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Interactions between People and the Ecological System: The Role of Environmental Diplomacy and International Cooperation in Mitigating Environmental Threats to National Security in Nigeria

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Abstract

The link which exists between human societies and the ecological system has become increasingly critical in the face of escalating environmental threats to national security. In a quest for sustainable solutions to environmental threats to national security, the study explored, analyzed and evaluated the interactions between people and the ecological system: the role of environmental diplomacy and international cooperation in mitigating environmental threats to national security in Nigeria. In the methodology, the study adopted a mixed approach with a cross-sectional research design. 80 respondents participated in the study. From the study findings, it established, 60(86.4%) (M = 4.32; SD = 1.103), that fragmented national interest, economic pressure, insufficient funding, and political instability are some of the factors limiting environmental diplomacy and international cooperation in addressing environmental threats to national security in Nigeria. Also, the study authenticated, 62(89%) (M = 4.39, Std = 1.009) that community-led initiatives, education and creation of awareness programs; sustainable urban planning; effective policy implementation and governance; and providing alternatives to cheaper and more effective sources of livelihood are sustainable opportunities necessary to enhance effective interactions between people and ecological systems, thereby mitigating environmental threats to national security in Nigeria. The study concludes that understanding the interaction between people and ecological systems is inevitable since it comprises man and the sustainability of his environment. Thus, strengthening the role of environmental diplomacy and international cooperation is crucial. The study recommends governments and international organisations to make commitments with vision in mind and not just serving a particular selfish interest but balancing between economic transition and sustainable development that promote the wellbeing of people and the environment. This can be achieved through the hook, the line, and the implementation agent indicators as depicted in the model.

Keywords:

People, Ecological system, Environmental diplomacy, International cooperation, environmental threats, National Security.

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Introduction

The link which exists between human societies and the ecological system has become increasingly critical in the face of escalating environmental threats to national security. The degradation of natural resources, climate change, and biodiversity loss have far-reaching implications for human well-being, economic development, and global stability (Homer-Dixon, 1999; Kaplan, 1994). Nigeria, with its rich ecological diversity and rapidly growing population, is particularly vulnerable to environmental insecurity. Environmental threats, such as desertification, deforestation, and pollution, have significant implications for Nigeria's national security, exacerbating poverty, displacement, and social unrest (Obioha, 2008; UNEP, 2012). The Niger Delta region, for instance, has experienced severe environmental degradation due to oil spills and pollution, leading to conflicts between local communities and the government (Ikelegbe, 2005).

Environmental diplomacy has emerged as a crucial strategy for mitigating environmental threats to national security. Environmental diplomacy involves negotiations and dialogue between governments, international organizations, and stakeholders to address environmental challenges (Susskind, 1994). In Nigeria, environmental diplomacy has facilitated the development of policies and frameworks aimed at protecting the environment and promoting sustainable development. For example, the National Environmental Policy (2017) and the Great Green Wall Programme (GGW, 2020) demonstrate Nigeria's commitment to environmental protection. Effective environmental diplomacy can help resolve environmental conflicts, promote cooperation, and foster sustainable development (Swart, 2016).

International cooperation plays a vital role in addressing environmental threats to national security. Global agreements, such as the Paris Agreement (2015) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1973), demonstrate international commitment to environmental protection. Regional organizations, such as the Economic Community of West African States (ECOWAS), have established environmental policies and frameworks (ECOWAS, 2010). International cooperation provides access to financial resources, technical expertise, and best practices, enabling Nigeria to address environmental challenges more effectively. Furthermore, international cooperation fosters global solidarity and collective action, essential for addressing transboundary environmental issues (Chasek, 2016).

Among the most pressing concerns in the world today are the environmental threats that ranges from global warming, natural disaster, drought, biodiversity loss, pollution, food, and water insecurity, among others (Singh & Singh, 2017). These threats arise from harmful human activities such as deforestation, bush burning, and wildfires. Environmental threats lead to a number of negative effects, and one of the most affected aspects is national security. This is achieved by destroying the welfare, peace, and political, economic, and social well-being of individuals in a given nation, and Nigeria is not excluded from these effects. As they cause state instability, exposure to weak political systems, decline in economic status, rise of conflicts, displacement of people and forced migrations, competition for the few land resources, and reduction in food productivity, all those put the nation’s security at risk.

Certainly, addressing the role of environmental diplomacy and international cooperation in mitigating environmental threats to national security in Africa, in this case Nigeria, is a complex and multifaceted topic. International cooperation and diplomacy in environmental matters are

critical in today's interconnected world. It delves into the ways in which these organisations facilitate cooperation among nations, formulate policies, and implement strategies to mitigate environmental challenges on a global scale. According to Gosovic (2019) the national and international responses to environmental problems, as well as the various conceptual and institutional frameworks devised to deal with them, have been significantly influenced and shaped by the real and/or perceived conflict between environmental objectives and what were considered as the more pressing social and economic goals and priorities of society. Thus, before and during the Stockholm Conference, the developing countries' suspicion and in many cases lack of experience of environmental issues affected the proceedings and the outcomes. A good deal of the continuing controversy shrouding environmental issues internationally can be attributed to the manner in which these early debates evolved and to the terms in which the issues were conceptualized.

Scholarly literature has uncovered some challenges limiting environmental diplomacy and international cooperation towards mitigating environmental threats. Some of the identified challenges included the anarchic nature of states in the international system, domestic policy, complexity in the interests of actors in the international system, capacity and political will of countries, and the influence of powerful states. Study by O'Neill (2009) emphasized that the lead states in international environmental politics are the Scandinavian nations for instance, often taking strong positions on the global environment, encouraging others to join negotiations, and often taking unilateral measures above and beyond their basic commitments.

A prominent feature of all international cooperation is the voluntary nature of participation. It is up to the individual government to decide whether to join in. Commitments can't be forced on an unwilling government. Negotiations therefore, tend to stop at what the least enthusiastic parties are willing to accept. To put in a few words, it is one of the main barriers to achieving strong internal environmental cooperation (Anderson, Boasson & Honneland, 2012).

This is evident that the international system is anarchic in that there is no central authority (world government) that can dictate or hold individual states or actors within those states accountable on what they must or must not do. Desombre (2005) affirmed that although there are international courts and tribunals, no state can ever be forced to appear before them or to accept punishment from them. This makes the realisation of international environmental cooperation complex. For the realists and neo-realist theorists, international anarchy is absolute (Waltz 1979, Keohane 1986). States have little or no motivation to collaborate to address shared issues, and their perceptions of one another are shaped by a history of international conflict rather than international collaboration. Their main drives are rivalry and the quest for relative dominance, especially when it comes to military or economic might.

On the contrary, Pease (2018) noted the discrepancies and challenges that hinder environmental diplomacy and international cooperation toward achieving sustainable development. Sustainable development recognizes that the kind of economic development that has occurred in the advanced industrialized countries cannot be replicated in the developing world without grave environmental consequences. The case study on climate change highlights the deep differences between rich and poor nations and deep-seated divisions over the causes and consequences of climate change.

Environmental crises of the 21st century as opined by Glaser, Krause, Ratter and Welp (2008) requires a new ways of analyzing nature and humanity's connections to it. By interfering with nature, humans generate the conditions for action for themselves and others. We need a dialogue on human/nature relations between the social and natural sciences. As human impact on nature grows increasingly problematic, human/ nature relations are reflected in the contemporary sustainability debate. The degradation of natural systems, the over-exploitation of resources, climate change, and continuing economic and social polarization on a global scale renders sustainability problems more pressing. The ecosystem services research field takes the other side of the equation—how do changes in natural systems feed through to changes in human well-being (as defined by the Millennium Ecosystem Assessment, 2005)? Several steps are required to quantify this contribution; first, there is a need to understand how changes in human activities impact the dynamics of ecosystems, then how these changes in ecosystem structure, function, and diversity affect the range of services that humans use and then how changes in these services feed through into well-being.

The metrics at each stage are not straightforward to define and the processes involved are not easy to quantify (Bennett, Peterson & Gordon, 2009). This is a very active area of research, following the lead of the MEA (Carpenter, Mooney, Agard, Capistrano, DeFries, Díaz, Dietz, Duraiappah, Oteng-Yeboah, Pereira & Perrings, 2009). Research that either quantifies the effect of human activities on biological systems or the effect of biodiversity loss on human well-being is in demand in order to inform current policy initiatives (Millennium ecosystem assessment, M.E.A., 2005). However, an understanding of the feedback between these two elements is also critical—the process by which changes in people's well-being drive changes in their behaviour towards nature. An understanding of the processes that drive this feedback is required if we are to produce truly predictive models of the effects of interventions or external trends on social–ecological system dynamics, enabling scientists to make management recommendations.

Another literature by Constantinou and Christodoulou (2024) pinpointed that building on indigenous thought and animist epistemologies, programmes such as Harmony with Nature (HwN) espouses a new relationship with Planet Earth and make it possible to explore 'nature' as a diplomatic interlocutor. We argue that existing peace-building paradigms fail to sufficiently capture the diplomatic aspects and complex local dynamics of the human–nature relationship and suggest a reconceptualization based on ecological diplomacy that is both expansive and transformative and views this relationship as one of troubled coexistence.

Despite these efforts, environmental threats persist, and Nigeria's national security remains vulnerable. This study investigated the interaction between people and ecological systems, examining the role of environmental diplomacy and international cooperation in mitigating environmental threats to national security in Nigeria.

Problem Statement

National security is the heart of any state, and a threat to the environment threatens national security. Environmental challenges continue to impact negatively across the country. Despite the efforts of the Nigerian Government through international organisations, challenges persist in effectively addressing environmental threats to national security in Nigeria. Olajide, Quadri, and Ojakorotu (2018) have shown that climate change challenges have manifested itself in

some of the direst ways in Nigeria. This includes the destruction of biodiversity in the Niger Delta, land degradation and desert encroachment in the North, and flooding of the most damaging magnitudes across the country. As the threat continues to arise, Oguamanam (2016) cried out that a national strategy based on innovation, security, sustainability and political will is urgently required to reconcile the present agro-ecological tension that threatens Africa's largest economy and its most populous nation. While progress has been made, ongoing challenges require continuous and coordinated efforts. Understanding and addressing these threats to national security form an integral part of this study to inform policy decisions and uncover opportunities available to enhance a more effective interaction between people and ecological system; help prospective international organisations make informed decisions and assist in the development of support mechanisms to address the challenges faced by the Nigerian government as a result of environmental threats to its national security. It was against this backdrop that this study was undertaken to examine the interactions between people and ecological systems: the role of environmental diplomacy and international cooperation in mitigating environmental threats to national security in Nigeria focusing on determining the factors limiting environmental diplomacy and international cooperation, examining the socio-political implications of these limiting factors, investigating how challenges related to environmental threats are handled and discovering opportunities to enhance effective interactions between people and ecological systems, thereby mitigating environmental threats to national security in Nigeria.

Methodology

Research design

The study adopted a cross-sectional research design through a mixed method (qualitative and quantitative approaches). Cross-sectional research design is a widely used methodology in social sciences, which involves collecting data from a sample of participants at a single point in time (Bryman, 2016; Creswell, 2014). This enabled the researcher to collect rich data from different respondents simultaneously. This supported the triangulation and generalization of study results.

Study population

In this study, the target population comprised of security experts, academic professionals, policy experts, environmental advocates and local citizens

Sample size

According to Amin (2005), sample size is the number of members of the target population which can include people, animals, or other entities that the study hopes to include. The sample size for this particular study was based on Krejcie and Morgan, (1970) recommendations for sample determination. The study adopted a target population of 100 participants which corresponds to 80 sample size of 2 security experts, 3 academic professionals, 2 policy experts, 3 environmental advocates and 70 local citizens.

Table 1: Sample size and categories of respondents' involved in the study

Sample size per stratum = $\frac{\text{SampleSize}}{\text{TotalPopulation}} \times \text{StratumSize}$; N: Actual Population

N= 100

Categories	Actual Population	Sample size	Sampling techniques
Security experts	2	2	Purposive sampling
Academic professionals	4	3	
Policy experts	2	2	
Environmental advocates	4	3	
Local citizens	88	70	Simple random sampling
Total	**100**	**80**	

Sources of data

The investigation focused on primary and secondary sources of information. Primary data was gathered through questionnaires and interviews from selected individuals with critical knowledge of the environmental and security concerns in Nigeria. The secondary data source was discovered in previously published works found through Google Scholar searches such as government documents, magazines, textbooks, journals, interviews, and discussions within this subject of inquiry. Considering the nature of this study, all of these were essential for the analysis.

Data collection methods and instruments

The researcher adopted a survey for quantitative data collection methods and in-depth interviews for qualitative data collection methods. Questionnaire and interview guide were the key instruments adopted.

Questionnaires

This study utilized questionnaires as a quantitative data collection instrument to systematically gather standardized data on the subject of inquiry with the help of research assistants who are residents in Nigeria. The questionnaire comprised four sections, each addressing specific research objectives. Participants responded to items using a Likert scale (1-5), ensuring comprehensive data collection. This method facilitated the standardized collection of data that was generated from the local citizens, providing valuable insights into the research topic.

Interview Guide

This study utilised a structured questions to interview the individuals chosen. The researcher did online interviews with the security experts, academic professionals with background in international relations and diplomacy, environmental advocates, and policy experts in Nigeria.

The researcher asked questions that were appended in this study and every person interviewed was through a referral by their colleagues.

Data Analysis and Presentation Plan

Qualitative data was collected mainly using an interview guide that was sieved, edited and systematically analysed. In this study, the principal method of data analysis was through thematic analysis using a systematic search of themes within data. Open coding of data was appropriate. This means building a set of themes by looking for patterns and meaning produced in the data, labeling and grouping them in connection with the objectives of the research.

Quantitative data was analysed through descriptive analysis. Data was presented in frequency tables, percentages, mean and standard deviation which helped in accuracy and brief presentations that corresponded to the guiding questions in the questionnaire using SPSS version 26. A descriptive analysis was done through providing the percentages to guide the researcher to benchmark the rate of agreeableness of the local citizens; to make decisions and identify areas for improvement based on their responses. Quantitative analysis was preferred because it allowed the researcher to analyze numerical data objectively, minimizing personal biases and interpretations. It provided a structured and systematic approach to examining data, ensuring validity and reliability.

Ethical considerations

In order to prevent any conflicts of interest, the researcher ensured that the confidentiality of any information availed was protected in this study. Throughout the entire investigation, neutrality and transparency was guaranteed. The researcher ensured that all authors whose works are included in this study were acknowledged through citations and lists of references.

Results

Data analysis was based on study objectives and results were presented on the following statements in a questionnaire. The mean average level of agreement was computed as (5+4+3+2+1)/5= 15/5 = 3.0. This therefore implies that all responses averaging 3.0 are neutral, and those averaging 3.0 and above account for “Agree” whereas all responses averaging below 3.0 account for “Disagree.” Also, the percentages of “agree and strongly agree” were computed together to form the overall level of agreeableness upon which the interpretations were made. Lastly the overall percentage were computed by getting the average of the total agreed percentages of each item per battery in the questionnaire.

Factors hindering environmental diplomacy and international cooperation in addressing environmental threat to national security in Nigeria

One of the study priorities was to determine the factors hindering environmental diplomacy and international cooperation in addressing environmental threats to national security in Nigeria. The mean and standard deviation scores were computed as presented below.

Table 2: Factors hindering environmental diplomacy and international cooperation in addressing environmental threat to national security in Nigeria

Items	Responses in Percentages (%)					Total %	Mean	Stand Dev
	SD %	D %	N %	A %	SA %			
Fragmented national interest like economic and political interests conflict with environmental diplomacy thus hinders environmental diplomacy and cooperation.	4.3	2.9	4.3	35.7	52.9	89	4.30	0.997
Economic pressures and insufficient funding to address poverty and unemployment rates puts less priorities to environmental protection limiting Nigeria's ability to address environmental threats	4.3	5.7	4.3	18.6	67.1	86	4.38	1.094
Political instability limits public awareness and engagement in environmental concerns.	7.1	5.7	2.9	20.0	64.3	84.3	4.28	1.217
Overall						**86.4**	**4.32**	**1.103**

Source: Primary data 2024

The high level of agreement by 62(89%) corresponds that fragmented national interest like economic and political interests conflict with environmental diplomacy thus hinders environmental diplomacy and cooperation. The mean of 4.30 on a scale of 1-5 was high which indicated that the environmental diplomacy hindrances are associated with state's interest such as political and economic interests which place less interest on environmental concerns.

Also, 60(86%) of respondents concurred that economic pressures and insufficient funding to address poverty and unemployment rates put less priority on environmental protection limiting Nigeria's ability to address environmental threats. 4.38 mean score was a high indicator which flagged the need to boost economy of a state to help in poverty alleviation and job creation as an impediment to environmental diplomacy and international cooperation in addressing the issues of environmental threats in Nigeria thus hampers the country's security stability arising from environmental challenges.

The study uncovered that 59(84.3%) of respondents confirmed that political instability limits public awareness and engagement in environmental concerns. With a high mean score of 4.28 on a scale of 1-5 indicated that without political stability, public engagement in environmental concerns is disenfranchised rendering international cooperation efforts inconsequential to mitigating environmental threats that affect national security.

Overall, 60(86.4%) (M=4.32; Std= 1.103) of the respondents' agreeableness confirmed that fragmented national interest, economic pressure, insufficient funding and political instability are some of the factors limiting environmental diplomacy and international cooperation in addressing environmental threats to national security in Nigeria.

In line with the quantitative findings above, the results from the interviews affirmed five concepts that limit environmental diplomacy and international cooperation in addressing environmental threats to national security in Nigeria.

Available policy and regulations

The participants confirmed that the available policies and regulations limit the effectiveness of the role of environmental diplomacy and international cooperation as the country grapples to handle other sectors of its economy. One of the key respondents attested;

> *"It is not about continuing to push for policies and regulations… it is about the too many policies at once and yet the implementation has not been fully achieved and there are other areas that also affect national security."(**Participant 1)***

The multiplicity of policies and how they are implemented is a hindrance that requires urgent attention.

Greed of capitalism and pursuit for money

Another theme that emerged was the greed of capitalism and pursuit for money. The respondents showed that the agenda may be for a right cause of action but the medium through which it is brought opens an avenue for money making and taking advantage over the nations resources thus divert the problem we are seeking to solve. One of the respondents added, "*Fear of hidden agenda using global agenda to smuggle their personal interest…"*This is a justification that a known intention harbored in-between unknown interest contributes to these ineffectiveness.

Borderless concerns

Borderless concerns emerged third as one of the themes. The respondents intimated the researcher that one of the limitations is that environmental concerns are borderless concerns. So, since it affects everyone, every actor choses to act how they feel or think fit. One of the respondents stated:

> "*In Nigeria, it is about national interest and implementation laxity that hinders environmental diplomacy and international cooperation as no leader would be interested in negotiating for issues that does not affect them alone. So, it is left to, if they want or it ends in meetings with few implementation and heightened social media broadcast of environmental impacts in the country."* ***(Participant 2)***

To whom should we hold responsible then if we are left in the hands of "If they want." This concept is complex and complicated as uncovered by the study. This discrepancy shows a grave for none concerned attitude of a state towards a common goal and this leads to noncompliance to sustainability agenda. Dialogue is vital but should it end in meetings and social media broadcast? Often, it is what it is. Yet the call for action demands everyone to be responsible and concerned about the impacts of environmental threats to national security as lives and properties are involved. Reconstruction of thoughts, attitude and behaviours towards environmental issues is everyone's business and should be taken serious. Everything will become meaningful and impacts curtailed through joint efforts. Instead of settling for the least of options which every state would agree to take on, why not settle for the most crucial and vital options in scalable manner that propels sustainability, promote human wellbeing, and

create harmony with nature in a healthy environment where all lives thrives. This would bring to minimal on the resource allocations set to fight against the complex emergencies rising from the environment.

Politics of regulation and institutional framework

Another interesting theme was the politics of regulation and institutional framework. The respondents were vivid that these regulations makes no sense if the various institutions that supposed to enforce compliance are reluctant with selective application of justice. Thus breeds corruption and create a state of unbalanced actions in implementation strategy…*Holding ourselves accountable for our actions is still a challenge…"*

Choice for survival

The last theme showed that choice for survival limits environmental diplomacy and international cooperation as the attitude to change and willingness to change are on a divergent grid. Thus, even when people are aware of what to do and resources are committed to repairing environmental damages, it is futile as long as those in the grass root are uncooperative towards sustainability.

One of the key respondents affirmed:

> *"People live for survival and when you want to stop them of their means of livelihood even when they know it's illegal or condemned by the law, they will always look for a way out... after all the impacts are felt by all. So let me enjoy now is the problem and we forget the consequences."**(**Participant 3)***

By and large, the will to do what we ought to do to save our environment is hindered by the interest and intentions of those promoting environmental diplomacy and international cooperation through hidden agendas, availability of policy and regulations, greed of capitalism and pursuit for money, issue of enforcement and compliance, corruption, choice for survival, politics of regulation and institutional framework, selective application of justice hindering accountability and laxity of the national interest on environmental concerns since it is a borderless concern.

Socio-political implications of these limiting factors on national security in Nigeria

The second goal of the study was to examine the socio-political implications of these limiting factors on national security in Nigeria. The mean and standard deviation scores were computed as presented below.

Table 3: Socio-political implications of these limiting factors on national security in Nigeria

Items	Responses in Percentages (%)					Total %	Mean	Stand Dev
	SD %	D %	N %	A %	SA %			
Environmental degradation fuels social unrest and conflicts, threatening national security	5.7	5.7	5.7	60.0	22.9	83	3.88	1.015
Environmental factors limit access to resources, widening socio-economic disparities and destabilizing national security	2.9	7.1	10.0	34.3	45.7	80	4.13	1.048
Government inaction on environmental concerns erodes public trust, undermining national security and stability	5.7	7.1	1.4	34.3	51.4	86	4.18	1.146
Overall						**83**	**4.06**	**1.069**

Source: Primary data, 2024

The study revealed that 58(83%) of respondents agreed that environmental degradation fuels social unrest and conflicts, threatening national security. The mean of 3.88 on the scale of 1-5 was high which indicated that one of the socio-political implications of the hindering factors is social unrest and conflict arising out of environmental threat like environmental degradation.

The study also showcased that 56(80%) of respondents agreed that environmental factors limit access to resources, widening socio-economic disparities and destabilizing national security. The mean of 4.13 on a scale of 1-5 was high which indicated that not prioritizing environmental diplomacy poses a great threat to national diplomacy as the interaction of people and the environment need cooperation to effectively fight these threats which creates socio-economic divides and disharmony to the security of the nation. Thus the danger of an uncooperative agenda between local and international level actors, driving different agendas hurts national security.

Lastly, by 60(86%) of respondent's agreement, it showed that government inaction on environmental concerns erodes public trust, undermining national security and stability. The mean of 4.18 on a scale of 1-5 was high which indicated that national security becomes destabilized when the public loses trust in government for not addressing the dangers imposed by environment on the citizen. This creates porous situations exposing the nation to security vulnerability.

Overall, 58(83%) (M=4.06; Std = 1.069) strongly confirmed that social unrest, conflicts, socio-economic disparities are some of the socio-political implications arising from the factors that limits environmental diplomacy and international cooperation in mitigating environmental threats to national security in Nigeria.

The qualitative findings also uncovered the following implications. Probing further, the major themes that were recurrent in the thematic analysis as socio-political implications of the limiting factors of environmental diplomacy and international cooperation on national security in Nigeria. These are:

Disruption of economic activities

The results showed that when the government care less, the environmental consequences create chaos ranging from disruption of economic activities that helps people to generate income to conflict. Consequently hinders peace and security of the country as people could do everything possible to survive.

> *…when we are not cooperative, nature takes it cause and that is when we realise cost of living skyrocketing, infrastructures damaged and reconstruction takes years and no one seems to be troubled because we are beclouded by as long as it does not affect me at that moment mentality…"(**Participant 4)***

Another key informant alluded;

> *"…Migration issues as a result of displacement could be minimized but due to lack of cooperation as a result of factors like what will I gain, what's my fair share of this, how much will I gain from the funded project as opposed to doing quality work to ensure such occurrences are curbed has brought security issues on boarders and within the country leading to economic, social and political crisis." (**Participant 5)***

This further justifies why they behave the way they do because it is taken to be no one's business as long as you are not affected at that moment. Migrations concerns also increases as people are displaced exposing the country to a critical security dilemma as a result of social, economic and political crisis. This is the more reason why awareness and mobilisation for movements that are committed to action is required to change the narrative by the people and the leaders in addressing environmental threat to national security through collaboration.

How challenges related to environmental threats are handled to mitigate their impact on national security in Nigeria

The third aim of the study was to investigate how challenges related to environmental threats are handled to mitigate their impact on national security in Nigeria. The descriptive results are presented in table 4 below.

Table 4: How challenges related to environmental threats are handled to mitigate their impact on national security in Nigeria

Items	Responses in Percentages (%)					Total%	Mean	Stand Dev
	SD %	D %	N %	A %	SA %			
Collaboration between government agencies and the international community through national adaptation strategy and plan of action on climate change has helped in mitigating environmental threats to national security in Nigeria.	10.0	2.9	1.4	74.3	11.4	86	3.74	1.045
Proactive measures like reforestation and afforestation programs like Great Green Wall Project has been impactful in minimizing the environmental impact to Nigeria's national security.	30.0	22.9	4.3	11.4	31.4	43	2.91	1.683

Investing in environmental sustainability initiatives like community-based engagement approach has helped to reduce Nigeria's vulnerability to environmental threats to national security.	28.6	28.6	5.7	25.7	11.4	37	2.63	1.426
Overall						**55.3**	**3.09**	**1.385**

Source: Primary data, 2024

The study revealed that 60(86%) of respondents agreed that collaboration between government agencies and the international community through national adaptation strategy and plan of action on climate change has helped in mitigating environmental threats to national security in Nigeria. The mean of 3.74 on a scale of 1-5 was high which indicated that state collaboration with other international organisation has been a positive way of how challenges related to environmental threats are handled to mitigate their impact on national security in Nigeria.

Again, the study empirical findings showed that 30(43%) of the respondents agreed that proactive measures like reforestation and afforestation programs like great green wall project has been impactful in minimizing environmental impact to Nigeria national security. The mean of 2.91 on a scale of 1-5 was low which indicated that proactive measures like reforestation and afforestation programs has not reached a satisfying state in Nigeria as showed by the level of disagreeableness by the respondents on this particular item. This is an indicator for action and further inquiry why such program has not gained the momentum required to mitigate environmental threat that impedes national security in Nigeria.

Finally, the study revealed that 26(37%) of respondents agreed that investing in environmental sustainability initiatives like community-based engagement approach has helped to reduce Nigeria's vulnerability to environmental threats to national security. The mean of 2.63 on a scale of 1-5 was low which indicated that there is a discrepancy of 63% level of disagreement with this particular statement. Conversely, it implied that as far as investment on environmental sustainability is concerned the Nigerian government still have a long way to go in community-based engagement approach to handling environmental threats which then shows a gap that is required to be filled by the government if environmental challenges can be minimized, there is need for engagement and application of community-based engagement approach as each context has its various environmental concerns that are recurrent across the country and context-specific action model (CSAM) is key to unlocking the sustainability development goals in Nigeria and across the globe.

Overall, the study confirmed that 39(55.3%) (M=3.09; Std = 1.385) of the respondents agreed that collaboration between government and international community, proactive measures like reforestation and afforestation programs, investing in environmental sustainability initiatives like community –based engagement approach are how challenges related to environmental threats are handled to mitigate their impact on national security in Nigeria.

Results from the interviews continued to support the quantitative findings as stated below; one informant was quoted

> "*It is our greatest duty to protect the environment and we do collaborate in tree planting and also walking the talk in our various communities though few are committed to this."(**Participant 6)***

Furthermore, another informant noted that;

> *"The government and international communities are trying through the action plan for climate change programs but this is only when the situation has occurred as an intervention strategy why not act now to save the environment? This means there is still lag in pre-crisis preparedness as a nation to handle this on our own and for this reason region and international cooperation is vital."(**Participant 7)***

The study further revealed that planting of trees through walking the talk in communities and cooperation between the Nigerian government and other international communities has been effective in handling environmental threats to national security. However, the study also posed that there is a lag that needs to be filled, that is, not waiting for environmental issues to arise before action but to act now and have also pre-crisis preparedness as nation that are environmentally friendly is more solution best as opposed to focusing on waiting for funding to repair damages caused by environmental challenges.

Opportunities to enhance effective interactions between people and ecological systems, thereby mitigating environmental threats to national security in Nigeria

The fourth priority of this study was to discover opportunities to enhance effective interactions between people and ecological systems, thereby mitigating environmental threats to national security in Nigeria. The descriptive results are presented in Table 5 below.

Table 5: Opportunities to enhance effective interactions between people and ecological systems, thereby mitigating environmental threats to national security in Nigeria

Items	Responses in Percentages (%)					Total%	Mean	Stand Dev
	SD %	D %	N %	A %	SA %			
Community-led initiatives empower locals to conserve natural resources, reducing environmental degradation	4.3	5.7	5.7	27.1	57.1	84	4.27	1.089
Education and awareness programs promote behavioral change and environmental action.	2.9	2.9	4.3	11.4	78.6	90	4.60	0.923
Sustainable urban planning reduces environmental footprint and enhances national security.	2.9	2.9	2.9	48.6	42.9	92	4.26	0.879
Effective policy implementation and governance are crucial in decision making to strengthen the regulatory framework between people and the ecological system	5.7	1.4	2.9	27.1	62.9	90	4.40	1.041
Alternatives to cheaper and effective source to navigate through technological, cultural, economic, and social transition towards a sustainable future are paramount	5.7	4.3	1.4	18.6	70.0	89	4.43	1.111
Overall						**89**	**4.39**	**1.009**

Source: Primary data, 2024

The study revealed that 59(84.2%) of respondents agreed that community-led initiatives empower locals to conserve natural resources, reducing environmental degradation. The mean

of 4.27 on a scale of 1-5 was high which indicated that encouraging shared responsibility through community-led initiatives are one of the ways the interaction between people and the ecological systems can be conserved and sustained.

The study also revealed that 63(90%) of respondents agreed that education and awareness programs promote behavioral change and environmental action. The mean of 4.60 on a scale of 1-5 was very high which indicated that the more aware people are of the risk of environment hazards, attitudinal change is easy to achieve. In the process of breaking the odds, education and awareness programs are crucial especially in the domain of transitioning from technological, social, political, and economic interests that suit the need of time that is sustainability at the core of every action. This begs the question how do we strike the equilibrium? Environmental diplomacy and international cooperation are pivotal tools to plan actions, commitment in terms of interest realignment, resources, equity in interventions and distribution of resources and political will; implementation, accountability, and central governance agreed upon by all actors for enforcement to compliance.

The study findings again showed that 64(92%) of respondents agreed that sustainable urban planning reduces environmental footprint and enhances national security. The mean of 4.26 on a scale of 1-5 was high which indicated that sectorial obligations in terms of urban planning must be revised to ensure that it houses sustainability plans and every project that does not meet this criterion must not be executed regardless of who is carrying out the project to reduce the environmental footprints that affect the national security as the negative impact of peoples interaction within the ecological systems arises.

Furthermore, the study revealed that 63(90%) of respondents agreed that effective policy implementation and governance are crucial in decision-making to strengthen the regulatory framework between people and the ecological system. The mean of 4.40 on a scale of 1-5 was high which indicated that the respondents accepted that effective policy implementation and governance is a powerful opportunity that can be tapped to ensure that decision-making at all levels is geared toward strengthening the regulatory framework guiding both people and their interaction with the ecological system.

Lastly, the study revealed that 62(89%) of respondents agreed that alternatives to cheaper and effective source to navigate through technological, cultural, economic, and social transition towards a sustainable future are paramount. The mean of 4.43 on a scale of 1-5 was high which indicated that cheaper and effective sources will promote a positive interaction between people and ecological system as they navigate through technological, cultural, economic and social transitions towards sustainable development.

Overall, the study confirmed that 62(89%) (M=4.39, Std = 1.009) agreed that community-led initiatives, education and creation of awareness programs; sustainable urban planning, effective policy implementation and governance; providing alternatives to cheaper and effective source of livelihood are sustainable opportunities necessary to enhance effective interactions between people and the ecological systems, thereby mitigating environmental threats to national security in Nigeria.

The qualitative results also uncovered interesting findings discussed below; one informant was quoted

> "*It is important we walk the talk than preaching what we don't do. In essence I mean we should be people who are concerned not for our selfish interest but joint network ready to solve not only national problem but global problems."(**Participant 8)***

Furthermore, another informant noted that

> "*We need great sensitization to address this issues from our local communities so that people become much aware of the consequences of their action in regards to ecological system."(**Participant 9)***

The study findings justify sensitization at the grassroots and local levels as key to improving the interaction between people and the environment. Moreover, being ambassadors of what we say is vital to actualizing sustainability goals. Lastly, alternative renewable energy sources, strengthening the policy regulatory framework, and avoiding duplication of policies with selective application, approach, implementation, accountability, and enforcement for compliance are crucial.

Study outcome

This study examined the challenges in environmental diplomacy, which we call the Hook. It also looked at the Line, meaning the ways we can work together. We're all about finding ways to tackle environmental threats that can affect national security. Plus, we want to improve how people connect with nature. The framework below shows how these ideas fit together.

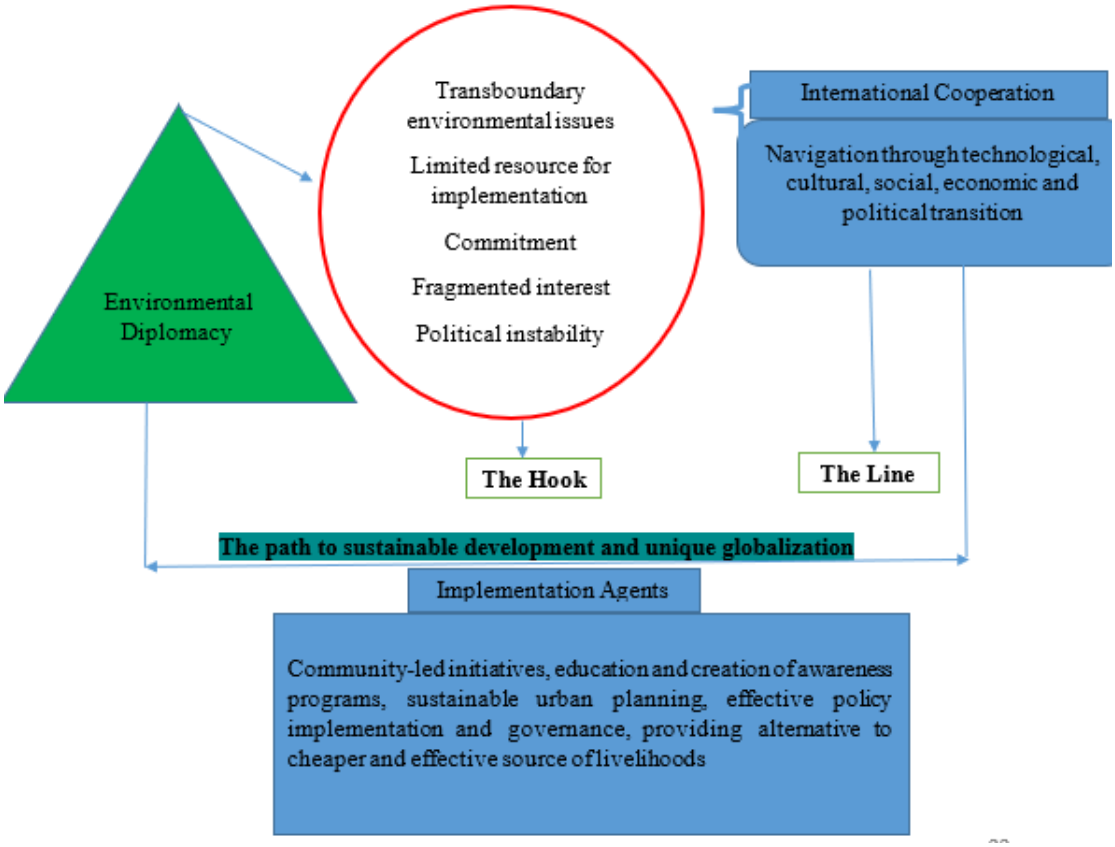

Fig. 1: The Hook and Line Model developed the researcher (2024)

Despite the efforts of international organizations, challenges persist in effectively addressing environmental threats to national security in Nigeria. This is why the model depicts the dynamic nature of environmental diplomacy as an ongoing process with vision in mind. However, challenges such as the complexity of transboundary environmental issues, limited resources for implementation, varying levels of commitment from member states, fragmented interest, and political instability are poised as setbacks for actualizing these objectives, and hence, if not addressed, will continue rotating within the same trend with a multiplicity of frameworks and policies that is fairly to no implementation at all. Looking ahead, working together with other countries can help us share knowledge and affordable technology. It also helps us handle changes in technology, culture, society, economy, and politics so we can better tackle environmental challenges.

To reach global goals, Nigeria and other nations have to join forces. Environmental diplomacy is becoming a key part of how countries interact. This is important because it affects everyone's life. Environmental diplomacy stands as a beacon and ways to safeguard political, economic, and security interests that assume a more genuine form through constructive regional and international contacts. The path to sustainable development and unique globalization is centred on these implementation agents, like community-led initiatives, education and creation of awareness programs, sustainable urban planning, effective policy implementation, and governance, providing alternatives to cheaper and more effective sources of livelihoods. In this regard, the most beneficial activity in international relations is caring for environmental security with an eye toward environmental diplomacy. In the end, environmental diplomacy can strengthen goodwill and peace between nations because it is one of the most fundamental and successful forms of international communion.

Discussion

The study validated, 60(86.4%) (M=4.32; Std= 1.103) that fragmented national interest, economic pressure, insufficient funding and political instability are some of the factors limiting environmental diplomacy and international cooperation in addressing environmental threats to national security in Nigeria. Most importantly, Pease (2018) noted the discrepancies and challenges that hinders environmental diplomacy and international cooperation towards achieve sustainable development. Sustainable development recognizes that the kind of economic development that has occurred in the advanced industrialized countries cannot be replicated in the developing world without grave environmental consequences. Desombre (2005) affirmed that although there are international courts and tribunals, no state can ever be forced to appear before them, or to accept punishment from them. This makes the realisation of international environmental cooperation complex. For the realists and neorealist theorists, international anarchy is absolute (Waltz 1979, Keohane 1986)

The study findings confirmed, 58(83%) (M=4.06; Std = 1.069) that social unrest, conflicts, socio-economic disparities are some of the socio-political implications arising from the factors that limits environmental diplomacy and international cooperation in mitigating environmental threats to national security in Nigeria. According to Singh and Singh (2017), among the most pressing concerns in the world today are the environmental threats that range from global warming, natural disasters, drought, biodiversity loss, pollution, food, and water insecurity, among others. These threats arise from harmful human activities such as deforestation, bush burning, and wildfires, among others. Environmental threats lead to a number of negative

effects, and one of the most affected aspects is national security. This is achieved by destroying the welfare, peace, and political, economic, and social well-being of individuals in given nations.

Furthermore, the study confirmed that 39(55.3%) (M=3.09, Std = 1.385) of the respondents agreed that collaboration between government and international community, proactive measures like reforestation and afforestation programs, investing in environmental sustainability initiatives like community –based engagement approach are how challenges related to environmental threats are handled to mitigate their impact on national security in Nigeria.

Finally, the study authenticated, 62(89%) (M=4.39, Std = 1.009) agreed that community-led initiatives, education and creation of awareness programs; sustainable urban planning, effective policy implementation and governance; providing alternatives to the cheaper and effective sources of livelihood are sustainable opportunities necessary to enhance effective interactions between people and ecological systems, thereby mitigating environmental threats to national security in Nigeria. In the views of Constantinou and Christodoulou (2024) building on indigenous thought and animist epistemologies, programmes such as Harmony with Nature (HwN) espouse a new relationship with Planet Earth and make it possible to explore 'nature' as diplomatic interlocutor.

Conclusion

This study was purposed to explore the interaction between people and the ecological systems.

From the study findings, it concludes that fragmented national interest, economic pressure, insufficient funding and political instability are factors limiting environmental diplomacy and international cooperation in addressing environmental threats to national security in Nigeria.

More so, the study concludes that social unrest, conflicts, and socio-economic disparities are some of the socio-political implications arising from the factors that limit environmental diplomacy and international cooperation in mitigating environmental threats to national security in Nigeria.

Furthermore, the study concludes that collaboration between the government and global community, proactive measures like reforestation and afforestation programs, investing in environmental sustainability initiatives like community –based engagement approach are the ways of handling challenges related to environmental threats and mitigating their impact on national security in Nigeria.

Additionally, the study concludes that community-led initiatives, education and creation of awareness programs, sustainable urban planning, effective policy implementation and governance, providing alternatives to cheaper and effective source of livelihood are sustainable opportunities necessary to enhance effective interactions between people and the ecological systems, thereby mitigating environmental threats to national security in Nigeria.

Overall, the study concludes that understanding the interaction between people and the ecological systems is crucial since it comprises man and sustainability of its environment. Thus, strengthening the role of environmental diplomacy and international cooperation is central. The study recommends that the Nigerian government should foster collaboration to develop a mechanism that supports practice management as opposed to actions after damages have occurred. Also, enforcement of already existing policies through different institutions is vital in combating these impacts to national security instead of multiplicity of policies that are selectively applied. More so, sensitization from the grassroots is required to ensure that the

policies are made feasible. In essence, *the practice what you preach formula* is essential. Lastly, the study recommends the government and international organisations to make commitments with vision in mind and not just serving a particular selfish interest but balancing between economic transition and sustainable development that promote the wellbeing of people and the environment. This can be achieved through the hook, the line and the implementation agent indicators as depicted in the model.

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Declaration of conflict of interest

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Data availability

The researcher declares that the dataset for this study is only available upon a reasonable request.

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