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CLIMATE CHANGE AWARENESS, LITERACY AND MITIGATION STRATEGIES IN OIL AFFECTED COMMUNITIES OF OGONI LGA, RIVERS STATE NIGERIA

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ABSTRACT

This study explored the correlation between climate change awareness, literacy, and mitigation strategies in oil-affected communities of Ogoni LGA, Rivers State, Nigeria. In carrying out this study, two hypotheses were formulated in line with the objectives of the study. The correlation research design was adopted for this study. The study population consisted of adults in oil-affected communities of Ogoni LGA, Rivers State. The sample of the study is made up of 418 adult respondents male and female from the research area. This study employed a multi-stage sampling approach involving proportionate and accidental sampling techniques to select a representative sample of adults from the study population. Data for this study were collected using a questionnaire titled Climate Change Mitigation Strategies Questionnaire (CCMSQ). The instrument demonstrated high internal consistency, with Cronbach's alpha reliability coefficients ranging from 0.85 to 0.91. For data analysis, simple linear regression analyses were utilized. The findings in data analyses indicated that that there is a significant relationship between level of education, awareness of climate change, and adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA. Based on the findings, it was recommended among others that adult education programs in Ogoni LGA should prioritize climate change awareness and mitigation strategies to promote environmental sustainability.

Keywords: Literacy, Climate Change, Mitigation Strategies, Educational level, Awareness, Oil-affected Communities, Ogoni LGA.

Introduction

Crude oil is a naturally occurring hydrocarbon substance extracted from the earth and refined into various petroleum products, including gasoline, jet fuel, and other fuels. It is a globally traded commodity, exchanged in international markets through spot transactions as well as derivative contracts (Lele, 2023). Many economists view crude oil as the single most important commodity in the world as it is currently the primary source of energy production (Lele, 2023). However, oil exploration and climate change have posed a major threat to the environment of the oil producing areas, which if not effectively checked can lead to the total destruction of the ecosystems. Oil spillage is a global issue that has been occurring since the discovery of crude oil (Ndimele, 2018), which was part of the industrial revolution.

The Niger Delta in Nigeria where Ogoniland is located is among the ten most important wetland and marine ecosystems in the world. The oil industry located within the region has contributed immensely to the growth and development of the country which is a fact that cannot be disputed but unsustainable oil exploration activities has rendered the Niger Delta region one of the five most severely petroleum damaged ecosystems in the world. The Niger Delta scenario has become a challenge, especially relating to climate change, and the debate to tackle this phenomenon by ditching fossil fuels for renewable energy technologies (Sani & Kouhy, 2004).

Climate change poses one of the greatest environmental challenges to mankind in the current century. The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report in early 2007 confirmed that the global climate change is already happening. The report found that communities who live in marginal lands and whose livelihoods are highly dependent on natural resources are among the most vulnerable to climate change (IPCC, 2007). Oil exploration and its associated activities are significant contributors to climate change. The

extraction, processing, and burning of fossil fuels release greenhouse gases like carbon dioxide and methane, which trap heat in the atmosphere and drive global warming.

The Ogoni people are an indigenous ethnic group in the Niger Delta region of southern Nigeria, primarily residing in the southeastern part of Rivers State. Based on the 2006 census and subsequent demographic projections, their population is now estimated at around 840,000 inhabitants occupying the eastern part of the state (Adeyemi, 2025). The Niger Delta is the richest region in Nigeria in terms of natural resources specifically crude oil and the poorest in terms of infrastructural development. In addition to oil, the Niger Delta is rich in aquatic foods and plants (Obi, 2010).

The discovery of oil in Ogoniland has had far-reaching consequences for the area. Initially, the Ogoni people saw the development of the oil industry as an opportunity to achieve socioeconomic transformation and improve their standard of living. They anticipated benefits such as better infrastructure, access to education and healthcare, and increased employment opportunities within their communities. While the oil industry has benefitted the Nigerian economy generally, over time the Ogonis experienced increasing hardship due to the environmental degradation that resulted from the oil exploration activities. Oil operations in Ogoniland have not only affected the environment, but have had serious impacts on the socioeconomic, health and political aspects of the Ogoni people. The health consequences experienced by people in Ogoniland as a result of oil production activities include respiratory issues; asthma; cancer; skin, throat and lung infections; and headaches and miscarriages among women (Adekola et al., 2017; UNEP, 2011; Yakubu, 2017). Udoh (2018) notes that “ten percent of airborne benzene detected in Ogoniland was higher than the concentrations WHO and the United States Environmental Protection Agency report as

corresponding to a 1 to 10,000 cancer.

The socioeconomic effects of oil exploration in Ogoniland are experienced by the oil contamination of agricultural land and water sources. This has had a negative impact on agricultural production and fishing (Ite et al., 2013). For example, Ogoni communities are heavily dependent on fishing and farming for their livelihood, and pollution of the land and rivers has resulted in increased poverty (Odoemene, 2011). Another socioeconomic effect of oil exploration has been an increase in the cost of living and outsourcing of jobs to experts who are not indigenes of Ogoniland (Idemudia & Osayande, 2016).

Environmental education (EE) is an integral part of basic education that enhances personal and social development, and fosters the social dynamics needed for problem-solving in societies (Marouli, 2002; UNESCO, 2002,2023). The transformative narratives of environmental education include "critical and innovative thinking, individual and collective learning, cultural interchange, systemic engagement with issues, indigenous knowledge, local culture and community participation" (Lotz-Sisitka, 2008, p. 5). In addition, Reddy (2011) explained that environmental education is a social agency for a transformative and ecologically sustainable society. Here, "sustainable "entails social, economic and cultural sustainability as they are integral to environmental development.

It is against this background that this study was conceived to explore the correlation among literacy level, awareness and climate change mitigation strategies in oil-affected communities of Ogoni LGA, Rivers State, Nigeria.

Literature review

Literacy and climate change mitigation

Education plays a crucial role in inspiring climate change mitigation by fostering awareness, understanding, and a sense of responsibility for addressing the issue. Higher levels of education are linked to increased awareness of climate change and support for mitigation efforts. Education empowers individuals to make informed decisions about their lifestyles and

consumption patterns, promoting sustainable practices and reducing their carbon footprint (Abdullahi, 2020). Climate change disrupts education, while literacy can shape the human potential for climate change adaptation or mitigation in several ways. Climate change related impacts are already disrupting education systems and outcomes. Direct effects include the destruction of education infrastructure as well as injuries and loss of life among students, parents and school staff. Climate change has a negative impact on education indirectly through its displacement of people and the effects on people's livelihoods and health. These are not neutral. Impacts are greater on marginalized populations.

Climate change poses a significant global challenge, demanding innovative and collaborative solutions (Borde et al., 2022). Literacy is pivotal in this fight, as it empowers individuals and communities to embrace sustainable practices (Ballew et al., 2019). It is therefore important that community engagement develops regarding involvement intersect to mitigate climate change locally. By fostering shared responsibility and equipping future leaders, educational strategies can enhance resilience and promote sustainability (Henderson & Serafeim, 2020; Abdullahi, 2020). Climate change literacy is therefore crucial for effective climate change mitigation. Understanding the causes and impacts of climate change, as well as the potential solutions, empowers individuals to make informed decisions and engage in sustainable practices. Improved literacy can lead to increased awareness of climate-related issues and foster a greater willingness to adopt mitigation strategies like reducing emissions, transitioning to renewable energy, and supporting sustainable land management.

Awareness of climate change and climate change (CC) mitigation

Public participation is critical for the effectiveness of adaptation/mitigation strategies, and the delivery of climate services. and it must embrace a bidirectional flow of information (Hügel and Davies, 2020). Generally, understanding stakeholders' perceptions could advise policymakers

and authorities to make efficient and viable decisions (Lorencová et al., 2019, Antronico et al., 2020, Portman and Zhulpa Camporesi, 2020).

Climate change awareness levels, as expressed through perceptions, interact directly with the acceptance of adaptation or mitigation measures (Lorencová et al., 2019) like the acceptance of higher prices for funding mitigation (Chang, 2018). The slow response of human societies (Howe, 2021) is justified, since CC is considered as a distant threat (Wolf and Moser, 2011, Weber, 2016). Public participation may expand as awareness grows (Reimann et al., 2021, Vollstedt et al., 2021). A consensus in social acceptability among various groups of stakeholders (politicians, scientists, local societies, NGOs, etc.) and different levels of governance (European Commission, 2021) is a prerequisite for the success of measures. Trust in formal institutions is identified as a requirement for effective CC governance (Papoulis et al., 2015), and its absence unquestionably leads to ineffective governance and unsuccessful measures (Steentjes et al., 2017, Sullivan and White, 2019).

Climate change awareness is crucial for motivating action towards climate change mitigation, which involves reducing greenhouse gas emissions and enhancing carbon sinks. While awareness is high, turning that awareness into concrete actions like policy changes and individual behavior shifts remains a challenge. People acknowledge and perceive climate change as a worldwide problem, but by "localizing" the concerns, adaptive and mitigation measures may be successfully implemented before communities experience the adverse consequences of climate change. It has been demonstrated that people identify the impacts of climate change that they might experience or witness

Communication strategies are knowledge-raising tools that can help shape or change attitudes and behaviors (Otto-Banaszak et al., 2011, Voskaki and Tsermenidis, 2015, Hagen et al., 2016, Chang, 2018), and support the development of climate services while their absence poses difficulties in confronting CC challenges (Bonatti et al., 2019). Different scientific fields

study CC under their scope and use complex technical and scientific terms (Steentjes et al., 2017) that the general public is unable to understand. As a result of this situation, the public is excluded from the decision-making process, resulting in the so-called "communication gap" (Barr & Woodley, 2019).

Climate change mitigation in this contest refer to any action taken by governments, businesses or people to reduce or prevent greenhouse gases, or to enhance carbon sinks that remove them from the atmosphere. These gases trap heat from the sun in our planet's atmosphere, keeping it warm. Since the industrial era began, human activities have led to the release of dangerous levels of greenhouse gases, causing global warming and climate change. However, despite unequivocal research about the impact of our activities on the planet's climate and growing awareness of the severe danger climate change poses to our societies, greenhouse gas emissions keep rising This gap could be filled by implementing a social learning process that leads to consensus among all participants in the CC dialogue, understanding each participant's mental models (Otto-Banaszak et al., 2011), and through the engagement and the empowerment of the public (Weber, 2016, Barr and Woodley, 2019). This might encourage the skeptical part of society to climate action (Hornsey and Fielding, 2020). As a result, there is a need to embrace social climate services in people's daily routines and social networks (Bremer et al., 2022) to assist those who need them to adapt more than people who have already the capacity to adapt (Williams and Jacob, 2021).

Purpose of the Study

The main gaol of this study was to explore the correlation between literacy level, awareness and climate change mitigation strategies in oil-affected communities of Ogoni LGA, Rivers State, Nigeria. Specifically, the study intends;

1. to examine the relationship between level of education and adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA.

2 to investigate the relationship between awareness of climate change and adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA.

Research Hypotheses

1. There is no significant relationship between level of education and adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA.
2. Awareness of climate change is not significantly related to the adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA.

Methods

Research design: This study adopted a correlation design. This design aims to identify the relationship between literacy and awareness on the adoption of climate change mitigation among adult citizens of the research area. By using this design, the researcher used the independent variables to predict the dependent variable as they manifest. The predictive correlation design allows the researcher to examine the relationships between the independent variables and the dependent variable, identifying the predictors of dependent variable

Population of the study*:* The study population consisted of adults in oil-affected communities of Ogoni LGA, Rivers State.

Sampling technique: The sapling technique employed in this study was a multi-stage sampling approach involving proportionate and accidental sampling approaches

Sample size: The sample of the study is made up of 418 adult respondents male and female from the research area,

Instrumentation: Data were gathered using the Climate Change Mitigation Strategies Questionnaire (CCMSQ), which showed high reliability. Cronbach's alpha coefficients ranged

from 0.85 to 0.91, demonstrating that the instrument was appropriate for the study. The instrument employs a 4-point rating scale, allowing respondents to express their degree of agreement or disagreement with each statement. The rating scale options include Strongly Agree (SA), Agree(A), Disagree (D), and Strongly Disagree (SD),

Method of data analysis: For data analysis, simple linear regression analyses were utilized at .05 level of significance and 1 and 416 degrees of freedom.

Results

Two hypotheses were stated and tested in order to provide solution to the problem of this study. Each hypothesis was tested at .05 level of significance.

Hypothesis one: There is no significant relationship between level of education and adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA.. To test the hypothesis simple linear regression analysis was used and the result of the analysis is shown in Table 1.

TABLE 1: *Simple regression analysis of relationship between level of education and adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA. (N=418)*

Source of variation	SS	Df	MS	F	p-value
Regression	103.445	1	103.445	15.142	.000[b]
Residual	4117.967	416	4.522		
Total	4221.412	417			

*Significant at .05 level, R=207, R^2=.043, Adj R^2=.041

The analysis in Table 1 showed that the Adj R^2 is 0.041. This implies that 4.1 % of the variance in the adoption of climate change mitigation strategies among adults in oil-affected communities could be accounted for by level of education.. Though the percentage contribution is small, a careful look at the table showed that the F=15.142(p<..05) is significant at 05 level of significance and 1 and 416 degrees of freedom. Also, since p(.000) is less than p(.05), it implies that there is a significant relationship between level of education and adoption of climate change

mitigation strategies among adults in oil-affected communities of Ogoni LGA. Hence the null hypothesis is rejected and alternative hypothesis upheld.

Hypothesis two. Awareness of climate change is not significantly related to the adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA . To test the hypothesis linear regression analysis was used and the result of the analysis is shown in Table 2

TABLE 2: *Simple regression analysis of relationship between* Awareness of climate change *and adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA. (N=418)*

Source of variation	SS	Df	MS	F	p-value
Regression	81.533	1	81.533	18.132*	.000[b]
Residual	4139.879	416	6.884		
Total	4221.412	417			

*Significant at .05 level, R=0.332, R^2 =0.110, Adj R^2 = 0.108

The analysis in Table 2 showed that the Adj R^2 is 0.108. This implies that 10.8% of the variance in the adoption of climate change mitigation strategies among adults in oil-affected communities could be accounted for by awareness of climate change. Though the percentage contribution is small, a cursory look at the table showed that the F-16.113($p<.05$) is significant at .05 level of significance and 1 and 416 degrees of freedom. And since p(.000) is less than p(.05), it implies that Awareness of climate change is not significantly related to the adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA. Therefore, the null hypothesis is rejected and alternative hypothesis upheld

Discussions

Level of education and adoption of climate change mitigation strategies among adults

The result of hypothesis one indicated that there is a significant relationship between level of education and adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA. The assertion was sequel to the fact that that the F=15.142(p<..05) is significant at 05 level of significance and 1 and 416 degrees of freedom. Also, since p(.000) is less than p(.05), it implies that there is a significant relationship between level of education and adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA. Hence the null hypothesis is rejected and alternative hypothesis upheld.

The present result is in line with the study of Abdullahi (2020) who stated that education plays a crucial role in inspiring climate change mitigation by fostering awareness, understanding, and a sense of responsibility for addressing the issue. Higher levels of education are linked to increased awareness of climate change and support for mitigation efforts. Education empowers individuals to make informed decisions about their lifestyles and consumption patterns, promoting sustainable practices and reducing their carbon footprint (Abdullahi, 2020). Climate change poses a significant global challenge, demanding innovative and collaborative solutions (Borde et al., 2022). Literacy is pivotal in this fight, as it empowers individuals and communities to embrace sustainable practices (Ballew et al., 2019). It is therefore important that community engagement develops regarding involvement intersect to mitigate climate change locally.

Awareness of climate change and adoption of climate change mitigation strategies among adults

The result of hypothesis one indicated that awareness of climate change is significantly related to the adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA. The assertion was sequel to the table showed that the F-16.113($p<.05$) is significant at .05 level of significance and 1 and 416 degrees of freedom. And since p(.000) is less than p(.05), it implies that Awareness of climate change is not significantly related to the adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA. Therefore, the null hypothesis is rejected and alternative hypothesis upheld .

The present result is in line with the study of Hügel and Davies (2020) that stated that Public participation is critical for the effectiveness of adaptation/mitigation strategies, and the delivery of climate services. and it must embrace a bidirectional flow of information. Generally, understanding stakeholders' perceptions could advise policymakers and authorities to make efficient and viable decisions. Accoording to the authors, Climate change awareness levels, as expressed through perceptions, interact directly with the acceptance of adaptation or like the acceptance of higher prices for funding mitigation (Chang, 2018).

Conclusion

This study's findings reveal that both level of education and awareness of climate change play significant roles in influencing the adoption of climate change mitigation strategies among adults in oil-affected communities of Ogoni LGA, suggesting that education and awareness initiatives can be effective tools for promoting environmental sustainability,

Recommendations

Based on the findings of the study, the following recommendations were made by the researcher:.

1. The government should inaugurate adult education programmes in Ogoni LGA which should prioritize climate change awareness and mitigation strategies to promote environmental sustainability.
2. Stakeholders should implement targeted awareness campaigns and sensitization programs to enhance climate change awareness among adults in oil-affected communities of Ogoni LGA, highlighting the causes, impacts, and mitigation strategies of climate change, to promote informed decision-making and encourage the adoption of climate change mitigation strategies.

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