

## **Environmental Change Impacts on Agribusiness and Food Security in Sub Sahara Africa: A Practical Way Forward**

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**Abstract:** This study reviewed the effects of environmental change on farming, nourishment security and biological system in Sub Sahara Africa. It is apparent that Nigeria as a nation has experienced the outcome of environmental change in the regions of harvest, animals creation, fishery and ranger service. The effects of environmental change have been felt to the degree that, the nation has not had the capacity to discover answer for the issue. Nigeria has not had the capacity to encourage her tremendous populace, since, sustenance generation is relied upon climatic condition. Antagonistic condition, for example, dry season, flooding, cruel climate condition as far as high temperature and sporadic precipitation has been ascribed to our nourishment security status. The adjustment and alleviation procedures to environmental change have not been commonly embraced in Nigeria as a result of low versatile limit and the dimension of consciousness of environmental change by the poor ranchers. Likewise, absence of comprehension of ramifications of some horticultural practices utilized by ranchers during the time spent creation in Nigeria may have extraordinary effect on environmental change. In this manner, it is reasoned that exercises that fuel environmental change in Nigeria ought to be discontinued while attention to environmental change among rustic ranchers ought to be escalated. Country should put a restriction on unpredictable cutting of tree and wood in the timberland for fuel or different purposes and create elective wellspring of fuel for the provincial family unit ranchers. Moreover, Nigeria should put to law the disallowance of shrubbery or backwoods being determined to flame, for any reason and support water system cultivating among rustic ranchers for maintainable sustenance generation. At long last, civil, mechanical and agricultural engineers ought to likewise research together with agriculturist in waste development to control flood and in arrangements of financial structures that can lessen the effects of environmental change in Nigeria.

**Key words:** Environmental change, agribusiness, nourishment security, adjustment, fuel, financial structures

### **INTRODUCTION**

Environmental change is a worldwide wonder with huge effects on agribusiness, sustenance security, human lives and different parts of the economy (UNFCCC., 2007) Climate change is as after effect of a dangerous atmospheric deviation which is brought about by yearly increments in green house gases emanation by various segments of the economy. In the same way as other creating nations, environmental change has turned into a noteworthy risk to the fulfillment of Sustainable Development Goals (SDGs) by 2030 in Nigeria. For example, an investigation by Anonymous (2009) predicts a conceivable ocean level ascent from 1990 dimensions to 0.3 m by 2020 and 1 m by 2050 and ascends in temperature of up to 3.2°C by 2050 under a

high environmental change situation. The low gauge expectations are for ocean level ascent of 0.1 and 0.2 m by 2020 and 2050 separately and a temperature increment of 0.4-1°C over a similar time frames. Ocean level ascent of 1 m could outcome in loss of 75% of the Niger Delta. As of late, it was recorded that in July, 2015, Nigeria as part of the world experienced increment in close earth surface temperature that has never been recorded ever.

Nkeme and Ndaeyo attest that environmental change and farming are interconnected phenomenon, the two of which happen globally. They further include that environmental change is predicted to impact significantly, factors associated with farming including temperature, carbon dioxide, frosty run-off, rainfall and the collaboration of these components.

Reacting to environmental change from both moderation and adjustment edges require vital methodologies from approach, administrative and institutional systems and limits segments of the economy. As indicated by National Environmental, Economic and Development Study (NEEDS) for environmental Change in Nigeria Final Draft Report (2010) Nigeria isn't executing just as expected in imagining the nation's atmosphere future and building dynamic reaction methodologies including sufficient research and framework improvement. Additionally, the report demonstrates that a great deal is should be done in the region of environmental change situation examination for both moderation and adjustment reaction measures and their cost ramifications on total premise. As per them, this will empower the nation to design great in her reaction to changes in its climatic conditions.

Thus, the report further demonstrates that up-to-date information that is basic for environmental change investigation and data spread, just as improve our comprehension of the atmosphere issue with regards to economical national advancement isn't promptly accessible in Nigeria in a reasonable and available way. The nation should reinforce her endeavors at setting up a far reaching environmental change data the board framework that is refreshed occasionally and promptly available.

Another exercise from the draft built up the way that a proactive reaction as opposed to a receptive reaction to environmental change concerns will contribute to the improvement demands of Nigeria with regards to supportable advancement when all is said and done and the achievement of the targets of its Vision 2020 (FME, 2010). Climate change is the main cause of environmental change and it has been neglected as one of the factors affecting agribusiness and food security. This knowledge gap is what this research paper intend to fill. In order to do justice to this topic, this research covers six sections which include meaning of climate change/environmental change, causes of environmental or climate change, impact of environmental or climate change on agribusiness, current approaches and laws on environmental change in Nigeria: quality and shortcoming, summary of global guidelines and strategies on environmental change alleviation and adjustment: instruments that identify with environmental change and horticulture, summary of international guidelines and strategies on environmental change relief and adjustment and practical ways on how the effects of environmental change on agribusiness can be reduced in Nigeria.

## MATERIALS AND METHODS

### **Meaning of climate change/environmental change:**

Environmental change as indicated by Age *et al.* (2012) citing Mendelsohn *et al.* (2006) is an ecological, social and financial test on a worldwide scale. Houghton (2001) characterizes climate change as an moderation in the factual composition of the atmosphere structures that occurred over a reasonable times (decades), paying little heed to the reason. The United Nations Framework Convention on Climate Change (UNFCCC) portrays natural or environmental change as a change which is credited to human activity that adjusts the bit of overall air and which is despite ordinary air variability saw over proportional timespans (UNFCCC., 2007).

According to Hannah *et al.* (2009), natural or environmental change implies present moment, medium term and long haul pull changes in atmosphere models and temperature that are foreseen to happen or are starting at now happening due to anthropogenic release of green house gases, for instance, carbon dioxide. These movements join a higher repeat of over the top atmosphere events, for instance, drought and floods, similarly as increasingly noticeable whim and change in the seasons and precipitation. According to Hannah *et al.* (2009), overlying this extended vacillation are ordinary whole deal changes, for instance, temperature and sea level risings and low or higher precipitation.

### **Causes of environmental or climate change:**

Environmental change is brought about by both characteristic wonder and human exercises in the biological community (Anonymous, 2007). Age *et al.* (2012) called attention to that environmental change has resulted basically from the arrival of "nursery" gases into the climate. These gases amass in the environment and this advancement prompts an Earth-wide temperature boost. These green house gases incorporate methane (CH<sub>4</sub>) which is being produced from flooded rice field, Nitrous Oxide (N<sub>2</sub>O) which is being produced by application of nitrogenous fertilizers and Carbon dioxide (CO<sub>2</sub> from burning of fossil fuel and exhaust from cars and mechanical equipment. The discharge of these gases could be realized by regular marvels, human exercises and agribusiness. The common marvels that cause environmental change are volcanic ejection, sea flows, the world's orbital changes and sun powered varieties. Likewise environmental change is brought about by human exercises, for example, consuming of non-renewable energy sources and changes in land use including agribusiness and deforestation. The primary gas sources are nitrogen composts, overwhelmed rice fields,

soil the board rehearses, land transformation, biomass consuming and domesticated animal's generation and related natural excrement the executives rehearses. All these are related with farming.

As indicated by Anonymous (2007), the three fundamental driver of the expansion in ozone harming substances saw over the previous decades have dependably been non-renewable energy sources, land use and farming. Farming has been found to deliver noteworthy impacts on atmosphere.

**Impact of environmental change on agribusiness:** A significant percentage of research has been done on the feasible effects of environmental change on rural profitability (Konijn *et al.* 1988; Parry, 1990; Leemans and Solomon 1993; Rosenzweig and Parry, 1994). As indicated by Mendelsohn *et al.* (2000), climate change marvel impacts horticulture the accompanying ways:

**It causes the vulnerabilities in cultivating season:** There are seven agro environmental zones in Nigeria, viz: the mangrove overwhelms, the salt water and crisp water swamps, tropical downpour timberlands, Guinea savannah, derived savannah, Sudan savannah and Sahel savannah (Adejuwon, 2004). All these have distinctive examples of precipitation. The area, size of and trademark alleviation in Nigeria have been accounted for to offer ascent to an assortment of atmospheres, extending from tropical downpour backwoods atmosphere along the coasts to the Sahel atmosphere in the Northern pieces of the nation, each being diverse by its yearly precipitation, daylight and other climatic components (Adejuwon, 2004). In Nigeria, for example, later early beginning of precipitation which may not be continued has come about to trim disappointment. Additionally, outrageous climate condition, for example, rainstorm, overwhelming breezes and floods wreck farmland and subsequently lead to edit disappointment. Nigeria encounters vast, spatial and worldly varieties in precipitation and less variety in dissipation and evapo-transpiration (Adejuwon, 2004). This imply environmental change likewise influence precipitation designs in Nigeria. Overwhelming rainfalls with resultant floods are visit in territories past known to have ideal downpours. Postponement in downpours is knowledgeable about territories where downpours begin early. Downpours are additionally, postponed in districts where downpours begin late. In some agro-environmental zones, particularly downpour woods zone, floods are knowledgeable about decimating impact on horticulture and harvest yield.

**It causes water shortage and dry spell:** The real wellspring of water to ranchers in Nigeria is precipitation and the accessibility of this will decide if yields or creature will progress admirably. Dry season happens when there is insufficiency in the measure of dampness requires by his plant to endure and subsequently the plant may pass on. This happen when there is discontinuance in precipitation some stable eco-frameworks, for example, savannah and semi-bone-dry belts have turned out to be progressively helpless against environmental change. It has fortified the current examples of water shortage and expanded the danger of dry spell in the zone

**It adjusts developing season, planting, gathering, ranchers settlement and wellbeing:** The effects of environmental instability on human being and normal frameworks recognized by IPCC incorporate human settlement and wellbeing, water assets, wet grounds and crisp water eco-framework, vitality, industry and monetary administrations, agribusiness, sustenance security, land debasement and ranger service and Coastal Zones and marine eco-framework. A portion of the immediate effects of environmental change in horticultural framework include: seasonal changes in precipitation and temperature, adjusting developing seasons, planting and reaping logbooks, water accessibility, irritation, weed and sickness populace, modification in evapo-transportation, photosynthesis and biomass generation and modification in rural land (Anonymous, 2007).

Also, temperature is a vital constraining component for animals. Past research work has appeared as profitability increments be it expanding milk yield in dairy steers or higher development rates and leanness in pigs or poultry, so, metabolic warmth creation increments and the ability to endure raised temperatures diminishes (Dikmen and Hansen, 2009) previous research work demonstrate that heat worry in dairy bovines can be in charge of the expansion in mortality and monetary misfortunes while Feng *et al.* (2008) brought up that heat pressure influences a wide scope of parameters in ovens; it weakens embryonic advancement and conceptive productivity in pigs (Barati *et al.*, 2008) and influences ovarian follicle development and ovulation in horses (Mortensen *et al.*, 2009).

**Current approaches and laws on environmental change in Nigeria: quality and shortcoming:** FME (2010) set up the way that Nigeria has various approaches, techniques and plans with capability of calibrating them into arrangement alternatives for environmental change adjustment in numerous defenseless areas of the nation. In any case, there is no unmistakable sign that the record

has been adjusted as a national arrangement of activity. The Special Climate Change Unit (SCCU) of the Federal Ministry of Environment is at present working in organization with Heinrich Boell Foundation (HBF), Nigerian Environmental Study Action Team (NEST), Nigeria Climate Action Network (Nigeria CAN) and the UNDP to build up a National Adaptation Strategy and Plan of Action (NASPA) that will recognize need exercises to empower Nigeria to react to the basic needs of adjusting to environmental change. Furthermore, government is leaving on the way toward setting up an environmental change strategy.

**Summary of global guidelines and strategies on environmental change alleviation and adjustment: instruments that identify with environmental change and horticulture:** The Copenhagen Accord, concurred in December, 2009 in Copenhagen incorporate worldwide pioneers choice on environmental change issue, first time under the UNFCCC includes: hold any expansion in worldwide temperature to beneath 2°C: the ramifications of this is the atmosphere will be positive for yield and domesticated animals creation as high temperature influences the efficiency of the two harvests and creature now and again.

Specify, one next to the other, outflows focuses for created nations and activities to decrease emanations by creating nations. This likewise has impacts of agribusiness as the gases which have been discharged (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O) are some of the time hazardous to living being a structure for national and global checking of what created and creating nations will do considerable financing to help outflows decreases and adjustment in creating contries ([www.climatechange.gov.au/global/arrangements/history-exchanges/copenhagen](http://www.climatechange.gov.au/global/arrangements/history-exchanges/copenhagen)).

The real instrument that influences agribusiness is the territory of afforestation, deforestation decrease, reforestation. As per cover environmental change by international organization([www.climatechange.gov.au/worldwide/arrangements/history-exchanges/durban](http://www.climatechange.gov.au/worldwide/arrangements/history-exchanges/durban)).

Decrease Emission Deforestation and Degradation (REDD+exchanges saw a noteworthy leap forward for the World's timberlands with nations consenting to secure woods in creating nations as a feature of a worldwide exertion to battle environmental change. Deforestation at present records for around 18% of worldwide outflows. Presently, out of the blue under the UNFCCC, a REDD+ instrument will convey financial open doors for creating nations to moderate, end and turn around outflows from their woodlands. The result sends the reasonable message that backwoods assume a significant job for the air and that this esteem is perceived. ([www.climatechange.gov.au/universal/dealings/history-arrangements/durban](http://www.climatechange.gov.au/universal/dealings/history-arrangements/durban))

The ramifications of this is woodland zone in Nigeria must be safeguarded for carbon sequestration process which help in diminishing emanation of carbon into the environment to be kept up. In any case, poor ranchers in Nigeria have been denied the trust support that should be given to them in supplementing their exertion in safeguarding the biological community.

Another difficulties in Nigeria is carbon exchanging issue our ranchers have been denied and the worldwide body have concur that ranchers ought to be remunerated for these administrations.

## RESULTS AND DISCUSSION

### **Practical ways on how the effects of environmental change on agribusiness can be reduced in Nigeria:**

Nigeria should put a prohibition on aimless cutting of tree and wood in the timberland for fuel reason and produce elective wellspring of fuel for the provincial family unit ranchers. Nigeria should put to law that bramble or backwoods ought not be determined to flame, for any design be it chasing or for horticultural reason. Additionally, defaulter ought to be rebuffed by law. Farmers ought to be persuaded to partake in utilizing improved seeds and cultivars that can adjust effectively to environmental change. Farmers edifying expansion body ought to be framed by Nigeria University will's identity in charge of instructing ranchers on the significance of specific practices that can moderate environmental change. Nigeria ought to set up environmental reserve for environmental change adjustment and alleviation procedures advancement. Nigeria government ought to build up an examination place with the end goal of climate change mitigation and adaptation research. Nigeria government should put into law the lasting yield pay conspire under this law, cocoa ranchers, oil palm espresso, kolanut and so on and some other perpetual harvest ranchers ought to be repaid month to month or every year for their commitment to environmental change alleviation practices and for upgrading life through supportable improvement rehearses. Rural ranchers ought to be given water system offices at the financed rate, so as to upgrade nourishment security, through constant creation. Alternative ought to be given to the utilization of inorganic manures, for example, NPK in Nigeria. Ranchers ought to be urge to utilize natural compost rather than inorganic manure. The biogas units should set up for transform human and creature squander into a blend of methane and carbon dioxide that can be utilized for lighting and cooking. Carbon capacity can likewise advanced through

agro-ranger service frameworks and enduring plantings on farming grounds. Making more extensive utilization of advancements to 'reap' water, to ration soil dampness (for example, crop build up maintenance) and to utilize water all the more viably in regions where there is a reduction in precipitation. Selection of improved land use rehearses: improved land use practices, for example, minimization of the utilization of inorganic composts can diminish discharge of ozone depleting substances. Improving nourishment of generally, overseen ruminant creatures can lessen discharges of methane. Better administration of creature manure or squanders and shirking of biomass consuming can decrease outflow of methane. Utilization of high yielding assortments of harvests. Selection of dry season cultivating through water system. Build up of afforestation and reforestation instrument for the country. Nigeria needs to build up ecological augmentation administrations will's identity in charge of scattering data and overseeing natural difficulties brought about by environmental change. Utilization of atomic vitality sources that will diminish green house gases focus and generation of bio-fuel from waste. Employments of sun powered and wind vitality sources that have zero outflow of green house gases. Adoption of nuclear energy source for electricity production and releasing of funds to private institutions in carrying out research that will enhance speedy accomplishment of Sustainable Development Goals SDGs. Before 2030.

### CONCLUSION

This study concludes that the activities of human being such as deforestation, afforestation and reforestation has great impact on agribusiness because agriculture as a business depends on climatic or environmental conditions Climate change and variability which cause fluctuation in temperature and rainfall destroy farming operations, both on the field, harvest and storage. Without appropriate adaptation and mitigation strategy low income and poverty will continue to be the effects. Moreover, the study also concludes that the impacts of environmental change and climate change on food sustainability and agriculture as a whole are significant, particularly effects is more on the human lives and the entire ecosystem but the impacts are more rampant in the Sub-Saharan Africa with Nigeria as one of the vulnerable country. Therefore, Nigeria Government must establish A function system in order to reduce impacts of climate change on agric business.

### RECOMMENDATIONS

Therefore, there is a need for Nigeria to take a proactive action by building resilience against environmental and climate change through implementation of the afore mentioned points by integrating them into a policy and by enforcing its implementation.

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