Irish Journal of Environment and Earth Sciences
Irish J. Env. E. Sci.
Volume: 9; Issue: 05,
September-October, 2025
ISSN: 2383 – 6345
Impact Factor: 5.42

Advance Scholars Publication Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/ijees

EVALUATING FLOOD ADAPTATION MEASURES IN ONDO TOWN, NIGERIA: A CLIMATE CHANGE PERSPECTIVE

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DOI: https://doi.org/10.5281/zenodo.17063811

Keywords: *Climate change, flood-prone areas, flooding, strategies.*

Abstract: *Ondo town has continued to experience flood events for the past years. The impacts of the flooding are far-reaching. Therefore, this study investigated the adaptation strategies to mitigate the impacts of climate change-related events like flooding in Ondo town, Ondo State, Nigeria. The study identified flood-prone areas, examined existing adaptation measures and their effectiveness, and proposed tailored-specific strategies for enhancing flood resilience in the region. The study was conducted in 2025. The study relied on questionnaire and field observation to collect primary data. Nine hundred and fifty respondents were purposively selected for questionnaire administration, while copies of the questionnaire were administered to residents found within 500 metres radius of the flood-prone areas using random sampling technique to gather data on their experiences and perceptions. The study flagged some areas as flood-prone zones. The study showed that the most effective adaptive measure of flood event was provision of effective flood management and response by the Local Authorities as one of the existing adaptive measures in the study area. The study further showed that climate-resilient infrastructure, such as flood-resistant buildings, developing early warning systems, and community engagement are vital to effectively adapt to climate change consequences, particularly flooding. The study provided significant insights into flood adaptation strategies, offering evidence-based recommendations that can inform climate-resilient infrastructure and community-based adaptation* *approaches to enhance flood risk management in Nigeria and other developing countries vulnerable to climate change. The study recommended that community resilience should be enhanced through initiatives that promote flood risk awareness and preparedness.*

Introduction

Climate change has emerged as one of the most pressing global challenges of the 21st century, with far-reaching consequences for ecosystems, economies, and human societies. One of the most significant impacts of climate change is the increased frequency and severity of extreme weather events, particularly flooding. Flooding occurs most commonly from heavy rainfall when natural watercourses do not have the capacity to convey excess water. Floods are always caused by heavy rainfall (Ezezue, Agha, Ndieze, & Dickson, 2017). Honestly, flood incidents have become a recurring phenomenon in many parts of the world, including Nigeria, where they pose grave threats to human lives, and infrastructure. Adesola, Okeke, Chris, Dike, Olughu, & Vermilye, (2024) noted that flood events in recent years resulted in the loss of life, and damages to human welfare.

Ondo West Local Government Area of Ondo State, Nigeria, is not exempted from the devastating effects of flooding. The region's geographical location, characterised by low-lying areas and proximity to water bodies, makes it highly susceptible to flood-related disasters. Diverse effects of flooding in Ondo West include loss of lives and property, displacement of victims, damage to infrastructure, and disruption of economic activities. Historically, Ondo West Local Government Area experienced fewer flood incidents, despite infrastructure limitations such as narrow bridges, and waterway channels. However, over time, the frequency and severity of flooding have increased, even with improvements to bridges and waterways. This shift suggests that infrastructure upgrades alone may not be sufficient to mitigate flood risks.

Nigeria is a great contributor to climate change as its industries emit high carbon footprints to the atmosphere, which contribute to global warming and rise in sea level that leads to extreme weather events, consequently resulting in flooding occurrences in Nigeria (Adesola et al. 2024). In the face of these challenges, climate change adaptation has become an essential strategy for building resilience and reducing vulnerability to flood-related disasters. Adaptation involves adjusting to the impacts of climate change by implementing measures that minimise risks, exploit opportunities, and enhance the capacity of communities to cope with climate-related stresses. The correlation between climate change and increased flooding in Ondo West is becoming increasingly evident. Rising temperatures and changing precipitation patterns are leading to more frequent and intense rainfall events, overwhelming existing drainage systems and causing widespread

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flooding. As a result, communities in the region are facing unprecedented challenges in coping with flood-related disasters.

The impacts of flooding in Ondo West are far-reaching, affecting not only physical infrastructure but also the livelihoods and well-being of community members. Displacement, loss of property, and disruption of economic activities are just a few of the consequences of flooding in the region. Moreover, the psychological trauma and stress caused by these incidents can have long-lasting effects on individuals and communities, considering the increases in extreme weather events, adapting to climate change is no longer a choice but a necessity for Ondo West. According to World Health Organisation (2022), the effects of changes in climate emphasised the need to increase adaptive capacity to flooding-associated human health risks. Effective adaptation strategies will require a comprehensive understanding of the complex interplay between climate change, infrastructure, and community vulnerability. Taking cognizance of innovative and region-specific adaptation measures, communities in Ondo West can build resilience and reduce the risks associated with flooding. Emphatically, appropriate climate impact adaptation strategies have been widely considered as a wealth of information that exists on climate change adaptation (Oyebola, Efitre, Musinguzi, & Falaye, 2021).

This research therefore, explores adaptation strategies for climate change-related events like flooding in Ondo town of Ondo West Local Government Area of Ondo State, Nigeria. Specifically, the study identifies existing adaptation measures, assesses their effectiveness, and proposes tailored-specific strategies for enhancing flood resilience in the region. In addition, the study tested null hypothesis, which states that, 'there is no significant relationship between the implementation of climate change adaptation strategies and the effectiveness in preventing and mitigating floods and its effects' with multiple regression analysis to validate reliability of the outcome of the findings.

Literature Review

Climate Change, Flood Incidents, and Effects

Climate change has been attributed directly or indirectly to activities of man that alter the composition of the greenhouse gas, in conjunction with the natural climatic variability observed over a period of time, thereby leading to extreme weather condition, such as increased temperature and precipitation, including noticeable change in wind patterns. The resultant adverse impacts are considered as disasters when they produce widespread damage and cause severe alterations in the normal functioning of communities or societies, to the extent that climate change may pose short-term changes, such as flooding, storms, heat waves and drought, and long-term changes like increasing average temperatures and sea level rise (Bello, Durosinmi, & Abdulkarim, 2018). Flood results from extreme weather event naturally caused by rising global temperature which results in heavy down pour, thermal expansion of the ocean and glacier melt, which in turn result in rise in sea level, thereby causing water to inundate coastal lands (Mfon, Oguike, Eteng, & Etim, 2022).

Similarly, natural phenomena such as intense rainfall, storm surges, and rapid snowmelt, combined with environmental conditions like soil moisture retention, groundwater levels, and impervious surface coverage, significantly contribute to flooding hazards (Nwako, Abubakar, & Fadamiro, 2024). According to Rentschler & Salhab (2020), floods are one of the most common and severe hazards that disrupt livelihoods around the world, especially in lower income countries where infrastructure systems such as drainage tends to be less developed, floods often cause unmitigated damage and suffering. This illustrates the generality of flood related hazards globally. The economic effects of floods are often much greater than indicated by the physical effects of floodwater coming into contact with buildings and their contents, whereby the indirect economic losses typically spread well beyond the flooded area and may last much longer than the flood itself, and adversely affect the national economy (World Health Organisation, 2022).

Indirect economic damages are induced by the direct impacts and transmitted through the economic system. Thus, for example, a production facility might be lacking an important input (electricity, raw materials, etc.) due to a flood event in its suppliers' areas, and thus be unable to operate thereby incurring financial loss (Merz, Kreibich, Schwarze, & Thieken, 2010).

Ondo West exposure to flood incidents was highlighted by the loss of lives, economic sabotage, and damage to several infrastructure resulting in homelessness and destitute, and more caused damages to roads, electricity supply systems, water supplies, sewage disposal systems.

Umar & Gray (2022) observed that annual floods in Nigeria have resulted in the loss of 1,763 lives and damage to properties worth close to $1 billion. Umar & Gray (2022) found that Nigeria recorded about 1,187 deaths connected to flooding, 15% of Africa's deaths by flooding between the years 2011–2020, revealing the cost of damage to properties amounting to $904.5 million, comprising 21% of property damage in Africa from flooding. In relation to this, recent experience has shown that public awareness of natural hazards and disaster risk reduction education constitutes a foundation and pre-requisite for effective catastrophic risk management strategies at country and regional levels, more importantly, by influencing human actions and perceptions through societal behaviour and behavioural adaptation (Glago, 2023). Adesola et al (2024) hinted that there is need for effective flood management control to reduce the public health hazard posed by floods.

Ezezue, et al (2017) found that the government and affected communities did not properly manage flood events. According to Ezezue et al (2017), the major effects of flooding in their study area include submergence of farmlands, houses, roads, as well as causing accidents that led to deaths and poverty of residents in the affected areas. This emphasised the level of negligence of the flood events in the affected communities. A study carried out by Leslie, Hafisu, Bawuro, & Goje, (2023) in Adamawa State, Nigeria on the causes and effects of flood revealed that flood causes diseases, which are dangerous to human health, soil infertility through erosion, damage to farm crops, and pollution of soil and water. In their study, they found that relocation before and during flood, use of sand bags to prepare as well as creation of drainage were among the mitigating approaches used to curb flood events by residents.

The research conducted by Patila, NijaliNgaappa, & Neelakanth (2021) found out that the immediate health effects of floods on victims include drowning, electrical injuries, disruption of health services, chemical contamination, breathing infection, and physical displacement. According to Patila, NijaliNgaappa, & Neelakanth (2021), the leading cause of death from floods is drowning. Flash flooding, rather than slower river flooding cause most flood-related deaths. However, the researchers failed to provide mitigating strategies to overcome drowning or other effects observed. In relation to this, Ebuzoeme (2015) found out that road congestion and accident were one of the consequences of flood events in Awka, Anambra State of Nigeria. Mandych (2022) categorised the impacts of flood on people and economy into direct and indirect loss. According to his study, reducuction of flood power or population, and property-at-risk are the two major ways to tackle floods.

Study Area

The study area is Ondo West, a Local Government Area in Ondo State, Nigeria. It comprises several communities, with its headquarters located in Ondo town. It is 43 km away from Akure, the state capital of Ondo State, about 47km away from Ile-Ife, Osun State, and about 38km away from Ore, headquqrters of Odigbo Local Government area in Ondo State. It is located between latitudes 5°45’ and 8°15’ N of the equator and longitudes 4°30’ and 6°0’ E of Greenwich meridian. According to National Population Commission (2006), the population of the study area is 283,672, mainly comprising Yoruba ethnic group. The climate of the study area is equatorial with two peaks of rainfall and a dry season. The study area has an equatorial climate, characterised by two distinct rainfall peaks and a dry season. The rainfall peaks occur in two periods: April to July and late August to October. These two peaks are associated with heavy rainfall with the mean annual rainfall of about 1500-2000 mm, during which flood events usually occur and common. Map of Nigeria showing Ondo State and the study area has been visualised in figure 1.

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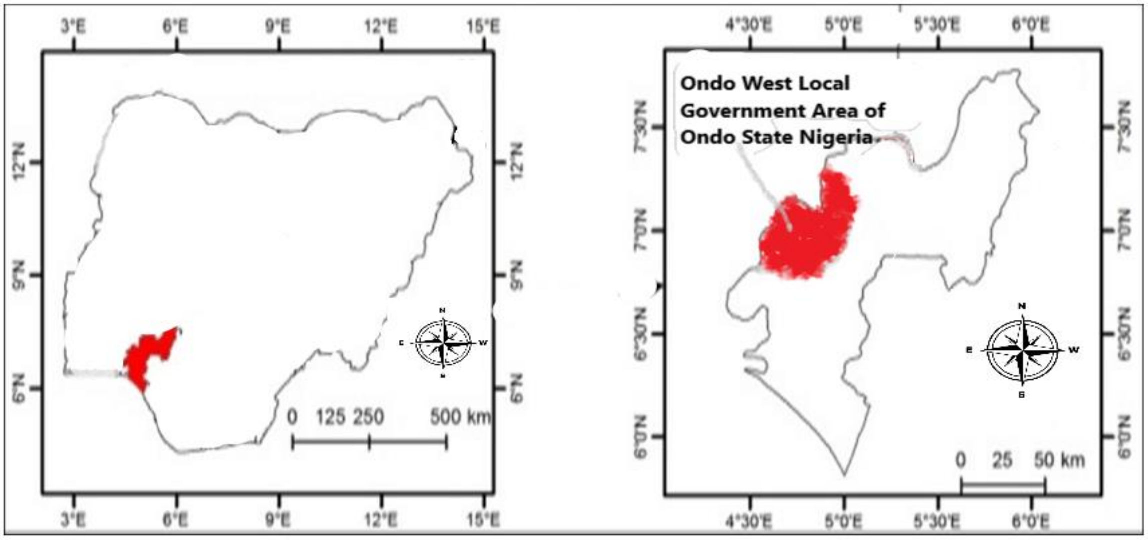

Figure 1: Map of the Study Area
Source: Adams & Fagbohunka, 2024

Material and Research Method

The study relied on questionnaire and field observation to collect primary data. Nine hundred and fifty (950) respondents were purposively selected for questionnaire administration, while copies of the questionnaire designed for the study were administered to residents found within 500 metres radius of the flood-prone areas using random sampling technique to gather data on their experiences and perceptions. The questionnaire copies were distributed within the enclosed radius of flood-prone areas to ensure that the questionnaire copies were administered to the residents who reside within the affected areas, where flooding have been occurring persistently in the study area. Purposive sampling was used because residents aged 18 years and above were selected for questionnaire administration. Data on respondents' socio-economic characteristics, identification of flood prone areas, existing adaptation measures and their effectiveness in the study area, and tailored specific climate change adaptation strategies were obtained, in conjunction with field observation. During the familiarisation trip to the study area, several key factors were observed, including the topographical terrain, the nature of drainage canals and bridges, residents' behavioural waste disposal methods, and rainfall intensity. Secondary data were sourced from journals, internet, and National Population Commission. The study employs both descriptive and inferential techniques of data analysis.

Results and Discussion

Socio-Economic Characteristics of the Respondents

Table 1 presents the demographic information of the respondents, showing that 39.2% of the respondents were between 40 and 50years old, while 7% of the respondents were older than 50years old. Also, 36.2% of the respondents were between 29 and 39years old, while 17.6% of the respondents were between 18 and 28years old. It was revealed that 48.1% of the respondents had secondary education, while 8% had no formal education. In addition, 27.9% of the respondents were primary school leavers, while 16% respondents had tertiary education. On occupation of the respondents, 31.6% respondents were traders, 25.9% were farmers, and 25.7% were artisans, while other 16.8% of the respondents were civil servants. Furthermore, 40.6% respondents have been living in the flood-prone areas not up to 5years, 27.9% respondents were dwellers of flood-prone areas between 5 and 9years, and 29.7% respondents were inhabitants of flood-prone areas in the study area for between 10 and 15years, while 9.8% respondents have been living in their area of residences for over 15years.

Obviously, the majority of the respondents' age group falls between 40 and 50years, indicating that respondents in this age group have likely experienced various flood events over the years, which could influence their perceptions and coping mechanisms. The age group's experience with flooding might have taught them coping mechanisms and preparedness strategies, which could inform effective flood management practices, such as elevating homes or implementing flood-proofing techniques.

It is evident that most respondents had secondary education. Respondents with secondary education are likely to have a good understanding of flood-related information and provide informed responses. This implies that education level might influence respondents' awareness and perception of flood risks, preparedness, and mitigation measures. Furthermore, education level could impact respondents ability to adopt and implement effective coping mechanisms, such as understanding flood warnings or taking preventive measures. The finding that majority of respondents had secondary education, while a few had tertiary education, raises interesting implications. Specifically, individuals with tertiary education might have a better understanding of the risks associated with living in flood-prone areas, which could influence their decision to avoid such areas for habitation. This suggests that education level play a role in shaping residents awareness and decision-making regarding flood risk.This emphasised the relationship between education level and flood-related experiences, perceptions, or behaviours to enhance flood resilience in the communities.

Evidently, most respondents were traders living in flood-prone areas. This has implications for flood management, as traders' livelihoods may be affected by flooding, even if their businesses are not located in the flood-prone areas, their homes and families may still be affected.

From the foregoing, it is clear that most respondents have been living in their residences located within the radius of flood-prone areas for less than 5 years, implying that these respondents might have limited experience with flooding in the area, which could impact their perception of flood risk and preparedness. Also, the relatively short duration of residence could indicate that these individuals are newcomers to the areas, potentially unaware of the flood history and local coping mechanisms. In contrast, the few respondents who have been residents of flood-prone areas for over 15 years are long-term residents likely to have gathered extensive experience with flooding, which could enlighten their perception of flood risk and preparedness. In addition, the long-term residents could share their experience and knowledge with newer residents to enhance community resilience.

Moreover, the fact that majority of respondents have been living in the flood-prone areas for less than 5 years could indicate that flood-prone areas are not desirable for long-term residence due to disturbances and impacts of flooding, such as property damage, displacement, and health risks. Implying that the areas might experience a high turnover of residents, with people moving in and out to the flood risks and associated challenges.

Table 1: Socio-Economic Characteristics of the Respondents

Demographic Information	**Number of Respondents**	**Percentage**
Age		
18-28	167	17.6
29-39	344	36.2
40-50	372	39.2
Above 50	67	7
Total	950	100
Level of Education		
No formal education	76	8
Primary school	265	27.9
Secondary	457	48.1
Tertiary education	152	16
Total	950	100
Occupation		
Farmers	246	25.9
Traders	300	31.6
Artisans	244	25.7
Civil Servants	160	16.8
Total	950	100
Length of Residence in the Area		
Less than 5years	386	40.6
5-9years	265	27.9
10-15years	206	21.7
Above 15years	93	9.8
Total	450	100

Source: Field Survey, 2025

Identified flood-prone areas using a 4-point Likert scale were presented in Table 2. General Mean Weighted Value of 2.56 was taken as the benchmark for deciding whether the identified areas were prone to floods, if greater than 2.56 were acceptable, or rejected if less than 2.56.

From the foregoing, Lipakala axis was perceived as a flood-prone area, having a high mean score of 2.87 above the GMWV, indicating that the respondents are aware of the flood risk in Lipakala axis. Implying that the area is perceived as vulnerable to flooding, which may be due to various factors such as geographic location, and obsolete infrastructure. Similarly, Itanla axis was accepted as a flood-prone area, having scored a high mean of 3.3, much above 2.56, indicating that Itanla axis of the study area should be prioritised for flood risk management strategies. Furthermore, Okeodunwo area and Funbi-Fagun estate were accepted as flood-prone areas with mean values of 2.86 and 3 respectively above the 2.56 GMWV value. It was observed that environmental conditions, including cementation of dwelling premises were the general causes of floods in these identified areas. In support of this, Mfon et al (2022) and Nwako et al (2024) linked major causes of current floods in Nigeria to climate change related phenomena, combined with environmental conditions like impervious surface coverage.

On the other hand, Odojomu, Yaba, Expoeta Hotel, and KolaRewire residential areas of the study area were rejected as flood-prone areas, having scored mean value respectively below the GMWV value of 2.56. Yet, observations showed that despite non-flood-prone areas classification, floods occur in the areas during torrential rainfall, but could be mild or moderate in volume. Observations further showed that homelessness, sleeplessness, vehicular movement impediment, road crashes, vehicles development of faults, psychological and physical stress were among the consequences of flood events in the identified areas.

Table 2: Identified Flood-Prone Areas

Flood-Prone Areas	**MD**	**M**	**S**	**C**	**Total**	**4-Point Likert Rating Scale**				**Total Weight Value**	**MWV**	**Decision**
						1	2	3	4			
Lipakala Axis	56	159	584	151	950	56	318	1752	604	2730	2.87	Accepted
Itanla Axis	31	103	370	446	950	31	206	1110	1784	3131	3.3	Accepted
Odojomu Area	374	396	131	49	950	374	792	393	196	1755	1.85	Rejected
Oke-Odunwo Area	77	124	605	144	950	77	248	1815	576	2716	2.86	Accepted
Yaba Area	413	305	216	16	950	413	610	648	64	1735	1.83	Rejected

Exporta Hotel Area	142	358	431	19	950	142	716	1293	76	2227	2.34	Rejected
KolaRewire Area	130	206	600	14	950	130	412	1800	56	2398	2.52	Rejected
Gani Fawhimi Street	74	393	441	42	950	74	786	1323	168	2351	2.47	Rejected
Funbi-Fagun Estate	117	204	579	50	950	117	408	1737	200	2462	2.59	Accepted
Italugho quarters	62	158	485	255	950	62	316	1455	1020	2853	3	Accepted
GMWV or COV											2.56	
Note: MD = Mild; M = Moderate; S = Severe; C = Catastrophic; TWV = Mean Weight Value.												

Source: Field Survey, 2025

Existing Adaptation Measures and Their Effectiveness

The responses of the respondents on existing adaptation measures and their effectiveness were presented in Table 3 using a 4-point Likert scale. General Mean Weighted Value of 2.55 was taken as the benchmark for deciding whether existing adaptation measures were effective, if greater than 2.55 or less effective if less than 2.55. The findings showed that the most effective adaptive measure of flood event was provision of effective flood management and response by the Local Authorities with mean value of 3.15, indicating that Local Authorities play crucial roles in early preparedness one hand, and mitigate the effects of floods in the other hand. Similarly, the measures taken to adapt to floods, e.g., flood-proofing, elevating belongings are effective in reducing damage, was moderately accepted as effective, indicating that these measures have been regularly practiced by the residents. This implies that the residents have been adapted to these practices like elevating belongings from flood sites to prevent damages and being transported by the flood.

Conversely, feeling well-prepared for foods due to past experiences, and that community provides sufficient support and resources to help prepare for and respond to floods with 2.19 mean and 2.08 mean respectively were low, by falling below the GMWV of 2.55, and rated as rejected. This implies that most residents did not invest in foodstuff storage as a means of preparedness against flood while approaching peak of raining season, perhaps due to ignorance, low awareness, and limited access to information, financial constraints, or failure to learn from the pass experiences of flood disaster.

Also, the implication of communities failing to provide sufficient support and resources for

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flood preparedness and response is that residents and infrastructure may be more vulnerable to flood damage and disruption. In addition, the affected communities might experience weak community engagement and social cohesion in addressing residents' concerns and safety related issues. This would definitely lead to increased risk of injury or loss of life, property damage and economic loss, displacement and social disruption, and strain on emergency services. However, communities may be more resilient and better equipped to handle floods if they prove sufficient support and resources for preparedness and response.

Table 3: Existing Adaptation Measures and Their Effectiveness

Adaptation Measures	**SD**	**D**	**A**	**SA**	**Total**	**4-Point Likert Rating Scale**				**Total Weight Value**	**Mean Weight Value**	**Decision**
						1	2	3	4			
Feeling well-prepared for foods due to past experiences	236	386	239	89	950	236	772	717	356	2081	2.19	Rejected
The measures taken to adapt to floods, e.g., flood-proofing, elevating belongings are effective in reducing damage	91	216	458	185	950	91	432	1374	740	2637	2.78	Accepted
Community provides sufficient support and resources to help prepare for and respond to floods	374	301	100	175	950	374	602	300	700	1976	2.08	Rejected
Local authorities provide effective flood management and response	78	179	217	476	950	78	358	651	1904	2991	3.15	Accepted
GMWV or COV											2.55	
Note: SA = Strongly Disagreed; D = Disagreed; A = Agreed SA = Strongly Agreed.												

Source: Field Survey, 2025

Strategies for Adapting to Climate Change

Table 4 presented the respondent's responses on tailored specific strategies for adapting to climate change using 4 point-Likert scale. The General Mean Weighted Value of 2.5 was obtained as the benchmark for deciding the specific strategies for adapting to climate change, where, it was accepted if greater than 2.5, and rejected, if less than 2.5. The community engagement is vital for adaption, had the highest mean adaptive strategy score of 2.8, which was closely followed by climate-resilient infrastructure is essential, such as sea walls, flood-resistant buildings with 2.79, indicating that community engagement and climate-resilient infrastructure would enhance significantly the residents' sense of safety as adaptive strategies against climate change related disasters like floods. Strategy for adapting to climate change with disaster preparedness is critical, such as developing early warning systems and emergency response plans of 2.7 mean value, was also significant, indicating the residents readiness and willingness to adopt and practice such strategies to combat climate change related events.

By contrast, agricultural adaptation practices are necessary, such as drought-tolerant crops, climate-smart farming, with 2.11 mean value, and access to climate information is crucial, with 2.08 mean scored below the Group Mean Weighted Value (GMWV) of 2.5, and were strongly expressed as being ineffective strategies to adapt to the consequences of climate change like flood. The rejection of these adaptive strategies might indicate lack of orientation, low awareness, and familiarity with the strategies, or lack of adequate ideas on how the strategies work. As regards to agricultural adaptation practices, which were less practiced in the study area was however widely adopted and practiced in Bangladesh, especially the flood-prone zones as revealed by Remana et al (2021) that Bangladesh residents cultivate flood tolerant paddy and vegetables in floating bed in order to embrace agricultural adaptation practices to mitigate and cope with climate change extreme events like flooding.

Table 4: Strategies for Adapting to Climate Change

Strategies for Adapting to Climate Change	SD	D	A	SA	Total	4-Point Likert Rating Scale				Total Weight Value	Mean Weight Value	Decision
						1	2	3	4			
Climate-resilient infrastructure is essential, such as	73	169	527	181	950	73	338	1581	724	2653	2.79	Accepted

sea walls, flood-resistant buildings											
Agricultural adaptation practices are necessary, e.g., drought-tolerant crops, climate-smart farming	361	219	273	97	950	361	438	819	388	2006	2.11	Rejected
Disaster preparedness is critical, such as developing early warning systems and emergency response plans	146	204	386	214	950	146	408	1158	856	2568	2.7	Accepted
Access to climate information in crucial	276	375	241	58	950	276	750	723	232	1981	2.08	Rejected
Community engagement is vital for adaption	111	217	373	249	950	111	434	1119	996	2660	2.8	Accepted
GMWV or COV											2.5	
Note: SA = Strongly Disagreed; D = Disagreed; A = Agreed SA = Strongly Agreed.												

Source: Field Survey, 2025

Hypothesis testing

HO: There is no significant relationship between the implementation of climate change adaptation strategies and the effectiveness in preventing and mitigating floods and its effects.

The linear regression analysis evaluated the relationship between climate change adaptation strategies and the effectiveness in preventing and mitigating floods and its effects. The **R-value of 0.334** suggested a strong correlation, while the **R-square value of 0.112** indicated that only **11.2% of the variation in prevention** is explained by the independent variables. The constant term is statistically significant **(t = 3.044, p = 0.003), climate change adaptation strategies (t = 0.382, p = 0.013)** and **mitigation (t = 3.571, p = 0.005)** are statistically significant at the **5% level**. This means that the variable has a strong statistical influence on floods mitigation. Consequently, the null hypothesis **(Ho: There is no significant relationship between the implementation of climate change adaptation strategies and the effectiveness in preventing and mitigating floods and its effects.)** is rejected. This indicates that climate change adaptation strategies significantly effective in preventing and mitigating floods and its effects if the strategies are implemented.

Linear Regression Analysis

Model	**Coefficients**	Std. Error	T	Sig
(Constant)	2.373	.780	3.044	.003[s]
climate change adaptation strategies	.062	.163	.382	.013[ns]
R Square	.334[a]			
Adjusted R Square	.075			
Dependent Variable: floods prevention and mitigation		s-significant at 5%		

Source: Field Survey, 2025

Conclusion

The study investigated adaptation strategies for flood events in Ondo town, Ondo State, Nigeria: a climate change perspective. The study has identified Lipakala axis, Oke-Odunwo area, Italugho quarters, Itanla axis, and Funbi-Fagun Estate are flood-prone areas. The study revealed that apart from climate change related factors responsible for floods in the study area, cementation (flooring) of dwelling premises was also a major factor behind flood events, as most premises of dwellings were floored, becoming impervious for water to percolate during rainfall, thereby contributing to floods. The study further showed that climate-resilient infrastructure, such as flood-resistant buildings, developing early warning systems, and community engagement are vital to effectively adapt to climate change consequences, particularly flooding. The results have significant implications for public health and safety, economy, and overall well-being of the populace. The study concluded that community resilience should be enhanced through initiatives that promote flood risk awareness and preparedness, and implementation of land-use planning strategies that redirect water away from vulnerable areas, such as grading and structure elevation.

References

Adesola, R.O., Okeke, V.C., Chris, N.P., Dike, C.K., Olughu, O.I., & Vermilye, A. (2024). Public health impacts of flooding: A case study of 2022 flood outbreak in Nigeria. *International Journal of Travel Medicine and Global Health*, 12(3), 145-153.

Bello, N.A., Durosinmi, W.A., & Abdulkarim, R.I. (2018). Assessment of adaptation strategies to flooding impacts in nigeria - a review. *Urban Design*, 1, 1-11.

Ebuzoeme, O.D. (2015). Evaluating the effects of flooding in six communities in Awka Anambra State Fof Nigeria. *Journal of Environment and Earth Science*, 5(4), 26-38.

Ezezue, B.O., Agha, N.C., Ndieze, J., & Dickson, R.S. (2017). Effective management of flooding in nigeria (a study of selected Communities in Anambra State). *Nigerian Journal of Management Sciences*, 6(1), 42-50.

Glago, F.J. (2023). Flood disaster hazards; causes, impacts and management: a state-of-the-art review. *Intech Open*, 1-22.

Leslie, V.B., Hafisu, R., Bawuro, M.F., & Goje, V.G. (2023). An Analysis on the Causes and Effects of Flood in Adamawa State North-East Nigeria. *Iconic Research and Engineering Journals*, 7(2), 23-30.

Mandych, A.F. (2022). Flood Control for Specific Types of Floods. *Natural Disasters*, 2, 1-6.

Merz, B., Kreibich, H., Schwarze, R., & Thieken, A. (2010). Review article Assessment of economic flood damage. *Natural Hazards and Earth System Sciences*, 10, 1697–1724.

Mfon, I.E., Oguike, M.C., Eteng, S.U., & Etim, N.M. (2022). Causes and effects of flooding in nigeria: a review. *East Asian Journal of Multidisciplinary Research (EAJMR)*, 1(9), 1777-1792.

Nwako, B.A., Abubakar, A., & Fadamiro, J.A. (2024). Sustainable Adaptation Strategies to Urban Flooding in Port Harcourt Metropolis, Rivers State. *International Journal of Advances in Engineering and Management (IJAEM)*, 6(8), 344-353.

Oyebola, O.O., Efitre, J., Musinguzi, L., & Falaye, A.E. (2021). Potential adaptation strategies for climate change impact among flood-prone fish farmers in climate hotspot Uganda. *Environment, Development and Sustainability*, 1-30.

Patila, P., NijaliNgaappa, T.B., & Neelakanth, S.W. (2021). Impacts of flood effect on public health and environmental. *International Journal of Creative Research Thoughts*, 9(1), 1158-1163.

Remana, A. M., Ahmed, A., & Hossain, M. S. (2021). A review on adaptation practices of affected people with riverine floods in Bangladesh. *International Journal of Environment and Climate Change, 11*(12), 251–260.

Rentschler, J., & Melda Salhab, M. (2020). People in Harm's Way: Flood Exposure and Poverty in 189 Countries. *Poverty and Shared Prosperity*, 1-28.

Umar, N., & Gray, A. (2022). Flooding in Nigeria: a review of its occurrence and impacts and approaches to modelling flood data. *International Journal of Environmental Studies*, 1-22.

World Health Organisation (2022). Floods: climate change and adaptation strategies for human health. Retrieved from: http://www.euro.who.int. 14/06/2025.