



E-ISSN: 2707-8396
P-ISSN: 2707-8388
JCEA 2024; 5(1): 20-22
Received: 11-11-2023
Accepted: 16-12-2023

Benjamin Anabaraonye
Institute of Climate Change
Studies, Energy and
Environment, University of
Nigeria, Nsukka, Nigeria

Usang N Onnoghen
Institute of Education,
University of Calabar, Calabar,
Nigeria

Ijeoma E Orji
Department of Environmental
Education, University of
Calabar, Nigeria

Olisah C Nzemeka
Department of Physics and
Industrial Physics, Nnamdi
Azikiwe University, Awka,
Nigeria, Nigeria

Beatrice O Ewa
Nnamdi Azikiwe Library,
University of Nigeria, Nsukka,
Nigeria

Corresponding Author:
Benjamin Anabaraonye
Institute of Climate Change
Studies, Energy and
Environment, University of
Nigeria, Nsukka, Nigeria

The impacts of climate change on poultry production in Nigeria

Benjamin Anabaraonye, Usang N Onnoghen, Ijeoma E Orji, Olisah C Nzemeka and Beatrice O Ewa

Abstract

Poultry plays an important economic, nutritional and socio-cultural role in the livelihood of many households in rural and urban areas in Nigeria. Agriculturists and nutritionists have generally agreed that developing the poultry industry of Nigeria is the fastest means of bridging the protein deficiency gap presently prevailing in the country. This study identified the impacts of climate change on poultry production in Nigeria. It highlighted that temperature fluctuation and increased sunshine intensity which are some of the effects of climate change, have negative consequences on poultry production. The impact of climate change has resulted in high mortality of the chickens, low egg production and low feed intake with low production. Other impacts of climate change such as flooding, drought, air pollution, are also identified as having negative impacts on poultry production in Nigeria. This study recommended climate change education among poultry farmers in Nigeria. It further recommended the use of solar energy in climate change mitigation for sustainable poultry production in Nigeria. It concluded by highlighting the need for better government policies, more international collaborations and further in-depth research towards adaptation and mitigation of the impacts of climate change on poultry production in Nigeria.

Keywords: Climate change, education, mitigation, Nigeria, poultry production

Introduction

Climate change has been described as an existential threat to human well-being. Globally, it affects the social and environmental determinants of health: clean air, safe drinking water, sufficient food and secure shelter. The effects of climate change are far-reaching and include heat waves and severe weather, deteriorated air quality, displacement and migration of vectors resulting in increase of a range of diseases related to water and ecological factors (Lu, 2016; PAHO, 2013) ^[9, 12]. The impact of climate change is also felt on animal health and this study identified its impact on poultry production in Nigeria.

Poultry plays an important economic, nutritional, and socio-cultural role in the livelihood of many households in rural and urban areas in Nigeria (Okonkwo and Akubuo, 2018) ^[11]. Agriculturists and nutritionists have generally agreed that developing the poultry industry of Nigeria is the fastest means of bridging the protein deficiency gap presently prevailing in the country (Okonkwo and Akubuo, 2018) ^[11]. Okonkwo and Akubuo (2007) ^[10] asserted that the present methods of using fossil fuel systems by poultry farm holders in the production activities is not really environmentally friendly. This is because fossil fuel systems have limitations in application with the resultant greenhouse gas emissions which contributes to environmental pollution and climate change (Okonkwo and Akubuo, 2007) ^[10]. Temperature fluctuation and increased sunshine intensity which are some of the effects of climate change have negative consequences on poultry production resulting in high mortality of the chickens, low egg production and low feed in take with low production. Other impacts of climate change such as flooding, drought, air pollution, are also having negative impacts on poultry production in Nigeria.

Methodology: This study examined the impacts of climate change on poultry production in Nigeria through existing literature review. The main purpose of this research work was to survey theoretical backgrounds and previous studies on the impacts of climate change on poultry production in Nigeria and the current progress with the implementation of the adaptation and mitigation strategies in Nigeria in ensuring sustainable economic growth and development in Nigeria.

Understanding poultry production

Poultry production is an important component of livestock farming and an integral part of agriculture which contributes significantly to food safety, job creation, poverty alleviation and animal protein production in Nigeria (Okonkwo and Akubuo, 2018) ^[11]. Over the years, poultry production has been intensified in order to boost agriculture and food security in general. However, the production is fraught with many challenges among of which is climate change. Poultry production involves several stages before poultry products reach consumers, including the rearing of these birds from hatch to peak performance and the subsequent harvesting and processing of broilers and eggs (Encyclopedia of Food Security and Sustainability, 2019) ^[7]. Poultry production has been a feature of human society for thousands of years. To ensure that it continues to make positive and sustainable contributions to stable human society, it is essential that production and marketing are tailored to local conditions and associated value chains, maximize nutrient cycling and efficient utilization of all products and maintain genetic diversity (Encyclopedia of Food Security and Sustainability, 2019) ^[7]. Minimizing GHG emission in poultry production value chain entails varying options that will lower the pollution effects and cost of production. Solar energy offers an alternative option as against fossil fuel systems because of the benefits associated with solar energy applications which include environmental friendliness and less economic burden (Okonkwo and Akubuo, 2018) ^[11] on poultry farmers. Anabaraonye (2018) ^[3] asserted that the innovative use of renewable energy (which includes solar energy) is a climate change mitigation strategy for achieving sustainable environment, socio-economic growth and sustainable development in Nigeria. The availability of solar energy all the year round makes it sustainable for poultry production. Fossil fuel and grid-based poultry systems are characterized by environmental pollution, fire outbreak and fossil fuel scarcity, unavailability and power outages.

Understanding climate change

Climate change is one of the global issues which we must of necessity tackle with alacrity in order to prevent global warming too unbearable for the survival of mankind. There is a general consensus among environmental scholars and scientists that the world is experiencing a rapid global climate change but separately differs on its nature, dimension, and effects (Umar and Ozohu 2015; Tsojon 2017) ^[14, 13]. The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (UNFCCC, 1992) ^[15]. Climate change is the most significant challenge to achieving sustainable development, not only because it affects the global physical environment directly, but also because it affects nearly all aspects of socio-economic development (World Bank, 2016) ^[16]. Climate change arises from the release of excessive greenhouse gases - carbon dioxide, water vapour, and nitrous oxide into the atmosphere due to human activities such as fossil fuel burning, gas flaring and deforestation (Anabaraonye, 2017) ^[2]. Climate change has been described as an existential threat to human well-being. Climate change impact is intensely felt on soil fertility in Nigeria (Anabaraonye *et al*,

2021) ^[5] and also on her biodiversity which affects sustainable development and economic growth of the nation and continent either positively or negatively (Anabaraonye *et al*, 2022) ^[6]. Climate change is recognized as a true global emergency that requires concerted efforts by all countries, businesses, and even individuals to achieve the Paris Agreement goals aimed at addressing the crisis. These goals include holding the rise of average global temperatures to well below 2 degrees Celsius (2 °C) above pre-industrial levels and pursuing actions to limit the temperature increase to 1.5 °C above pre-industrial levels. "Climate change mitigation is any action taken to eliminate or reduce the long-term risk and hazards of climate change to human life, property and the society" (GGW, 2018) ^[8]. "Climate adaptation refers to the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damage, to take advantage of opportunities, or to cope with the consequences" (GGW, 2018) ^[8].

Impacts of climate change on poultry production in Nigeria

These include

- a) High mortality of the chickens, low egg production and low feed in take with low production.
- b) Flooding
- c) Drought
- d) Air pollution
- e) Water Pollution

Recommendation

1. Climate change education amongst poultry farmers is very vital in order to enable them to adapt and mitigate the impacts of climate towards sustainability in their poultry production (Anabaraonye, Okafor & Hope, 2018) ^[4].
2. The innovative use of solar energy in poultry production processes is highly recommended. Solar energy is a cheap energy resource and is widely available all the year round in the tropics (Okonkwo and Akubuo, 2007) ^[10]. Its sustainability makes solar the most attractive option for effective and efficient poultry production in Nigeria today.
3. There is great need for better government policies by the local, state and federal government towards enhancing sustainable poultry production in Nigeria.
4. There is a call for more international collaborations and involvement of multilateral organizations such as the World Bank Group (WBG) and International Monetary Fund (IMF) thereby increasing financial support for poultry farmers to enhance sustainable poultry production in Nigeria.
5. There is need for further in-depth research by researchers, lecturers and students of various educational institutions in Nigeria towards adaptation and mitigation of the impacts of climate change on poultry production in Nigeria.
6. The strategic planting of economic trees around the poultry farm which will help to cool the environment and reduce carbon emissions.
7. The recycling of poultry waste products into other useful products such as manures, fish feeds, clothing materials for enhancing climate resilience and ensuring sustainable economic growth in Nigeria.

Conclusion

Nigeria is a country which has the abundance of human and natural resources, including skills and talents which are needed to maximize the green entrepreneurial opportunities in the solar energy industry for our sustainable development (Ajator, Anabaraonye & Ewa, 2020) ^[1] and to enhance sustainable poultry production. There is therefore great need for better government policies, more international collaborations and further in-depth research towards adaptation and mitigation of the impacts of climate change on poultry production in Nigeria.

References

1. Ajator C, Anabaraonye B, Ewa B. The Health Benefits in the Use of Solar Energy for Sustainable Development in Nigeria. *EC Emergency Medicine and Critical Care*. 2020;4(2):01-06.
2. Anabaraonye B. Climate change education for sustainable development in Nigeria. *Rev Educ, Inst Educ J Univ Nsukka*. 2017;28:403-414.
3. Anabaraonye B. The Innovative Use of Renewable Energy For Sustainable Development in Nigeria. *Int J Climate Change Stud Energy & Environ, Univ Nigeria, Nsukka, Nigeria*. 2018;1:122-130.
4. Anabaraonye B, Okafor JC, Hope J. Educating Farmers In Rural Areas On Climate Change Adaptation For Sustainability In Nigeria. In: Leal Filho W, eds. *Handbook of Climate Change Resilience*. Springer Nature Switzerland AG; c2018. https://doi.org/10.1007/978-3-319-71025-9_184-1.
5. Anabaraonye B, Okafor JC, Ewa BO, Anukwonke CC. The Impacts of Climate Change on Soil Fertility in Nigeria. In: Choudhary DK, Mishra A, Varma A, eds. *Climate Change and the Microbiome*. Soil Biology, vol 63. Springer, Cham; c2021. https://doi.org/10.1007/978-3-030-76863-8_31.
6. Anabaraonye B, Amaechi M, Okolo NV, Adeniyi TF, Nwobu EA. The impacts of climate change on biodiversity in Nigeria. *Int J Res Civil Eng Technol*. 2022;3(2):01-05.
7. Encyclopedia of Food Security and Sustainability. Food security and sustainability; c2019. <https://www.sciencedirect.com/referencework/9780128126882/encyclopedia-of-food-security-and-sustainability>.
8. Global Greenhouse Warming. Climate change mitigation and adaptation; c2018. <http://www.global-greenhouse-warming.com/climate-mitigation-and-adaptation.html>.
9. Lu JLD. Impact of climate change on human health. *Acta Med Philippina*; c2016. https://doi.org/10.1007/978-3-319-16751-0_53.
10. Okonkwo WI, Akubuo CO. Trombe Wall System for Poultry Brooding. *Int J Poultry Sci*. 2007;6(2):125-130.
11. Okonkwo WI, Akubuo CO. Design, Construction and Performance Evaluation of a Trombe Wall Poultry Brooding House. Paper presented at: Annual Meeting of the American Society of Agricultural and Biological Engineers (ASABE); c2018. Cobo, Detroit, Michigan, USA. 29th July – 1st August 2018.
12. PAHO. Health, Environment and Sustainable Development: Towards the Future We Want. A collection of texts based on the PAHO Seminar Series towards Rio+20 that occurred in the period between 8 February and. Washington, DC; c2013. Retrieved from <https://www.paho.org/hq/dmdocuments/2013/seminario-rio-20-eng.pdf>.
13. Tsojon JD. Impact of climate change on agricultural production by farmers in Taraba state. *Niger Int J Entrep Dev Educ Sci Res*. 2017;4(1):178-190.
14. Umar OJ, Ozohu OA. Impact of climate change on agricultural production and food supply in Africa. Paper presented at: International Conference on Latest Trends in Food, Biological & Ecological Sciences, Dubai; c2015 Oct 11-12.
15. UNFCCC. United Nations Framework Convention on Climate Change; c1992. <https://unfccc.int/resource/docs/convkp/conveng.pdf>.
16. World Bank. Climate Change Action Plan 2016-2020. Washington DC: World Bank; c2016.