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African Continental Free Trade Agreement and agricultural development in Nigeria

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Abstract
African Continental Free Trade Area (AfCFTA), according to the World Bank, is believed to have the capacity to lift about 68 million people out of moderate poverty, and create employment opportunities and incomes for Africans provided the right policy reforms and trade facilitating measures are put in place. Nigeria has the largest economy in Africa and holds a competitive position in the newly enlarged market. Nigeria's unemployment rate of over 30% is expected to reduce when trade starts in a commercial quantity. The study, therefore, examines African Continental Free Trade Agreement (AfCFTA) and Agricultural Development in Nigeria. The study involves a systematic literature review of the African Continental Free Trade Agreement (AfCFTA) and Agricultural Development in the era of climate change. Sources of data include official publications, newspapers, working papers, journals, and the Internet. The study discovered that Nigeria has the potential to benefit maximally from AfCFTA, to develop her agricultural sector. This can be actualized if necessary measures are put in place to address the challenges of climate change, poor infrastructures, logistics, and poor inputs and outs, among others. The study recommends a practicable policy with transparent implementation to enable Nigeria to attain its potential in the African Free Trade regime.

Keywords
Agriculture; Climate Change; Free Trade; Unemployment; Policy Reforms

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Contents

1. Introduction

Agriculture is one of the mainstays of the Nigerian economy. It used to be the principal foreign exchange earner for the country between 1960 and the mid-1970s when the country was the largest world producer of groundnuts, cocoa, and palm oil (Ladan, 2014). Agriculture accounted for half of the Nigerian GDP as of independence in 1960 (Nairaland, 2018), 21.96 percent of the nation's GDP in the first quarter of 2020 (Ekott, 2020), and 22.35 percent of the total Gross Domestic Product as at the first quarter of 2021 (Tsokar, 2022; Allafrica, 2022). Besides, agriculture is a major employer of labour in Nigeria, especially in the majority of rural areas (Ajinde, Muchie, and Olatunji, 2011; Umaru and Zubairu, 2012; Nairaland, 2018). Tsokar (2022) noted that over 70 percent of Nigerians engage in the agricultural sector mainly at a subsistence level. It is the major occupation in most rural areas throughout the country. Some people engage in the cultivation of soil to produce crops, while some people (especially in riverine areas) engage in fishing, and others in animal husbandry. Agriculture, according to Umaru and Zubairu (2012), "involves the cultivation of land, raising and rearing of animals, for production of food for man, feed for animals and raw materials for industries. It involves forestry, fishing, processing, and marketing of these agricultural products." It involves the cultivation of land for food production for man and raw materials for industries. It also involves the rearing of animals for human consumption and raw materials for industries (for instance, animal skin as leather for industries). Agricultural products in Nigeria include cocoa, rubber, groundnut, palm oil, cassava, rice, guinea corn, yam, maize, millet, sorghum, soybeans, and cotton, (Umaru and Zubairu, 2012; Odetola & Etumnu, 2013; Tsokar, 2022).

Agricultural productivity depends mainly on climate conditions. A good climate condition would enhance agricultural productivity while a bad climate would negatively affect productivity. The threat of climate change, according to Beyioku (2016), includes "global warming, greenhouse gas effects, flooding, acid rain typhoons, rising sea levels, rising sea temperatures resulting in depletion

of marine organisms, earthquakes, wind storms, land and mudslides, desertification, tsunami, erosion, volcanic activities, hurricanes, pollution, deforestation among several others". Extreme climate change is a threat to agricultural development. Climate change does not only affect crop production but also livestock. Ayinde, Muchie, and Olatunji (2011) noted the direct effects of climate change on livestock to include air, temperature, humidity, wind speed, and other climate factors which affect animal growth, milk production, and reproduction. It can also affect the quantity and quality of feedstuff and the spread of livestock diseases and parasites (Ayinde, Muchie & Olatunji, 2011). There is a need for Nigeria to adapt and mitigate the effects of climate change to harness its potential through agriculture in the African Continental Free Trade Agreement (AfCFTA). The relevance of agriculture to Nigeria's economy is evident in the nation's natural resources such as arable land, water, human resources, and capital (Odetola and Etumnu, 2013). Sasu (2022), Ikani (2022), and Agrifarming (2021) revealed the total agricultural area in Nigeria as 70.8 million hectares divided into 34 million hectares of arable land, 6.5 million hectares for permanent crops, and 30.3 million hectares of meadows and pastures. With these vast resources, Nigeria is in a good position to benefit from the AfCFTA.

According to Food and Agriculture Organisation (FAO, 2020), Nigeria is expected to play a crucial role in meeting the growing demand for food on the continent. The organization noted that trade helps to stabilise food prices and enhances the movement of food from surplus regions to deficit regions. Nigeria can harness the opportunities of arable lands and natural resources to make an edge in the continental markets. The study, therefore, examines the African Continental Free Trade Agreement (AfCFTA) and Agricultural Development in Nigeria. The objectives of the study are to systematically consider the role of agriculture in development, the nexus between climate change and agriculture, and the prospects for agricultural development in Nigeria through AFCTA.

2. Review of Empirical Study

Nwagbara (2015) investigated the emerging advantages of climate change for agriculture in Kano State, North-Western Nigeria. He discovered that increasing annual rainfall is beneficial to Kano State. He noted that though increased rainfall may mean flooding for some areas, it is advantageous for Kano with the popular culture of a small amount of rainfall and short rainy seasons. He submitted that agriculture can be enhanced in the area due to increased rainfall. This according to him, would allow for the planting of crops that were not planted before due to inadequate moisture with increasing rainfall both directly and from stored ones from tanks, dams, ponds, and underground. He revealed that the increase in rainfall enabled Kano State to rank first in the production of several crops and animal products for both local and international markets.

Apata (2012) in an empirical analysis of the effects of global climate change on Nigerian Agriculture, calculated the production, consumption, and storage of grains under different climate scenarios over a 10-year period. He noted that there was population growth as well as an increase in food production in the first and second scenarios (1971 – 1980 and 1981 -1990), while the third scenario (1990 – 2000) revealed a decline in food production as the population continued to grow. He discovered that hunger-related deaths could increase if grain production does not keep pace with population growth in an unfavourable climatic environment. He submitted that climate change adaptations have a significant impact on farm productivity. His study established a decrease in grain production and rainfall during the period under study, especially in the Northern regions with a decline in food production to about 178.37% with a high deficit recorded in the –North -West Zone of the country which was 339%.

Ajetomobi, Ajakaiye and Gbadegesin (2015), considering the potential impacts of climate change on Nigerian Agriculture, investigate how extreme weather conditions have affected crop yields over a period of 42 years (1971-2012). They discovered that the production of more than half of staple crops is threatened by an increase in total annual rainfall and extreme temperature nationally and across states in Nigeria. They, however, discovered that such an increase is found to have beneficial effects on the productivity of a few crops in the Northern part, such as millet, melon, and sugarcane.

2.1 Agriculture and Development Nexus

Agriculture, according to Muhammad, Maringa, Thompson, and Bello (2020:46) "is a way of life that involves the production of animals, fishes, crops, forest resources for consumption of man and supply of agro-allied product required by various sectors". The authors classified agriculture into crop production which involves the cultivation of either food or cash crops; livestock which involves the rearing of animals such as goats, sheep, and poultry; fishing, which involves breeding and catching of fish for domestic consumption and commercial purpose; and forestry, which involves preservation and maintenance of economic trees or plants. Agricdemy (2017) also defined agriculture as the science or practice of cultivating the land and keeping or breeding animals for food. The above definition indicates two aspects of agriculture, which are the cultivation of land and the breeding of animals. According to Cropsreview (2022), "agriculture is the art and science of growing plants and other crops and raising animals for food, other human needs, or economic gain". The practice of agriculture is not only for consumption but for economic gain to individuals and the country at large. To Eagrovision, agriculture is the "deliberate

modification of the earth's surface for the cultivation of plants and rearing of animals and livestock". The definition recognised the cultivation of land and rearing of animals as aspects of agriculture. Agricdemy (2017) categorised agriculture in Nigeria into crop production, which includes rice, cassava, maize, and cocoa farming; Livestock, which comprises cattle, goat, poultry, and pig farming; forestry, which involves cutting trees and processing such as 'plywood, veneer, pulp, panel and other forms for construction, paper and furniture making'; and fishing, rearing and processing of aquatic animals for food consumption, which may take the form of aquaculture (raising and rearing aquatic animal in a man-made environment) and commercial fishing (fishing involve using of ships, trawlers, and other sea-faring vehicles into the deep sea). Agriculture has played a significant role in providing food for the teaming population. Besides, agriculture, unlike the oil sector, has provided a livelihood for many Nigerians (Ajinde, Muchie, & Olatunji, 2011). Agriculture is a major source of food and income for the Nigerian teeming population.

Scholars have revealed that agriculture is pertinent for industrialization. It serves as a source of local income to raise capital and a source of raw materials for industries (Odetola & Etumnu, 2013). Uzoigwe (2007) also revealed the importance of agriculture in feeding local agro-process industries with raw materials such as animal skin for leather processing; cotton for textiles; cocoa for beverages and confectionary and others. Furthermore, Muhammad, Maringa, Thompson, and Bello (2020) examined the role of agriculture in the diversification of the Nigerian economy between 1980 and 2016 and discovered that non-oil revenue had a positive and significant relationship with non-oil exports while government expenditure on agriculture had a negative relationship but significant impact on economic diversification in Nigeria over a period of time. Government intervention is germane to harness the positive impacts of agriculture on the economy of the country.

The challenges confronting agriculture in Nigeria have been identified by scholars. Among others, Tsokar (2022) identified poor land tenure systems, low levels of irrigation farming, climate change, and land degradation. Ofana, Efefiom and Omini (2016) identified the constraints of the agricultural sector to include a defective input subsidy administration system, which to them is tainted with non-transparency in implementation through official and institutional corruption, diversion, or late deliveries of subsidised inputs; low technology diffusion which results in low input and output and consequently, leading to heavy post-harvest losses; poor infrastructure such as roads; absence of long-term finance window is a huge drawback to investment in agricultural development; a weak and undeveloped market for agricultural input and output lead to poverty and food insecurity; extreme weather such as frost, drought, floods and storms heavily damage output. All the above constraints, according to them, resulted in high food importation.

Syngenta Group (2022) identified the challenge of modern agriculture to include how to cope with climate change, soil erosion, and biodiversity loss; meeting customers' changing tastes and expectations for higher quality food; investment in farming; adaptation to new technologies; adjusting to resilient global economic factors; and inability to inspire young people to stay in rural areas and become future farmers. Abutu (2014) also revealed the challenges of agriculture in Nigeria. He advanced mismanagement and corruption in money allocated to the agricultural sector; low agricultural mechanism, the use of crude methods of farming; non-availability of improved seeds and seedlings while some reject available ones due to ignorance with the excuse that it may not adapt to their soil or the taste may not be good; lack of credit facilities from government or financial institutions; extreme weather conditions; and inability to build irrigation capacity. Other challenges identified are low technology, high production cost and poor distribution of inputs, limited financing, high post-harvest losses, and poor access to markets (Tsokar, 2022; Bello, 2020). The place of agriculture cannot be over-emphasized for national development. Even though agriculture plays a prominent role in national development, a lot of factors have hindered its development in Nigeria. The following, among others, have incapacitated its growth: lack of adequate funding; low-quality inputs and outputs; high-cost inputs; climate change; crude method of production; rural-urban migration; lack of interest by the youths; and poor preservative methods.

2.2 Climate Change

Weather refers to "the actual atmospheric conditions that are being experienced now. It also includes changes that are forecast over the next few days, for example, in temperature and rainfall" while climate, on the other hand, refers to the kind of weather that's typically expected in a region. This includes describing the range of conditions that are possible" (Government of Canada, 2020). The difference between weather and climate, according to the above definition is the duration covered. Weather covers a short duration or few days while climate is about a longer period of coverage. There are various definitions of climate change scholars. Le Treut, Somerville, Cubasch, Ding, Mauritzen, Mokssit, Peterson and Prather, (2007) described climate change in "terms and variability of temperature, precipitation, and wind over a period of time, ranging from months to millions of years (the classical period is 30 years)". The UNs (2022) refers to climate change as long-term shifts in temperatures and weather patterns. Similarly, the Government of Canada (2020) describes climate change as "a long-term shift in the average weather conditions of a region, such as its typical

temperature, rainfall, and windiness". To Olaniyi, Funmilayo, and Olutimilehin (2014), climate change refers to the increase in average global temperatures caused by natural and human activities. Common to the above definitions is that climate change depicts extremity in weather conditions over a long period of time.

The main driver of climate has been linked to human activities. Among such activities include the burning of fossil fuels like coal, oil, and gas (UNs, 2022). Burning fossil fuels results in greenhouse emissions which act like a blanket wrapped around the earth, thereby trapping the sun's heat and raising the temperature (UNs, 2022). Greenhouse gas emissions that are causing climate change include water vapour, carbon dioxide, methane, Nitrous oxide, and Chloroflouro carbon (UNs, 2022; Ladan, 2014; Government of Canada, 2020). The government of Canada (2020) described the process of climate change to occur when the sun's energy warmed the earth and the warmed earth released heat into the atmosphere. The heat is trapped by certain gases in the atmosphere, acting like the glass of a greenhouse. The gases in the greenhouse, on the other hand, absorb some heat and radiate some of it back to the earth which raises the earth's temperature.

2.3 The Nexus between climate change and Agriculture

Adams (2019) revealed that climate affects agriculture through changes in average temperature, rainfall, and climate extremes; changes in pests and diseases; changes in atmospheric carbon dioxide and ground-level ozone concentrations; changes in the nutritional quality of some foods; and changes in sea level." He considered the effects of drought on agriculture to include; livestock death and diseases, reduction in crop production due to poorly distributed rainfall with consequent losses to industries that rely on such agricultural products to remain in business, reduction of feed quality, and fodder shortage which may lead to weight loss and increased death among livestock, death of aquatic organisms such as fish, high rate of poverty and malnutrition among farmers, especially those who have no assets to sell, and decline in agribusiness. Rainfall, according to him, causes erosion and washing away of quality soil, weed infestation on the farm, excessive moisture during harvesting, death, and diseases of livestock especially birds such as poultry. He revealed the effects of high temperature or excess heat on agricultural production including death and diseases of livestock, reduction in quality of vegetables, and reduction of food in storage. Similarly, the United Nations Framework Convention on Climate Change (UNFCCC, 2007) identifies the threat of climate change to include, severe water shortage and/or flooding, a shift in crop growing season due to rising temperature, flooding and soil erosion as a result of melting of glaciers, extinction for many habitats and species due to increase in temperature. In the same vein, Akomolafe, Awoyemi, and Babatunde (2018), using annual rainfall, temperature, and carbon-dioxide emission as proxies revealed the effects of climate change on agriculture to include water stress and heat-related diseases among livestock. The extremity in climate has implications for crop production and livestock.

Ogunleye (2015) reveals climate change as a major hindrance to production and profitability. He noted that crop production is affected by climate extremes such as causing flooding during the rainy season and droughts during the dry seasons. Ladan (2014), similarly, emphasizing the importance of climate to agriculture, revealed that more extreme temperatures and precipitation prevent crops from growing well. He further noted that floods and draught harm crops and reduce yields. He noted the threat of heat waves on livestock, vulnerability to diseases, and reduction of fertility and milk production by livestock. Other threats identified by him include carbon dioxide making the world's oceans to become more acidic and the increasing acidity harming shellfish which are created from calcium and are vulnerable to increasing acidity; the threat of growth pattern of rain-fed crops such as maize and rice by unpredictable rainfall; other crops that need the low temperature to grow could not be produced due to inability to get low temperature, such as wheat in Hadejia-Jamaare River Basin Development Project in Northern Nigeria. Nwachukwu (2018), while assessing "Climate Change threat to Agriculture and Food Security in Nigeria" noted the evidence in the declining number of fish in the Niger Delta, underweight cattle in the North, and inadequate rice, wheat, and vegetables. Evidence from the above findings reveals that extreme temperature brought about by climate change results in poor production, causes diseases, confuses farmers during planting season, results in higher food prices aggravates rural poverty, and abandonment of farming by some farmers for non-farming activities. Animal farming has also been found susceptible to diseases, infertility, and lack of milk production.

2.4 Potentials for agriculture and development through AfCFTA

The African Continental Free Trade Agreement (AfCFTA) was signed on 21st March 2018 by 44 African Heads of State in Kigali, Rwanda (Hammond, 2018; Onubedo, 2018;). Nigeria signed the African Continental Free Trade Agreement on the 7th of July, 2019, joining the list of 54 countries, at the 12th Extraordinary Session of the Assembly of the Union on African Continental Free Trade Area (AfCFTA) at Niamey, Niger (Olukoyi, 2019). The only country yet to sign the agreement is Eritrea which has a largely closed economy (Thomas, 2022). Nwafuru (2021) and Olukoyi (2019) revealed the purpose of the agreement which is to:

1. Lay the foundation for the establishment of a Continental Customs Union;

2. Promote and attain sustainable and inclusive socio-economic development, gender equality, and structural transformation of the State Parties;

3. Enhance the competitiveness of the economies of the State Parties within the continent and global markets;

4. Promote industrial development through diversification and regional value chain development, agricultural development, and food security, resolve the challenges of multiple and overlapping memberships and expedite the regional and continental integration processes.

To achieve the objectives, the Party States are to:

1. Progressively eliminate tariffs and non-tariff barriers to trade in goods (on at least 90% of goods they produce);

2. Progressively liberalise trade in services;

3. Cooperate in investment, intellectual property rights, and competition policy;

4. Cooperate in all trade-related areas;

5. Cooperate on all customs matters and the implementation of trade facilitation measures;

6. Establish a mechanism for the settlement of disputes concerning their rights and obligations; and

7. Establish and maintain an institutional framework for the implementation and administration of the AfCFTA (Nwafuru, 2021; Apeh, 2018; Olukoyi, 2019; Edoigiawerie, 2022).

A lot of benefits are expected to accrue from the agreement. The benefits of AfCFTA, according to the World Bank (2022), "promises broader and deeper economic integration and would attract investment, boost trade, provide better jobs, reduce poverty, and increased shared prosperity in Africa". The World Bank (2022) and African Business (2022) listed the following expected benefits from AfCFTA:

1. Africa could see FDI increase by between 111 percent and 159 percent under the AfCFTA

2. Inflows of FDI attracted by AfCFTA would bring jobs and expertise, build local capacity, and forge connections that can help African companies join regional and global value chains.

3. The AfCFTA can bring about higher-paid, better-quality jobs, with women seeing the biggest wage gains.

4. Wages would rise by 11.2 percent for women and 9.8 percent for men by 2035 albeit with regional variations depending on the industries that expand the most in specific countries.

5. If AfCFTA goals are fully realized, 50 million people could escape extreme poverty by 2035, and real income could rise by 9 percent.

6. Under deep integration, Africa's export to the rest of the world would go up by 32 percent by 2035, and intra-African exports would grow by 109 percent, led by manufactured goods.

Olukoyi (2019) noted that the agreement will open up new markets, thereby making African-owned companies expand their customer base and further lead to new products and services. He further noted that the agreement will also help to grow the manufacturing sector and consequently increase the GDP contribution from the manufacturing sector. On the other hand, robust manufacturing will create more well-paid jobs for young people, thereby reducing unemployment and boosting national income. To Kupoluyi (2019), AfCFTA will further reduce the costs of inputs. The agreement will make the process of importing raw materials from other countries easy while firms can be set up in other countries to access cheaper means of production.

Considering that Nigeria is Africa's greatest economy and population, with a GDP of over $445 billion and a population of over 200 million, it is expected that Nigeria's membership will provide enhanced economic opportunities for collaborative action with other African counterparts (Edoigiawerie, 2022). The introduction of joint production enterprise which promotes specialisation and industrialisation by making it easier to import raw materials from one African country with limited production capacity to another with enhanced production capacity is believed to be beneficial to Nigeria (Edoigiawerie, 2022). Nigeria will have the opportunity to import raw materials from other African countries at a low cost for needed industries.

FAO (2020) considered the expectation from AfCFTA to play a crucial role in meeting the growing demand for food on the continent, stabilising food prices and enhancing the movement of food from surplus regions to deficit regions through trade. It noted the positive effects of AfCFTA on food security, and opined the Trade Area could help facilitate access to a larger supply of cheaper, higher-quality food products but stresses the need to satisfy the local market first. Nigeria can harness the opportunities of arable lands and natural resources to produce in larger quantities for the continental markets.

Mumba (2021) revealed that AfCFTA would enable Nigeria to gain better access, using the OneAgrix trading platform to boost the agricultural market both regionally and globally. He further revealed the potential for

Nigeria's agriculture, in AfCFTA, with Nigeria Feeds the World Initiative, launched by Dr Noel Akpata, to economically empower the country's smallholder farmers, and small and medium-sized enterprises (SMEs). The initiative would allow those in the Agric-food sector to access markets within the continent and beyond. He opined the potential of the partnership in the ability of African smallholders and farmers to offer value-added products which is an available feature with OneAgrix's platform. The Feed the World Initiative was established in direct collaboration with OneAgrix and the International Centre to match producers with credible buyers from around the world within a world-class and secure framework to guarantee product traceability and certification for export (Akpata, 2021). Similarly, OneAgrix is also the world's first B2B e-commerce marketplace for agricultural and halal food, using the digital platform to integrate sustainability into an end-to-end supply chain, connecting buyers and suppliers in a singular customer journey and creating an ecosystem that serves the world (OneAgrix, 2022). These platforms will enhance markets for agricultural products between countries

Obi-chukwu (2019) identified various potential impacts of AfCFTA on business in Nigeria. He argued, regarding zero tariffs on 90% of goods produced in African countries can reduce the cost price of goods thereby making them more competitive across markets. He opined that AfCFTA will create new market opportunities for Nigeria in poorer African countries with a taste for low-quality products till they get better at production. He also noted that investors can seize the opportunity of AfCFTA to set up manufacturing hubs in Nigeria and from there export to other member nations, thereby increasing the Foreign Direct Investment (FDI) and consequently affecting the exchange rate in the country. He further argued that AfCFTA will avail Nigerian businesses the privilege of access to raw materials needed by local manufacturers and also enable Nigeria to access new markets for exports of her raw materials.

Nigeria can benefit enormously from the African Continental Free Trade Agreement. It would expand the markets for Nigerian agricultural products with the elimination of tariffs on at least 90% of goods within the continent. With her arable land, natural and human resources, products in which Nigeria has an edge over other countries can be converted to finished goods and exported. For instance, oranges, cashew, mango, pineapple, and other fruits can be processed into fruit juice. Plantain, cassava, millet, and maize can be processed into powder form for export to the continental market. It would enhance the country's foreign earnings. Nigeria can seize the opportunity of continental free trade to showcase its manufacturing goods to the world.

Babali (2022) revealed various efforts of Nigeria to harness her potential in AfCFTA. This includes efforts by both private manufacturers and federal and state authorities to rebrand Nigeria as a high-quality manufacturer across the continent. He noted the establishment of more industrial enterprises since the beginning of 2021. He also revealed the establishment of the Special Agro-industrial Processing Zone (SAPZ), a Public Private Partnership (PPP), launched recently with great support from the federal and state governments of Oyo, Kaduna, Kano, Kwara, Imo, Cross River, and Ogun. The objective of SAPZ is to raise the processing capacity of the country's agriculture sector, thereby generating more exportable products with added value and earning foreign exchange. Others in the pipeline include the privatization of poorly performed state-owned manufacturing businesses for greater agility and operation more profitably.

The participation of Nigeria in AfCFTA has been criticized on certain grounds. Some scholars revealed that infrastructural deficits, the uncertainty of the country's business environment, and logistics are major obstacles to competition with other countries (Hammond, 2019). Kupoluyi (2019), similarly, noted infrastructural challenges, especially transportation networks needed for the transportation of perishable goods across the African continent. Onubedo (2018), Obi-chukwu, (2019) and Kupoluyi (2019) opined that the agreement would lead to job losses due to the exposure of already struggling manufacturing sector to undue competition with Agric-businesses in high-income African countries like South Africa, Kenya, Ethiopia, and Egypt. The inability to present quality products for market competition has also been identified as another handicap to the benefits of AfCFTA membership (Chocomilo, 2022; Aliyu, 2022). Onubedo (2018), Obi-chukwu, (2019) and FAO (2020) noted that firms that are unable to improve productivity can be displaced and pushed out of the markets. Other identified challenges to getting the best from the agreement include making the country a dumping ground for cheap products by countries with already established industries (Obi-chukwu, 2019). This is dangerous for the industrial growth of the smaller countries. There is also the fear of the threat to the protection of intellectual property in Africa. It is opined that the agreement can lead to intellectual property theft whereby new ideas and innovation might lose protection as a result of the easy movement across the border (Onubedo, 2018).

The Nigerian Economic Summit Group (2019) examined the impact of AfCFTA on the agricultural sector. It examined briefly the impact on outputs, imports, and export. It observed that agricultural output declined during the AfCFTA period while export declined with full liberalisation and increased government spending, and there was an increase in imports across all scenarios set. They briefly attributed the decline in output to a lower level of investment due to cheaper imported produce. It further argued that the challenge of competing investment, since

investors will prefer a more investment-favourable climate because of common tariff. Other identified challenges to investment, according to the policy brief, include the high cost of doing business occasioned by poor infrastructure, poor power supply, and poor standards of local and exportable produce. The brief recommended support policies and incentives for players in the sector to avoid adverse effects of the agreement. In addition to the above, the challenge of insecurity in the country, in the form of terrorism, kidnapping, and ritual killings, is another factor capable of discouraging investors. Besides, lack of transparency and corruption in the implementation of good policies can have devastating effects on the potential of Nigeria in the continental trade. Furthermore, erratic and epileptic power supply and bad roads are challenging factors to agricultural development and are capable of incapacitating the country from getting the best from AfCFTA.

The major benefit from AfCFTA in the agricultural development in Nigeria is the opportunity to expand its market, as one of the key producers of crops such as palm oil, cocoa beans, nuts, pineapple, and sorghum (Karmer, 2022) and also to enable investors to increase capacity and extend to other African countries (Alex-Adedipe and Atanda, 2020). Due to the implication of climate change on agriculture, various measures have been put in place by the government to combat climate change in Nigeria. Among such policies is the National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN). Its strategies are to;

increase access to drought-resistance crops and livestock feeds; adopt better soil management practices; provide early warning/meteorological forecasts or related information; increase planting of native vegetation cover and promotion of re-greening efforts (Eke, 2016).

National Policy on the environment is another government policy to ensure environmental protection and the conservation of natural resources (Eke, 2016). In addition to the above is the National Agricultural Resilience Framework (NARF) to strengthen the overall policy framework to mitigate climate change in the agricultural sector (Eke, 2016). For instance, "community and grassroots farmers are to be trained on land and water management strategies like irrigation farming, water harvesting, erosion control" (Eke, 2016) for improved productivity. The diverse measures put in place by the government would improve agricultural productivity in the era of climate change and also enhance the potential of Nigeria in AfCFTA.

2.5 Conclusion and Recommendations

This study discusses the prominent place of agriculture in Nigeria's economy and the threat of climate change on both crop production and livestock. It further examines the potential for agricultural development in Nigeria through the AfCFTA. There is a need for careful strategies and initiatives to adapt to climate change and mitigate its effect. The identified challenges of AfCFTA should also be addressed in order to get the best from the African Continental Free Trade Agreement (AfCFTA) through agricultural development. The following recommendations are germane for Nigeria to harness the benefits of AfCFTA in the era of climate change:

There is a need to create more awareness about climate change through meetings, workshops, and mediums such as radio, Television, and social media. Stakeholders in the agricultural sector should be well-educated on how to mitigate the effects of climate change in different areas. Awareness of the causes, implications, and solutions to the challenge of climate change should be created by policymakers, teachers, lecturers, parents, and non-governmental organisations. Topics on climate change should be inculcated in the school curriculum to create awareness and reduce its effects.

Farmers should be made to know the need for convenient and suitable shelter for livestock to reduce the effect of high temperatures or excessive heat. Government and non-governmental organizations should create awareness of the need to revive planting trees to mitigate climate change's effects. Planting trees would help to reduce erosion. There should also be effective management of waste to reduce flooding.

Technology for dry land agriculture through the use of alternative water sources for plants and animals, such as boreholes should be employed. Potential adaptive measures that can be taken to mitigate the negative effects of climate change include improved irrigation, the introduction of weather–based insurance schemes, the introduction of new crops and crop varieties, sowing crops earlier, draining water from the soil (in case of flooding), and utilisation of lands that were thought unfit for planting previously (Ajetomobi, Ajakaiye & Gbadegesin, 2015). Government should encourage business through favourable policies and encourage the use of technology and production for exportation. Agricultural grants should be offered to local farmers with proper monitoring at every stage of production. This would encourage more people to engage in agriculture and motivate small-scale farmers into technology-based production. Fertilisers should be supplied and effectively distributed to farmers to boost their yields. In the same vein, quality seeds should be used in order to get quality produces.

Government should tackle the problem of infrastructure to ensure access to markets. Local productions should be made accessible to markets through the construction of roads in rural areas. More railway networks should be provided while the available ones could be renovated or repaired where necessary. This would enhance the movement of goods to other countries.

Efforts should be made to process products to quality finished or semi-finished goods to increase profit. For

instance, industrial starch can be extracted from cassava, and fruit juice from our numerous local fruits for export (Kupoluyi, 2022). It would enhance better earnings from exports than trading in raw materials. There must be zero tolerance for corruption in the implementation of AfCFTA. Shady deals and sharp practices must be shunned. Security must be tightened at the border to prevent smuggling which may lead to the dumping of foreign goods which can kill local industries.

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