



The Challenges of Climate Change in National Development
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CLIMATE CHANGE ADAPTATION: CLIMATE CHANGE EDUCATION AND REAL ESTATE RESILIENCE IN ANAMBRA STATE, NIGERIA

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Abstract

The real estate sector has experienced its fair share of climate change and its attendant issues. Cases of flooding and erosion abound in Anambra State. Housing, Infrastructure, human livelihoods and the health of inhabitants have been adversely affected by climate change. Efforts are currently being made globally to assess and adapt to the impacts of our changing climate and climate change education has become an integral part of the international response to climate change. The real estate sector needs to be up to date with climate change issues, to remain competitive in a rapidly changing environment. Consequently, this study determined the level of climate change education and perceptions of stakeholders in the real estate sector and how it affects real estate resilience in Anambra State. The study employed the primary and secondary sources of data. Data were analysed using frequencies, percentages and the Chi-square test of Independence. The study revealed that there is a general awareness of climate change. The few awareness programmes organized by the state government are not very effective. There is a low knowledge of the causes and impacts of climate change in the state. Knowledge about measures to improve real estate resilience in the state is also low. The study recommends that the government should partner with all stakeholders namely, property owners, tenants, real estate investors, professionals in the built environment, lawmakers and others in making and implementing sustainable policies and laws that will lead to real estate resilience.

Keywords: Climate Change Education, Real Estate Investment, Real Estate Resilience

1.0 INTRODUCTION

Climate change poses significant challenges to various sectors, including the real estate industry. As global temperatures continue to rise, the adverse consequences of climate change, such as increased frequency and intensity of extreme weather events, are being increasingly felt in different regions. Anambra State, Nigeria is no exception; it is also experiencing its own set of climate-related problems, including flooding and erosion.

The real estate sector plays a crucial role in providing housing and infrastructure for the citizenry. However, the impacts of climate change present significant threats to the sustainability and resilience of real estate investments in the area. It is imperative to assess these climate change challenges and identify appropriate adaptation strategies to mitigate their effects on real estate.

Additionally, an essential aspect of climate change adaptation is education and awareness. The success of adaptation measures relies on the knowledge and understanding of the stakeholders involved. According to the head of the climate change education and action programme (CLEAP) in Anambra State, the state is one of the worst affected by climate change in Nigeria. (Obinaeri,2022) The flood situation in the state continues to worsen, also the erosion menace. Hence, evaluating the level of climate change education and awareness among real estate investors and stakeholders in Anambra State is crucial for developing effective adaptation strategies.

This study aims to address these issues by assessing the level of climate change education and awareness among real estate investors and stakeholders, establishing the current adaptation strategies implemented by the real estate sector in response to climate change and providing recommendations for enhancing the resilience of real estate in Anambra State.

2.0 LITERATURE REVIEW

According to the United Nations, climate change arises when greenhouse gases are released into the environment in enormous quantities which pushes the greenhouse effect to new levels and results in global warming altering weather patterns and impacting the earth as extreme heat, drought, flooding, hurricane, and glacier melting and rising sea levels. Climate change cannot be stopped without understanding what drives it. Human activities are seen as the major driver of climate change. Some of the activities include according to NRDC, (2022)

1. Use of fossil fuel in transportation, electricity generation, and others resulting in increased atmospheric greenhouse gases most especially carbon dioxide.
2. Deforestation causes natural resources that absorb carbon dioxide (carbon sinks) like forests to be depleted.
3. Industry and Manufacturing sector is also a source of greenhouse gas emissions. It comes from electricity use and the emission of health-threatening pollutants
4. Indiscriminate dumping of solid waste like plastics which have devastating impacts on oceans, wildlife and human health.
5. Industrialized agriculture has significantly altered the ecosystem. The sector produces greenhouse gases like methane and nitrous oxide from chemical fertilizer usage, the use of herbicides and other chemicals which aim at achieving high yields.
6. Buildings emit a lot of greenhouse gases from cooling and heating systems, cooking, lighting, running appliances and others.

Climate change has become a pressing global concern for the real estate sector. Real estate has been proven to have one of the highest carbon footprints, ranging from emissions generated by building materials, the buildings themselves and the energy that powers buildings. According to architecture2030.org, 40% of global carbon (greenhouse gas) emissions come from the built environment. These emissions contribute to various climate change challenges that also affect real estate and they include:-

2.1. Rising Temperatures

The real estate sector is affected by the increased temperature caused by greenhouse gases and it directly affects the costs of property management. The heat waves currently being experienced around the world lead to increased energy use of both electricity (or generators) and water by tenants and property owners to stay cool and this increases pollution (from generators), places a greater burden on the electrical grid and an inflated cost of those utilities due to increased demand.

2.1.1. Severe Weather Events

The greenhouse gases cause an increase in the earth's temperature which causes a rise in sea levels and trigger increased or severe rainfall, flood, hurricane, erosion and others. Flooding and erosion are common experiences in Anambra State. According to Merem, Twumasi, Wesley, Alsarari, Fagier, Crisler, Romorno, Olagbegi, Hines, Mwakimi, Nwagbaoso, Leggett, Foster, Purry, and Washington (2019), the state has over 700 erosion sites mostly situated in Agulu, Oko, Ideani, Amankwa and Nanka towns while towns in Ogbaru, Onitsha North, Onitsha South, Anambra West, Anambra East and Ihiala local government areas are mostly affected by the perennial flooding due to overflow of river banks worsened by increased or irregular rainfall caused by climate change. In the year 2023, Anambra State is also listed as a high flood risk by the Nigeria Hydrological Services Agency (NIHSA) and the Nigerian Meteorological Agency (NIMET) in the year 2023 (Okafor, 2023).

According to Iliyasu, Sanusi, Mamman, and Ibrahim (2023), approximately 32% and 22.62% of Lagos City will be inundated by 2100 and 2050, respectively, following recent projections on sea level rise (SLR). Findings according to their study showed that residential real estate highly exposed to SLR sells at a 0.5% discount relative to a comparable unexposed property and a 37-year window is expected by the Nigerian real estate market before 1 km² of area of beachfront residential estate would completely go underwater. Therefore, this study concludes that both climate change and proximity to the coast influence the current price of residential real estate in the coastal city of Lagos, Nigeria.

These climate change impacts have significant negative effects on property values in the affected areas. Potential investors or tenants may be discouraged by the risk of property damage or loss due to these impacts. There will be increased operating or maintenance expenses, increased insurance premiums, loss of property values and overall non-desirability of a location or property in the affected areas while there will be a rise in rental values and property values in unaffected neighbourhoods.

The impacts of climate change are likely to have far-reaching effects on the real estate industry therefore these are compelling reasons for the government, professionals in the built environment, real estate investors and tenants to join in the global decarbonisation of the real estate sector. There is also a need for the industry to embrace innovations to remain competitive in a rapidly changing world.

As a result, property owners, tenants, property investors and real estate professionals need education on climate change, its trends, impacts and potential risks on real estate. This will help them take proactive steps to mitigate the impact of climate change on the sector and assist them in making informed decisions about buying, selling, or developing properties in Anambra State.

2.2 Climate Change Adaptation and Resilience in the Real Estate Industry

Resilience is no longer an option for the real estate sector. The climate change challenges have greatly affected real estate and led to increasing costs and this will also be aggravated by the recent transition to a net zero economy. Adaptation measures should be adapted to minimize these effects. At COP26, the immediate past President of Nigeria, Muhammed Buhari, committed to net zero emissions by the year 2060, which is in line with the Climate Change Act 2021. Nigeria's Energy Transition Plan for the year 2022, was developed as a roadmap towards achieving the 2060 net zero target. The real estate sector in Nigeria should embrace the new normal and fortify its portfolio to secure the future of real estate investments. To achieve these, the populace and mainly the stakeholders need to have climate change education.

2.2.1 Climate Change Education-

According to Anderson (2012), the causes of climate change are to some extent connected to human actions and need to be identified and corrected. This involves learning to change consumption and production patterns. According to UNESCO (No date), education is indispensable in promoting climate action. To address the impacts of climate change, there is a need to educate, empower and engage all stakeholders on policies, and action relating to climate change. People need to be empowered with the knowledge, skills, values and attitudes needed to act as agents of change. The international community has made education a central and visible part of the international response to climate change. People should be engaged to be aware and prepare for an uncertain future arising from climate risks and also the human and environmental impacts of climate change. (Stevenson, Nicholls & Whitehouse 2017). Education is an unharnessed opportunity to fight climate change. There is a need to educate people on the potential for natural disasters arising from climate change, the human activities that contribute to climate change and develop their capacity to respond with meaningful actions. Educating the public on the climate-related risks faced by real estate, activities of stakeholders in the real estate industry that contribute to climate change, and the importance of resilient building designs and green construction materials will go a long way in combating climate change in developing countries. Knowledge of these climate change adaptation measures will ameliorate the impacts of climate change on the real estate sector.

2.2.2. Town Planning Laws

The Nigerian Urban and Regional Planning Law, CAP 138 LFN of 2004 provides for the use of planning schemes by planning authorities to regulate the development and the use of land in different parts of the country. This will ensure orderly physical development and the maintenance of quality esthetics of settlements in urban areas. (Omole,2022). The states are expected to implement the provisions of the law by setting up the Urban and Regional Planning Boards, the Local Planning Authority (LPA) and the Development Control Department (DCD) as key actors in the physical development regulatory process (Sani, 2022). According to Azoro (2021), conflicts in the powers and functions of the town planning regulatory bodies, Inconsistency in the implementation of development plans, government's attitude to compulsory acquisition and compensation issues and corruption were considered the bane of urban development in Anambra State.

Due to rapid urbanization and poor urban governance, cities in Anambra state are becoming, sprawling urban areas due to the following;

1. Uncontrolled erection of illegal structures that do not conform with urban planning laws. Structures are constructed in flood-prone areas, water canals and channels.
2. Minimum setbacks for the right of ways which are not adhered to,
3. Lack of adequate drainage systems
4. Non-compliance to development and land use plans thereby locating non-conforming land uses together, for instance, Filling stations or Industries in residential areas.

All these issues raised above exacerbate climate change challenges by increasing heatwaves due to the disappearance of green areas due to the non-implementation of planning laws. Flooding and its attendant erosion, solid waste, air, and water pollution are also common sights in such areas.

The government should make building codes and regulations that involve resilient construction. The public should also be enlightened on the need to adhere to these town planning laws, and building codes to ensure that buildings that can withstand natural disasters and climate-related hazards are constructed.

2.2.3. Sustainable Buildings and Infrastructure

The climate change impact on the environment is putting pressure on real estate owners and real estate developers globally. Sustainable practices in building construction are being adopted to reduce the impact of climate change on real estate. Cost is the main challenge to achieving resilient building design but the long-term costs of repairs and damages from natural disasters should not be overlooked. Moreover, as awareness of the impact of climate change increases, demand for eco-friendly and sustainable properties will rise and this will lead to increased property values in the long run.

2.2.4 Resilient Design and Construction

Buildings and Infrastructure should be designed and constructed to withstand extreme weather events and climate change impacts. According to Akabuogu (2023), resilient building design is making creative building designs that incorporate the use of sustainable materials and advanced engineering techniques to produce structures that can resist damage and maintain functionality under adverse conditions. Sustainable real estate is achieved when renewable materials, efficient energy systems and smart technologies are used to improve building performance and user comfort.

Best practices include:-

1. Design and use of weather-resistant and durable materials for the roof, walls, windows and doors (building envelope) to be able to withstand natural disasters.
2. The building should be well anchored to the foundation by using materials like steel and reinforced concrete. Other sustainable materials include cross-laminated timber (CLT) and fibre-reinforced polymers (FRPs), self-healing concrete and shape memory alloys. Renewable or eco-friendly materials like bamboo, straw bale, rammed earth and recycled steel are also used to reduce the environmental impact of the real estate industry.

3. The mechanical and electrical systems should be placed in areas that are less prone to flooding.
4. Implement green roofs that absorb rainwater to reduce the "heat island effect" and ensure the thermal comfort of occupiers.
5. Implement rainwater storage systems to manage stormwater by collecting, re-using or absorbing it to reduce flooding.
6. The use of solar panels to generate electricity to reduce carbon emissions from generators and adopting an energy-efficient design that incorporates natural light and ventilation to reduce power usage.
7. Household waste management systems to sort, recycle and properly dispose of waste.
8. Design roads and bridges to handle increased stormwater flows.

2.2.5 Building Elevation and Flood Control Infrastructure

Already existing buildings can be retrofitted or elevated to prevent flooding in low-lying areas. The construction of sea walls, flood barriers, and drainage systems are also resilience measures that can help real estate withstand extreme weather events. This can help safeguard real estate investments in the face of climate change.

2.2.6 Climate Change Insurance

Climate change insurance is a protective cover against the negative impacts of climate change. The insurance payments can provide quick assistance in emergencies which can prevent poverty, hunger and indebtedness. In Nigeria, flooding has become more intense and frequent in recent times resulting in losses running into billions of Naira.

Flood insurance cover can strengthen financial resilience against the damages and losses resulting from these flooding incidents. As climate risks become more apparent, insurance companies would adopt a more cautious approach to insuring properties because some properties may be deemed too risky to insure. An example is properties built in flood-prone areas or on water channels. Insurers may also be required to adopt certain steps to mitigate their risks such as foundation reinforcement to protect the building against flooding and using disaster-resistant building materials.

2.2.7 Enforcement of Environmental Laws

To achieve a clean, green and sustainable environment, there is the need for the government to enact laws and make policies that will compel citizens to be actively involved in environmental protection. According to Budnukaeku and Hyginus (2021), environmental laws are principles, policies, directives and regulations enacted and enforced by local, national and international bodies to regulate human treatment of the earth.

There are some already existing environmental laws in Nigeria. They are found in the Constitution, Legislation, Judicial precedents, Received English Law, and Customary and Islamic Laws. Some of them are:

The Criminal Code Act cap.77 L.F.N of 1997: These are the basic criminal law offences that relate to damage to the environment, public health and natural resources.

Associated Gas Re-Injection Act. Cap 12(L.F.N) 1990: This Act was aimed to stop the wasteful and destructive flaring of gas by making oil companies develop schemes for the utilization or re-injection of gas produced.

Harmful Waste Special Criminal Provision Act cap. 165, L.F.N: This act makes it an offence to dump or deposit harmful waste in Nigerian soil, inland waters and sea, including the Exclusive Economic Zones of Nigeria.

National Environmental Protection (Protection Abatement in Industries and Facilities Generating Waste) Regulations S49 of 1991 L.F.N: These regulations are against the unauthorized handling of toxic waste, discharge of effluent, industrial solids in drains, water bodies, municipal landfills and others. It also requires industries to conduct environmental impact assessments for new projects and also prevent the start-up of any facility that will constitute pollution.

The legislative objectives of these environmental laws remain unachieved due to poor drafting and implementation of the environmental laws in Nigeria which has led to increased pollution and environmental injustice (Oyebode, 2018). People are not aware of their legal rights (Ignorance), there is barely any punishment for non-compliance, and injured parties are not adequately compensated. The enforcement of these laws is generally superficial.

The Climate Change Law of 2021 compels the government to enact laws that will protect the environment, help achieve climate goals, and also achieve social and economic resilience and sustainability. The Anambra state government in a town hall meeting to commemorate the 2023 World Earth Day celebration held in Awka, on 24 April, promised to enact environmental laws to drive environmental policies and programmes in the state. These laws would mostly target waste management and industry emissions. If these are properly implemented, it will go a long way in enhancing real estate resilience.

2.2.8. Climate Change Justice

Climate change highlights the inequalities between the rich and the poor globally. Climate change justice which was a key theme during the opening of the UN Climate Change Conference in Paris in 2015(COP 21) compels the global community and those who bear the most responsibility for the climate crisis to support the low-income countries, people of colour, indigenous people, women, children and people with disabilities who have done the least to cause climate change but are more exposed to the devastating impacts of climate disasters such as floods, wildfires, drought, erosion, increasing temperatures and others. There is a need for true interdependence amongst nations of the world by providing finance, transferring green technologies and supporting low carbon climate resilient strategies for the poorer and disadvantaged countries so they share in the combined effort in mitigation and adaptation (UC Center for Climate Justice 2022; Robinson, No date).

In Nigeria, the issue with climate justice is the impact of international oil companies on their host communities. These impacts are frequent oil spills which leave alarming levels of toxic chemicals in the soil, air and water endangering aquatic lives and human lives. persistent gas flaring, which also

causes pollution and human rights violations. There is little hope for extensive cleanup and recovery as well as enactment and implementation of appropriate industry regulations (Ekott, 2023).

3.0 METHODOLOGY

3.1 The Study Area

Anambra State is located in the South Eastern region of Nigeria. It lies between latitudes 5° 45' N and 6° 45' N within longitudes 7° 15' E and 6° 45' E (Google Map, 2018). The name was derived from the Oma Mbala River. It shares borders with Delta State and Edo State in the west, Imo State, Abia State and Rivers State in the South, Enugu State in the East and Kogi State in the North. The state is predominately occupied by Igbos. The State has 179 communities (towns) in twenty-one (21) local government areas with the capital city of Awka, the commercial town of Onitsha and the industrial city of Nnewi being the major towns. The study area is the rainforest belt. It is characterized by the presence of tall trees with a mixture of shrubs and grasses especially in rural areas. This tropical rainforest vegetation is gradually disappearing due to urbanization.

The cosmopolitan nature of the study area coupled with its zeal to develop in the areas of commerce, industry, and agriculture among others gave rise to different land uses in the area. Land uses in the urban areas are mostly residential, commercial and industrial uses, while agricultural uses dominate in the rural areas.

The climate change impacts mostly experienced in the state are erosion and flooding. Anambra state, out of the five eastern states is the worst hit by erosion as a result of the topography and the nature of soil with over 700 erosion sites located in the state alone. Agulu, Oko, Ideani, Amankwa and Nanka towns are mostly affected by erosion (Merem et al, 2019). Towns in Ogbaru, Onitsha North, Onitsha South, Anambra West, Anambra East and Ihiala local government areas are also greatly affected by the perennial flooding due to overflow of river banks worsened by increased or irregular rainfall caused by climate change.

3.2 Research Questions-

1. Are residents of Anambra State aware of the climate change phenomenon?
2. Are residents aware of human activities that cause climate change?
3. Are real estate professionals aware of how climate change affects real estate?
4. Are real estate professionals aware of measures that can enhance real estate resilience?

3.3 Hypothesis

Ho: There is no significant difference in the proportion of people who are aware of the causes of climate change between different educational qualification groups.

3.4 Sample

The study which is exploratory in nature used a cross-sectional survey research design in gathering data. A simple random sampling technique was adopted in selecting respondents which were made up of property owners, tenants, estate surveyors and valuers, town planners, architects, builders, developers and other real estate stakeholders in Anambra State.

3.5 Instrumentation

Two (2) sets of questionnaires were used for data collection. The first set was for residents of the state which was made to elicit information on the level of climate change awareness. The second set of questionnaires was for professionals in the built environment. It was constructed to get data on how informed these professionals are about the effects of climate change on real estate and ways to enhance resilience. They were validated by a language education, measurement and evaluation expert and it yielded a high- reliability coefficient of 8.1 which was obtained using Cronbach alpha reliability. The questionnaire was distributed both electronically using Google Forms and in person. A hundred and twenty (120) questionnaire responses were received. Frequencies and percentages were used to answer the research questions and the Chi-Square test of independence was employed in testing the hypothesis to reveal the effect of climate change education on real estate resilience in Anambra State.

4.0 ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Results

The result of the analysis of respondents' awareness of climate change in Anambra State in Table 1 showed that 41% of the people claimed to have become aware of the phenomenon through the news. 37.5% heard about it in school while 20% got to know through research. 65.8% of the respondents do not know of any climate change awareness programme in Anambra State. 43.3% of the respondents are aware of state government provides, 20% are aware of NGOs, and 31.7% are not aware of any institution that provides climate awareness programmes 54.2% of the respondents see the existing awareness programmes as ineffective. This revealed that there is a general awareness of climate change phenomenon in the state.

Table 1: Descriptive Statistics for Residents' Awareness of Climate Change

Variables		Frequency	Percentage
Have you heard of climate change?	Yes	107	89.2
	No	13	10.8
Are you aware of climate change awareness programmes?	Yes	41	34.2
	No	79	65.8
Institutions that provide climate awareness programmes	State Govt	52	43.3
	NGO	24	20
	None	38	31.7
Medium of awareness of climate change?	News	50	41.7
	Research	25	20.8
	School	45	37.5
Are the awareness programmes effective?	Very Effective	15	12.5
	Somewhat Effective	40	33.3
	Not Effective	65	54.2

However, knowing about climate change should include having information about human activities that contribute to the phenomenon. The results of the analysis of the respondents' awareness of these activities are shown in Table 2 below

Table 2: Descriptive Statistics for Residents' Awareness of Human Activities that Contribute to Climate Change

Variables		Frequency	Percentage
Are you aware of human activities that cause climate change?	Yes	63	52.5
	No	57	47.5
Are you aware that the use of fossil fuels (petroleum products, coal etc) contributes to climate change?	Yes	49	40.8
	No	71	59.2
Are you aware that industry emissions and effluents cause climate change?	Yes	56	46.7
	No	64	53.3
Are you aware that the felling of trees contributes to climate change?	Yes	74	61.7
	No	46	38.3
Are you aware that bush burning causes climate change?	Yes	96	80
	No	24	20
Are you aware that non-adherence to town planning laws and building codes contributes to climate change?	Yes	42	35.0
	No	78	65.0
Are you aware that indiscriminate dumping of refuse causes climate change?	Yes	107	89.2
	No	13	10.8
Are you aware that indiscriminate sand mining contributes to climate change	Yes	46	38.3
	No	74	61.7

The respondents are generally aware that some human activities aggravate climate change but have a shallow knowledge of the activities that fall under the category. 71% of the respondents are not aware that the use of fossil fuels contributes to climate change. 64% don't know about industry emissions and effluents as a contributor, 74% are not informed about indiscriminate sand mining and 78% are not aware of non-adherence to town planning laws as a cause of climate change. They are well informed about bush burning, indiscriminate dumping of refuse, and felling of trees (96%, 89.2%, and 74%) as contributors to climate change.

Table 3 shows the respondents' awareness of the effects of climate change on real estate. They are aware that climate change affects real estate in various ways. High Construction Costs (92%), Reduced Property Life Span (86%), Obsolescence (67%), Income Loss (82%), Building Collapse (61%), Infrastructural Damage (91%). High Building Maintenance Costs (68.3%)

Table 3: Descriptive Statistics for Real Estate Professionals' Awareness of Ways Climate Change Affects Real Estate

Variables		Frequency	Percentage
Are you aware that climate change affects real estate?	Yes	106	88.3
	No	14	11.7
Are you aware that climate change causes high construction costs?	Yes	92	76.7
	No	28	23.3
Are you aware that climate change reduces property life span?	Yes	86	71.7
	No	30	25.0
Are you aware that climate change causes obsolescence?	Yes	67	55.8

	No	53	44.2
Are you aware that climate change causes real estate income loss?	Yes	82	68.3
	No	24	20
Are you aware that climate change can cause building collapse?	Yes	61	50.8
	No	57	47.5
Are you aware that climate change causes infrastructural damage?	Yes	91	75.8
	No	27	22.5
Are you aware that climate change causes high building maintenance costs?	Yes	82	68.3
	No	38	31.7

The respondents' level of awareness of measures that can be used to enhance real estate resilience in the face of climate change challenges is analysed in Table 4 below. The respondents are well educated about community engagement and participation as a measure to enhance real estate resilience (93.3%); Partnership amongst built environment professionals (73.3%). Respondents are not aware of the demand for sustainable buildings (31%), Climate Justice (21%), and Purchasing Flood Insurance (35%) as measures to enhance real estate resilience.

Table 4: Descriptive Statistics for Real Estate Professionals' Awareness of Measures to Enhance Real Estate Resilience in Anambra State.

Variables		Frequency	Percentage
Community Engagement and Participation in Climate Action	Yes	112	93.3
	No	4	3.3
Govt. and Stakeholders' Collaboration in Formulating Sustainable Building Practices and Policies	Yes	56	46.7
	No	63	52.5
Partnership among the Built Environment Professionals	Yes	88	73.3
	No	31	25.8
Laws targeting Emissions and Effluents	Yes	58	48.3
	No	62	51.7
Tenants demanding more Sustainable Properties	Yes	31	25.8
	No	89	74.2
Purchasing Flood Insurance	Yes	35	29.2
	No	85	70.8
Implementing Climate Justice	Yes	21	17.5
	No	99	82.5

4.2 Test of Hypothesis

The proportion of people who are aware of the causes of climate change between different educational qualification groups is compared using the Chi-Square test of Independence. The analysis is shown in table 5.

Table 5: Comparison of Awareness of Causes of Climate Change and Educational Qualifications

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.932 ^a	2	.628
Likelihood Ratio	.932	2	.628
Linear-by-Linear Association	.072	1	.788
No. of Valid Cases	120		

In Table 5, there is a chi-square (X^2) of 0.932, with a degree of freedom of 2 obtained at a level of significance (P-value) of 0.628 which is greater than 0.05. It is concluded that there is a significant difference between the proportions of people who are aware of the causes of climate change between different educational qualification groups. The tertiary qualification group has the most number of people with knowledge of the causes of climate change followed by the secondary education group.

4.3 Discussion of Findings

The result as shown in Table 1 revealed that there is a general awareness of climate change which is pushed through the media. There are few awareness programmes organized by the state government but they are not very effective. The UN Framework Convention on Climate Change (UNFCCC) has the responsibility to undertake educational and public awareness campaigns on climate change, to promote public participation and to ensure information accessibility (UN, 2023). This emphasizes the importance of climate education and public participation in climate change adaptability.

Table 2 shows that there is a shallow knowledge of the various human activities that contribute to climate change. Activities like bush burning, indiscriminate dumping of refuse and felling of trees are mainly known to contribute to climate change. This can be attributed to the awareness about climate change created during news commentaries which mostly concentrate on these three activities.

It is evident from the study as shown in Tables 3 and 4 that built environment professionals are fully aware that climate change affects real estate in many areas but they don't have adequate knowledge of measures to enhance real estate resilience. This confirmed the findings in the study of Clayton, Devaney, Sayce and Van de Wetering (2021) which showed that awareness of climate risks is beginning to make a sustained impact on real estate pricing and investor decision-making.

The study showed that the tertiary qualification group has the highest number of people with knowledge of the causes of climate change followed by the secondary education group. This finding agrees with that of Striessing, Lutz and Patt (2013) whose study revealed that education is the single and most important social and economic factor associated with the reduction in vulnerability to natural disasters.

5.0 CONCLUSION

There is a general awareness of climate change in Anambra State but there needs to be a deeper understanding of the causes and impacts of climate change for effective mitigation and adaptation. Lack of adequate information about climate change effects on real estate will hinder real estate resilience in the state.

6.0 RECOMMENDATIONS

1. The government should provide effective climate change awareness programmes which will provide materials and information about climate change. The government should use clear and concise language which is devoid of technical jargon (preferably Igbo language) in communicating climate risks, especially in rural areas.
2. The government should partner with all stakeholders namely, property owners, tenants, real estate investors, professionals in the built environment, lawmakers and others in making and implementing sustainable policies and laws that will lead to real estate resilience.
3. The government should ensure community engagement and participation in promoting climate action.

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