challenges, Colin Butler in his edited book "Climate Change and Global Health" published in 2014 confirm the organic linkages of the three issues under consideration. Colin's book examined how climate change is an obstacle to the health sector with a special chapter that interrogates zoonotic diseases in Africa. There is no doubt that the present challenges, the Coronavirus (COVID-19) pandemic, that rocks the globe has some links with climate change and impacting on food security. Places that are facing heatwaves experiencing less COVID-19 impacts compared with the temperate and Mediterranean types of climate. Despite that assertion, the global lockdown affected access to quality food and quantity of food by consumers as farmers could not go to their farms for planting and harvesting. The negative implications of this development will be interrogated through complex interdependence and liberal embedded theories. Relying on secondary source of data, the paper concludes that the neoliberal approach to food security and solution to COVID-19 in the era of climate change will bring more hardship and eventually, political instability to the African continent. Against this, there is a need to internalize liberal thesis through the environmental concern of each state since the globalization of complex interdependence is here to stay.*

## INTRODUCTION

Globalization and climate change have many variables in common. They refuse to respect the territorial integrity of a state. They are like a porcupine, which hurt who cares to touch or grip the animal from any direction. This is the case of the novel COVID-19 that started as an internal affair of China, Wuhan specifically, but like Ebola, it would soon spread to the rest of the world. The only solace for Africa at this stage is that it did not emanate from the forgotten continent, a continent that hardly matters in the geopolitical calculation of the North, developed states, and a continent that continues to wallow in abject poverty for obvious reasons; politics of international economic relations that tilt against developing areas, Eurocentric or what some see as Anglo-Saxon affairs. From every part of development, Africa is the least concern of the rest of the world because it is a continent that good for nothing except as a dumping ground for manufactured goods and a veritable source of industrial inputs (Ake, 1981; Amin, 2006; Carmody, 2016; Onimode, 2000; Stephan, Power, Hervey & Fonseca, 2006).

When the issue of COVID-19 started in Africa, the continent did not have it as bad as what was applicable in developed states. This could have been because the majority of the continent falls within the tropical region, the Sahel and Sudan where the temperature is relatively high; and unconducive environment for COVID-19 to thrive. On the other hand, the high rate of the pandemic that was registered in Southern Africa could be linked to the high rate of people with comorbidity. It has been documented that due to climate change, food insecurity is being registered in many parts of Africa (Howden, et al., 2007; Meredith et al., 2018). For instance, the interplay between El Nina and El Nino brings about unpredictable conditions in many parts of the continent. Heatwaves do encourage food poisoning through contamination by mycotoxins; this, in most cases, causes loss of sense of taste that leads to liver failure (Butler, Mathieson, Bowles, Ana & Cisse, 2014). Also of note is the influence of molds and fungi in staple crops and stored grain caused by an increase in temperature that is conducive for

their multiplication. An increase in temperature, as discussed above, maybe a blessing in some cases, while it is a curse in most cases. One of the blessings is the increase in the cultivation of cassava, a major staple food in the West, and the central part of Africa. The dividend of this is short live because of land and water grab in almost every state in the continent. The unpredictability of weather by governments in Africa is another crisis, though some embarked on irrigation to supplement rainfed farming. It is worth noting that about 4% of the sub-Saharan farmers embark on irrigation due to poor government interest in farmers' plight and lack of access to relevant technology and finance to embark on irrigated farming (Wiggins & Lankford, 2019). Poverty in the continent with the support of the local elite forced many subsistence farmers to sell off their land to large-scale farmers (foreign and local capitalists) and turned landlords into tenants on their land overnight.

Those who remain in the farming business were hedged out because of the cost of farming in the modern age of large scale farming where inputs such as fertilizer, herbicides, insecticides are dominated by multinational corporations (MNCs) such as Yara (fertiliser) herbicides and insecticides (Bayer and Corteva) (Holt-Gimenez, 2017; McMichael, 2017). The main ingredient of fertiliser, phosphate that is at a commercial value in Morocco is under the control of MNCs without value-added, export to the North for processing before sending it as fertiliser to Africa, which attracts high prices. The introduction of genetically modified seeds and animals (GMOs) by various developed states companies like Bayer (formerly Monsanto before 2017), Corteva, DowduPont, and Syngenta leads to partial if not total capture of the continent as seeds from GM plants cannot be kept for another planting season, which in most cases lead hidden hunger due to deficiency in micronutrient needed for healthy living (Kimura, 2013).

Climate change leads to flooding, sometimes severe drought, as experienced in the eastern part of Africa in 2019, vector-borne diseases, famine, conflicts, and migration are associated with climate change as discussed severally (Amusan, 2013a; Amusan, 2010; Amusan & Jegede, 2014; Amusan & Olutola, 2017; Okorie, Maphambukeli & Amusan, 2019).

High temperatures may cause death from cardiovascular and respiratory diseases mostly among elders. In Botswana as a result of the drought that captured the country, there was a high rate of animal death, the main source of foreign exchange after diamond and gold. This implies that the smallholders and as well as large scale herders were affected due to changes in climate in 2013. Some areas that were not experienced malaria, yellow fever, and other zoonotic diseases have started to experience it with implications on health issues (Butler et al, 2014). Examination of the likely crises that this may have caused, it boils down to the novel Covid-19, which claimed the life of so many Africans with emphasis on Southern Africa.

COVID-19 came even though the continent had been battling with water and food due to the effects of climate change. The effects of the pandemic implied that there was a general lockdown during the planting season and those that are into perishable farm business such as vegetable and dairy products were mostly affected. The urban dwellers could not access food and those that had the opportunity to have food, the élite embarked on panic buying, which raised the prices of food items and other essential commodities. Having examined the relationship between food security, COVID-19, and climate change at a tangential level, it is the turn of this paper to interrogate likely theories that capture the problem at hand. To this, there is a need to examine the twin theories, complex interdependence, and embedded liberal theories for a proper understanding of the challenges of the three issues this paper examines.

## Theoretical Underpinnings of Climate Change, Food Security, and COVID-19

In the study of political geography, as in other social sciences disciplines, there can hardly be a theory that will capture the problem of human behaviour. It should be noted that other theories such as green, feminist, critical, English school, games among other theories are also pertinent in this study. For this study,

this paper intends to employ twin theories of complex interdependence and embedded liberal theories. These two theories have some variables in common. They are developed out of the liberal theory of capitalism. At the same time, they rely on a systemic approach in their understanding. Due to economic, cultural, and political globalization that is here to stay for long because of their organic linkages (Acharya & Buzan2019; Friedman, 2006), it is the belief of the two theories that a need for cooperation is needed for sustainable development. Some of the areas of departure between the two theories are that while complex interdependence theory calls for the developed and developing states to come together for economic development through a neo-liberal approach, embedded liberal theory is of the view that there is a need for adjustment of liberal theory so that environmental issues such as culture and level of economic development ought to be taken into account. That is, the old-age imperialistic international trade of specialization on what a state is at best with in the form of production should be adhered to. Hence Africa should focus on the production of industrial inputs while developed states concentrate on finished goods that attract more foreign exchange. For the developing states of Africa, the price for their commodities would be determined by developed states based on the forces of demand and supply. This account for low prices for cocoa, groundnuts, rubber, timber, gold, platinum, palm oil, and many more (Amusan, 2018a, Bond, 2006; Burgis, 2015).

Complex interdependence theory believes in the law of natural science where systems at national, sub-regional, regional, and global are closely linked. That is, a system may not function as expected without the support of the rest for a long time since no state can be an island at the turn of the 21st century. Even North Korea that is known to be a socialist state still relies on some other states described as rogue states such as Iran and to some extent, China and Russia in her conduct of international relations. This is a departure line that Francis Fukuyama (1992) describes as "the end of history and the last man", though this position was *ipso facto* proven wrong by some students of social sciences (Macharia, 2014). Some of the arguments against Fukuyama position are that he fails to realise that liberal democracy, to a larger extent, sometimes brews secession, conflicts, and hegemonic ambition of a few over the majority (Hannum, 2002; Olowu, 2020). Despite Fukuyama's cues from John Locke, Thomas Hobbes, and Plato (*The Republic*), he fails to recognise the greed of man but focused more on the theory of recognition through imposed democratic liberalism. Recognition, as against brings about unity leads to conflict and civil war as experienced in Sudan that brought about South Sudan. The Kiev and Russia issue is on-going to date without a meaningful solution in sight.

Not too far from this is the belief in systemic theory as the organic linkage that may not be separated as a biological system is working. The theory believes that dismembers a part implies that the whole system may collapse as applies in natural biological science (Ojo and Sesay, 1988). Rather, states have been without strict adherence to the theory. Morocco for instance disengaged from the defunct Oganisation of African Unity (OAU) in 1984 due to the organisation's recognition of Western Sahara, a territory that Rabat claimed to be part of Morocco, but joined the African Union (AU) after thirty-four years in 2017. Disengagement with OAU/AU did not destabilize the system, and neither was Morocco seeing as a pariah.

Despite the recognised lapses of complex interdependence theory, it is relevant to the topic under discussion. The COVID-19 that is being globalised is ~~a~~ result of the complex relationship in the international system. As Fukuyama alluded, industrialization and technology globalized the pandemic as there is, to some extent, free movement of factors of production.[1] Contract workers are needed in farms with a special focus on South Africa, Nigeria, Ghana, and Ivory Coast from

[1] For this discussion, one may not claim an unperturbed free movement of labour due to the West borders closure against people from developing states despite invaluable values they add to recipient states. For more explanation on this see (Collier, 2013; Mavroud & Nageli, 2016;)

coterminous states. Inability to cross to states that need their services to sap food production as this paper discussed below.

The liberal embedded theory is another position taken by the student of the Third World States (TWSs), which calls for determining the appropriateness of any theory in social sciences that is environmentally compatible with a certain location (Hinrichs, 2000; Keohane, 1986; Mũnke, et al. 2015). For a proper understanding of the theory, the next area of focus is to interrogate how climate change impacts food security and by extension its influence on COVID-19.

## Climate Change, Food Security, and COVID-19

Many students of climatology, development studies, international relations, food politics, and various international organisations (Amusan, 2009; Cavalcanti, 2005; Hickey & Unwin, 2020; Kimble, 2005; Ruben, McDermott & Brouwer, 2020; Stiglitz, 2020) agree that the impact of climate on food security continues to be a major crisis that is compounded with the Covid-19 challenges. The type of international economic relations that have been put in place from the 17th century is not too far away from the reality that the globe is contending with today. The same create a lacuna between developed and developing states. Despite a fact that developed states with its industrial development of unsustainable cause negative impacts on the climate change impact that Africa is facing due to the introduction of dirty investment on the continent by the colonial powers, the concentration of Greenhouse Gas Emission (GHGE) and factory farming put in place in the continent are pointers to the problem of climate change (Barnhill, Budolfson & Doggett, 2018; Norwood & Mix, 2019; Paarlberg, 2013). Factory farming and land grabbing that are ongoing unabated in many African states such as DR Congo, Nigeria, Ghana, Senegal, Liberia, Mozambique, Sudan, Kenya in the guise of food security is compounding climate variabilities on the continent (Carmody, 2016; Cotula, 2013). Ability to adapt and mitigate the effects of climate change continue to be a mirage due to adjustment of Eurocentric theories that do not recognise the impact of climate change on the environment with special focus on TWSs (Amusan, 2010). The theory addresses the issue of environment/level of development in the attitudes of the developed states. Despite the theoretical introduction of clouding, seeding, sequestration (Carbon Capture and Storage, CCS), Bioenergy with CCS, BECCS, and geo-engineering as a mitigative approach to climate change, these are proved—to be ineffective in addressing the triple heritage of global challenges, climate change, food insecurity, and COVID-19 pandemic (Chalecki & Ferrari, 2018; Tol, 2014). On its website, Friend of the Earth Europe[2] alluded to the fact that false solutions to climate change mitigation and adaptation are aggravating food insecurity and pose serious health challenges globally. This is more prevalent in Africa where human lives matter least to government as experienced in another type of Nigeria's Arab Spring through youth protest due to poor governance system in the country and police brutality that led to #ENDSARS which grew like a wildfire in the country.

An attempt to address one problem leads to another crisis. In an attempt to address crises of dirty investment, many alternatives were pushed forward, but turn out to be ineffective and unsustainable. Alternatives such as fracking, bioenergy, nuclear, natural gas, hydrogen energy, coal to oil technology (synthetic oil), thermal depolymerisation, methane hydrate, and Zero-Point Energy (ZPE) among others pushed forward as beyond oil solution aggravate further GHGE. Some students of climate change and oil politics also see this as a means to embarrass the Arab world that controls substantial oil deposits in the globe; it is also an offshoot of the Africa Command (Amusan, 2016; Nwoke, 2014). Unfortunately, these alternatives may not rescue the world, from climate change challenges, rather some of them caused more harms in the form of "nature bites back" through climate change, epidemic diseases,

[2] https://www.foeeurope.org/false-solutions. Accessed 28 October 2020.

water scarcity, habitat destruction, and the dark side of the industrial age (Kunstler, 2005: 147) as discussed elsewhere (Amusan, 2018b, 2016, 2013b, 2009; Amusan & Olutola, 2017a, 2017b).

On the question of food security and climate change, there is doubt that Africa is development (Darkoh, 1989; Warner, Chain & Weiss, 2020). There is a link between climate change and food insecurity in Africa. Also of import is the organic linkage between climate change and terrorism. Why movements such as Boko Haram, al-Qa`ida in the Islamic Maghreb (AQIM), Jama'at Nusrat al-Islam wal Muslimin (JNIM), and the Islamic State of Iraq and Syria/ Islamic State of Iraq and the Levant (ISIS) have easy penetration of many African states such as Mozambique, Nigeria, Cameroon, Chad, Mali, Algeria, and Kenya could not be too far away from lack of an alternative to food insecurity. This implies that they recruit many youths who are affected by the impacts of climate change and its effects on agriculture. This is said to have contributed to the Libya implosion as Gadhafi recruited the people of the Blue cloth, the Tuaregs, in Mali who eventually caused an insurrection in Northern Mali after the demise of Ghaddafi regime (Amusan, 2013a; Amusan & Adeyeye, 2014).

With food insecurity and the introduction of genetically modified (GM) food, the crisis of coronavirus pandemic that plagues the global system may continue for a long time. As alluded to above, hidden hunger that unhealthy food brings due to a need to satisfy a few MNCs and their shareholders caused compromised immunity, which contributes to vulnerability to the COVID-19 pandemic (Howard, 2016; Kimura, 2013; Osendarp, Morris & Atkin, 2020; Otero, 2018). What this implies in the food system is the lack of relevant minerals in the form of a complete diet for bodybuilding that explains why obesity, undernutrition, and underweight may be identified in a family (Okorie, Maphambukeli & Amusan, 2019). It has been proved beyond doubt that that the impacts of climate change on food security brought about a need to intensify biotechnology in the form of coming up with drought-resistant seedlings and seeds. undergoing a series of shocks when it comes to food quantity and quality. The unceasing desert encroachment towards the tropical region (Sudan and Sahel Savannah) has been documented by many students of African

This is prevalent in Africa where Bayer, Corteva, DowDuPont, and a few more gene-editing companies continue to control what to eat as against what we want to eat. According to Ortiz (2019), plant breeding and gene-editing are the major challenges of food security with an emphasis on food sovereignty amid plenty when one considers Africa's situation. With GM plants and animals in the turn of the 21st century, and feeding lots in various factory farms, for example, feeding animals with antibiotics and various types of injection are to fatten the animals such as cows and chickens, not to prevent ailment, but to make profits by large scale farmers. The implication of this is to aggravate the challenges of health crises that have plagued the African continent.

With the coming of COVID-19 and the consumption of junk foods, products of factory farming throw very many people into a dungeon of multinational pharmaceutical companies (MPCs). For instance, Bayer, the producer of GM seeds and other farm inputs such as herbicides and insecticides that are causing diseases such as cancer is the same company that manufactures drugs to cure the same. With the attack of Covid-19, people who are contending with these ailments are the first culprit of the pandemic. To cap the pandemic crisis that was imposed on Africa towards the end of March 2020, the total lockdown of the globe affected the food chain; many states in the continent rely on food aid in the form of humanitarian assistance. Those that do not rely on this were faced with restriction in the importation of food due to panic buying that was in place in export states such as Malaysia, China, Thailand, India, America, and Canada, to mention a few of them. Hoarding of food was registered in many states such as South Africa, Zimbabwe and to some extent, Swaziland in southern Africa. The Nigeria case was not too different from what was

experienced in southern Africa. Because of the general lockdown, farmers were unable to farm and police brutality that eventually led to youth uprising in many cities in Nigeria forced farmers not to prepare the land for planting. This is more prevalent in towns and cities where farmers needed transport before they go to their farms.

farm; this was capped with lack of transport. Though many scholars are of the view that the lockdown brought about mitigation to climate change as industries that embarked on dirty investment could not operate as well as air, road, and sea transport were almost in total halt (Gilder & Rumble, 2020; Jauregui, 2020; Yosie, 2020). This approach to climate change mitigation amount to inflicting hardship on people as a result of poor or nonexistence in the supply of food. This led to food fraud in the form of substitution of quality food with inferior ones; addition fraud as it is common in the restaurant; fraud that leads to nutritional deficiency; and fraud with the aid of mafia in the form of wrong labelling. The most common ones are those that lead to a deficiency in nutritional values and wrong labelling where expired food is sold to consumers through re-packaging and changed the expiry date of the same (Spink, 2019). As a result of these limitations in access to required

The challenge also led to pre-harvest and post-harvest loss due to the lockdown. Perishable products faced the most challenging time as basic infrastructures that should put in place such as silos and unperturbed supply of electricity made some products rotten on the

food and minerals consumption, there is a 33.3% drop in average calorie consumption during the lockdown because agri-food systems innovation, biofortified crops, and protection of women and children disappeared during the time under consideration (Headey & Ruel, 2020).

Many students of climatology and various international institutions (Ayoade, 2005; Azare, et al. 2020; Brown et a.., 1997; Chaturvedi & Doyle, 2015; Doyle & McEachern, 2008; Ologunorisa, 2006, 2020; *The World Bank*, 2010; Tol, 2014) worked on the likely impacts of climate change and environmental disaster with direct implications on food availability, water-borne diseases and the interplay of El Nina and El Nino. Table 1 below shows some negative effects of climate change and how floods impacted the availability of food and caused internally displaced of many people while many died of flooding in 2020.

Table 1: Some Selected 2020 Flood List in Africa

| **Country** | **Months** | **Dead recorded** | **Displaced people** | **Affected Areas** | **Food and Nutrition Impacts** |
|---|---|---|---|---|---|
| Mozambique | October | 22 | 16,657 | Niassa, Nampula, Zambezia, Maputo, Doa | Overflow of Zambezi river damaged farmland |
| Kenya | From mid-August-October | - | 25,000 | Lake Turkana area of Kerioa, Kangatotha, Kalokol, Lake Zone wards. Also affected is the lake Victoria area in Budalangi | Waterborne diseases, lack of aquaculture disrupted, sedentary farming affected |
| Uganda | August-October | - | 8,700 | The settlement around Lakes Albert and Kyoga rendered people from | Rural dwellers who are farmers lost their animals and plants to flooding. |

| | | | | | |
|---|---|---|---|---|---|
| | | | | Buliisa, Nakasongola, Amolatar, Kalaki, Kakure and Kaveramaido areas homeless | |
| Nigeria | September -October | 150 | 25,000 | Overflowing of the Niger and Benue due to dams releases from Niger, Cameroon and Benin affected 22 states: Jigawa, Kebbi, Kwara, Sokoto, Zamfara, Bayelsa, Anambra, Rivers & Delta | Cash and food crops destroyed, fishing impossible, road and other infrastructural affected, NiMet warns that this will continue till December, hence food insecurity and overreliance on food aid as usual. Compromised immunity and proliferation of COVID-19 |
| Togo | Sept-Oct | 8 | 57,000 | Oti River areas of Savanes, Kara also the river basin affected southern Burkina Faso and northern Benin and Ghana. Flood in Lome affected Be-Kpota-Attiegou and Hedzranawoe | Cash and food crops damaged, waterborne diseases and lack of support from national government. Roads and bridges damaged that cut communities off. Homes were damaged. |
| Ghana | June, October | 1 dead, 2 missing | - | Flash flood brought about flooding around Accra, Kasoa, Kotoka airport, Ashanti Region, Bono Region | Traffic chaos, vehicles abandoned some swept away by flood, many roads turned rivers. Food supply to urban areas affected. Farmers could not transport their farm products as well as farm inputs during planting season. Many homes were damaged. |

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|---|---|---|---|---|---|
| Chad | August-October | | 120,000 | N'djamean, easter and central provinces of Batha, Salamat, Sila, Quaddai, Ennedi-ouest, Wadi Fira. At Mayo-Kebbi Provinces of Mandoul and Tandjile | Already stressed state due to the impact of climate change on the Lake Chad, flooding affcetd farming activities and the same promote fundamentalism nd mke youth available for Boko-Haram and ISIS recruit possible. |

Sources: https://floodlist.com/africa# compiled by the author in 2020.

According to the 7 October 2020 Food Security Cluster report, not only COVID-19 brought untold hardship on people. Torrential rainfall that was adjudged to be the worst in a decade in the Sahel and Sudan regions of Africa impacted negatively on the quantity of food that will be available for the rest of the year and 2021. This is because many farmlands were submerged and livestock was wiped out by floods with emphasis on littoral states of the Niger River. For instance in Burkina Faso where the state is contending with the violence of which 20% of the population is affected by political instability, the impact of climate change coupled with the general lockdown brought more hardship to the Burkinabe; dangerous water level is recorded between August and October in the 13 regions. Nigeria is said to have recorded more than 180,000 people displaced and their crops damaged as well as stored grains in the time of lockdown.

Inaccessibility of farm inputs that are obtainable in urban centres during the lockdown continues to compromise the quality and quantity of food that will be available by 2021. The Niger Republic recorded 16,000 hectares of agricultural land claimed by flooding; and 550,000 people were negatively affected. The same applied to Chad and Mali where more than 236,000 and 50,000 respectively people were directly affected as their farmlands were destroyed and stored grain was lost within days to flooding. In Sudan, about 860 across 17 states lost their crops before harvest to the torrential rainfall; it is on record that Sudan, Nigeria, and Burkina Faso were food insecure where 9.6 million, 8.5 million, and 3.0 million people were affected due to lack of both quantity and quality food. This could have explained why Nigeria borrowed/loaned 5,000 MT of grains from ECOWAS to cushion the effects of the impacts of El Niño and El Niña (*Business Finance Info, 2020*). ECOWAS, a sub-regional organisation set up a Regional Food Security Reserve Programme (RFSR) due to the importance of the Sahel in the geostrategic calculation of the West African areas. The Commission also donated 3,399 MT of cereals to Nigeria as a palliative measure against the Covid-19 pandemic. The same gesture was extended to Burkina Faso, Niger, and Mali due to unfavourable climate change in the countries (Obi, 2020).[3]

"Human activity has made an ocean circulation pattern misbehave triggering a weird confluence of events that have caused the infestation" (Stone, 2020). In the littoral communities of the Atlantic and the Indian

[3] It worth noting that Burkina Faso came up with local food security reserves due to the complex causes of food insecurity in the state, political instability, climate change and youth movement away from food crops to cash crops (cotton) that attracts more income. For details on this, access for following sites: https://www-cdn.oxfam.org/s3fs-public/file_attachments/cs-promoting-local-food-security-reserves-burkina-faso-110713-en_3.pdf. Also access https://allianceforscience.cornell.edu/blog/2019/04/burkina-faso-cotton-production-plummets-phasing-gmo-crop/.

Oceans, the impacts of the increase in the volume of the Oceans have submerged many communities and paralysed the economic activities of many (Cohen, 2015; Flint & Taylor, 2018; Oyewole, 2014). This affects mostly the artisanal whose livelihood depend mostly on aquaculture at subsistence level. The 2019 Cyclones Idai (March) and Kenneth (April) ravaged the economic system of Mozambique when hundreds of Mozambicans died, 2.2 million in need of urgent assistance, and 90,000 survivors were displaced and relocated to 66 supposedly permanent resettlement villages (Kleinfeld, 2019). The implications of such resettlement will bring further crises of identity politics of *we* and *the* with negative implications of xenophobic attacks due to competition for scarce resources in their new-found areas called new home. It is also a violation of basic rights of the indigenous peoples with particular focus on their ancestral homes, violation of religion, culture and livelihood (Mamo, 2020).

Another impact of climate change is the introduction of destructive insects in many parts of the continent. In southern Africa, mostly Swaziland, Lesotho and South Africa, hardly could one heard of mosquito that causes malaria. Of recent, malaria and yellow fever that were unheard of before have been taken a substantial part of the newly affected states' budgets in the health sector. The plague of locusts has descended on many parts of East Africa (Stone, 2020). For instance, between 2017 and 2018, some states in West Africa, East Africa, and Southern Africa were visited by armyworms with negative impacts on crops harvest (Amusan & Olawuyi, 2018).

## Positive Impacts of COVID-19 on Climate Change and Food Security

Despite all the negative impacts of COVID-19 such as loss of a job, loss of loved ones, and immediate food insecurity, there is no doubt that the pandemic has changed not only international politics, it also has positive direction in doing things, hence a new normal has been introduced to the globe, this time, as a matter of must. This is due to restriction in movement caused by total or partial lockdown imposed to curb the spread of the pandemic. One of the advantages is working from home as against travelling from peri-urban to the urban centres of Dakar, Lagos, Abidjan, Johannesburg, and Juba to mention a few. The impact that this brought to the globe is a drastic reduction in $CO_2$ emissions. Working from home brings about the beauty of climate change mitigation because there is a need to adapt to reality. In his recent observation, Steven Davis (2020) of the Department of Earth System Science at the University of California, the better air quality and animal roaming city streets are part of the dividend of the lockdown; that is, there is improve in the biodiversity and eco-system improvement. He also maintained that there was a drastic reduction in $CO_2$ emission, up to 25% reduction, imposed climate change mitigation that the international system never experienced. Pollution is known to have contributed to the health hazard in the world. This is prevalent in oil-producing areas and where mining of precious minerals are common; unfortunately, these challenges were played down by the World Bank, which led to a sponsored book project edited by Bonnie Campbell (2009), which romanticised mining as a source of development in Africa. It is estimated (Kottasova, 2020) as observed by Marshall Burke that lockdown saved between 50,000 and 75,000 people from dying prematurely. As experienced in China where good quality air increased by 21.5% in February 2020, the same applies to mining areas of DR Congo, Nigeria, Ghana, Niger, Mali, South Africa, and Botswana. There was a drastic reduction in nitrogen dioxide emissions from vehicles, power plant, and industrial facilities (Wright, 2020).

Another advantage is a reduction in food waste. As a sign of opulence by many families where a lot of food ends in the waste bin with an emphasis on urban centres. This is prevalent in hotels and restaurants due to out-of-home dining; it is a challenge that students of development studies and food science are grabbing with. Food waste occurs when food that is meant for human consumption ends up in feeding animals and use as industrial inputs. In many cases, the same is used as an alternative to fossil fuel to mitigate climate

change. According to Dhair, Talwar, Kaur, and Malibari (2020), there are some avoidable waste that ought to avoid, but it ends up in waste, the unavoidable waste such as eggshells and potentially food waste such as potato skin that are sometimes consumed but others throw it into a bin. With lockdown in Africa, not only that food waste was in existence before lockdown, it was unheard of that food was wasted because no one knew when the lockdown would end. As a result of that, people started to know how to manage a few that they have at home. This was evident in the Nigerian situation when the government promised palliatives that did not get to the right people. Against this, it became an instrument of politics by the government in power to hoard for the next electioneering campaign although this food had expiry dates. Personal consumption came to a minimum level at the time and food waste was unheard of when the lockdown lasted. Food sovereignty has been the main target of many African states due to a great lesson learnt from the over-reliance on food importation. During the lockdown, many states that export grains and other food items stops doing that for domestic needs. Also many African states that import their meat and fish also cautioned on this because of COVID-19 affected products. *Ceteris paribus,* many state will focus on agriculture promotion from nest planting season.

Another advantage of the COVID-19 on food security [4] is the further investigation into alternative medicine in Africa. For instance, some plants that could have been patented by the developed states were discovered to have been contributing to the pandemic alleviation. Such plants like siam weed (*chromolaena odorata*) and neem leave (*Azadirachta Indica*) are known to have contained anti-bacteria and stimulate the immune system that can fight against COVID-19 (Malik, 2018). From available information, those that died of the pandemic were said to be the ones with low immunity due to their comorbidity status. International economic relations eventually crept into the discovery of drugs that cures COVID-19 as the case of the COVID Organics medicine developed by the Malagasy Institute of Applied Research in Madagascar. The drug that contains Artemisia was said to have been effective in the cure of the pandemic. Due to the World Health Organisation (WHO) prevaricates position on the drug, and despite that it was imported by many African states to address the pandemic, the developed states soon came up with their politics which made the drug not to see the light of the day. The double standard continues to be at play when it comes to Africa and other developing states' research and innovation. In May 2018, President Donald Trump signed into law a right-to-try bill. This bill allows multinational pharmaceutical companies (MPCs) to sell drugs that are not well tested and prove medically fit for consumption. Though the Food and Drug Administration (FDA) was fairly gung-ho about this bill as it may compromise quality and serves as an avenue for some new companies to make more money from the bill. This bill was sponsored by a libertarian think tank, the Goldwater Institute based in Arizona (Brennan, 2018). Politics entrenched in drug administration and the influence of MPCs received attention elsewhere (Amusan, 2015, 2019).

## CONCLUSION

In concluding this paper, there is a need to adjust the liberal position regarding the issue of development in general. Specifically, there is a need to adhere to the principle of the polluters-should-pay approach because the current crisis of climate change is caused by the developed states. The acclaimed pollution from Africa, critically examination of this position comes from a fact that all companies that pollute the environment were established by colonial lords; also of note is that many technologies released to Africa after political independence are inappropriate to the continent's environment through dirty investment such as coal plants in South Africa, cement manufacturing companies and recycling steel companies like the one along Osogbo-Ikirun (Osun State, Nigeria) road.

[4] For this paper, food is defined as any item consume through mouths such as drugs/medicine, water and any smoke.

Therefore, there is a need for the north and south to come together in paving ways for developing states with an emphasis on Africa to make use of their commonwealth resources with emphasis on herbal medicine to cure the pandemic and other diseases that are ravaging the continent due to the complex interdependence global system. The embedded liberal theory discussed above is in line with a need for Africa to come up with its own medicinal system that will address some ailments as the practice before colonialism. What the developed states need to do is to improve on the herbs of Africa, but on equal exchange as against the current *status quo* that tilt more in favour of Euro-America ambition.

On the issue of food security, there is a need to introduce appropriate technology to the continent to deal with the twin challenges of adaptation and mitigation of the effects of climate change. This will bring about planting organic seeds that are environmentally compatible with the climate of the continent. Doing this, will guide against dubious GM seeds and seedlings that are terminator and destructive technologically.

COVID-19 is here to stay for a long time according to what developed states make us to believe. To this, there is a need to improve on Africa medicine through cooperation between traditional medical doctors and various medical research institutes for alternative medicine. If all these could be put in place, Africa of the 21st century will be a radical paradigm shift to the advantage of the oppressed.

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