IJAAR PUBLISHING®

African Journal of Sustainable Agricultural Development | ISSN: 2714-4402
Vol. 7, Number 1 (2026) | www.ijaar.org/ajsad

ASSESSMENT OF CLIMATE CHANGE POLICIES AND FOOD SECURITY STATUS AMONG FARM HOUSEHOLDS IN EBONYI STATE, NIGERIA.

E.E. Nnamani, B.N. Mbam

Department of Agricultural Economics, Management and Extension, Faculty of Agriculture and Natural Resources Management, Ebonyi state university, Abakaliki

Corresponding Author's Email: nnamaniebuka474@gmail.com, Tel: +2347030374231

ABSTRACT

The study assessed the effects of climate change policies on the food security status of farming households in Ebonyi State, Nigeria. A multistage sampling procedure involving purposive and random sampling techniques were used to select 240 farm households across two agricultural zones of the state. Primary data were collected through structured questionnaires and analyzed using both descriptive and inferential statistical tools in line with the study objectives. The result of the analysis showed that respondents were predominantly male (57.9%), with a mean age of 48 years, indicating an active farming population. The average farm size was 2.2 hectares, while the mean annual farm income was ₦1,711,250, reflecting small-scale production systems. The study further showed that awareness of climate change policies was generally high, with the National Climate Change Policy (82.5%) and the National Environmental Policy (81.3%) recording the highest awareness levels. In addition, most policies were perceived as effective, with mean effectiveness scores ranging from 3.10 to 4.16, except the United Nations Framework Convention on Climate Change with (mean = 2.88). Despite the relatively high awareness and perceived effectiveness of policies, food security assessment showed that only 30% of households were food secure, while 70% experienced varying degrees of food insecurity. The result on Regression analysis indicated that climate change policies significantly influenced household food security, explaining 78.1% of the variation ($R^2 = 0.781$; $F = 35.371$; $p < 0.01$). Key policies with significant effects included the National Climate Change Policy, National Adaptation Strategy and Plan of Action on Climate Change, National Climate Policy and Response Strategy, the United Nations Framework Convention on Climate Change, and the National Green Bonds Programme. Varimax rotated component analysis identified institutional, environmental/socio-cultural, and socio-economic constraints, particularly poor policy implementation, inadequate funding, environmental degradation, limited extension services, and poor access to climate-resilient inputs as major barriers to policy effectiveness. Based on the findings, the study recommended that the government should strengthen policy implementation, ensure institutional support, and improve farmers' access to climate-resilient resources, as these are critical to improving food security among farm households in Ebonyi State.

KEYWORDS: Assessment, climate change policies, food security status, farm households in Ebonyi state, Nigeria.

https://doi.org/10.46654/bhnjfy38

1. INTRODUCTION

One of the most pressing challenges of 21st century is the rapid change in climatic conditions that is negatively affecting global agricultural sectors. Climate plays a crucial role in crop and livestock production in developing regions, as farmers primarily rely on rain-fed agriculture. Climate is the long-term atmospheric conditions that affect crop growth, development and productivity in a specific region.

Climate change poses a global threat to food security, causing decline in crop yields and reduced food availability which is exacerbated by household food insecurity altering crop yields, water supplies, and farming systems. Climate change is a significant global challenge with adverse impacts on ecosystems, economies, and human livelihoods (IPCC, 2021).

It is primarily defined as a rise in global temperatures, thus altering climatic patterns like floods and droughts. In Nigeria, agriculture is the main source of food and employer of labor, employing about 60-70% of the population (Adebisi and Oyesola, 2014). Since agriculture in Nigeria is mostly rain-fed, any change in climate is bound to impact on its productivity and socioeconomic activities in the country.

The impact could be measured in terms of effects on crop growth, availability of soil water, livestock production, incidents of pests and diseases, sea level rises and decrease in soil fertility (Adejuwon, 2004; Anyadike, 2009).

The leading cause of climate change is the vast release of greenhouse gas emissions into the atmosphere. This is primarily driven by the rapid advancement of global output using environmentally unsustainable methods, i.e., burning fossil fuels, industrial processes, deforestation, and modern agricultural practices such as precision agriculture, biotechnology and genetically modified crops, the excessive use of chemical fertilizers and pesticides, large-scale livestock production, and unsustainable irrigation practices.

Furthermore, the global climate crisis also has a significant impact on ecosystems, economies, and communities, necessitating urgent attention to enhance climate change policies and mitigate the adverse effects of climate change through climate change policies and adaptation strategies. Understanding these effects aids in devising adaptive strategies and guiding policies for enhancing resilience, food security, and sustainable agricultural practices.

Nigeria, as the most populous nation in Africa, faces severe climate risks, including rising temperatures, desertification, coastal erosion, flooding, and irregular rainfall patterns (Nwafor, 2020). These environmental challenges threaten food security, water resources, public health, and overall economic stability, particularly in climate-sensitive sectors such as agriculture and fisheries (Adelekan, 2018).

The country's geographical diversity exacerbates its climate vulnerability. The northern region experiences increasing desert encroachment due to prolonged droughts, while the southern coastal areas are at risk of sea-level rise and recurrent flooding (Oladipo, 2019). Extreme weather events, such as the 2012 nationwide flooding that displaced over 2 million people, highlight the urgency of climate resilience strategies (NEMA, 2013).

Climate change policies serves as a critical tool for addressing climate change by promoting sustainable resource management, emissions reduction, and climate adaptation measures (Schoenefeld and Jordan, 2017). In Nigeria, key legislative and policy frameworks, such as the National Policy on Environment (1989, revised in 2016) and the Climate Change Act (2021), outline strategies for mitigating climate risks (Federal Ministry of Environment

[FME], 2021). These policies aim at regulating the land use, reduce deforestation, promote renewable energy, and strengthen institutional frameworks for environmental protection. However, the success of these policies depends on effective implementation, which requires political commitment, adequate funding, and institutional coordination (Olawuyi, 2020). Weak governance structures, corruption, and limited technical capacity have hindered policy enforcement, reducing Nigeria's ability to build long-term climate resilience (Agboola And Emmanuel, 2021). Despite the presence of comprehensive climate change policies, Nigeria continues to experience environmental degradation and climate-induced disasters. A critical factor undermining policy effectiveness is the lack of strong political will and poor implementation mechanisms (Ibrahim and Ajibade, 2022). Political leaders often prioritize short-term economic gains over sustainable environmental practices, leading to inadequate policy enforcement (Eze and Chukwuemeka, 2019). Furthermore, bureaucratic inefficiencies, weak institutional coordination, and corruption have contributed to poor policy outcomes (Okonkwo, 2022).

According to the Food and Agriculture Organization of the United Nations (FAO, 2009), Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Food security is built on four pillars, Food availability (that is; sufficient quantities of food produced and supplied consistently); Food access (that is; physical access and affordability); food utilization (proper use of food based on basic nutrition knowledge); and stability in food availability, access and utilization. (Committee on World Food Security, 2012; Ericksen, 2008; FAO; 2013)

Therefore, understanding the effects of climate change policies on the food security status of farming households is imperative to enhance crop growth and food productivity.

Various studies have assessed climate change impacts on food security status on farming households in Nigeria using different methods, For instance Olalekan, Fatoki, Titilayo, Oguntoye, Olayinka Arowolo and Ajibola Ogunsola (2021) assessed the effects of climate change on rural farming households on food security in Ogun state, Nigeria. Sule Magaji and Ibrahim Musa (2024) worked on the analysis of farmers awareness on the effect of climate change on food security in Nigeria. Johnmary Ani, Vicent Okwudiba Anyika and Emmanuel Mutambara (2021) examined the impacts of climate change on food security in Nigeria. (Magaji And Musa 2015) studied impact of climate change on food security in Nigeria. On the global side so, many Studies have shown that climate change can lead to significant decreases in crop yields. For example, a study by Schlenker and Roberts (2009) found that for each 1°C increase in global mean temperature, there is an average reduction of about 6% in global maize yields. Similarly, Lobell *et al.* (2011) estimated that by 2050, climate change could cause a 3% to 4% decline in global wheat production for each degree of warming. Such reductions in crop yields have implications for food availability and affordability, potentially leading to increased food prices and decreased access for vulnerable populations. Also, the World Health Organization (WHO) describes three facets of food security: food availability, food access, and food use (WHO 2018). In addition to the direct impact on crop production, climate change also affects other components of the food system. Changes in temperature and precipitation patterns can disrupt pest and disease dynamics, altering the distribution and prevalence of agricultural pests and pathogens (Bebber, 2013). Additionally, climate change can influence the nutritional content of crops, potentially reducing their quality and exacerbating malnutrition (Smith., 2019).

Despite all these studies, none dwelt equally on this topic in the study area. There seems therefore a dearth of empirical data on the effects of climate change policies on the food security status of farming households in Ebonyi state. Hence it is therefore imperative to fill the gap in the knowledge in the study area.

It is against this backdrop that this study became imperative in order to assess the effects of climate change policies on food security status of farming households in the study area. In a bid to do justice to this study, efforts will be made to proffer solutions to the following research questions which include ; what are the socio-economic characteristics of the farming households whose food security status are affected by climate change policies in the area ?what are the level of awareness of climate change policies in the area? What are the various climate change policies on farming households food security status in the area? What are the food security status of farming households in the area? Are there effects of climate change policies on food security status of farming households in the area? Are there constraints to improving food security status through climate change policies?

To address the seeming gap this study ascertain the level of awareness of climate change policies in the area, determine the food security status of the farming households in the study area, determine the effects of climate change policies on food security status of farming households in the area, analyze the constraints to improving food security status through climate change policies in the area. The hypothesis of the study was that climate change policies have not significantly effects on food security status of farming households in the study area.

2. METHODOLOGY

The Study Area

The study was carried out in Ebonyi State of Nigeria, which is one of the states created in 1996 by late General Sani Abacha. The state has thirteen local Government areas, which include Abakaliki, Afikpo North, Edda, Ebonyi, Ezza North, Ezza South, Ikwo, Ishielu, Izzi, Ivo, Ohaozara, Ohaukwu and Onicha with its capital at Abakaliki.

It has a population of 3,520,289 based on the 2025 population projection with a land area of about 5935 sq. km (NPC, 2022). The state lies between the latitude 6.18^{0} East and longitudes 7.96^{0} north and shares borders with Benue state to the North, Enugu State to the west, Imo and Abia to the south and cross river state to the east. The tropical climate of the state is broadly of two seasons which are the rainy season (April to October) and dry season (November to March),

The temperature ranges between 21°C to 30°C annually, with relatively high humidity. The annual rainfall varies from 2000mm in the southern areas to 1,150mm in the northern areas. The state is located in south-Eastern part of Nigeria and is predominantly characterized as forest savannah.

The people of the state are predominantly farmers. The main crops grown are rice, yam, palm produce, cocoa, maize, groundnut, plantain, bananas, cassava, melon, sugar, cane, beans fruits and vegetables. According to the national Agricultural sample census (NASC) 2022, about 48% of agricultural households in Ebonyi state raise livestock in some form. The endowment of rivers in the state if adequately harnessed can boast agricultural production through irrigation. Furthermore, the people of the state also engage in other economic

activities such as quarry activities, lead mining and mining of other mineral deposit in the area.

3.2 Sampling Technique

Through multistage sampling procedure a combination of purposive and random sampling technique was adopted in the selection of respondents; however, a list of registered farmers was obtained from the ADP office Abakaliki.

Stage i Purposive sampling technique was used to select two (2) Zones from the three (3) Agricultural zones of Ebonyi state (Ebonyi south, Ebonyi central and Ebonyi North). The zones that were selected are Ebonyi Central and Ebonyi North because they engage more in agricultural activities.

Stage ii Purposive sampling technique was also adopted in selecting three (3) Local Government Areas, each from the two (2) agricultural zones already selected. The local Government Areas selected were, Abakaliki, Izzi, Ohaukwu, Ezza North, Ikwo, Ishielu, these L.G.A were selected because of their high engagement in farming.

Stage iii Random sampling was used in selecting 2 autonomous communities from each of 6 local government area selected. Making a total of (12) communities selected in this stage.

Stage iv Involved random sampling of 20 farming households each from each of the selected communities.

The selection was done in such a way that major farming households were adequately covered. Hence 240 Respondents will be used as a sample size.

3.3 Data Collection

Primary data were collected using structured questionnaires. The construction of the research instrument was based on the objectives of the study. The questionnaires were administered with the aid of research assistant/enumerators who are residents of the communities selected.

3.5 Analytical technique

The data collected for the study will be analyzed relative to the specific objectives of the study. Thus, Objective one (I) Two (II) Three (III) and Four (IV) will be analyzed using descriptive statistics such as Tables, frequency distribution, means, percentages and Likert scale rating (V) will be achieved using multiple regression analysis while Objective six (VI)will be further subjected factor analysis.

3.6 Model Specifications

3.6.1 Multiple Regression Analysis

To assess climate change policies and food security status among farm households in Ebonyi State, a multiple linear regression model was employed. This approach enables the estimation of the simultaneous effects of several climate change policy–related variables on household food security while controlling for other factors. The functional relationship between food security status and climate change policy variables is expressed as follows:

$$Y = F(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) \quad \text{(i) Implicit}$$

$$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + et \quad \text{(ii) Explicit}$$

Where:

Y = Food security status of the farming household, measured using the Household Food Insecurity Access Scale (HFIAS), with values ranging from 0 to 27. Following previous empirical studies, the HFIAS score was treated as a continuous variable and estimated using OLS.

X{1} = Household perception of the effectiveness of national climate change policies.

X{2} = Household perception of the effectiveness of the National Adaptation Plan (NAP).

X{3} = Household perception of the effectiveness of the National Green Bonds Programme

X{4} = Household perception of the effectiveness of the National Action Plan on Gender and Climate Change in Nigeria.

X{5} = Household perception of the effectiveness of the National Adaptation Strategy and Plan of Action on Climate Change in Nigeria .

X{6} = Household perception of the effectiveness of the National Policy on Low Carbon Emission

X{7}= Household perception of the effectiveness of the United Nations Framework Convention on Climate Change (UNFCCC)

X{8}= Household perception of the effectiveness of the National Environmental Policy

X{9}= Household perception of the effectiveness of the National Climate Policy and Response Strategy

βo= intercept or constant term

βo-$_{89}$ = Regression coefficients measuring the change in food security status resulting from a unit change in each explanatory variable, holding other variables constant.

et = Error term, representing random variation in Y not explained by the model.

All climate change policy variables were measured based on farm household's assessment of their effectiveness and extent of implementation using a five-point Likert scale, defined as follows:

Very Great Extent (VGE = 5), Great Extent (GE = 4), Fairly Great Extent (FGE = 3), Low Extent (LE = 2), and Very Low Extent (VLE = 1).

Each explanatory variable represents the household's perception of the effectiveness of a specific climate change policy. These perception-based measures are used as proxies for household-level exposure and experience with the policies

Test of Hypothesis

The null hypothesis which stated that there are no significant effects of climate change policies on food security status of farming households in the study area was tested using F-test at 5% level of significance. From the rule of thumb if F-cal > F-tab, reject the null hypothesis otherwise accept its alternative and the results showed that F-cal (35.371) > F-tab (1.96) thus the null hypothesis was rejected and the alternative accepted. The study therefore concluded that climate change policies had significant effects on food security status of farming households in the study area

3. RESULTS AND DISCUSSION

Awareness of climate change policies in the study area.

Table 1: Awareness of Climate Change Policies in the Study Area.

	Climate change policies	Frequency (n=240)	Percentages %
A	National climate change policy	198	82.5
B	National adaptation plan (NAP)Framework	156	65
C	National green bonds programme	176	73.3
D	National action plan on Gender and climate change for Nigeria	190	79.2
E	National adaptation strategy and plan action on climate change for Nigeria (NASPA.CCM)	131	54.6
F	National policy on low carbon emission	155	64.6
G	United Nations framework convention on climate change (UNFCCC)	138	57.5
H	National environmental policy	195	81.3
I	National climate policy and response strategy (NCCP-RS)	167	69.6

Source: Field survey, 2025

The result of the analysis on table 1, awareness of climate change policies showed that the National climate change policy has the greatest awareness in the study area, having majority (82.5%) indicating that 198 out of 240 respondents were aware of the climate change policy , followed by National environmental policy with percentage score of (81.3%) showed 195 out of 240 respondent were aware of the policy, while united nations frameworks convention on climate change and national adaptation strategy and plan action on climate change for Nigeria has the least awareness with (57.5%) and (54.6%) respectively.

Food security status of the Farming households in the area.

The food security status of the 240 farming households surveyed in Ebonyi State was assessed using the Household Food Insecurity Access Scale (HFIAS), which ranges from 0 to 27. The households were classified into four categories: food secure, mildly food insecure, moderately food insecure, and severely food insecure. The results are presented in

Table 2: Percentage Distribution of the Food security Status of farm Households in the area

Category	Varicode	Frequency	Percentage
0	Food secure	72	30
1	Mildly Food insecure	36	15
2	Moderately food insecure	72	30
3	Severely food insecure	60	25

Source: Field survey, 2025.

Table 3: Effectiveness of climate change policies in the study area.

	Item	Mean scores	Decision
A	National climate change policy	4.16	Accepted
B	National adaptation plan (NAP)Framework	3.61	Accepted
C	National green bonds programme	3.83	Accepted
D	National action plan on Gender and climate change for Nigeria	3.53	Accepted
E	National adaptation strategy and plan action on climate change for Nigeria (NASPA.CCM)	3.78	Accepted
F	National policy on low carbon emission	3.35	Accepted
G	United Nations framework convention on climate change (UNFCCC)	2.88	Rejected
H	National environmental policy	3.53	Accepted
I	National climate policy and response strategy (NCCP-RS)	3.10	Accepted

Source: Field Survey, 2025.

The results of analysis on table 3 indicate that respondents generally perceived climate change policies in Nigeria as effective as evidenced by the acceptance of eight out of the nine policy instruments assessed. The mean scores for the accepted items ranged from 3.10 to 4.16, suggesting moderate to high effectiveness in addressing climate change issues. The National Climate Change Policy recorded the highest mean score (4.16), indicating that it is viewed as the most effective framework for guiding climate change mitigation and adaptation efforts in Nigeria. However, the United Nations Framework Convention on Climate Change (UNFCCC) was the only item rejected, with a mean score of 2.88. This implies that, despite its global importance, respondents perceived its effectiveness at the national or local level as limited possibly due to challenges in domestication, implementation, or alignment with local realities.

Table 4: Regression Results on Effects of Climate Change Policies and Food Security Status Among Farm Households in the Study Area

Vari-code	Variable Name	Coefficients(β)	Std error	t-values	sign
X1	National climate change policy	0.585	0.066	8.928	0.000
X2	National adaptation plan (NAP) Framework	-0.061	0.051	-1.182	0.239
X3	National green bonds programme	0.111	0.063	1.764	0.079
X4	National action plan on Gender and climate change for Nigeria	0.017	0.063	0.267	0.790
X5	National adaptation strategy and plan action on climate change for Nigeria	-0.222	0.047	-4.671	0.000
X6	National policy on low carbon emission	0.009	0.064	0.147	0.883
X7	United Nations framework convention on climate change	0.158	0.049	3.243	0.001
X8	National environmental policy	-0.041	0.061	-0.680	0.497
X9	National climate policy and response strategy	0.206	0.047	4.357	0.000
	Constant	1.219	0.250	4.873	0.000
	R^2	0.781			
	R^2 Adjusted	0.651			
	F-ratio	35.371***			

The result of the analysis on table 4 indicated R^2 value of 0.781 which showed that 78% changes in the dependent variable (food security status) is caused by the combined effects of the changes in the independent variable (climate change policies) stated in the model. The remaining 22% accounted for variables that are not stated in the model. The F-ratio value of 35.371 that was significant at 1% probability level indicated the overall significant of the regression model and also indicated that the coefficients of the explanatory variables included in the model were statistically different from zero.

Specifically, National climate policy(0.000), National adaptation strategy and plan action on climate change for Nigeria(0.000), United nations framework convention on climate change(0.001), National climate policy and response strategy (0.000) are significantly related to food security status at 1% while National green bonds programme (0.079) significantly related to food security status at 10%

Table 5 Varimax Rotated Components Matrix on Constraints to improving food security status through climate change policies.

Vari-code	Variable Name	institutional	Environmental and socio-cultural	Socio-economic
X1	Poor policy implementation	**0.506**	0.090	-0.264
X2	Inadequate funding	**0.702**	0.037	-0.002
X3	Lack of policy coherence	**0.699**	0.065	-0.387
X4	Lack of access to extension services	-0.271	0.033	**0.709**
X5	Inefficient market or market structure	-0.475	0.070	**0.581**
X6	Lack of information on climate change policies	0.077	0.120	**0.500**
X7	Cultural barriers to adopting new practices	0.108	**0.522**	0.129
X8	Soil degradation and environmental degradation	0.128	**0.497**	-0.424
X9	Loss of biodiversity or ecosystem	0.099	**0.767**	-0.078
X10	Limited access to climate-resilient crop or animal varieties	-0.107	0.044	**0.651**
X11	Incessant change of government	**0.904**	-0.260	0.039
X12	Non-sustainability of government policies	**0.897**	-0.608	0.033

Source: Field survey, 2025

The result of factor analysis on constraints to improving food security status through climate change policies were presented in table 5. Factor loading of 0.4 with 10% overlapping variance was used as applied by Nwibo and Okorie (2013), Nwibo and Alimba (2013), Indira (2018) and Umeh et al (2019), variables with a minimum loading of ≥0.4 can be isolated as being positive (constraint) to the attribute in question. In view of these, the constraints were categorized into institutional, Environmental and socio-cultural and socio- economic categories. Specifically, variables that loaded for institutional constraints included poor policy implementation (0.506), inadequate funding (0.702), lack of policy coherence (0.699), incessant change of government (0.904) and non-sustainability of government policies (0.897). Those that loaded for Environmental and socio-cultural constraints were cultural barriers to adopting new practices (0.522), soil degradation and environmental degradation (0.497), loss of biodiversity or ecosystem (0.767) while lack of access to extension services (0.709) , inefficient market or market structure (0.581), lack of information on climate change policies(0.500), limited access to climate resilient crop or animal varieties (0.651) loaded for socio-economic constraints.

4. CONCLUSION AND RECOMMENDATION

In summary, the study established that climate change policies play a significant role in shaping the food security status of farming households in Ebonyi State. While awareness, availability, and perceived effectiveness of most national policies were relatively high, their impact is constrained by institutional weaknesses, environmental challenges, and socio-

economic limitations. Strengthening policy implementation, improving institutional stability, enhancing extension services, promoting access to climate-resilient inputs, and addressing environmental degradation are critical for maximizing the food security benefits of climate change policies. Therefore, based on the findings of this study, the following recommendations are proposed to enhance the effectiveness of climate change policies and improve the food security status of farming households in Ebonyi State.

i. Strengthen Policy Implementation and Institutional Coordination

Government at federal and state levels should prioritize effective implementation of climate change policies, as poor execution was identified as a major constraint.

ii. Ensure Sustainable Funding for Climate Change Programs

Adequate and sustained funding should be allocated to climate change and agricultural adaptation programs. Budgetary provisions should be protected from political changes to ensure continuity. iii. Localize and Contextualize Adaptation Policies

Adaptation policies such as the National Adaptation Plan (NAP) and NASPA-CCN should be better localized to reflect the specific agro-ecological and socio-economic conditions of Ebonyi State.

iv. Strengthen Agricultural Extension and Information Dissemination

Extension services should be expanded and adequately funded to improve farmers' access to climate change information, adaptation strategies, and policy-related programs.

REFERENCES

Abdussalam, A. F., Monaqhani, A. J., Steinhoff, D. F., Dukic, V. M., & Hayden, M. H. (2014). The impact of climate change on meningitis in Northwest Nigeria: An assessment using CMIP5 climate model simulations. American Meteorological Society, 371–379.

Action on Climate Change for Nigeria (NASPA-CCN). Federal Ministry of Environment Special Climate Change Unit, Ibadan, Nigeria.

Adebayo, M. A. (2010). The discursive construction of community identity. Journal of Community and Applied Social Psychology, 15, 48–62.

Adger, W. N., Huq, S., Brown, K., Conway, D., & Hulme, M. (2003). Adaptation to climate change in the developing world. Progress in Development Studies, 3(3), 179–195.

Ahmed, B., Kelman, I., Fehr, H. K., & Saha, M. (2016). Community resilience to cyclone disasters in coastal Bangladesh. Sustainability, 8, 1–29.

Akamani, K. (2012). A community resilience model for understanding and assessing the sustainability of forest-dependent communities. Human Ecology Review, 19(2), 25–36.

Alam, G. M. M., Alam, K., Mushtaq, S., & Filho, W. L. (2018). Climate change and hazards impact on rural communities in Bangladesh: Policy implications for livelihood development. Environmental Science and Policy, 84, 7–18.

Aldrich, D. P., & Meyer, M. (2014). Social capital and community resilience. American Behavioral Scientist, 59(2), 254–269.

Allen, K. M. (2006). Community-based disaster preparedness and climate adaptation: Local capacity building in the Philippines. Disasters, 30, 81–101.

Allwood, J. M., Bosetti, V., Dubash, N. K., Gómez-Echeverri, L., & von Stechow, C. (2014). Glossary. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

Amanchukwu, R. N., Amadi-Ali, T. G., & Ololube, N. P. (2015). Climate change education in Nigeria: The role of curriculum review. Education, 5(3), 71–79.

Amobi, D., & Onyishi, T. (2015). Governance and climate change in Nigeria: A public policy perspective. Journal of Policy and Development Studies, 9(2), 199–210.

Anthoff, D., Nicholls, R. J., & Tol, R. S. J. (2010). The economic impact of substantial sea-level rise. Mitigation and Adaptation Strategies for Global Change, 15, 321–335.

Apata, T. G. (2011). Effects of global climate change on Nigerian agriculture: An empirical analysis. CBN Journal of Applied Statistics, 2(1), 31–50.

Arnall, A. (2015). Resilience as transformative capacity in Mozambican resettlement programmes. Geoforum, 66, 26–36.

Asadzadeh, A., Kotter, T., Salehi, P., & Birkmann, C. (2017). Composite indicators for measuring community disaster resilience. International Journal of Disaster Risk Reduction, 25, 147–162.

Ashkenazy, A., Chebach, T. C., Knickel, K., Peter, S., Horowitz, B., & Offenbach, R. (2017). Resilience in farms and rural regions. Journal of Rural Studies.

Asun, A. R., Rdz-Navarro, K., & Alvarado, M. J. (2016). Developing multidimensional Likert scales using item factor analysis. Sociological Methods and Research, 45(1), 109–133.

Avella, J. R. (2016). Delphi panels: Research design, procedures, advantages, and challenges. International Journal of Doctoral Studies, 11(1), 305–321.

Ayanlade, A., Radeny, M., & Morton, J. F. (2017). Farmers' perception of climate change vs meteorological data in Nigeria. Weather and Climate Extremes, 15, 24–33.

Ayeni, A. O. (2011). Malaria morbidity in Akure under climate change conditions. Trends in Applied Sciences Research, 6, 488–494.

Bach, R. (2015). Strategies for supporting community resilience: Multinational experiences. Swedish Defence University, Stockholm.

Bach, R., & Sundelius, B. (2015). Strategies for supporting community resilience. Multinational Resilience Policy Group.